

APPENDIX A

Cameron Run Watershed Plan Candidate Projects

- A-1 Project Fact Sheets for Tier 1 Projects**
- A-2 Tier 2 Projects**
- A-3 Tier 3 Projects**
- A-4 Project Fact Sheets for Selected Drainage Complaint Projects**

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APPENDIX A-1

Project Fact Sheets for Tier 1 Projects

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Cameron Run Watershed Plan - Tier 1 Projects

 Cameron Run Watershed

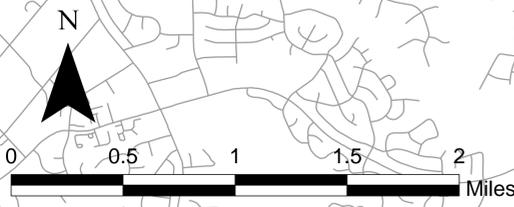
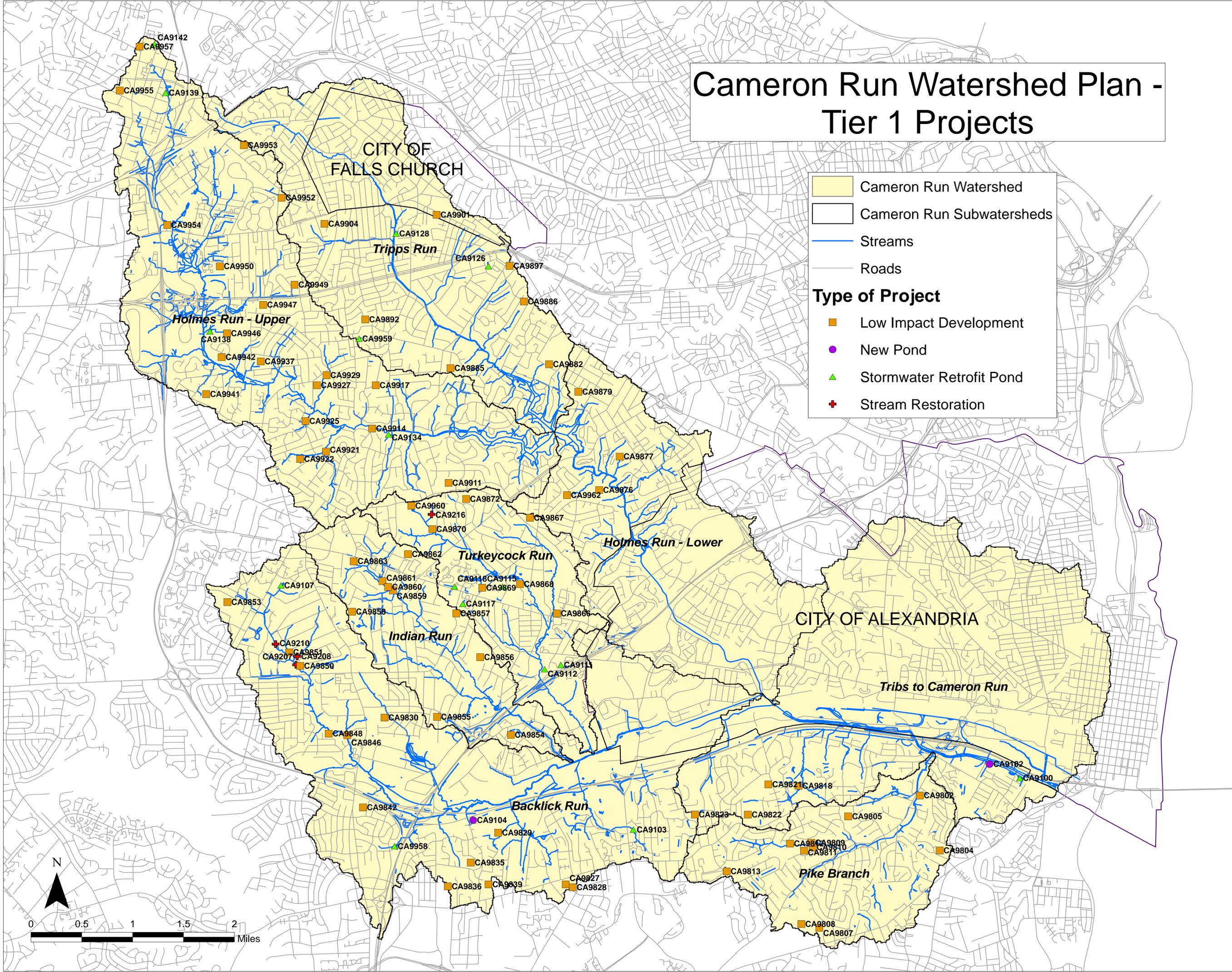
 Cameron Run Subwatersheds

 Streams

 Roads

Type of Project

-  Low Impact Development
-  New Pond
-  Stormwater Retrofit Pond
-  Stream Restoration



Farrington Park SWM Pond Retrofit

Project ID: CA9100
Project Name: Farrington Park SWM Pond Retrofit
Project Location: Mount Vernon Dr. & Arlington Terr.
Parcel ID No.:

Project Type: Stormwater Pond Retrofit
Subwatershed: Tributaries to Cameron Run
Drainage Area: 13.8 acres

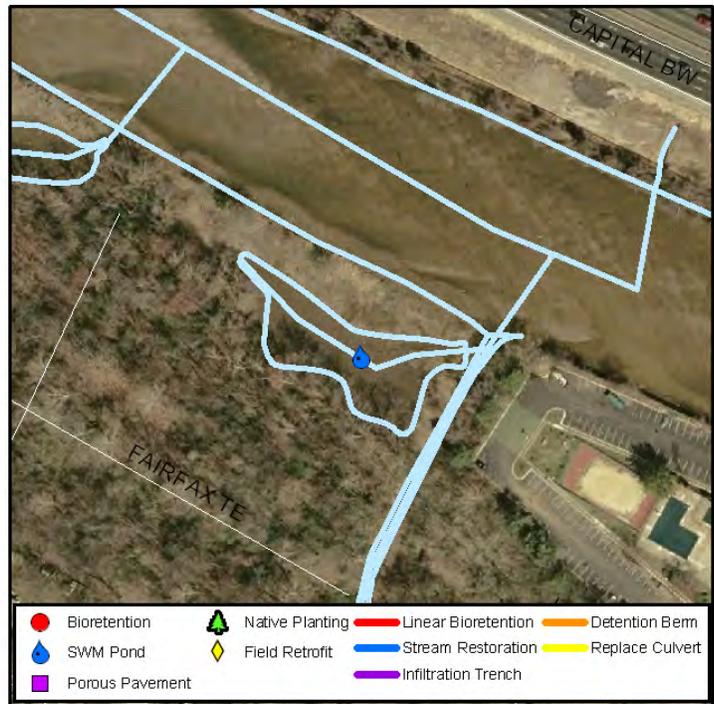
Project Location:



Proposed Action:

Expand capacity of existing SWM wet pond and upgrade control structure. This project will be re-evaluated by the on-going flood damage reduction study for the Huntington community (see Section 4.2.7.1) and recommendations from that study may supersede this project.

Proposed Project:



Outfall into SWM pond



Wetlands adjacent to SWM pond and mainstem Cameron Run

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$61,000

Farrington Park SWM Pond Retrofit

Project ID: CA9100

Project Name: Farrington Park SWM Pond Retrofit

Estimated Project Cost:

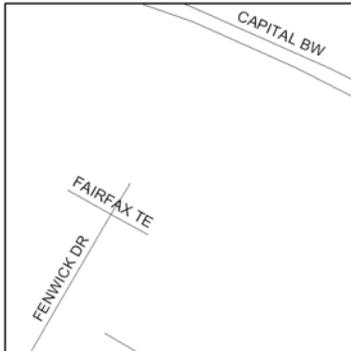
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	475	CY	\$35.00	\$16,625
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$31,625
Mobilization (5%) =				\$1,581
Subtotal 1 =				\$33,206
Contingency (25%) =				\$8,302
Subtotal 2 =				\$41,508
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$18,679
Total =				\$60,186
Estimated Project Cost =				\$61,000

Huntington Park SWM Pond

Project ID: CA9102
Project Name: Huntington Park SWM Pond
Project Location: Huntington Park
Parcel ID No.: 0831 14C 0110A

Project Type: New Pond
Subwatershed: Tributaries to Cameron Run
Drainage Area: 16.7 acres

Project Location:



Proposed Project:



Proposed Action:

Install SWM pond with micropool areas in pond bottom to provide water quality and extended detention controls. This project will be re-evaluated by the on-going flood damage reduction study for the Huntington community (see Section 4.2.7.1) and recommendations from that study may supersede this project.



Location of small stream meeting mainstem Cameron Run



Stormwater inlet in park

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$98,000

Huntington Park SWM Pond

Project ID: CA9102

Project Name: Huntington Park SWM Pond

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	525	CY	\$50.00	\$26,250
Structural Improvements & Incidentals	1	LS	\$20,000.00	\$20,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$51,250
Mobilization (5%) =				\$2,563
Subtotal 1 =				\$53,813
Contingency (25%) =				\$13,453
Subtotal 2 =				\$67,266
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$30,270
Total =				\$97,535
Estimated Project Cost =				\$98,000

Woodfield SWM Pond Retrofit

Project ID: CA9103

Project Type: Stormwater Pond Retrofit

Project Name: Woodfield SWM Pond Retrofit

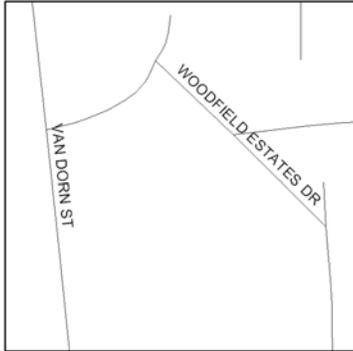
Subwatershed: Backlick Run

Project Location: Van Dorn St. & Woodfield Estates Dr.

Drainage Area: 102.1 acres

Parcel ID No.: 0814 33 C

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



Outfall entering pond



Outfall entering pond

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$276,000

Woodfield SWM Pond Retrofit

Project ID: CA9103

Project Name: Woodfield SWM Pond Retrofit

Estimated Project Cost:

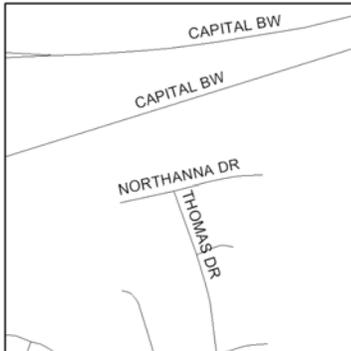
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	3100	CY	\$35.00	\$108,500
Structural Improvements & Incidentals	1	LS	\$20,000.00	\$20,000
Erosion & Sediment Control	3100	CY	\$3.50	\$10,850
Landscaping	3100	CY	\$1.75	\$5,425
Base Cost =				\$144,775
Mobilization (5%) =				\$7,239
Subtotal 1 =				\$152,014
Contingency (25%) =				\$38,003
Subtotal 2 =				\$190,017
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$85,508
Total =				\$275,525
Estimated Project Cost =				\$276,000

Thomas SWM Pond Retrofit

Project ID: CA9104
Project Name: Thomas SWM Pond Retrofit
Project Location: Northanna Dr. & Thomas Dr.
Parcel ID No.: 0813 01 0003

Project Type: Stormwater Pond Retrofit
Subwatershed: Backlick Run
Drainage Area: 39.3 acres

Project Location:



Proposed Action:

Expand existing SWM pond control structure to provide additional storage capacity.

Proposed Project:



Existing stormwater pond



Outfall

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stormwater quality controls.

Estimated Cost: \$148,000

Thomas SWM Pond Retrofit

Project ID: CA9104

Project Name: Thomas SWM Pond Retrofit

Estimated Project Cost:

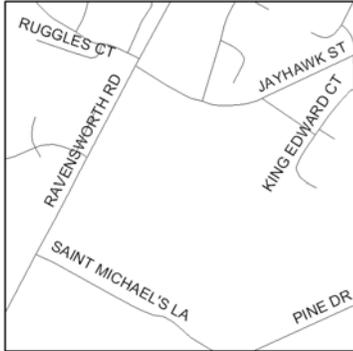
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	1550	CY	\$35.00	\$54,250
Structural Improvements & Incidentals	1	LS	\$15,000.00	\$15,000
Erosion & Sediment Control	1550	CY	\$3.50	\$5,425
Landscaping	1550	CY	\$1.75	\$2,713
Base Cost =				\$77,388
Mobilization (5%) =				\$3,869
Subtotal 1 =				\$81,257
Contingency (25%) =				\$20,314
Subtotal 2 =				\$101,571
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$45,707
Total =				\$147,278
Estimated Project Cost =				\$148,000

Jayhawk SWM Pond Retrofit

Project ID: CA9107
Project Name: Jayhawk SWM Pond Retrofit
Project Location: Ravensworth Rd. & Jayhawk St.
Parcel ID No.: 0711 09 0007A

Project Type: Stormwater Pond Retrofit
Subwatershed: Backlick Run
Drainage Area: 46.3 acres

Project Location:



Proposed Project:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.



Outlets filled with trash and debris

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$236,000

Jayhawk SWM Pond Retrofit

Project ID: CA9107

Project Name: Jayhawk SWM Pond Retrofit

Estimated Project Cost:

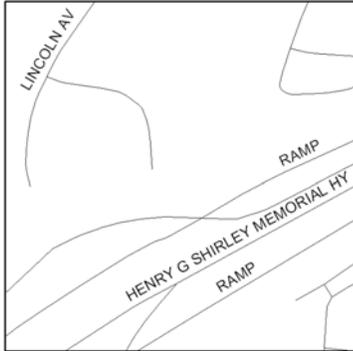
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	2575	CY	\$35.00	\$90,125
Structural Improvements & Incidentals	1	LS	\$20,000.00	\$20,000
Erosion & Sediment Control	2600	CY	\$3.50	\$9,100
Landscaping	2600	CY	\$1.75	\$4,550
Base Cost =				\$123,775
Mobilization (5%) =				\$6,189
Subtotal 1 =				\$129,964
Contingency (25%) =				\$32,491
Subtotal 2 =				\$162,455
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$73,105
Total =				\$235,559
Estimated Project Cost =				\$236,000

Beauregard SWM Pond Retrofit

Project ID: CA9111
Project Name: Beauregard SWM Pond Retrofit
Project Location: Strawbridge Square Dr.
Parcel ID No.: 0723 01 0040

Project Type: Stormwater Pond Retrofit
Subwatershed: Turkeycock Run
Drainage Area: 3.5 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



Stormwater outfall



SWM pond

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$25,000

Beauregard SWM Pond Retrofit

Project ID: CA9111

Project Name: Beauregard SWM Pond Retrofit

Estimated Project Cost:

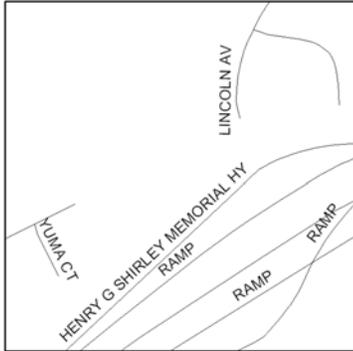
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	75	CY	\$35.00	\$2,625
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$12,625
Mobilization (5%) =				\$631
Subtotal 1 =				\$13,256
Contingency (25%) =				\$3,314
Subtotal 2 =				\$16,570
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$7,457
Total =				\$24,027
Estimated Project Cost =				\$25,000

Strawbridge Square SWM Pond Retrofit

Project ID: CA9112
Project Name: Strawbridge Square SWM Pond Retrofit
Project Location: Strawbridge Square Dr. & Lincoln Ave.
Parcel ID No.: 0723 01 0040

Project Type: Stormwater Pond Retrofit
Subwatershed: Turkeycock Run
Drainage Area: 2 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



SWM dry pond



Inlet in parking lot to east leading to pond

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$25,000

Strawbridge Square SWM Pond Retrofit

Project ID: CA9112

Project Name: Strawbridge Square SWM Pond Retrofit

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	75	CY	\$35.00	\$2,625
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$12,625
Mobilization (5%) =				\$631
Subtotal 1 =				\$13,256
Contingency (25%) =				\$3,314
Subtotal 2 =				\$16,570
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$7,457
Total =				\$24,027
Estimated Project Cost =				\$25,000

Little River SWM Pond Retrofit

Project ID: CA9115
Project Name: Little River SWM Pond Retrofit
Project Location: Little River Turnpike & Green Spring Rd.
Parcel ID No.: 0721 01 0022B

Project Type: Stormwater Pond Retrofit
Subwatershed: Turkeycock Run
Drainage Area: 3.9 acres

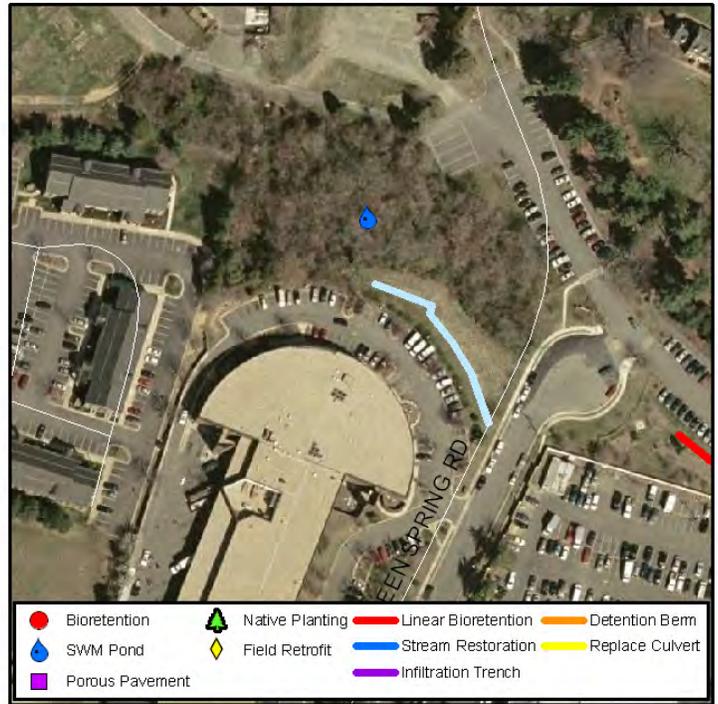
Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



Concrete ditch below roadway



SWM dry pond

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$33,000

Little River SWM Pond Retrofit

Project ID: CA9115

Project Name: Little River SWM Pond Retrofit

Estimated Project Cost:

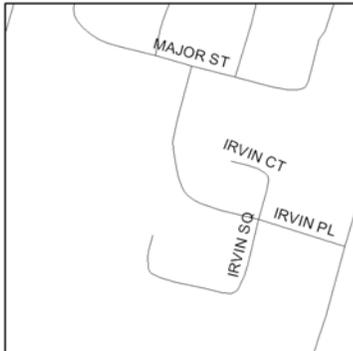
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	200	CY	\$35.00	\$7,000
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$17,000
Mobilization (5%) =				\$850
Subtotal 1 =				\$17,850
Contingency (25%) =				\$4,463
Subtotal 2 =				\$22,313
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$10,041
Total =				\$32,353
Estimated Project Cost =				\$33,000

Braddock Place SWM Pond Retrofit

Project ID: CA9117
Project Name: Braddock Place SWM Pond Retrofit
Project Location: Irvin Pl. & Irvin Ct.
Parcel ID No.: 0721 30 A

Project Type: Stormwater Pond Retrofit
Subwatershed: Turkeycock Run
Drainage Area: 7.4 acres

Project Location:



Proposed Project:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.



View of pond and trickle ditch looking at inlet



Inlet

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$49,000

Braddock Place SWM Pond Retrofit

Project ID: CA9117

Project Name: Braddock Place SWM Pond Retrofit

Estimated Project Cost:

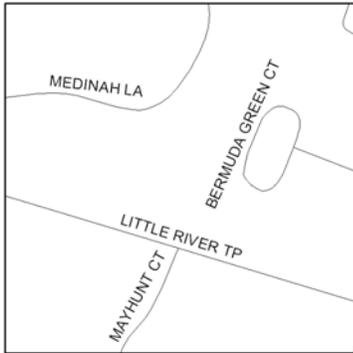
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	300	CY	\$35.00	\$10,500
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$25,500
Mobilization (5%) =				\$1,275
Subtotal 1 =				\$26,775
Contingency (25%) =				\$6,694
Subtotal 2 =				\$33,469
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$15,061
Total =				\$48,530
Estimated Project Cost =				\$49,000

Pinecrest SWM Pond Retrofit

Project ID: CA9118
Project Name: Pinecrest SWM Pond Retrofit
Project Location: Little River Turnpike & Pinecrest
Parcel ID No.: 0712 3404 A

Project Type: Stormwater Pond Retrofit
Subwatershed: Turkeycock Run
Drainage Area: 13.3 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



SWM dry pond



Grassy swale and outlet

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$69,000

Pinecrest SWM Pond Retrofit

Project ID: CA9118

Project Name: Pinecrest SWM Pond Retrofit

Estimated Project Cost:

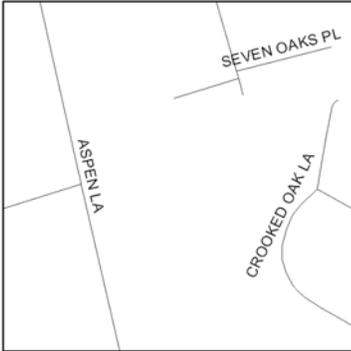
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	600	CY	\$35.00	\$21,000
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$36,000
Mobilization (5%) =				\$1,800
Subtotal 1 =				\$37,800
Contingency (25%) =				\$9,450
Subtotal 2 =				\$47,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$21,263
Total =				\$68,513
Estimated Project Cost =				\$69,000

Dominion SWM Pond Retrofit

Project ID: CA9126
Project Name: Dominion SWM Pond Retrofit
Project Location: Crook Oak Ln. & Sleepy Hollow Rd.
Parcel ID No.: 0513 31 A1

Project Type: Stormwater Pond Retrofit
Subwatershed: Tripps Run
Drainage Area: 8.3 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



SWM dry pond

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$61,000

Dominion SWM Pond Retrofit

Project ID: CA9126

Project Name: Dominion SWM Pond Retrofit

Estimated Project Cost:

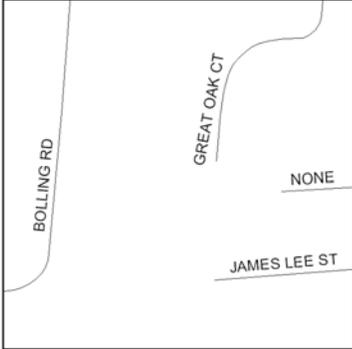
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	475	CY	\$35.00	\$16,625
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$31,625
Mobilization (5%) =				\$1,581
Subtotal 1 =				\$33,206
Contingency (25%) =				\$8,302
Subtotal 2 =				\$41,508
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$18,679
Total =				\$60,186
Estimated Project Cost =				\$61,000

Great Oak SWM Pond Retrofit

Project ID: CA9128
Project Name: Great Oak SWM Pond Retrofit
Project Location: Great Oak & James Lee St.
Parcel ID No.: 0502 14 A

Project Type: Stormwater Pond Retrofit
Subwatershed: Tripps Run
Drainage Area: 18.9 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



SWM dry pond

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$89,000

Great Oak SWM Pond Retrofit

Project ID: CA9128

Project Name: Great Oak SWM Pond Retrofit

Estimated Project Cost:

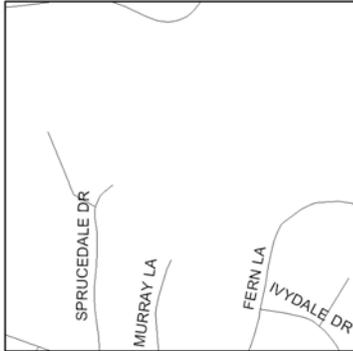
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	900	CY	\$35.00	\$31,500
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control	925	CY	\$3.50	\$3,238
Landscaping	900	CY	\$1.75	\$1,575
Base Cost =				\$46,313
Mobilization (5%) =				\$2,316
Subtotal 1 =				\$48,628
Contingency (25%) =				\$12,157
Subtotal 2 =				\$60,785
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$27,353
Total =				\$88,138
Estimated Project Cost =				\$89,000

Columbia Pines SWM Pond Retrofit

Project ID: CA9134
Project Name: Columbia Pines SWM Pond Retrofit
Project Location: Sprucedale Dr. & Sprucedale Ct.
Parcel ID No.: 0604 01 0003

Project Type: Stormwater Pond Retrofit
Subwatershed: Holmes Run - Upper
Drainage Area: 7.7 acres

Project Location:



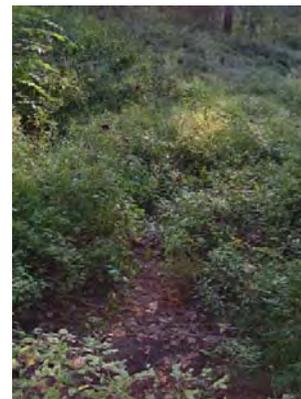
Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.

Proposed Project:



Outfall into SWM pond



SWM pond area

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.
 Improve floodplain and nutrient cycling functions.

Estimated Cost: \$30,000

Columbia Pines SWM Pond Retrofit

Project ID: CA9134

Project Name: Columbia Pines SWM Pond Retrofit

Estimated Project Cost:

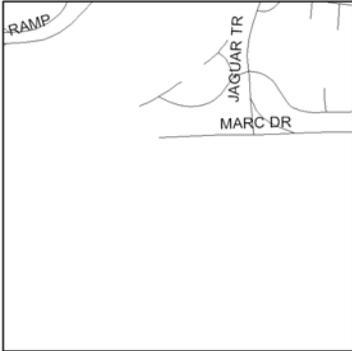
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	150	CY	\$35.00	\$5,250
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$15,250
Mobilization (5%) =				\$763
Subtotal 1 =				\$16,013
Contingency (25%) =				\$4,003
Subtotal 2 =				\$20,016
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$9,007
Total =				\$29,023
Estimated Project Cost =				\$30,000

Providence RECenter SWM Pond Retrofit

Project ID: CA9138
Project Name: Providence RECenter SWM Pond Retrofit
Project Location: March Rd. & Jaguar Tr.
Parcel ID No.: 0494 01 0068

Project Type: Stormwater Pond Retrofit
Subwatershed: Holmes Run - Upper
Drainage Area: 4.5 acres

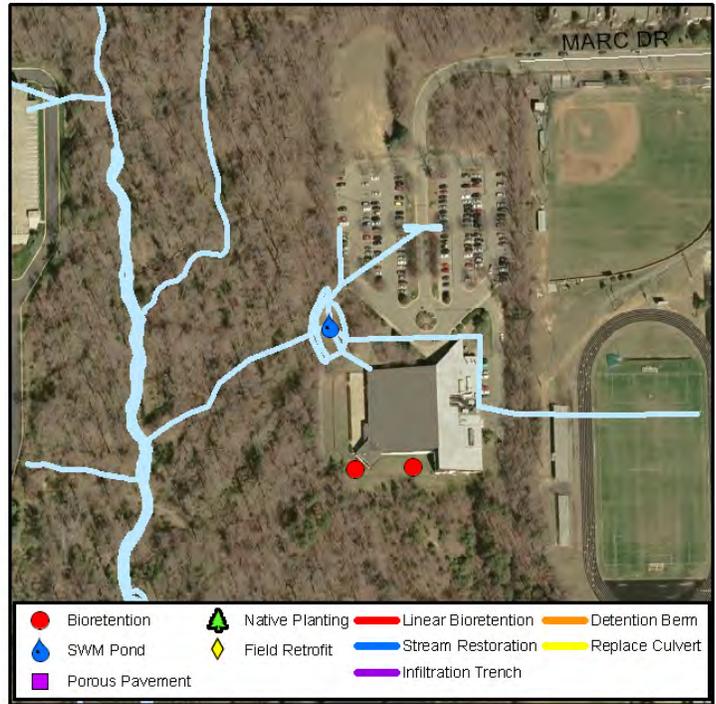
Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; add bioretention areas in existing swale S of bldg.

Proposed Project:



SWM pond and control structure



Newly constructed parking lot with existing tree box filter, underdrain, and infiltration

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$102,000

Providence RECenter SWM Pond Retrofit

Project ID: CA9138

Project Name: Providence RECenter SWM Pond Retrofit

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	100	CY	\$35.00	\$3,500
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Bioretention Area	1600	SF	\$25.00	\$40,000
			Base Cost =	\$53,500
			Mobilization (5%) =	\$2,675
			Subtotal 1 =	\$56,175
			Contingency (25%) =	\$14,044
			Subtotal 2 =	\$70,219
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$31,598
			Total =	\$101,817
			Estimated Project Cost =	\$102,000

Kings Glen SWM Pond Retrofit

Project ID: CA9139
Project Name: Kings Glen SWM Pond Retrofit
Project Location: Foxmore Dr. & Morgan Ln.
Parcel ID No.: 0394 29 A1

Project Type: Stormwater Pond Retrofit
Subwatershed: Holmes Run - Upper
Drainage Area: 81.8 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; add detention micro-berm along contour and margin of mature woods in pond bottom.

Proposed Project:



SWM pond control structure



Detention berms could be installed along contour and margin of mature woods

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$243,000

Kings Glen SWM Pond Retrofit

Project ID: CA9139

Project Name: Kings Glen SWM Pond Retrofit

Estimated Project Cost:

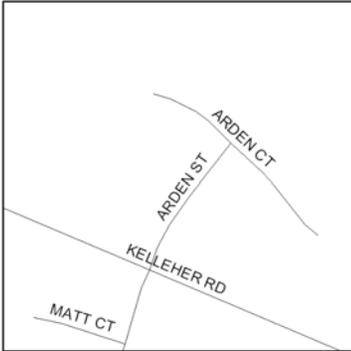
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	2650	CY	\$35.00	\$92,750
Structural Improvements & Incidentals	1	LS	\$20,000.00	\$20,000
Erosion & Sediment Control	2600	CY	\$3.50	\$9,100
Landscaping	2650	CY	\$1.75	\$4,638
Detention Berm	410	LF	\$2.00	\$820
Base Cost =				\$127,308
Mobilization (5%) =				\$6,365
Subtotal 1 =				\$133,673
Contingency (25%) =				\$33,418
Subtotal 2 =				\$167,091
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$75,191
Total =				\$242,282
Estimated Project Cost =				\$243,000

Courts of Tyson SWM Pond Retrofit

Project ID: CA9142
Project Name: Courts of Tyson SWM Pond Retrofit
Project Location: Arden Ct. & Trevor Pl.
Parcel ID No.: 0394 21 A

Project Type: Stormwater Pond Retrofit
Subwatershed: Holmes Run - Upper
Drainage Area: 6.5 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; install two bioretention areas at yard drains in Ch. 2 street (Kelleher Rd.).

Proposed Project:



Existing SWM pond



Yard drain in undeveloped road

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$31,000

Courts of Tyson SWM Pond Retrofit

Project ID: CA9142

Project Name: Courts of Tyson SWM Pond Retrofit

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	25	CY	\$35.00	\$875
Structural Improvements & Incidentals	1	LS	\$5,000.00	\$5,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Bioretention Area	200	SF	\$25.00	\$5,000
			Base Cost =	\$15,875
			Mobilization (5%) =	\$794
			Subtotal 1 =	\$16,669
			Contingency (25%) =	\$4,167
			Subtotal 2 =	\$20,836
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$9,376
			Total =	\$30,212
			Estimated Project Cost =	\$31,000

Wilburdale Park Stream Restoration

Project ID: CA9207

Project Type: Stream Restoration

Project Name: Wilburdale Park Stream Restoration

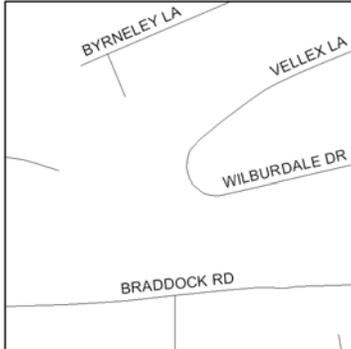
Subwatershed: Backlick Run

Project Location: Wilburdale Park

Drainage Area: 0 acres

Parcel ID No.: 0713 09 A

Project Location:



Proposed Project:



Proposed Action:

Notch two weirs and one concrete ford; redistribute large rocks in reach; control invasive vegetation; reforest buffer.



Concrete ford to be notched



Large rocks in reach to be redistributed in stream

Benefits: Improve stream stability and instream habitat. Reduce erosion.
Improve floodplain and nutrient cycling functions.
Opportunity for public education.
Other.

Estimated Cost: \$320,000

Wilburdale Park Stream Restoration

Project ID: CA9207

Project Name: Wilburdale Park Stream Restoration

Estimated Project Cost:

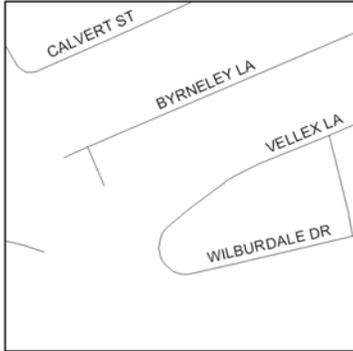
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Stream Restoration	800	LF	\$200.00	\$160,000
Riparian Buffer Restoration	790	LF	\$10.00	\$7,900
Base Cost =				\$167,900
Mobilization (5%) =				\$8,395
Subtotal 1 =				\$176,295
Contingency (25%) =				\$44,074
Subtotal 2 =				\$220,369
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$99,166
Total =				\$319,535
Estimated Project Cost =				\$320,000

Wilburdale Park Bank Stabilization

Project ID: CA9208
Project Name: Wilburdale Park Bank Stabilization
Project Location: Wilburdale Park
Parcel ID No.: 0713 09 0097

Project Type: Stream Restoration
Subwatershed: Backlick Run
Drainage Area: 0 acres

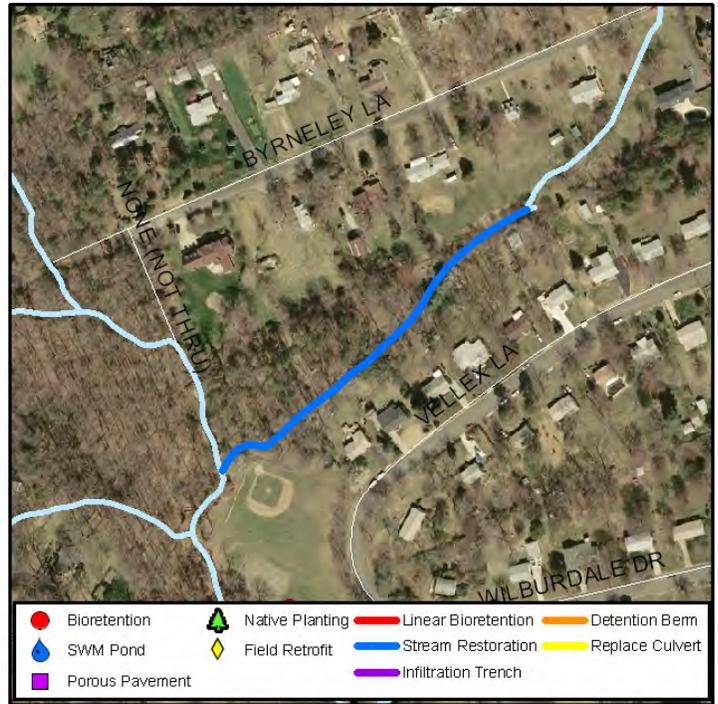
Project Location:



Proposed Action:

Remove check dam; enhance buffer through backyards; remove invasive bamboo and other species; implement backyard management program to reduce dumping of yard wastes/trash into streams.

Proposed Project:



Eroding streambanks to be restored with woody riparian buffer and removal of invasive bamboo



Streambanks to be stabilized and buffers planted to reestablish connection with floodplain

Benefits: Improve stream stability and instream habitat. Reduce erosion.
 Improve floodplain and nutrient cycling functions.
 Opportunity for public education.
 Improve community usage.

Estimated Cost: \$169,000

Wilburdale Park Bank Stabilization

Project ID: CA9208

Project Name: Wilburdale Park Bank Stabilization

Estimated Project Cost:

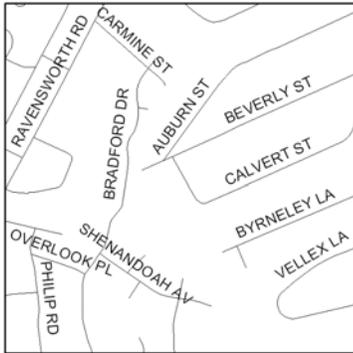
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Remove: small dam, invasive species	800	LF	\$100.00	\$80,000
Planting	1.1	AC	\$8,000.00	\$8,800
			Base Cost =	\$88,800
			Mobilization (5%) =	\$4,440
			Subtotal 1 =	\$93,240
			Contingency (25%) =	\$23,310
			Subtotal 2 =	\$116,550
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$52,448
			Total =	\$168,998
			Estimated Project Cost =	\$169,000

Brook Hill Stream Restoration

Project ID: CA9210
Project Name: Brook Hill Stream Restoration
Project Location: Rapidan Place, Wilburdale Park
Parcel ID No.: 0713 01 0004

Project Type: Stream Restoration
Subwatershed: Backlick Run
Drainage Area: 0 acres

Project Location:



Proposed Action:

Notch weirs in gabion lined channel; add rock vanes to straightened and overwidened middle section; cut log pourovers/debris jams; add toe protection on steep berms in lower third; enhance buffer in localized areas; construct bioretention area at end of two roads; implement backyard management program to reduce dumping of yard wastes/ trash into streams.

Proposed Project:



Stream lined with gabion baskets and concrete weirs



Install toe protection on steep banks. Restore woody riparian buffer

Benefits: Provide stormwater quantity controls.
 Improve floodplain and nutrient cycling functions.
 Opportunity for public education.
 Improve community usage.

Greenway opportunity

Estimated Cost: \$1,171,000

Brook Hill Stream Restoration

Project ID: CA9210

Project Name: Brook Hill Stream Restoration

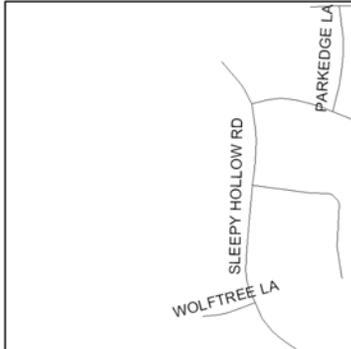
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2	EA	\$15,000.00	\$30,000
Stream Restoration	2750	LF	\$200.00	\$550,000
Planting	4.4	AC	\$8,000.00	\$35,200
Base Cost =				\$615,200
Mobilization (5%) =				\$30,760
Subtotal 1 =				\$645,960
Contingency (25%) =				\$161,490
Subtotal 2 =				\$807,450
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$363,353
Total =				\$1,170,803
Estimated Project Cost =				\$1,171,000

Mason District Park Stream Restoration - A

Project ID: CA9216 **Project Type:** Stream Restoration
Project Name: Mason District Park Stream Restoration - A **Subwatershed:** Turkeycock Run
Project Location: Mason District Park **Drainage Area:** 0 acres
Parcel ID No.: 0604 01 0028

Project Location:



Proposed Action:

Implement Park Authority's stream restoration plans at this location.

Proposed Project:



Benefits: Improve stream stability and instream habitat. Reduce erosion.
Improve floodplain and nutrient cycling functions.
Opportunity for public education.
Improve community usage.

Greenway opportunity

Estimated Cost: \$996,000

Mason District Park Stream Restoration - A

Project ID: CA9216

Project Name: Mason District Park Stream Restoration - A

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Stream Restoration	1	LS	\$523,000.00	\$523,000
			Base Cost =	\$523,000
			Mobilization (5%) =	\$26,150
			Subtotal 1 =	\$549,150
			Contingency (25%) =	\$137,288
			Subtotal 2 =	\$686,438
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$308,897
			Total =	\$995,334
			Estimated Project Cost =	\$996,000

Instream Debris Jam Evaluation and Removal

Project ID: CA9700

Project Type: Non-Structural

Project Name: Instream Debris Jam Evaluation and Removal

Subwatershed: Watershed-wide

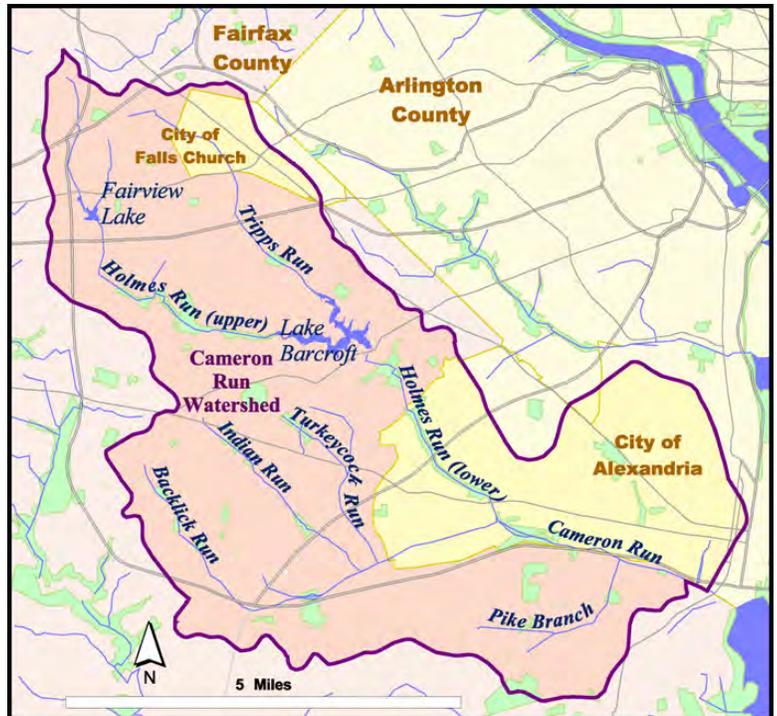
Project Location: Cameron Run Watershed

Drainage Area: 28400 acres

Parcel ID No.:

Project Location:

Proposed Project:



Proposed Action:

Locate, evaluate, and remove debris jams observed to cause excessive erosion.



Example of a debris blockage from Holmes Run, as identified in the Stream Physical Assessment

Benefits: Improve stream stability and instream habitat. Reduce erosion.
Prevent property and structural loss.
Reduce road flooding.
Opportunity for public education.

Estimated Cost: \$286,000

Instream Debris Jam Evaluation and Removal

Project ID: CA9700

Project Name: Instream Debris Jam Evaluation and Removal

Estimated Project Cost:

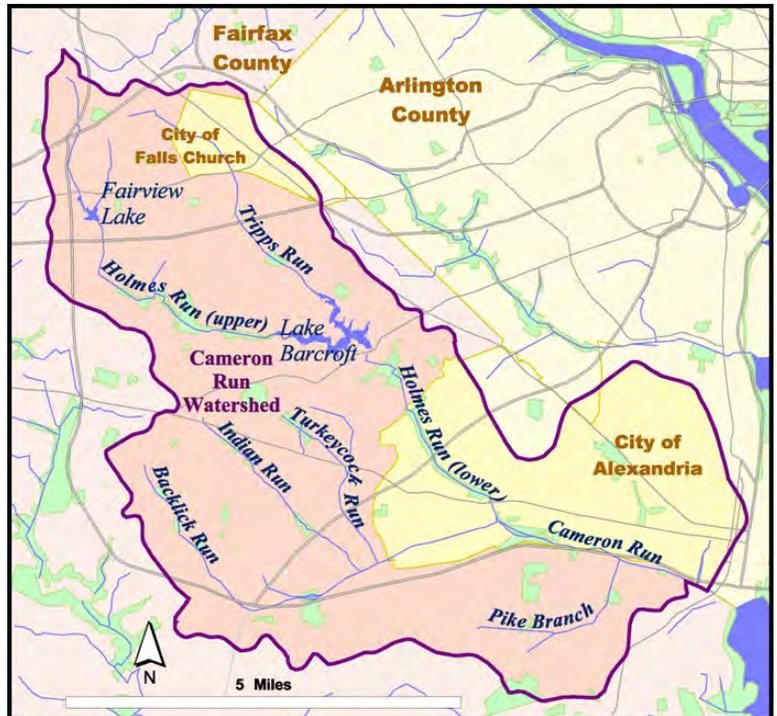
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Instream debris-jam identification and removal	5	YR	\$30,000.00	\$150,000
Base Cost =				\$150,000
Mobilization (5%) =				\$7,500
Subtotal 1 =				\$157,500
Contingency (25%) =				\$39,375
Subtotal 2 =				\$196,875
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$88,594
Total =				\$285,469
Estimated Project Cost =				\$286,000

Community Watershed Restoration Support

Project ID: CA9701 **Project Type:** Non-Structural
Project Name: Community Watershed Restoration Support **Subwatershed:** Watershed-wide
Project Location: Cameron Run Watershed **Drainage Area:** 28400 acres
Parcel ID No.:

Project Location:

Proposed Project:



Proposed Action:

Provide education and technical assistance to encourage restoration practices on private property. Explain the need for restoration and describe effective techniques. Distribute "how to" information on creating rain gardens, backyard riparian buffers, and other LID projects. Provide technical assistance with individual LID projects.

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Opportunity for public education.

Estimated Cost: \$1,407,000

Community Watershed Restoration Support

Project ID: CA9701

Project Name: Community Watershed Restoration Support

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Informational Brochures	25	YR	\$20,000.00	\$500,000
County Website support	25	YR	\$15,000.00	\$375,000
Technical Assistance	25	YR	\$10,000.00	\$250,000
Base Cost =				\$1,125,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$1,125,000
Contingency (25%) =				\$281,250
Subtotal 2 =				\$1,406,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$1,406,250
Estimated Project Cost =				\$1,407,000

Small Watershed Grant Program

Project ID: CA9702

Project Type: Non-Structural

Project Name: Small Watershed Grant Program

Subwatershed: Watershed-wide

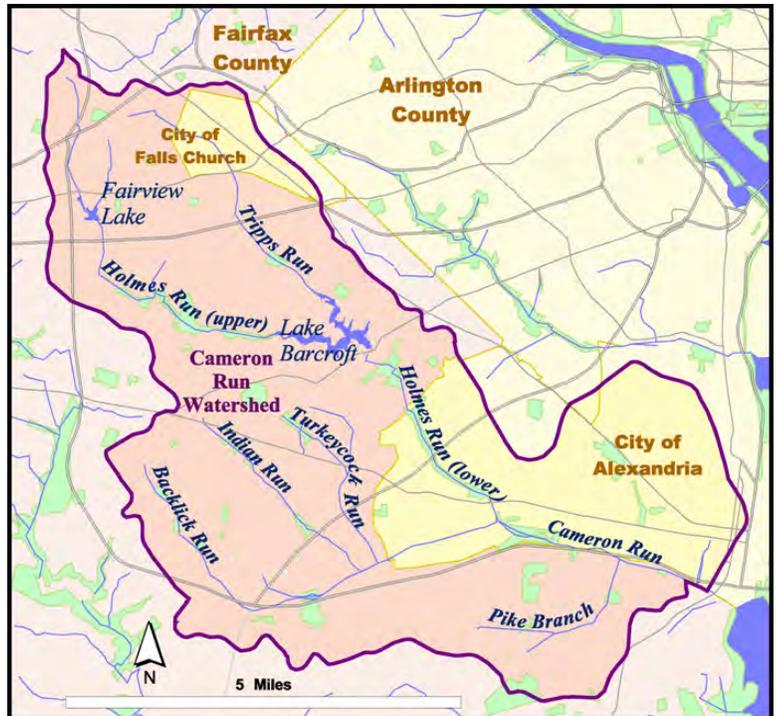
Project Location: Cameron Run Watershed

Drainage Area: 28400 acres

Parcel ID No.:

Project Location:

Proposed Project:



Proposed Action:

Establish and administer an annual program that provides small grants to local organizations, residents, and businesses to facilitate education, capacity building, small retrofit and restoration projects, and monitoring activities. For example, grants could be used to off-set the costs to purchase and install rain barrels or other LID projects on private property via a coupon program or other sales mechanism, to cover staff time for a watershed organization, or to provide field equipment for a volunteer watershed monitoring program.

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Opportunity for public education.

Estimated Cost: \$1,094,000

Small Watershed Grant Program

Project ID: CA9702

Project Name: Small Watershed Grant Program

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Create/Administer Program	25	YR	\$35,000.00	\$875,000
Base Cost =				\$875,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$875,000
Contingency (25%) =				\$218,750
Subtotal 2 =				\$1,093,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$1,093,750
Estimated Project Cost =				\$1,094,000

Jefferson Manor Park Bioretention

Project ID: CA9802

Project Type: Low Impact Development

Project Name: Jefferson Manor Park Bioretention

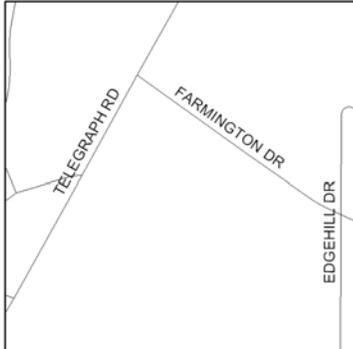
Subwatershed: Pike Branch

Project Location: Jefferson Manor Park

Drainage Area: 9.2 acres

Parcel ID No.: 0831 01 0015

Project Location:



Proposed Action:

Construct bioretention area below parking lot and detention micro-berm along edge of baseball field.

Proposed Project:



Construct bioretention area below parking lot

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.

Estimated Cost: \$73,000

Jefferson Manor Park Bioretention

Project ID: CA9802

Project Name: Jefferson Manor Park Bioretention

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	190	LF	\$2.00	\$380
Bioretention Area	1500	SF	\$25.00	\$37,500
Base Cost =				\$37,880
Mobilization (5%) =				\$1,894
Subtotal 1 =				\$39,774
Contingency (25%) =				\$9,944
Subtotal 2 =				\$49,718
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$22,373
Total =				\$72,090
Estimated Project Cost =				\$73,000

Mount Eagle Elementary School LID

Project ID: CA9804
Project Name: Mount Eagle Elementary School LID
Project Location: Mount Eagle Elementary School
Parcel ID No.: 0833 01 0004

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 5.9 acres

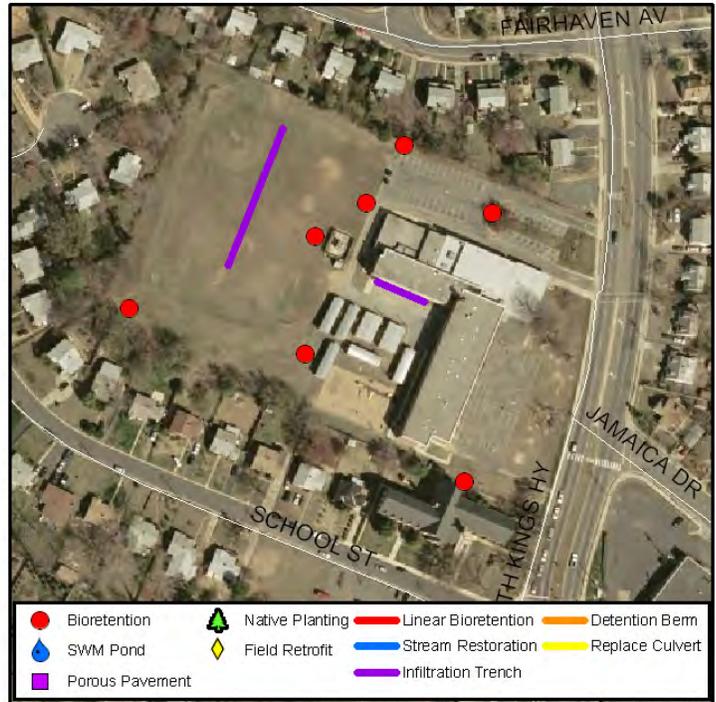
Project Location:



Proposed Action:

Construct bioretention areas in traffic island, at parking lot margins, SW corner of trailers, and SW corner of property; direct roof drains to bioretention areas; install infiltration trench along W side of new parking lot.

Proposed Project:



Convert concrete ditch to linear bioretention area and collect water from downspouts



Potential bioretention areas in rear parking lot and playing fields

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$210,000

Mount Eagle Elementary School LID

Project ID: CA9804

Project Name: Mount Eagle Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	3150	SF	\$25.00	\$78,750
Infiltration Trench	315	LF	\$100.00	\$31,500
Base Cost =				\$110,250
Mobilization (5%) =				\$5,513
Subtotal 1 =				\$115,763
Contingency (25%) =				\$28,941
Subtotal 2 =				\$144,703
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$65,116
Total =				\$209,820
Estimated Project Cost =				\$210,000

Wilton Administration Center LID

Project ID: CA9805
Project Name: Wilton Administration Center LID
Project Location: Wilton Administration Center
Parcel ID No.: 0824 01 0004A

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 6.6 acres

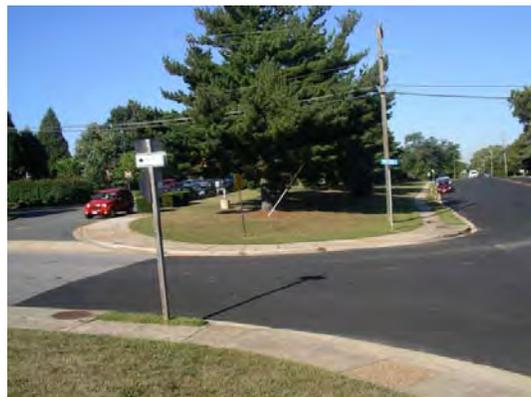
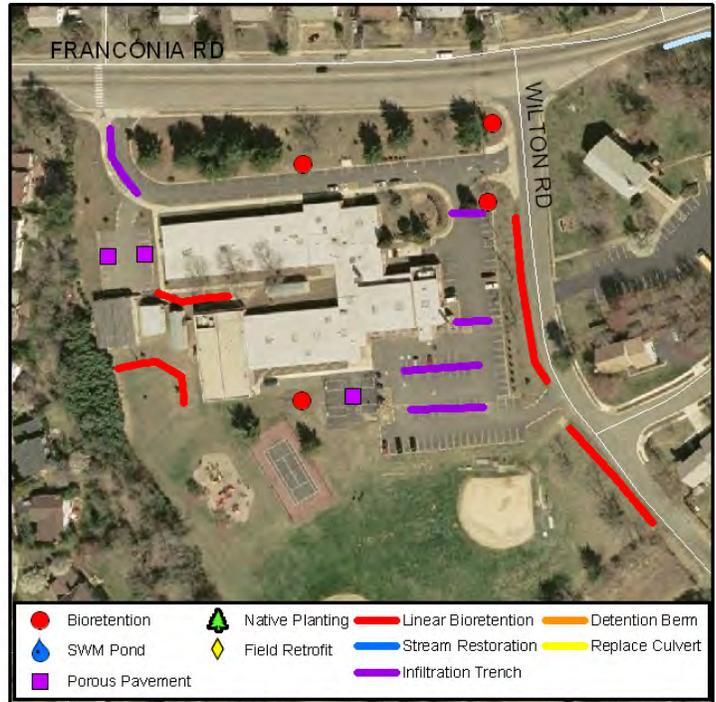
Project Location:



Proposed Action:

Construct bioretention areas in traffic islands along front and side parking lot, at inlet on south side of school, and at storm drain outlet on west side; install infiltration trenches and porous pavement in parking lots and asphalt court. This facility may be renovated within the next five years and these proposed retrofits, or similar stormwater improvements, should be incorporated into the renovation plans.

Proposed Project:



Bioretention area location in traffic islands



Locations for infiltration trenches and porous pavement in parking lots and asphalt courts

Benefits: Provide stormwater quality controls.
 Improve stormwater quantity controls.
 Opportunity for public education.

Estimated Cost: \$460,000

Wilton Administration Center LID

Project ID: CA9805

Project Name: Wilton Administration Center LID

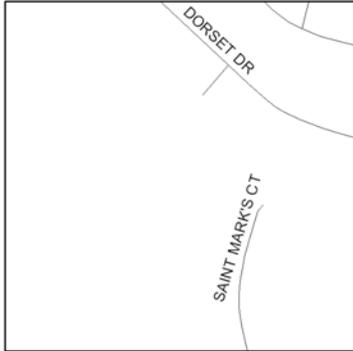
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	5470	SF	\$25.00	\$136,750
Infiltration Trench	350	LF	\$100.00	\$35,000
Porous Pavement	260	SY	\$15.00	\$3,900
Bioretention Area, Linear	2625	SF	\$25.00	\$65,625
Base Cost =				\$241,275
Mobilization (5%) =				\$12,064
Subtotal 1 =				\$253,339
Contingency (25%) =				\$63,335
Subtotal 2 =				\$316,673
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$142,503
Total =				\$459,176
Estimated Project Cost =				\$460,000

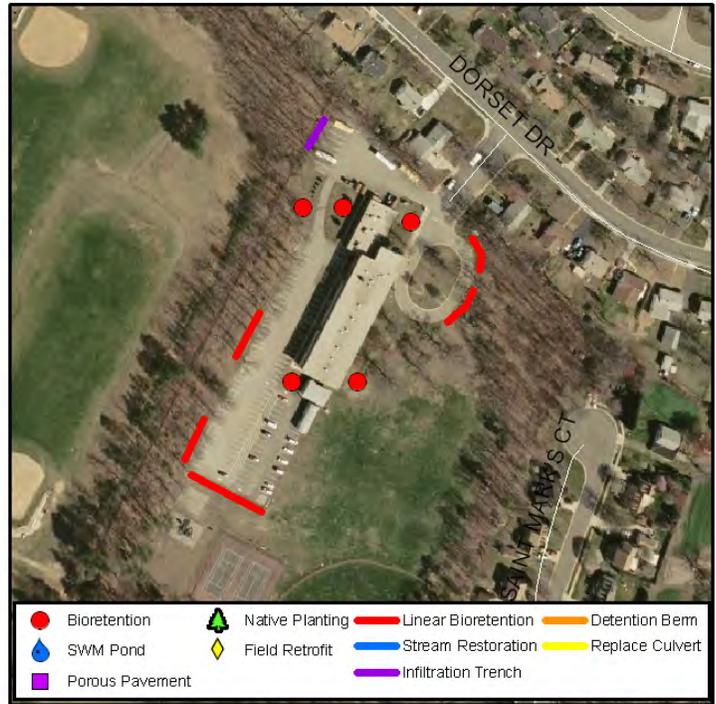
Virginia Hills Administration Center (School) LID

Project ID:	CA9807	Project Type:	Low Impact Development
Project Name:	Virginia Hills Administration Center (School) LID	Subwatershed:	Pike Branch
Project Location:	Virginia Hills Administration Center (School)	Drainage Area:	4.8 acres
Parcel ID No.:	0922 01 0002A		

Project Location:



Proposed Project:



Proposed Action:

Construct linear bioretention areas along outside of bus loop and along rear parking lot; direct roof drains at front wing to bioretention areas; install infiltration trench in NW corner of bus parking area. This facility may be renovated within the next five years and these proposed retrofits, or similar stormwater improvements, should be incorporated into the renovation plans.



Potential bioretention area along NW corner of school



Potential linear bioretention areas along outside edge of traffic circle

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$352,000

Virginia Hills Administration Center (School) LID

Project ID: CA9807

Project Name: Virginia Hills Administration Center (School) LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	4690	SF	\$25.00	\$117,250
Bioretention Area	2215	SF	\$25.00	\$55,375
Infiltration Trench	120	LF	\$100.00	\$12,000
Base Cost =				\$184,625
Mobilization (5%) =				\$9,231
Subtotal 1 =				\$193,856
Contingency (25%) =				\$48,464
Subtotal 2 =				\$242,320
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$109,044
Total =				\$351,364
Estimated Project Cost =				\$352,000

Lee District Park LID

Project ID: CA9808
Project Name: Lee District Park LID
Project Location: Dorset Dr. & Robinson Dr.
Parcel ID No.: 0921 01 0021

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 43.4 acres

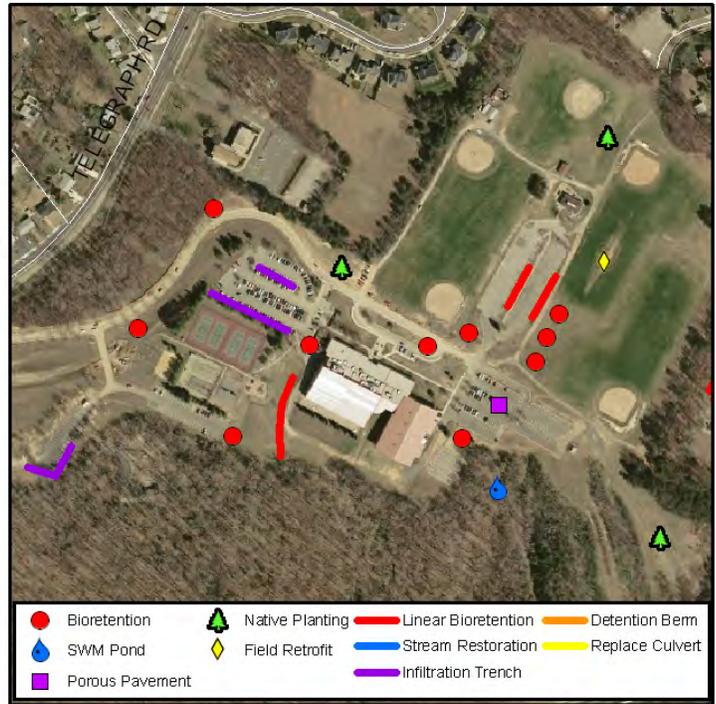
Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; construct bioretention areas along N parking lot, in south central swale, and in parking lot islands/road margins; install infiltration trench in tennis court parking lot and porous pavement in E parking lot; convert athletic fields to artificial turf; add tree cover throughout. Note that athletic fields are scheduled for conversion to artificial turf in 2008. Facility maintenance and renovation is an on-going process and proposed retrofits, or similar stormwater improvements, should be incorporated into site improvement plans.

Proposed Project:



Convert athletic fields to artificial turf with underdrain and cistern



Incorporate bioretention and additional tree cover throughout the site, including in this traffic circle

- Benefits:**
- Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Improve community usage.
 - Opportunity for public education.

Estimated Cost: \$1,589,000

Lee District Park LID

Project ID: CA9808

Project Name: Lee District Park LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	800	CY	\$35.00	\$28,000
Reforestation	0.63	AC	\$25,000.00	\$15,750
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Bioretention Area, Linear	530	SF	\$25.00	\$13,250
Infiltration Trench	570	LF	\$100.00	\$57,000
Bioretention Area	2725	SF	\$25.00	\$68,125
Porous Pavement	2500	SY	\$15.00	\$37,500

Base Cost = \$834,625

Mobilization (5%) = \$41,731

Subtotal 1 = \$876,356

Contingency (25%) = \$219,089

Subtotal 2 = \$1,095,445

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$492,950

Total = \$1,588,396

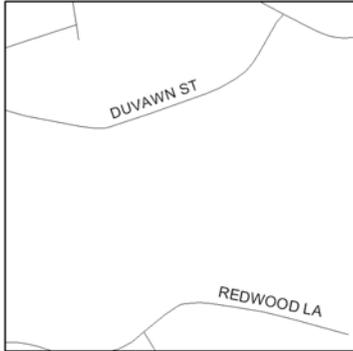
Estimated Project Cost = \$1,589,000

Ridgeview Park LID - A

Project ID: CA9809
Project Name: Ridgeview Park LID - A
Project Location: Duvawn St. & Ridge View Dr.
Parcel ID No.: 0823 10 C

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 2.9 acres

Project Location:



Proposed Action:

Construct off-line bioretention in existing swale; plant meadow in lawn areas that extend into park/ROW; build detention micro-berm parallel to ROW in meadow areas; use integrated vegetation management practices to encourage shrub/low growing trees beneath power lines.

Proposed Project:



Create detention berm and bioretention area in transmission line ROW; replant unused mowed areas



Enhance habitat in ROW - control regrowth to encourage a low-growth, climax community

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$59,000

Ridgeview Park LID - A

Project ID: CA9809

Project Name: Ridgeview Park LID - A

Estimated Project Cost:

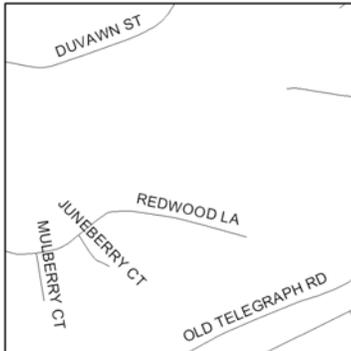
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	1210	SF	\$25.00	\$30,250
Detention Berm	320	LF	\$2.00	\$640
Wildflower Planting	0.02	AC	\$3,000.00	\$60
Base Cost =				\$30,950
Mobilization (5%) =				\$1,548
Subtotal 1 =				\$32,498
Contingency (25%) =				\$8,124
Subtotal 2 =				\$40,622
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$18,280
Total =				\$58,902
Estimated Project Cost =				\$59,000

Ridgeview Park LID - B

Project ID: CA9810
Project Name: Ridgeview Park LID - B
Project Location: Ridgeview Park
Parcel ID No.: 0824 29 A

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 7.6 acres

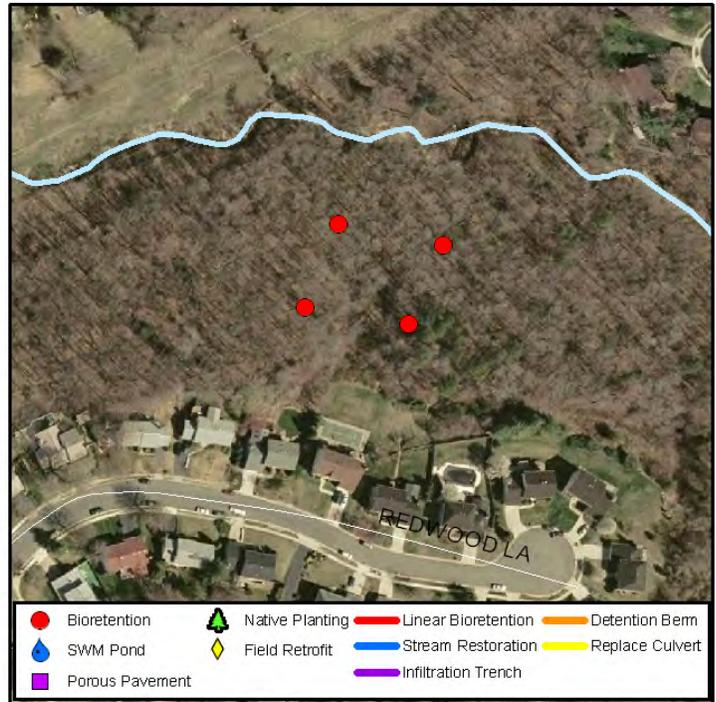
Project Location:



Proposed Action:

Install off-line bioretention areas to intercept flow before reaching stormwater outfall.

Proposed Project:



Divert stormwater into off-line bioretention areas above this eroded pipe outfall



View of eroded outfall from above

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.
Opportunity for public education.

Estimated Cost: \$414,000

Ridgeview Park LID - B

Project ID: CA9810

Project Name: Ridgeview Park LID - B

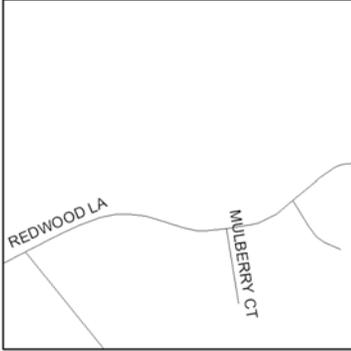
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	8690	SF	\$25.00	\$217,250
			Base Cost =	\$217,250
			Mobilization (5%) =	\$10,863
			Subtotal 1 =	\$228,113
			Contingency (25%) =	\$57,028
			Subtotal 2 =	\$285,141
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$128,313
			Total =	\$413,454
			Estimated Project Cost =	\$414,000

Redwood Lane - LID

Project ID: CA9811 **Project Type:** Low Impact Development
Project Name: Redwood Lane - LID **Subwatershed:** Pike Branch
Project Location: Redwood Ln. at Shannon Hill Rd. and Mulberry Ct **Drainage Area:** 2.9 acres
Parcel ID No.: 0824 29 A

Project Location:



Proposed Action:

Construct off-line bioretention area at stormwater pipe outfall below Mulberry Ct.; use integrated vegetation management practices to encourage shrub/low growing trees beneath power lines.

Proposed Project:



Mulberry Court - off-line bioretention garden to be constructed at stormwater pipe outfall

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.

Estimated Cost: \$211,000

Redwood Lane - LID

Project ID: CA9811

Project Name: Redwood Lane - LID

Estimated Project Cost:

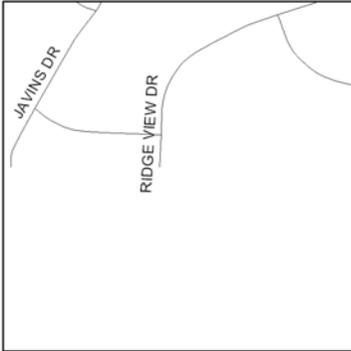
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	4425	SF	\$25.00	\$110,625
			Base Cost =	\$110,625
			Mobilization (5%) =	\$5,531
			Subtotal 1 =	\$116,156
			Contingency (25%) =	\$29,039
			Subtotal 2 =	\$145,195
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$65,338
			Total =	\$210,533
			Estimated Project Cost =	\$211,000

Ridge View Drive - LID

Project ID: CA9812
Project Name: Ridge View Drive - LID
Project Location: Ridge View Drive after Dubois Street
Parcel ID No.: 0823 01 0037B

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 3.1 acres

Project Location:



Proposed Action:

Construct off-line bioretention area at stormwater pipe outfall.

Proposed Project:



Divert flow from concrete channel into off-line bioretention area



Space for off-line bioretention area at end of street

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$249,000

Ridge View Drive - LID

Project ID: CA9812

Project Name: Ridge View Drive - LID

Estimated Project Cost:

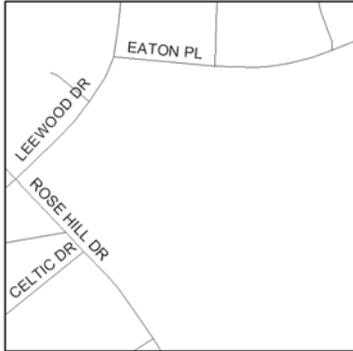
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	5230	SF	\$25.00	\$130,750
			Base Cost =	\$130,750
			Mobilization (5%) =	\$6,538
			Subtotal 1 =	\$137,288
			Contingency (25%) =	\$34,322
			Subtotal 2 =	\$171,609
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$77,224
			Total =	\$248,834
			Estimated Project Cost =	\$249,000

John Marshall Library LID

Project ID: CA9813
Project Name: John Marshall Library LID
Project Location: Rose Hill Dr. & Celtic Dr.
Parcel ID No.: 0823 12 B

Project Type: Low Impact Development
Subwatershed: Pike Branch
Drainage Area: 1.8 acres

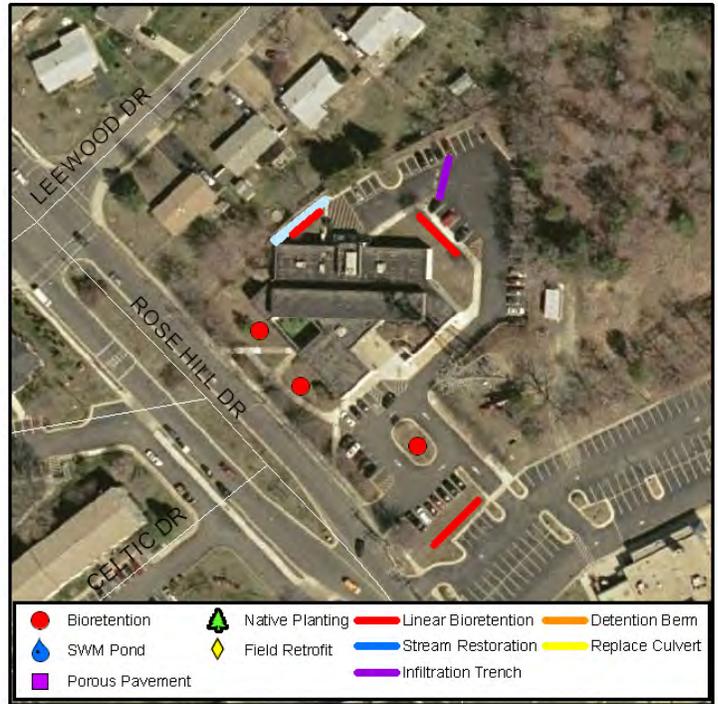
Project Location:



Proposed Action:

Construct linear bioretention areas along edge of rear parking lot and in swale to NW; construct bioretention areas in islands along front of bldg. and in parking lot; install infiltration trench in rear parking lot.

Proposed Project:



Potential bioretention areas in island in east parking lot



Convert concrete swale to linear bioretention area along NW side of building

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.
 Opportunity for public education.

Estimated Cost: \$246,000

John Marshall Library LID

Project ID: CA9813

Project Name: John Marshall Library LID

Estimated Project Cost:

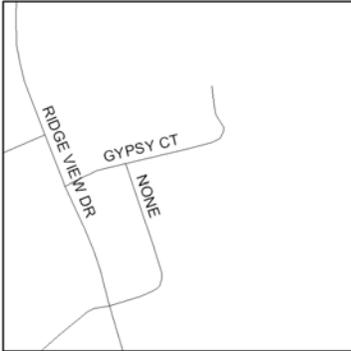
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	1575	SF	\$25.00	\$39,375
Bioretention Area	3365	SF	\$25.00	\$84,125
Infiltration Trench	55	LF	\$100.00	\$5,500
Base Cost =				\$129,000
Mobilization (5%) =				\$6,450
Subtotal 1 =				\$135,450
Contingency (25%) =				\$33,863
Subtotal 2 =				\$169,313
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$76,191
Total =				\$245,503
Estimated Project Cost =				\$246,000

Clermont School Site Park LID

Project ID: CA9818
Project Name: Clermont School Site Park LID
Project Location: Clermont School Site Park - Gypsy Ct.
Parcel ID No.: 0822 01 0003B

Project Type: Low Impact Development
Subwatershed: Tributaries to Cameron Run
Drainage Area: 1.1 acres

Project Location:



Proposed Action:

Construct bioretention area below houses on Gypsy Ct.

Proposed Project:



Potential bioretention area behind houses



Concrete ditch behind houses

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.

Estimated Cost: \$49,000

Clermont School Site Park LID

Project ID: CA9818

Project Name: Clermont School Site Park LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	1020	SF	\$25.00	\$25,500
			Base Cost =	\$25,500
			Mobilization (5%) =	\$1,275
			Subtotal 1 =	\$26,775
			Contingency (25%) =	\$6,694
			Subtotal 2 =	\$33,469
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$15,061
			Total =	\$48,530
			Estimated Project Cost =	\$49,000

Clermont Elementary School LID

Project ID: CA9821
Project Name: Clermont Elementary School LID
Project Location: Clermont Elementary School
Parcel ID No.: 0821 01 0005B

Project Type: Low Impact Development
Subwatershed: Tributaries to Cameron Run
Drainage Area: 12.4 acres

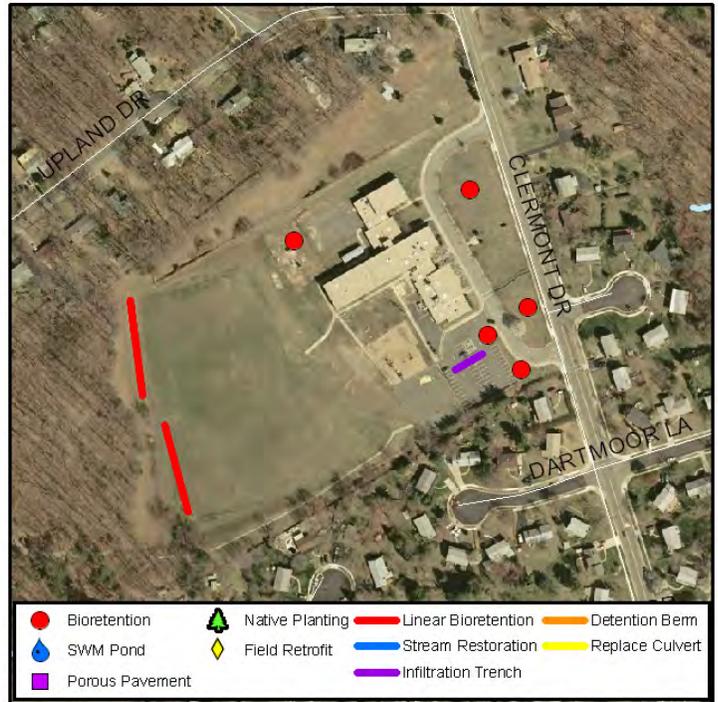
Project Location:



Proposed Action:

Construct bioretention areas in bus loop traffic island and NW of building; construct linear bioretention area S of building and along west end of fields; replace inlet at NE corner of parking lot with a tree box filter.

Proposed Project:



Bus loop where bioretention gardens could be constructed



Potential bioretention area at inlet in front of school

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$308,000

Clermont Elementary School LID

Project ID: CA9821

Project Name: Clermont Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	3940	SF	\$25.00	\$98,500
Bioretention Area	1675	SF	\$25.00	\$41,875
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Infiltration Trench	180	LF	\$100.00	\$18,000
Base Cost =				\$161,375
Mobilization (5%) =				\$8,069
Subtotal 1 =				\$169,444
Contingency (25%) =				\$42,361
Subtotal 2 =				\$211,805
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$95,312
Total =				\$307,117
Estimated Project Cost =				\$308,000

Twain Middle School LID

Project ID: CA9822
Project Name: Twain Middle School LID
Project Location: Twain Middle School
Parcel ID No.: 0823 01 0020

Project Type: Low Impact Development
Subwatershed: Tributaries to Cameron Run
Drainage Area: 9.6 acres

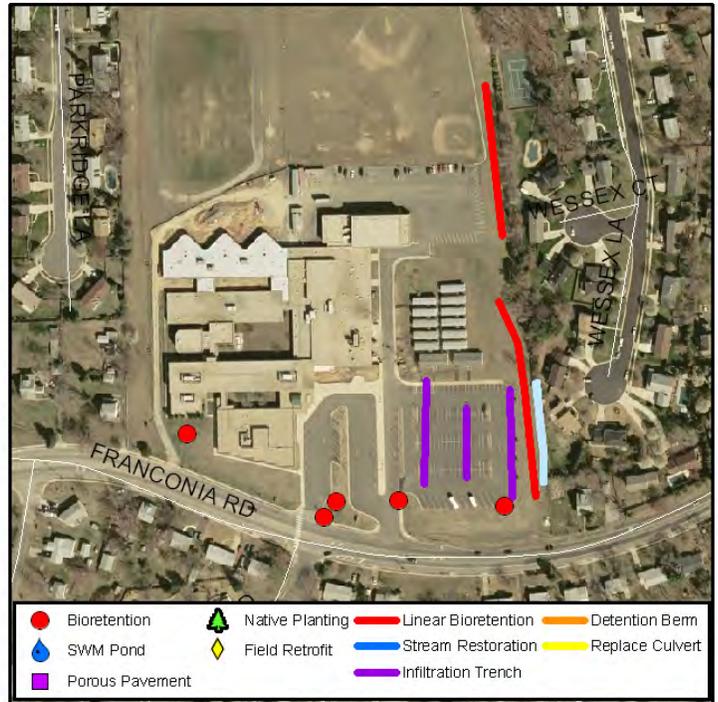
Project Location:



Proposed Action:

Construct bioretention areas in bus loop traffic island and in grass island SW of bldg.; construct linear bioretention areas along E side of property; install infiltration trenches and tree box filters in SE parking lot.

Proposed Project:



Construct bioretention areas in bus loop traffic island and along parking lots



Add bioretention areas in this traffic island, and replace inlet with a tree box filter

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$660,000

Twain Middle School LID

Project ID: CA9822

Project Name: Twain Middle School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	8740	SF	\$25.00	\$218,500
Bioretention Area	2600	SF	\$25.00	\$65,000
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Infiltration Trench	540	LF	\$100.00	\$54,000
Base Cost =				\$346,500
Mobilization (5%) =				\$17,325
Subtotal 1 =				\$363,825
Contingency (25%) =				\$90,956
Subtotal 2 =				\$454,781
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$204,652
Total =				\$659,433
Estimated Project Cost =				\$660,000

Bush Hill Elementary School LID

Project ID: CA9823
Project Name: Bush Hill Elementary School LID
Project Location: Bush Hill Elementary School
Parcel ID No.: 0823 01 0001

Project Type: Low Impact Development
Subwatershed: Tributaries to Cameron Run
Drainage Area: 9.6 acres

Project Location:



Proposed Action:

Construct bioretention areas in traffic/sidewalk islands; install infiltration trenches in parking lots; construct off-line bioretention at end of concrete trench from eastern parking lot and detention micro-berm along northern tree line.

Proposed Project:



Potential bioretention area in bus circle



Potential bioretention area south of parking lot

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$183,000

Bush Hill Elementary School LID

Project ID: CA9823

Project Name: Bush Hill Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	590	LF	\$2.00	\$1,180
Bioretention Area, Off-line	915	SF	\$25.00	\$22,875
Bioretention Area	1445	SF	\$25.00	\$36,125
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Infiltration Trench	265	LF	\$100.00	\$26,500
Base Cost =				\$95,680
Mobilization (5%) =				\$4,784
Subtotal 1 =				\$100,464
Contingency (25%) =				\$25,116
Subtotal 2 =				\$125,580
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$56,511
Total =				\$182,091
Estimated Project Cost =				\$183,000

Lee District Government Center LID

Project ID:	CA9827	Project Type:	Low Impact Development
Project Name:	Lee District Government Center LID	Subwatershed:	Backlick Run
Project Location:	Lee District Government Center, Franconia Road	Drainage Area:	3.1 acres
Parcel ID No.:	0813 05 0002A		

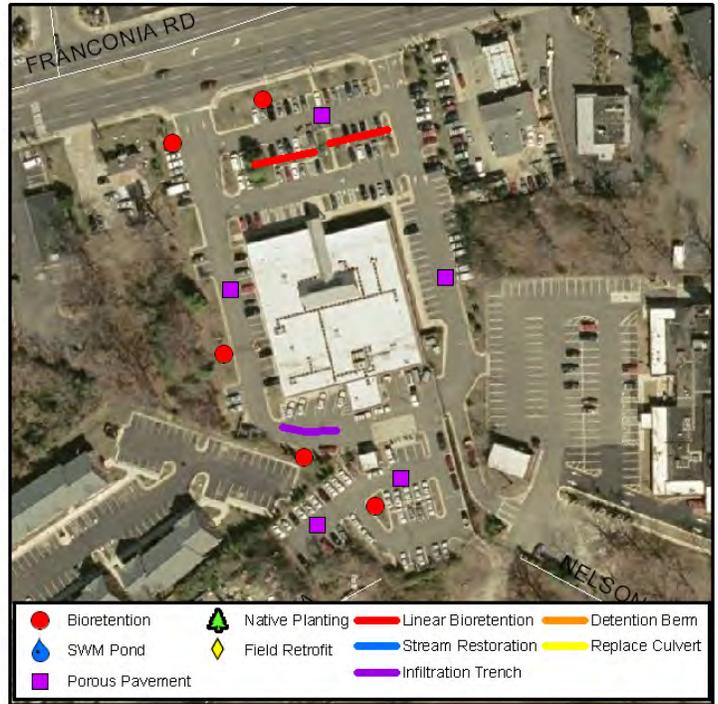
Project Location:



Proposed Action:

Construct bioretention areas in traffic islands; install infiltration trench in lane SW of bldg.; install tree box filters and porous pavement.

Proposed Project:



Traffic island conversion to bioretention areas



Replace inlet with tree box filter

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.

Estimated Cost: \$209,000

Lee District Government Center LID

Project ID: CA9827

Project Name: Lee District Government Center LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	1345	SF	\$25.00	\$33,625
Porous Pavement	3400	SY	\$15.00	\$51,000
Bioretention Area	150	SF	\$25.00	\$3,750
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Infiltration Trench	150	LF	\$100.00	\$15,000
Base Cost =				\$109,375
Mobilization (5%) =				\$5,469
Subtotal 1 =				\$114,844
Contingency (25%) =				\$28,711
Subtotal 2 =				\$143,555
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$64,600
Total =				\$208,154
Estimated Project Cost =				\$209,000

Fire Station - Company No. 5 LID

Project ID: CA9828
Project Name: Fire Station - Company No. 5 LID
Project Location: Franconia Rd. and Beulah St. (VA 613)
Parcel ID No.: 0813 05 0020

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 2.6 acres

Project Location:



Proposed Project:



Proposed Action:

At Fire Station, divert roof drains to cistern for filling fire trucks; install porous pavement in W parking lot; construct bioretention area in SE corner; install tree box filter.



Roof drains at Fire Station can be diverted to cistern for filling fire trucks



Location for bioretention area

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.

Estimated Cost: \$71,000

Fire Station - Company No. 5 LID

Project ID: CA9828

Project Name: Fire Station - Company No. 5 LID

Estimated Project Cost:

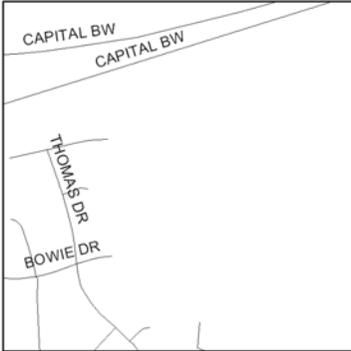
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Cistern	2	EA	\$5,000.00	\$10,000
Porous Pavement	560	SY	\$15.00	\$8,400
Bioretention Area	625	SF	\$25.00	\$15,625
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Base Cost =				\$37,025
Mobilization (5%) =				\$1,851
Subtotal 1 =				\$38,876
Contingency (25%) =				\$9,719
Subtotal 2 =				\$48,595
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$21,868
Total =				\$70,463
Estimated Project Cost =				\$71,000

Franconia Park LID

Project ID: CA9829
Project Name: Franconia Park LID
Project Location: Franconia Park
Parcel ID No.: 0813 01 0041

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 12.8 acres

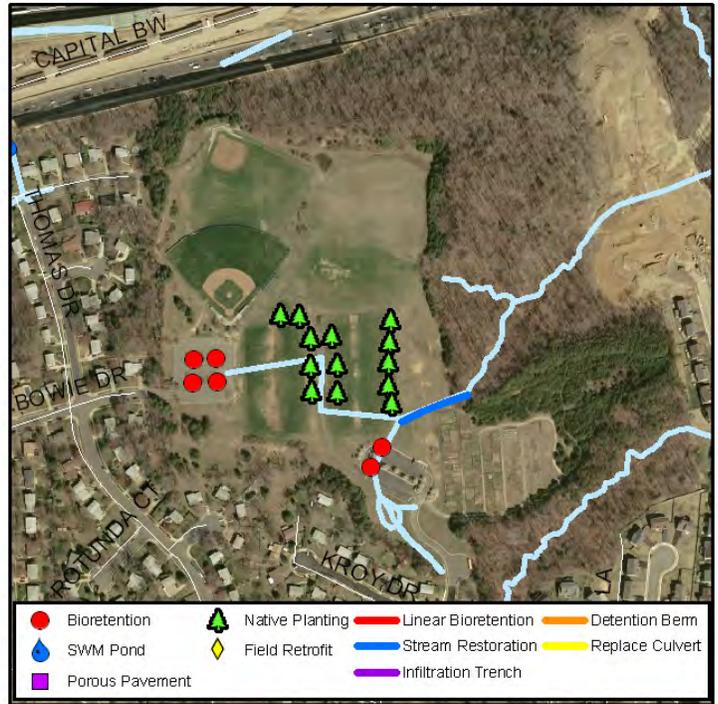
Project Location:



Proposed Action:

Construct bioretention areas in islands of both parking lots; plant trees between soccer fields and other locations to provide shade; repair streambank erosion and downcutting. Note that athletic fields are scheduled for conversion to artificial turf. Facility maintenance and renovation is an on-going process and proposed retrofits, or similar stormwater improvements, should be incorporated into site improvement plans.

Proposed Project:



Eroded cut along streambank



Outfall

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Opportunity for public education.

Estimated Cost: \$126,000

Franconia Park LID

Project ID: CA9829

Project Name: Franconia Park LID

Estimated Project Cost:

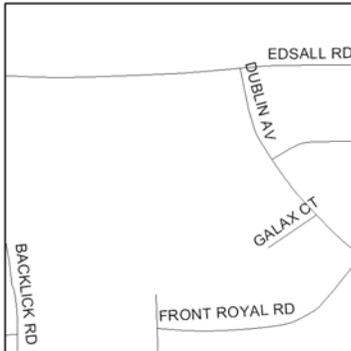
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Streambank Stabilization	250	LF	\$80.00	\$20,000
Bioretention Area	1100	SF	\$25.00	\$27,500
Shade Tree	0.5	AC	\$25,000.00	\$12,500
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Base Cost =				\$66,000
Mobilization (5%) =				\$3,300
Subtotal 1 =				\$69,300
Contingency (25%) =				\$17,325
Subtotal 2 =				\$86,625
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$38,981
Total =				\$125,606
Estimated Project Cost =				\$126,000

Edsall Administration Center LID

Project ID: CA9830
Project Name: Edsall Administration Center LID
Project Location: Edsall Rd. & Dublin Av.
Parcel ID No.: 0714 01 0042

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 4.5 acres

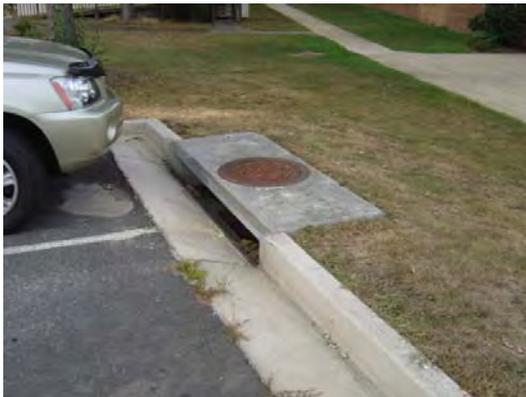
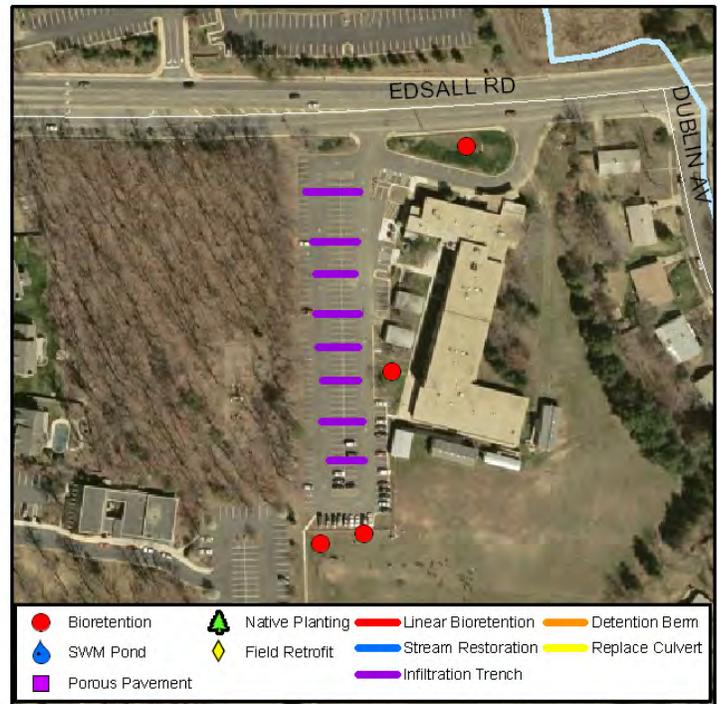
Project Location:



Proposed Action:

Install infiltration trenches in parking lots; construct bioretention areas in islands/borders; install tree box filters.

Proposed Project:



Inlet where tree box filter could be installed



Depressed area where bioretention area could be installed

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Improve community usage.

Estimated Cost: \$139,000

Edsall Administration Center LID

Project ID: CA9830

Project Name: Edsall Administration Center LID

Estimated Project Cost:

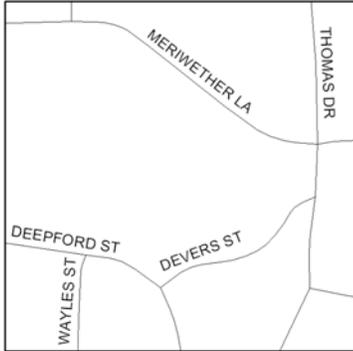
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	150	SF	\$25.00	\$3,750
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Infiltration Trench	660	LF	\$100.00	\$66,000
Base Cost =				\$72,750
Mobilization (5%) =				\$3,638
Subtotal 1 =				\$76,388
Contingency (25%) =				\$19,097
Subtotal 2 =				\$95,484
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$42,968
Total =				\$138,452
Estimated Project Cost =				\$139,000

Springfield Elementary School LID

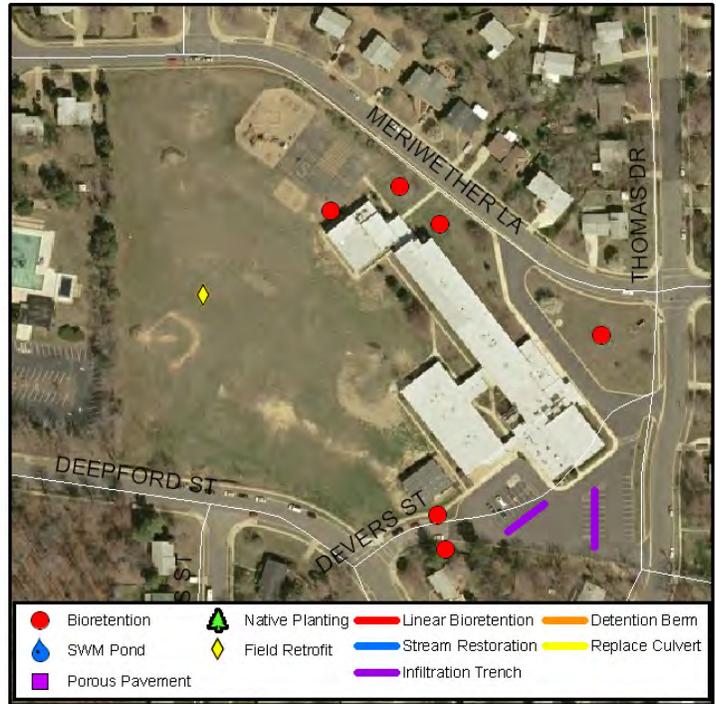
Project ID: CA9835
Project Name: Springfield Elementary School LID
Project Location: Deepford St. & Crozet Ct.
Parcel ID No.: 0813 01 0005B

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 10.2 acres

Project Location:



Proposed Project:



Proposed Action:

Create bioretention areas in bus loop and landscape islands in front of bldg.; install infiltration trenches and tree box filters in parking lot; construct linear bioretention areas and filter strip adjacent to asphalt play yard; convert soccer/football field from grass to artificial turf with cistern and underdrain system.



Inlet in front of school where tree box filter could be installed



Inlet in grassy area where bioretention area could be installed. Note parking lot island in background where bioretention can be used

- Benefits:**
- Provide stormwater quantity controls.
 - Provide stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Improve community usage.
 - Opportunity for public education.

Estimated Cost: \$1,356,000

Springfield Elementary School LID

Project ID: CA9835

Project Name: Springfield Elementary School LID

Estimated Project Cost:

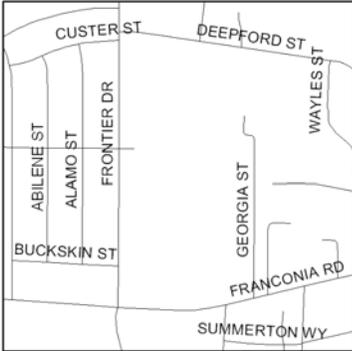
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Filter Strip	70	LF	\$2.00	\$140
Bioretention Area	1800	SF	\$25.00	\$45,000
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Infiltration Trench	610	LF	\$100.00	\$61,000
			Base Cost =	\$712,140
			Mobilization (5%) =	\$35,607
			Subtotal 1 =	\$747,747
			Contingency (25%) =	\$186,937
			Subtotal 2 =	\$934,684
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$420,608
			Total =	\$1,355,291
			Estimated Project Cost =	\$1,356,000

Lee High School LID

Project ID: CA9836
Project Name: Lee High School LID
Project Location: Lee High School and Lee Park
Parcel ID No.: 0804 01 0037

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 42.1 acres

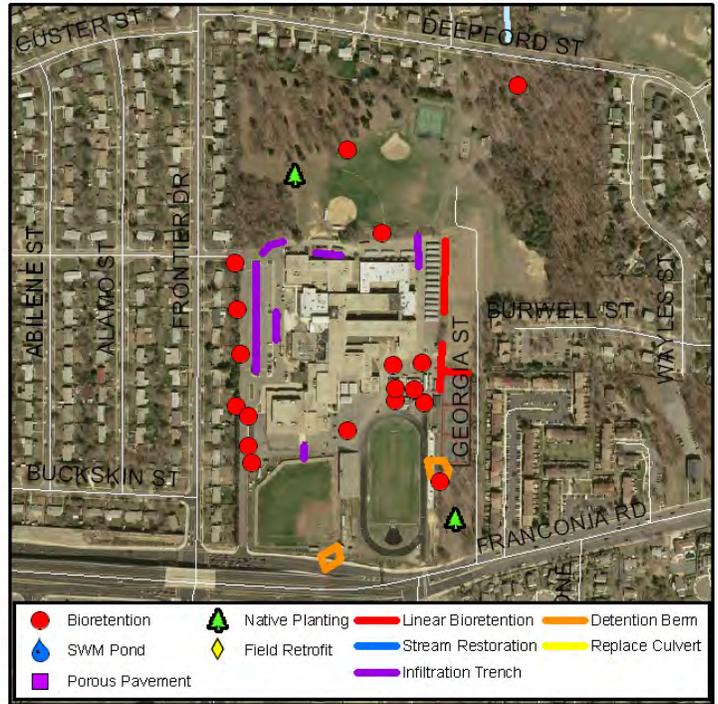
Project Location:



Proposed Action:

Construct off-line bioretention area at outfall S of Deepford St.; construct infiltration trenches and bioretention areas in parking lots around school bldg.; linear bioretention areas along tennis courts and concrete swale E of trailers; build detention micro-berm around 2 inlets; reforest unused open space.

Proposed Project:



Parking lot island conversion to bioretention area



Stormwater pipe inlet at Deepford St where bioretention area could be utilized

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.

Estimated Cost: \$3,421,000

Lee High School LID

Project ID: CA9836

Project Name: Lee High School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	540	LF	\$2.00	\$1,080
Bioretention Area, Off-line	31250	SF	\$25.00	\$781,250
Bioretention Area, Linear	12500	SF	\$25.00	\$312,500
Bioretention Area	20000	SF	\$25.00	\$500,000
Reforestation	1	AC	\$25,000.00	\$25,000
Infiltration Trench	1775	LF	\$100.00	\$177,500

Base Cost = \$1,797,330

Mobilization (5%) = \$89,867

Subtotal 1 = \$1,887,197

Contingency (25%) = \$471,799

Subtotal 2 = \$2,358,996

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$1,061,548

Total = \$3,420,544

Estimated Project Cost = \$3,421,000

Key Middle School LID

Project ID: CA9839
Project Name: Key Middle School LID
Project Location: Franconia Rd. & Thomas Dr.
Parcel ID No.: 0813 01 0022B

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 21.3 acres

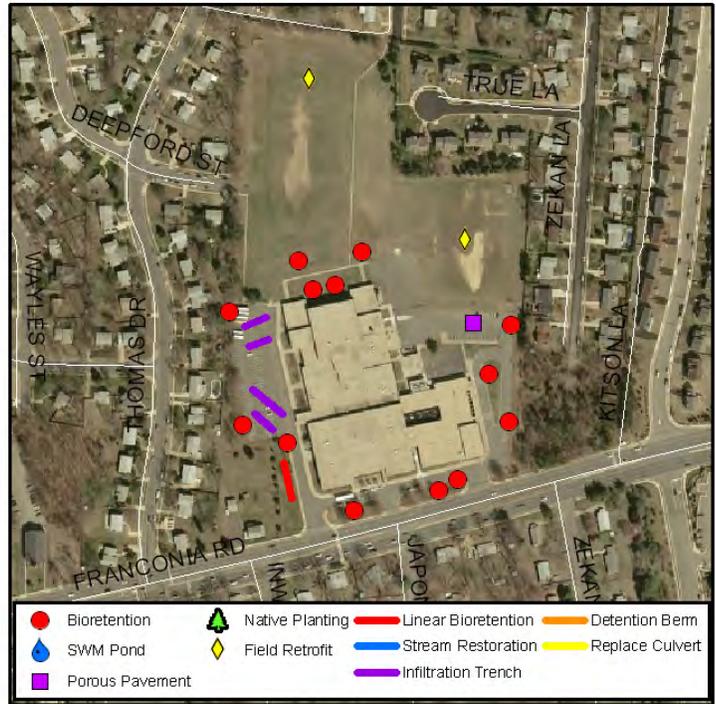
Project Location:



Proposed Action:

Construct bioretention areas, infiltration trenches, and tree box filters in parking lots; convert NE parking lot to porous pavement; provide depression storage N of bldg. in trailer area (not shown in aerial); convert two fields from grass to artificial turf with cistern and underdrain system.

Proposed Project:



Grassy swale leading to inlet



Inlet in parking lot where tree box could be installed

- Benefits:**
- Provide stormwater quantity controls.
 - Provide stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Improve community usage.
 - Opportunity for public education.

Estimated Cost: \$2,745,000

Key Middle School LID

Project ID: CA9839

Project Name: Key Middle School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Artificial Turf, Underdrains and Cistern	2	EA	\$600,000.00	\$1,200,000
Depression Storage	4000	SF	\$10.00	\$40,000
Bioretention Area, Linear	1440	SF	\$25.00	\$36,000
Porous Pavement	3750	SF	\$15.00	\$56,250
Bioretention Area	2600	SF	\$25.00	\$65,000
Tree Box Filter	5	EA	\$3,000.00	\$15,000
Infiltration Trench	300	LF	\$100.00	\$30,000

Base Cost = \$1,442,250

Mobilization (5%) = \$72,113

Subtotal 1 = \$1,514,363

Contingency (25%) = \$378,591

Subtotal 2 = \$1,892,953

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$851,829

Total = \$2,744,782

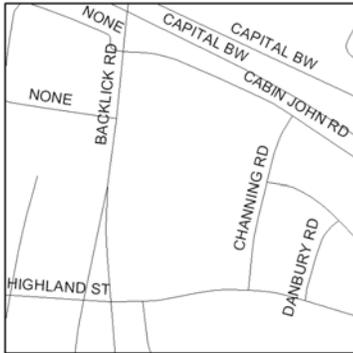
Estimated Project Cost = \$2,745,000

Lynbrook Elementary School LID

Project ID: CA9842
Project Name: Lynbrook Elementary School LID
Project Location: Backlick Road
Parcel ID No.: 0802 01 0021

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 11 acres

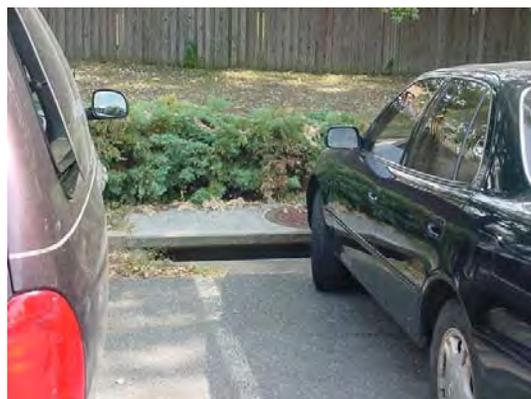
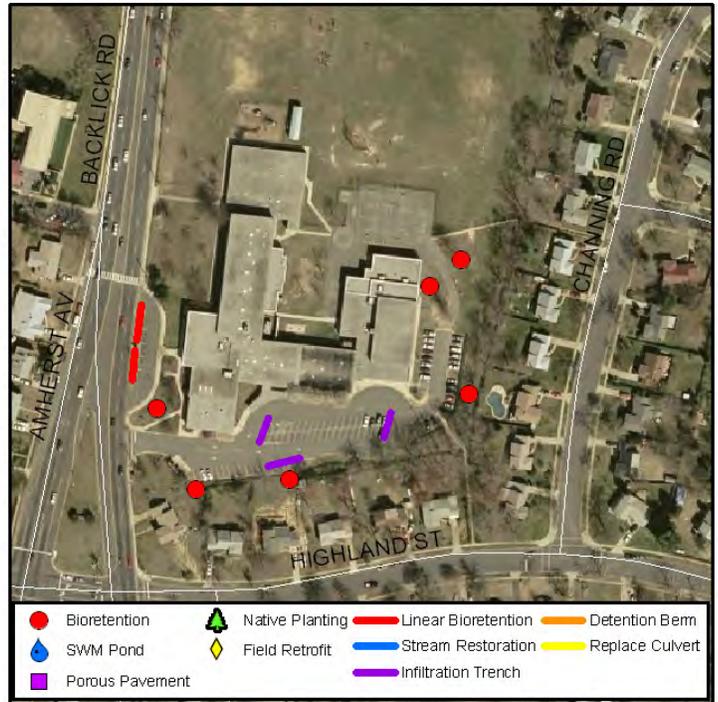
Project Location:



Proposed Action:

Construct bioretention in bus loop island, in front of school building, and to E of bldg.; direct roof drainage to cistern to water fields; install infiltration trenches and tree box filters in parking lot.

Proposed Project:



Inlet in parking lot



Stormwater inlet in lawn

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$254,000

Lynbrook Elementary School LID

Project ID: CA9842

Project Name: Lynbrook Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Cistern	5	EA	\$5,000.00	\$25,000
Bioretention Area, Linear	490	SF	\$25.00	\$12,250
Bioretention Area	2300	SF	\$25.00	\$57,500
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Infiltration Trench	295	LF	\$100.00	\$29,500
Base Cost =				\$133,250
Mobilization (5%) =				\$6,663
Subtotal 1 =				\$139,913
Contingency (25%) =				\$34,978
Subtotal 2 =				\$174,891
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$78,701
Total =				\$253,591
Estimated Project Cost =				\$254,000

Leewood Park LID - A

Project ID: CA9846
Project Name: Leewood Park LID - A
Project Location: Leewood Park
Parcel ID No.: 0801 04 0004A

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 11.4 acres

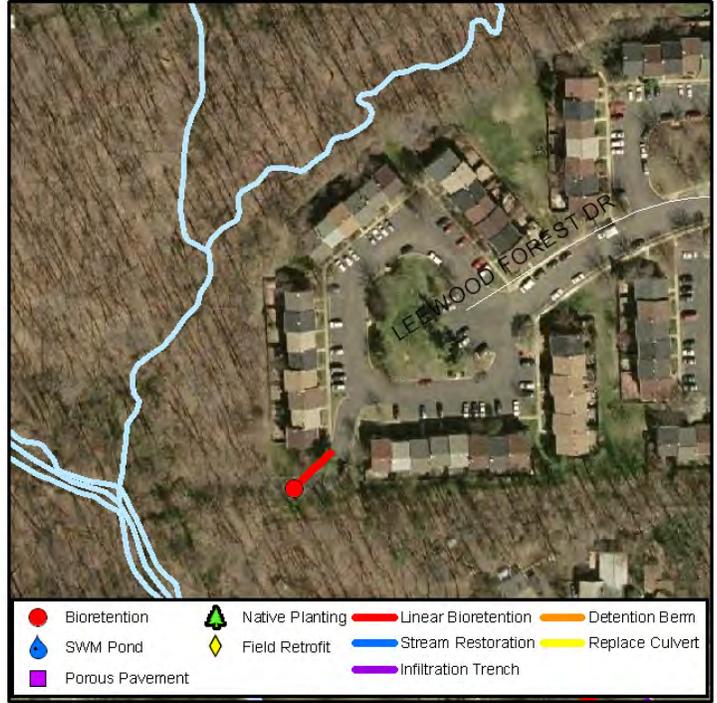
Project Location:



Proposed Action:

Restore grass swale; install bioretention area next to stormwater outfall pipe. Use woodland species.

Proposed Project:



Proposed bioretention area adjacent to outfall



Channel below outfall

Benefits: Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$39,000

Leewood Park LID - A

Project ID: CA9846

Project Name: Leewood Park LID - A

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grass Swale	50	LF	\$6.00	\$300
Bioretention Area	800	SF	\$25.00	\$20,000
Base Cost =				\$20,300
Mobilization (5%) =				\$1,015
Subtotal 1 =				\$21,315
Contingency (25%) =				\$5,329
Subtotal 2 =				\$26,644
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$11,990
Total =				\$38,633
Estimated Project Cost =				\$39,000

Leewood Park LID - B

Project ID: CA9848
Project Name: Leewood Park LID - B
Project Location: Leewood Park
Parcel ID No.: 0801 13 E

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 6.6 acres

Project Location:



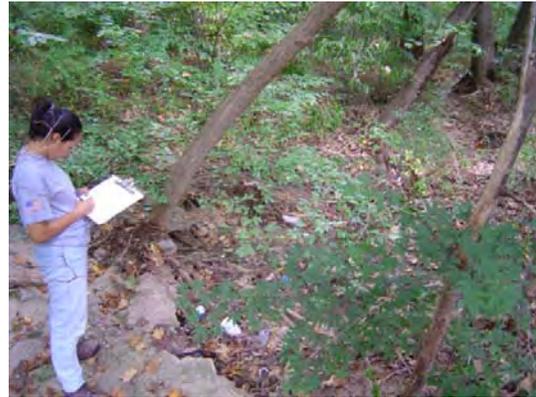
Proposed Action:

Install riprap and infiltration trench at the end of stormwater outfall.

Proposed Project:



View of spillway



Top of spillway looking down

Benefits: Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$13,000

Leewood Park LID - B

Project ID: CA9848

Project Name: Leewood Park LID - B

Estimated Project Cost:

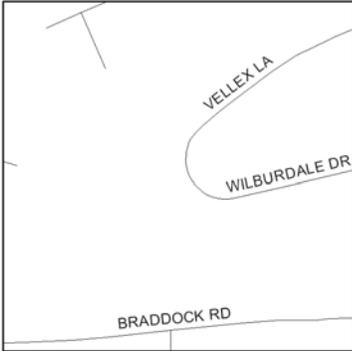
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Rip-Rap lining	50	LF	\$30.00	\$1,500
Infiltration Trench	50	LF	\$100.00	\$5,000
Base Cost =				\$6,500
Mobilization (5%) =				\$325
Subtotal 1 =				\$6,825
Contingency (25%) =				\$1,706
Subtotal 2 =				\$8,531
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$3,839
Total =				\$12,370
Estimated Project Cost =				\$13,000

Wilburdale Park LID - A

Project ID: CA9850
Project Name: Wilburdale Park LID - A
Project Location: Wilburdale Park
Parcel ID No.: 0713 09 A

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 25.6 acres

Project Location:



Proposed Action:

Install bioretention areas next to court and along street; construct off-line bioretention area at outfall into concrete ditch; reforest unused areas in park.

Proposed Project:



Ditch and outfall



Ditch leading into stream

Benefits: Provide stormwater quality controls.
 Opportunity for public education.
 Improve community usage.

Estimated Cost: \$156,000

Wilburdale Park LID - A

Project ID: CA9850

Project Name: Wilburdale Park LID - A

Estimated Project Cost:

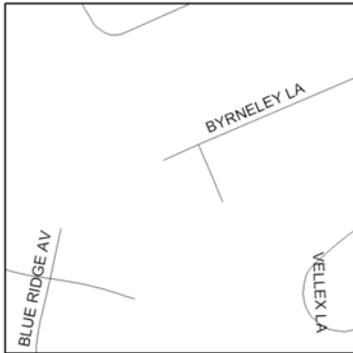
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	2500	SF	\$25.00	\$62,500
Bioretention Area	600	SF	\$25.00	\$15,000
Reforestation	0.16	AC	\$25,000.00	\$4,000
Base Cost =				\$81,500
Mobilization (5%) =				\$4,075
Subtotal 1 =				\$85,575
Contingency (25%) =				\$21,394
Subtotal 2 =				\$106,969
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$48,136
Total =				\$155,105
Estimated Project Cost =				\$156,000

Wilburdale Park LID - B

Project ID: CA9851
Project Name: Wilburdale Park LID - B
Project Location: Byrneley La. & Backlick Rd.
Parcel ID No.: 0713 10 0018

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 6 acres

Project Location:



Proposed Action:

Develop/restore grass swales along road to deliver runoff to new bioretention area at end of roadway.

Proposed Project:



Proposed location for bioretention area



Swale and outlet

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$97,000

Wilburdale Park LID - B

Project ID: CA9851

Project Name: Wilburdale Park LID - B

Estimated Project Cost:

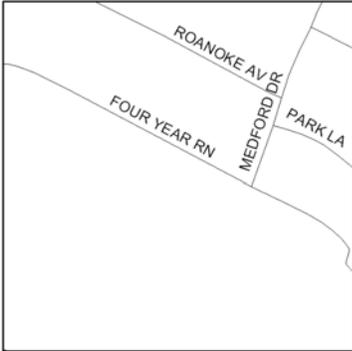
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grass Swale	270	LF	\$6.00	\$1,620
Bioretention Area	1960	SF	\$25.00	\$49,000
Base Cost =				\$50,620
Mobilization (5%) =				\$2,531
Subtotal 1 =				\$53,151
Contingency (25%) =				\$13,288
Subtotal 2 =				\$66,439
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$29,897
Total =				\$96,336
Estimated Project Cost =				\$97,000

Annandale High School LID

Project ID: CA9853
Project Name: Annandale High School LID
Project Location: Four Year Run & Heritage Dr.
Parcel ID No.: 0711 01 0068

Project Type: Low Impact Development
Subwatershed: Backlick Run
Drainage Area: 17.7 acres

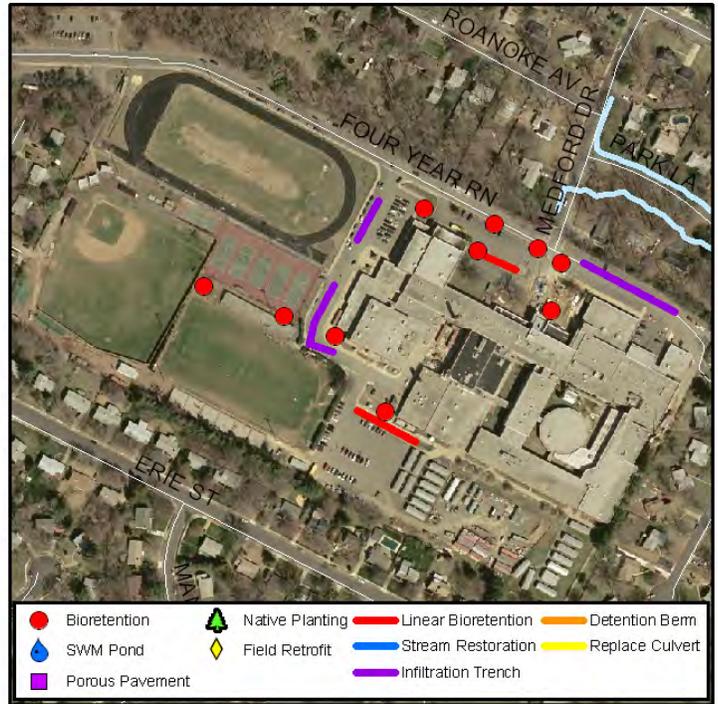
Project Location:



Proposed Action:

Incorporate grass swale along roadway; construct linear bioretention areas and infiltration trenches along parking lots and courts; install tree box filters.

Proposed Project:



Partial sidewalk along Four Year Run could be converted to a grass filter strip



Potential bioretention area

- Benefits:** Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$420,000

Annandale High School LID

Project ID: CA9853

Project Name: Annandale High School LID

Estimated Project Cost:

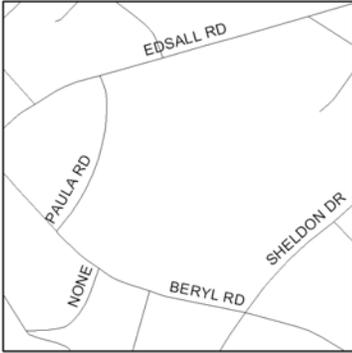
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Filter Strip	190	LF	\$2.00	\$380
Bioretention Area, Linear	2560	SF	\$25.00	\$64,000
Bioretention Area	2500	SF	\$25.00	\$62,500
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Infiltration Trench	875	LF	\$100.00	\$87,500
			Base Cost =	\$220,380
			Mobilization (5%) =	\$11,019
			Subtotal 1 =	\$231,399
			Contingency (25%) =	\$57,850
			Subtotal 2 =	\$289,249
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$130,162
			Total =	\$419,411
			Estimated Project Cost =	\$420,000

Bren Mar Park Elementary School LID

Project ID: CA9854
Project Name: Bren Mar Park Elementary School LID
Project Location: Bren Mar Park Elementary School
Parcel ID No.: 0811 01 0006

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 5.5 acres

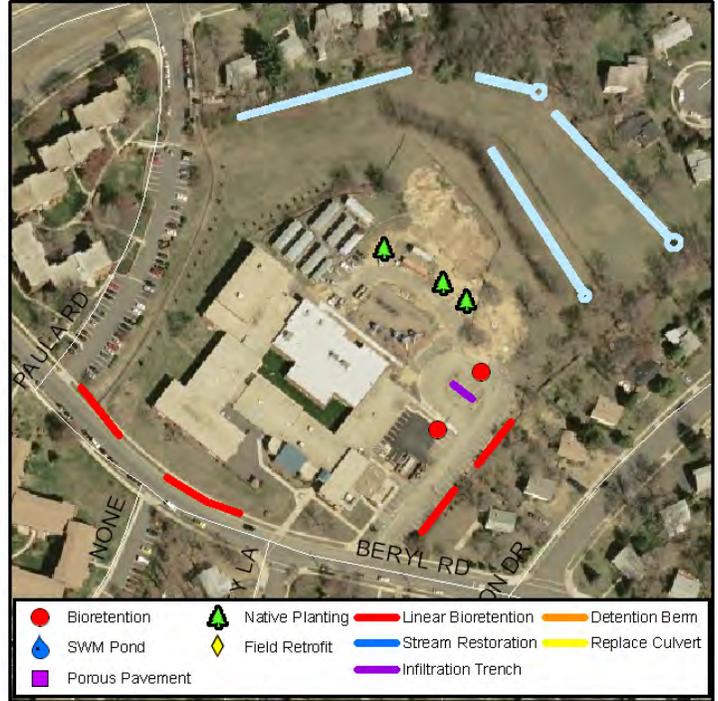
Project Location:



Proposed Action:

Construct linear bioretention areas in grass areas along Beryl Rd. and along E edge of parking lot; install infiltration trench and tree box filter in rear of parking lot; plant shade trees between new basketball court and baseball field (not shown on aerial).

Proposed Project:



Install linear bioretention area along Beryl Road



Potential linear bioretention area along parking lot

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$230,000

Bren Mar Park Elementary School LID

Project ID: CA9854

Project Name: Bren Mar Park Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	4000	SF	\$25.00	\$100,000
Shade Tree	0.28	AC	\$25,000.00	\$7,000
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Infiltration Trench	75	LF	\$100.00	\$7,500
Base Cost =				\$120,500
Mobilization (5%) =				\$6,025
Subtotal 1 =				\$126,525
Contingency (25%) =				\$31,631
Subtotal 2 =				\$158,156
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$71,170
Total =				\$229,327
Estimated Project Cost =				\$230,000

Fire Station - Company No. 26 LID

Project ID: CA9855
Project Name: Fire Station - Company No. 26 LID
Project Location: Fire Station - Company No. 26 - Edsall Rd.
Parcel ID No.: 0802 01 0048

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 1.8 acres

Project Location:



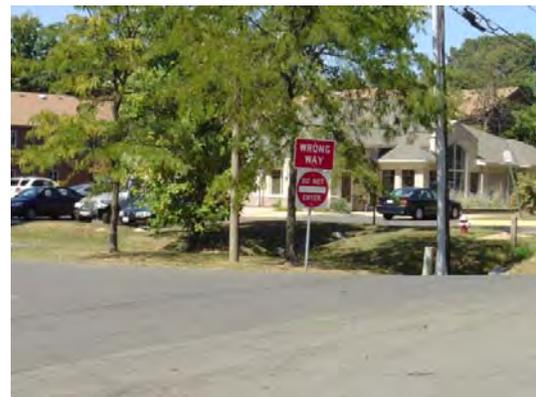
Proposed Action:

At Fire Station, divert roof drains to cistern for filling fire trucks; construct bioretention areas in sodded ditch to north and along western edge of parking lot.

Proposed Project:



Fire station



Potential linear bioretention area in ditch north of fire station

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$131,000

Fire Station - Company No. 26 LID

Project ID: CA9855

Project Name: Fire Station - Company No. 26 LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Cistern	1	EA	\$5,000.00	\$5,000
Bioretention Area, Linear	2550	SF	\$25.00	\$63,750
Base Cost =				\$68,750
Mobilization (5%) =				\$3,438
Subtotal 1 =				\$72,188
Contingency (25%) =				\$18,047
Subtotal 2 =				\$90,234
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$40,605
Total =				\$130,840
Estimated Project Cost =				\$131,000

Holmes Middle School LID

Project ID: CA9856
Project Name: Holmes Middle School LID
Project Location: Holmes Middle School
Parcel ID No.: 0723 01 0014

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 17.5 acres

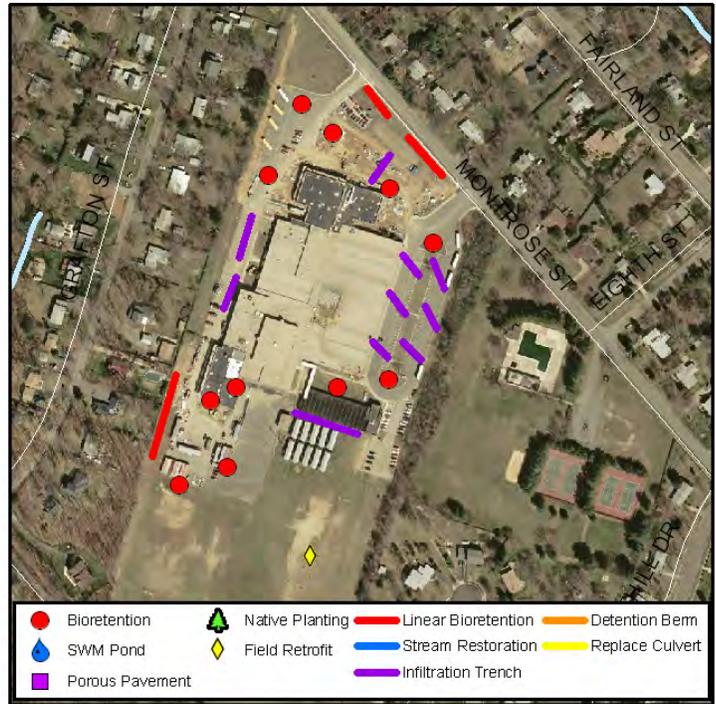
Project Location:



Proposed Action:

Construct linear bioretention areas in grass along Montrose St.; construct area bioretention areas in traffic islands in NW and E lots; install infiltration trenches in road ways and next to rear of bldg.; install tree box filters in front lot and filter strip along edge of rear parking lots; create multisport, artificial-turf playing fields.

Proposed Project:



Linear bioretention and filter strips could be installed along tennis courts



Install infiltration trench along portable buildings

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$1,593,000

Holmes Middle School LID

Project ID: CA9856

Project Name: Holmes Middle School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	2330	SF	\$25.00	\$58,250
Bioretention Area	3550	SF	\$25.00	\$88,750
Infiltration Trench	825	LF	\$100.00	\$82,500
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Filter Strip	135	LF	\$2.00	\$270
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Grass Swale	210	LF	\$6.00	\$1,260

Base Cost = \$837,030

Mobilization (5%) = \$41,852

Subtotal 1 = \$878,882

Contingency (25%) = \$219,720

Subtotal 2 = \$1,098,602

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$494,371

Total = \$1,592,973

Estimated Project Cost = \$1,593,000

Weyanoke Elementary School LID

Project ID: CA9857
Project Name: Weyanoke Elementary School LID
Project Location: Weyanoke Elementary School
Parcel ID No.: 0721 01 0013

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 5.9 acres

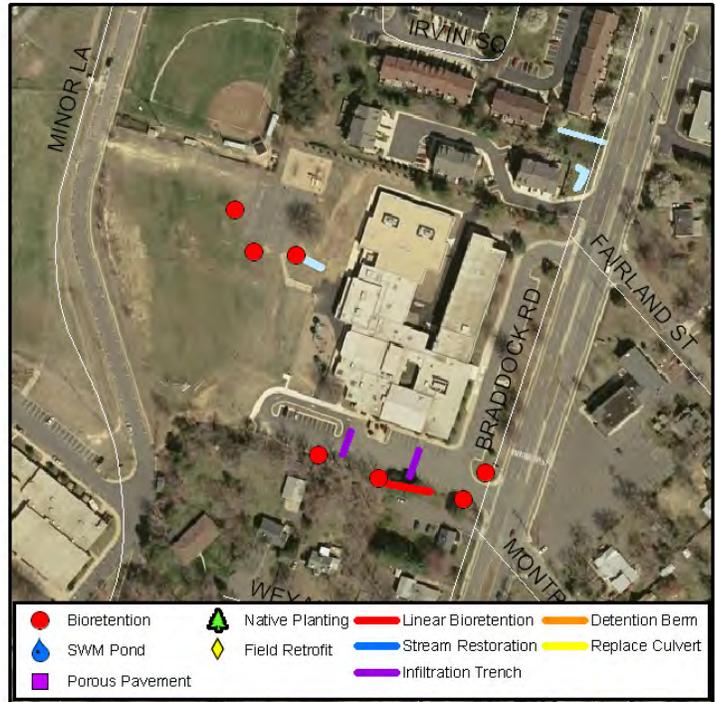
Project Location:



Proposed Action:

Construct bioretention area in Braddock Rd. traffic island and at edge of asphalt courts; install filter strip around asphalt courts; install linear bioretention area, tree box filters, and infiltration trenches in S parking lot

Proposed Project:



Proposed location for stepped bioretention area at edge of courts



Potential bioretention area in traffic island

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$124,000

Weyanoke Elementary School LID

Project ID: CA9857

Project Name: Weyanoke Elementary School LID

Estimated Project Cost:

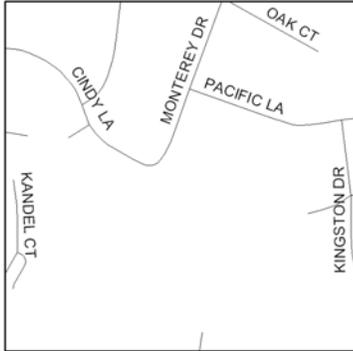
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Filter Strip	180	LF	\$2.00	\$360
Bioretention Area, Linear	1020	SF	\$25.00	\$25,500
Bioretention Area	825	SF	\$25.00	\$20,625
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Infiltration Trench	125	LF	\$100.00	\$12,500
			Base Cost =	\$64,985
			Mobilization (5%) =	\$3,249
			Subtotal 1 =	\$68,234
			Contingency (25%) =	\$17,059
			Subtotal 2 =	\$85,293
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$38,382
			Total =	\$123,675
			Estimated Project Cost =	\$124,000

Poe Middle School LID

Project ID: CA9858
Project Name: Poe Middle School LID
Project Location: Poe Middle School - Monterey Dr.
Parcel ID No.: 0711 01 0131

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 9.6 acres

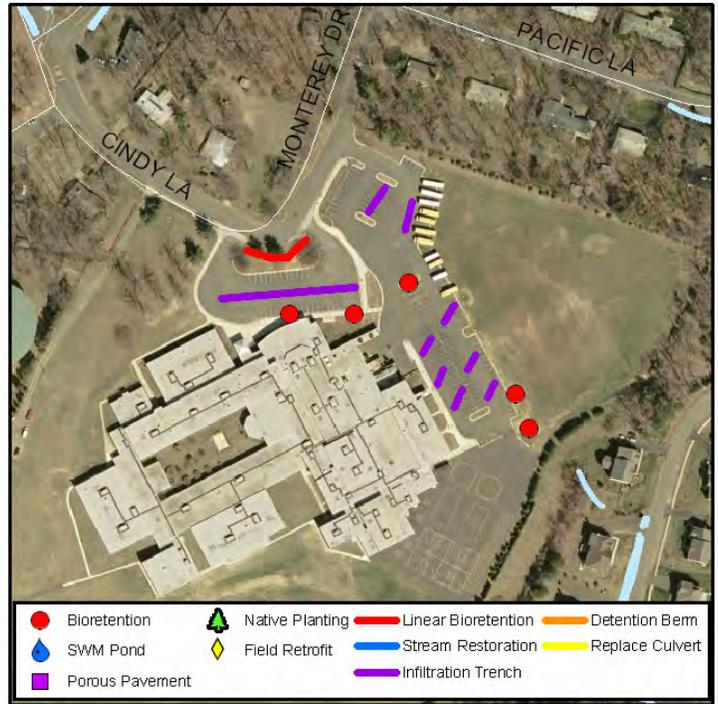
Project Location:



Proposed Action:

Construct linear bioretention area in loop island; install infiltration trenches, tree box filters, and traffic island bioretention areas in parking lots.

Proposed Project:



East parking lot where bioretention could be used in islands and along parking lot edge



Inlet in east parking lot

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$248,000

Poe Middle School LID

Project ID: CA9858

Project Name: Poe Middle School LID

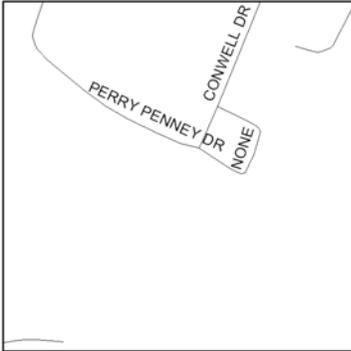
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	1200	SF	\$25.00	\$30,000
Infiltration Trench	510	LF	\$100.00	\$51,000
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Bioretention Area	1600	SF	\$25.00	\$40,000
Base Cost =				\$130,000
Mobilization (5%) =				\$6,500
Subtotal 1 =				\$136,500
Contingency (25%) =				\$34,125
Subtotal 2 =				\$170,625
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$76,781
Total =				\$247,406
Estimated Project Cost =				\$248,000

Indian Run Stream Valley Park LID - C

Project ID: CA9859 **Project Type:** Low Impact Development
Project Name: Indian Run Stream Valley Park LID - C **Subwatershed:** Indian Run
Project Location: Indian Run Stream Valley Park, Logsdon Drive **Drainage Area:** 3.9 acres
Parcel ID No.: 0712 01 0025A

Project Location:



Proposed Action:

Install off-line bioretention area at end of stormwater outfall.

Proposed Project:



Stormwater outfall

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.

Estimated Cost: \$516,000

Indian Run Stream Valley Park LID - C

Project ID: CA9859

Project Name: Indian Run Stream Valley Park LID - C

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	10830	SF	\$25.00	\$270,750
Base Cost =				\$270,750
Mobilization (5%) =				\$13,538
Subtotal 1 =				\$284,288
Contingency (25%) =				\$71,072
Subtotal 2 =				\$355,359
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$159,912
Total =				\$515,271
Estimated Project Cost =				\$516,000

Indian Run Stream Valley Park LID - A

Project ID: CA9860

Project Type: Low Impact Development

Project Name: Indian Run Stream Valley Park LID - A

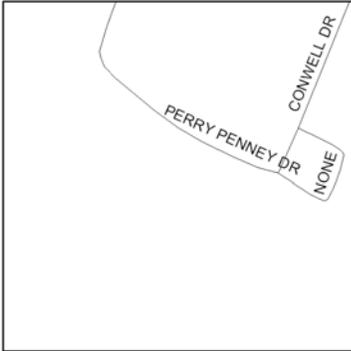
Subwatershed: Indian Run

Project Location: Indian Run Stream Valley Park

Drainage Area: 9.9 acres

Parcel ID No.: 0712 01 0025R

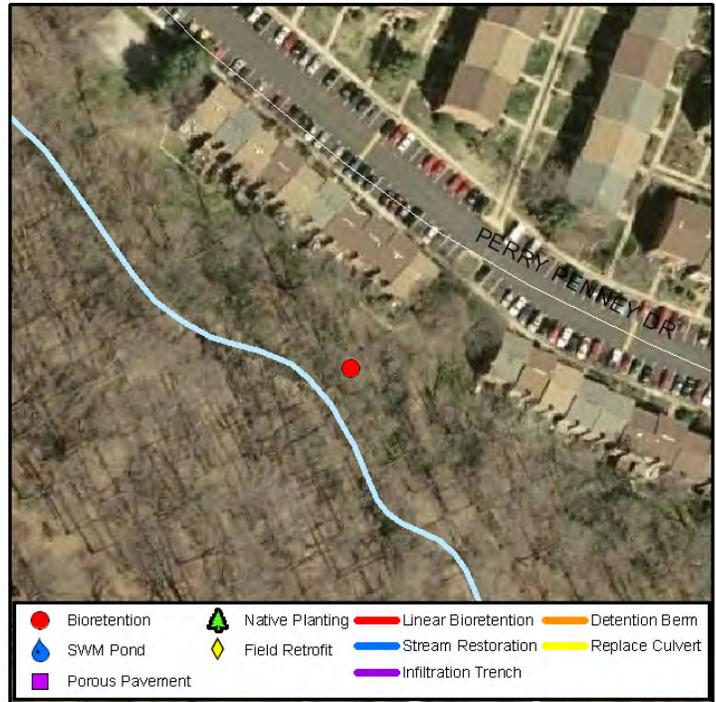
Project Location:



Proposed Action:

Install bioretention area at end of stormwater outfall.

Proposed Project:



Stormwater pipe outfall

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.

Estimated Cost: \$334,000

Indian Run Stream Valley Park LID - A

Project ID: CA9860

Project Name: Indian Run Stream Valley Park LID - A

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	7000	SF	\$25.00	\$175,000
Base Cost =				\$175,000
Mobilization (5%) =				\$8,750
Subtotal 1 =				\$183,750
Contingency (25%) =				\$45,938
Subtotal 2 =				\$229,688
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$103,359
Total =				\$333,047
Estimated Project Cost =				\$334,000

Indian Run Stream Valley Park LID - B

Project ID: CA9861

Project Type: Low Impact Development

Project Name: Indian Run Stream Valley Park LID - B

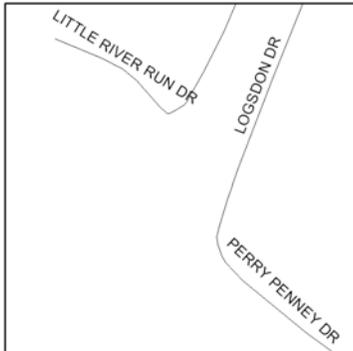
Subwatershed: Indian Run

Project Location: Indian Run Stream Valley Park

Drainage Area: 3.6 acres

Parcel ID No.: 0712 32 C

Project Location:



Proposed Action:

Install bioretention area at end of stormwater outfall.

Proposed Project:



Potential bioretention area at end of stormwater outfalls

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.

Estimated Cost: \$543,000

Indian Run Stream Valley Park LID - B

Project ID: CA9861

Project Name: Indian Run Stream Valley Park LID - B

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	11400	SF	\$25.00	\$285,000
Base Cost =				\$285,000
Mobilization (5%) =				\$14,250
Subtotal 1 =				\$299,250
Contingency (25%) =				\$74,813
Subtotal 2 =				\$374,063
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$168,328
Total =				\$542,391
Estimated Project Cost =				\$543,000

Columbia Elementary School LID

Project ID: CA9862

Project Type: Low Impact Development

Project Name: Columbia Elementary School LID

Subwatershed: Indian Run

Project Location: Alpine Dr. & Pinecrest Pkwy

Drainage Area: 5.5 acres

Parcel ID No.: 0712 05 0084A

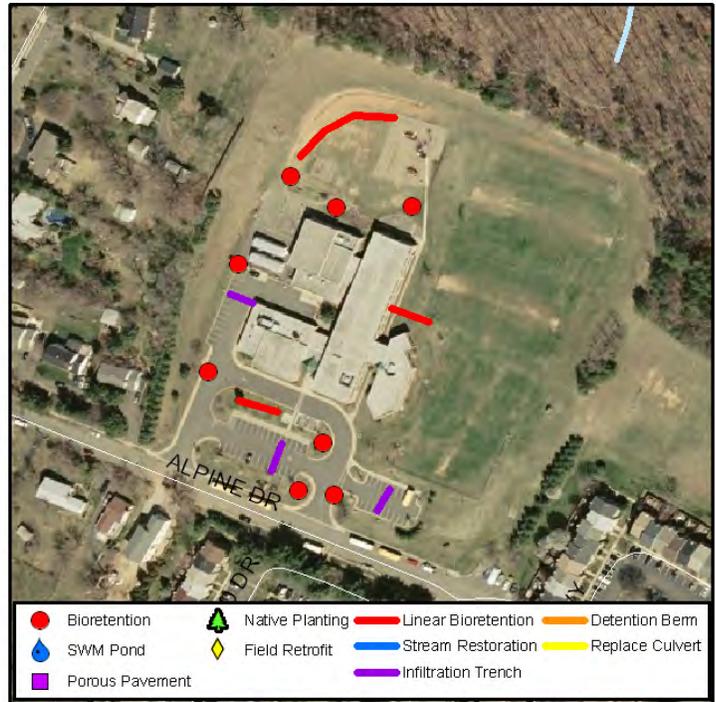
Project Location:



Proposed Action:

Construct linear and area bioretention areas in traffic islands; install infiltration trenches in front parking lots and side road; replace inlets with tree box filters; restore existing grass swale in back of bldg.; add filter strips around two inlets.

Proposed Project:



Replace inlet with tree box filter insert



Stressed vegetation in existing grass swale on property

- Benefits:**
- Provide stormwater quantity controls.
 - Provide stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Opportunity for public education.

Estimated Cost: \$134,000

Columbia Elementary School LID

Project ID: CA9862

Project Name: Columbia Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	1350	SF	\$25.00	\$33,750
Bioretention Area, Linear	600	SF	\$25.00	\$15,000
Infiltration Trench	110	LF	\$100.00	\$11,000
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Grass Swale	225	LF	\$6.00	\$1,350
Filter Strip	60	LF	\$2.00	\$120
Base Cost =				\$70,220
Mobilization (5%) =				\$3,511
Subtotal 1 =				\$73,731
Contingency (25%) =				\$18,433
Subtotal 2 =				\$92,164
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$41,474
Total =				\$133,637
Estimated Project Cost =				\$134,000

George Mason Regional Library LID

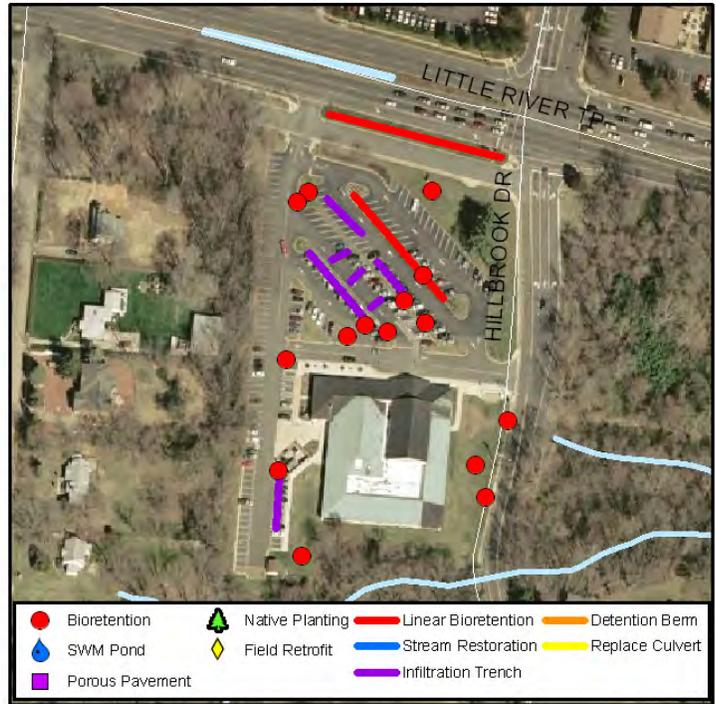
Project ID: CA9863
Project Name: George Mason Regional Library LID
Project Location: George Mason Regional Library
Parcel ID No.: 0712 07 0001

Project Type: Low Impact Development
Subwatershed: Indian Run
Drainage Area: 5.1 acres

Project Location:

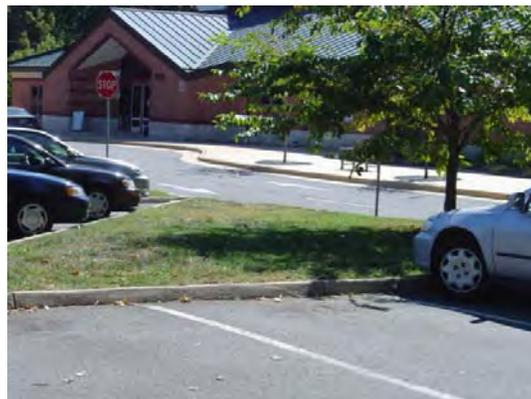


Proposed Project:



Proposed Action:

Construct bioretention in traffic islands along Little River Turnpike, in parking lot, between bldg. and Hillbrook Dr., and at SW corner of bldg.; install infiltration trench along several parking rows; install tree box filter inserts.



Potential bioretention area in traffic island



Divert downspouts on West side of library to bioretention areas

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$403,000

George Mason Regional Library LID

Project ID: CA9863

Project Name: George Mason Regional Library LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2100	SF	\$25.00	\$52,500
Infiltration Trench	360	LF	\$100.00	\$36,000
Tree Box Filter	11	EA	\$3,000.00	\$33,000
Bioretention Area, Linear	3595	SF	\$25.00	\$89,875
Base Cost =				\$211,375
Mobilization (5%) =				\$10,569
Subtotal 1 =				\$221,944
Contingency (25%) =				\$55,486
Subtotal 2 =				\$277,430
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$124,843
Total =				\$402,273
Estimated Project Cost =				\$403,000

Turkeycock Run Stream Valley Park LID

Project ID: CA9866

Project Type: Low Impact Development

Project Name: Turkeycock Run Stream Valley Park LID

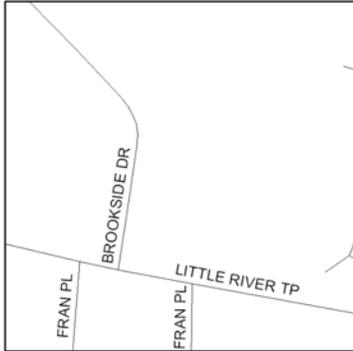
Subwatershed: Turkeycock Run

Project Location: Turkeycock Run Stream Valley Park

Drainage Area: 34.4 acres

Parcel ID No.: 0721 01 0044

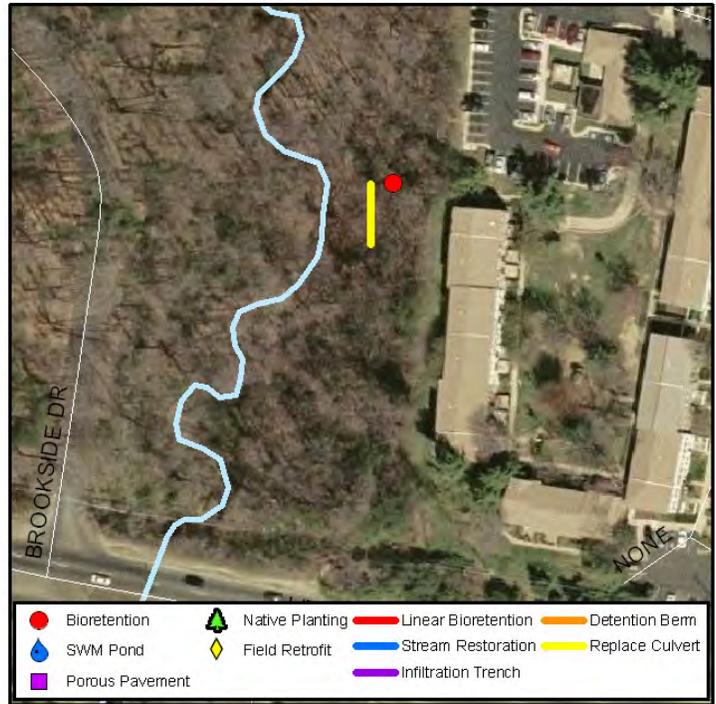
Project Location:



Proposed Action:

Install off-line bioretention area at end of stormwater outfall; repair concrete ditch and add riprap protection.

Proposed Project:



Existing concrete ditch at stormwater outfall



Broken concrete at the end of the channel

Benefits: Provide stormwater quality controls.
 Improve stormwater quantity controls.
 Opportunity for public education.

Estimated Cost: \$198,000

Turkeycock Run Stream Valley Park LID

Project ID: CA9866

Project Name: Turkeycock Run Stream Valley Park LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	3750	SF	\$25.00	\$93,750
Repair concrete ditch and add riprap protection	1	EA	\$10,000.00	\$10,000
Base Cost =				\$103,750
Mobilization (5%) =				\$5,188
Subtotal 1 =				\$108,938
Contingency (25%) =				\$27,234
Subtotal 2 =				\$136,172
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$61,277
Total =				\$197,449
Estimated Project Cost =				\$198,000

Parklawn Elementary School LID

Project ID: CA9867
Project Name: Parklawn Elementary School LID
Project Location: Parklawn Elementary School
Parcel ID No.: 0613 01 0012

Project Type: Low Impact Development
Subwatershed: Turkeycock Run
Drainage Area: 11.1 acres

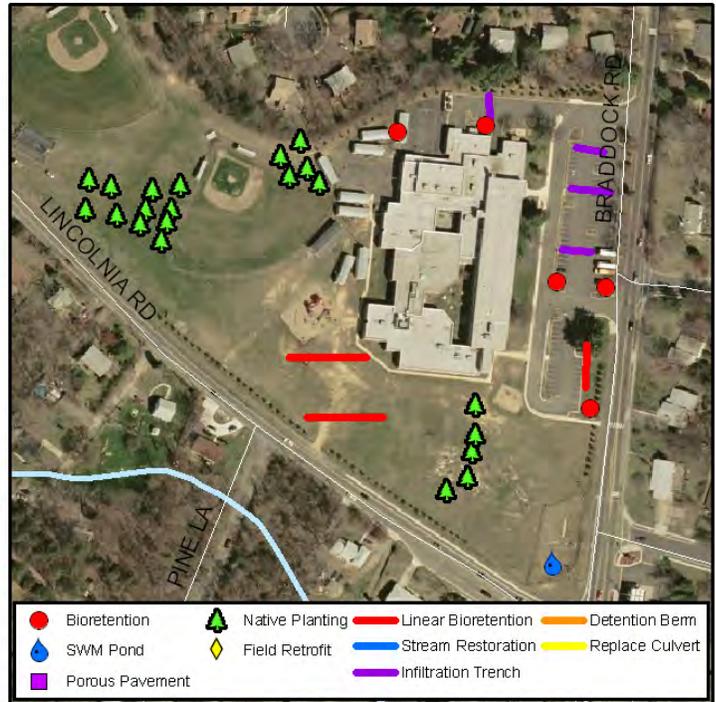
Project Location:



Proposed Action:

Retrofit small dry pond to wet detention pond; construct bioretention areas in traffic islands; install infiltration trenches and one tree box filter in parking lots; install linear bioretention strips along large trailer (not shown) SW of bldg.; direct roof drains to cistern to water fields; reforest unused lawn areas.

Proposed Project:



Dry pond with outlets and inlet structure



Linear bioretention areas could be incorporated along trailer for roof drainage

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$168,000

Parklawn Elementary School LID

Project ID: CA9867

Project Name: Parklawn Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	325	CY	\$35.00	\$11,375
Cistern	1	EA	\$5,000.00	\$5,000
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Bioretention Area, Linear	320	SF	\$25.00	\$8,000
Bioretention Area	800	SF	\$25.00	\$20,000
Infiltration Trench	195	LF	\$100.00	\$19,500
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Shade Tree	0.25	AC	\$25,000.00	\$6,250

Base Cost = \$88,125

Mobilization (5%) = \$4,406

Subtotal 1 = \$92,531

Contingency (25%) = \$23,133

Subtotal 2 = \$115,664

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$52,049

Total = \$167,713

Estimated Project Cost = \$168,000

Green Spring Gardens LID

Project ID: CA9868
Project Name: Green Spring Gardens LID
Project Location: Green Spring Gardens, Lincolnia
Parcel ID No.: 0721 01 0024

Project Type: Low Impact Development
Subwatershed: Turkeycock Run
Drainage Area: 1.1 acres

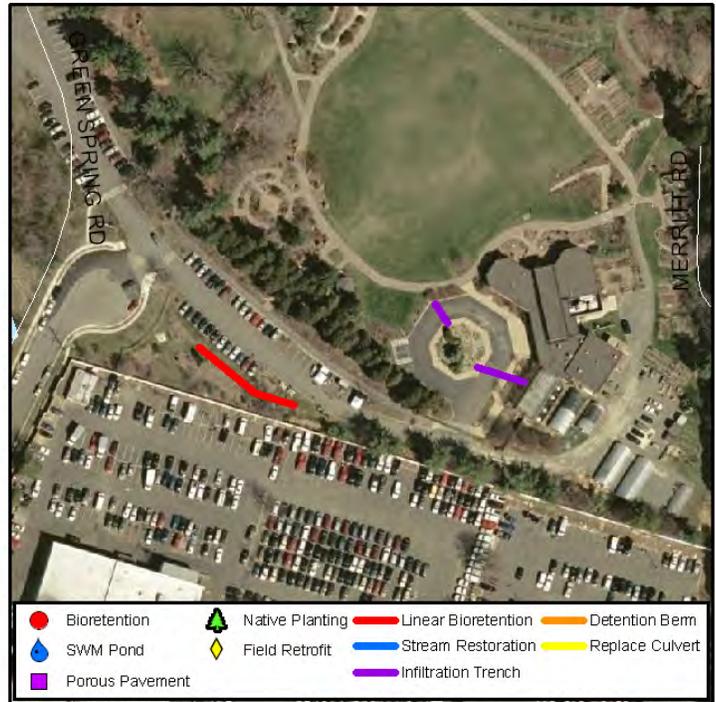
Project Location:



Proposed Action:

Install linear bioretention area along parking spaces and infiltration trenches in traffic circle.

Proposed Project:



Potential linear bioretention area along parking lot



Traffic circle

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.
Opportunity for public education.

Estimated Cost: \$99,000

Green Spring Gardens LID

Project ID: CA9868

Project Name: Green Spring Gardens LID

Estimated Project Cost:

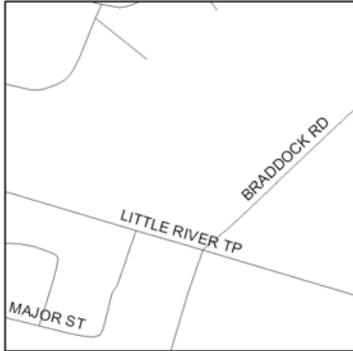
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	1600	SF	\$25.00	\$40,000
Infiltration Trench	120	LF	\$100.00	\$12,000
Base Cost =				\$52,000
Mobilization (5%) =				\$2,600
Subtotal 1 =				\$54,600
Contingency (25%) =				\$13,650
Subtotal 2 =				\$68,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$30,713
Total =				\$98,963
Estimated Project Cost =				\$99,000

Pinecrest Golf Course LID

Project ID: CA9869
Project Name: Pinecrest Golf Course LID
Project Location: Pinecrest Golf Course
Parcel ID No.: 0721 26 D

Project Type: Low Impact Development
Subwatershed: Turkeycock Run
Drainage Area: 1.9 acres

Project Location:



Proposed Action:

Implement stormwater retrofits based on the Park Authority's existing LID retrofit concept plan.

Proposed Project:



Parking lot with traffic islands

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.
Opportunity for public education.

Estimated Cost: \$78,000

Pinecrest Golf Course LID

Project ID: CA9869

Project Name: Pinecrest Golf Course LID

Estimated Project Cost:

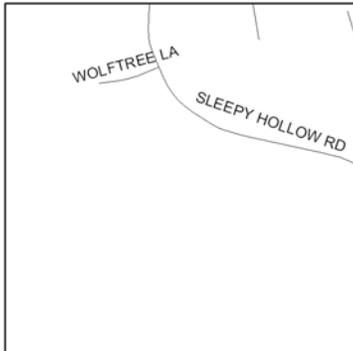
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	750	SF	\$25.00	\$18,750
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Infiltration Trench	190	LF	\$100.00	\$19,000
Base Cost =				\$40,750
Mobilization (5%) =				\$2,038
Subtotal 1 =				\$42,788
Contingency (25%) =				\$10,697
Subtotal 2 =				\$53,484
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$24,068
Total =				\$77,552
Estimated Project Cost =				\$78,000

Wolftree Lane LID

Project ID: CA9870
Project Name: Wolftree Lane LID
Project Location: Wolftree Ln. & Sleepy Hollow Rd.
Parcel ID No.: 0712 01 0059A

Project Type: Low Impact Development
Subwatershed: Turkeycock Run
Drainage Area: 8.6 acres

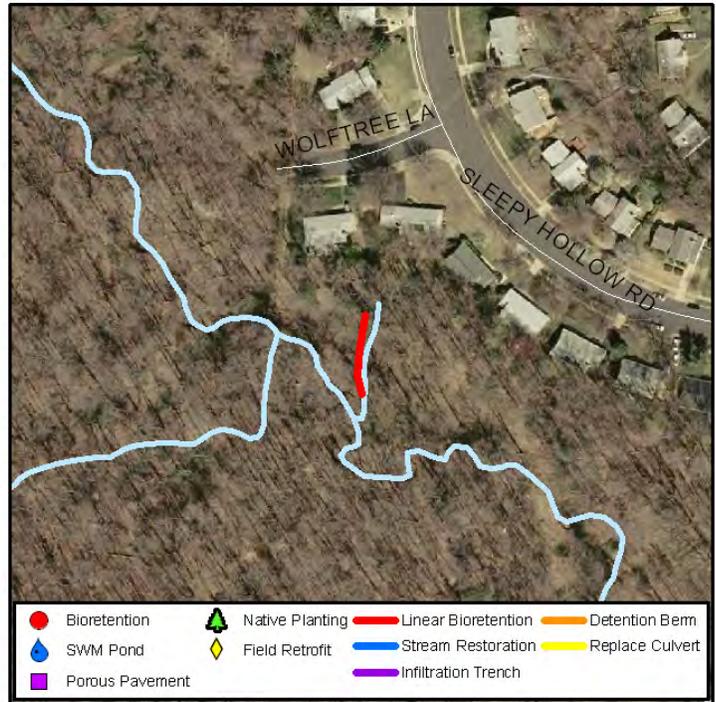
Project Location:



Proposed Action:

Linear bioretention area to capture end of pipe stormwater.

Proposed Project:



Potential location for off-line bioretention at stormwater pipe outfall

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$286,000

Wolfree Lane LID

Project ID: CA9870

Project Name: Wolfree Lane LID

Estimated Project Cost:

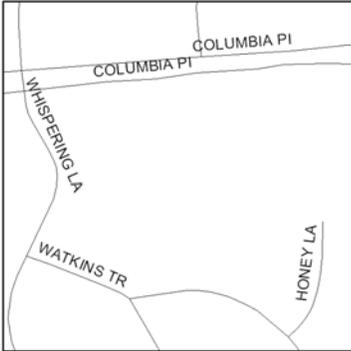
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	6000	SF	\$25.00	\$150,000
			Base Cost =	\$150,000
			Mobilization (5%) =	\$7,500
			Subtotal 1 =	\$157,500
			Contingency (25%) =	\$39,375
			Subtotal 2 =	\$196,875
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$88,594
			Total =	\$285,469
			Estimated Project Cost =	\$286,000

Mason Government Center LID

Project ID: CA9872
Project Name: Mason Government Center LID
Project Location: Columbia Pike & Downing St.
Parcel ID No.: 0613 01 0003

Project Type: Low Impact Development
Subwatershed: Turkeycock Run
Drainage Area: 6.6 acres

Project Location:



Proposed Action:

Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; construct bioretention area along Columbia Pike to collect roadway runoff; install linear bioretention strips, bioretention areas, and tree box filters in parking lot.

Proposed Project:



SWM dry pond



Potential linear bioretention areas along parking lot medians

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.
 Opportunity for public education.

Estimated Cost: \$220,000

Mason Government Center LID

Project ID: CA9872

Project Name: Mason Government Center LID

Estimated Project Cost:

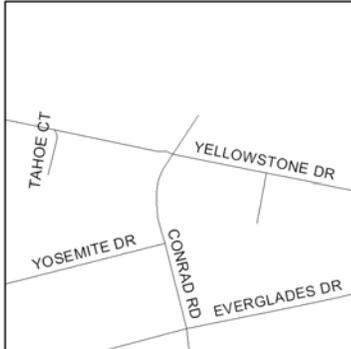
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	350	CY	\$35.00	\$12,250
Structural Improvements & Incidentals	1	LS	\$10,000.00	\$10,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Bioretention Area, Linear	875	SF	\$25.00	\$21,875
Bioretention Area	2400	SF	\$25.00	\$60,000
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Base Cost =				\$115,125
Mobilization (5%) =				\$5,756
Subtotal 1 =				\$120,881
Contingency (25%) =				\$30,220
Subtotal 2 =				\$151,102
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$67,996
Total =				\$219,097
Estimated Project Cost =				\$220,000

Glasgow Middle School LID

Project ID: CA9876
Project Name: Glasgow Middle School LID
Project Location: Glasgow Middle School
Parcel ID No.: 0614 01 0151A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Lower
Drainage Area: 22.6 acres

Project Location:



Proposed Project:



Proposed Action:

Install off-line bioretention areas at stormwater pipe outfall on E side of entrance road. Note: school to be rebuilt by fall 2008.



Stormwater pipe draining area south of Yellowstone Dr outlets in woods adjacent to school parking lot

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$703,000

Glasgow Middle School LID

Project ID: CA9876

Project Name: Glasgow Middle School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	14770	SF	\$25.00	\$369,250
Base Cost =				\$369,250
Mobilization (5%) =				\$18,463
Subtotal 1 =				\$387,713
Contingency (25%) =				\$96,928
Subtotal 2 =				\$484,641
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$218,088
Total =				\$702,729
Estimated Project Cost =				\$703,000

Baileys Community Center LID

Project ID: CA9877
Project Name: Baileys Community Center LID
Project Location: Baileys Community Center
Parcel ID No.: 0614 01 0042

Project Type: Low Impact Development
Subwatershed: Holmes Run - Lower
Drainage Area: 6.9 acres

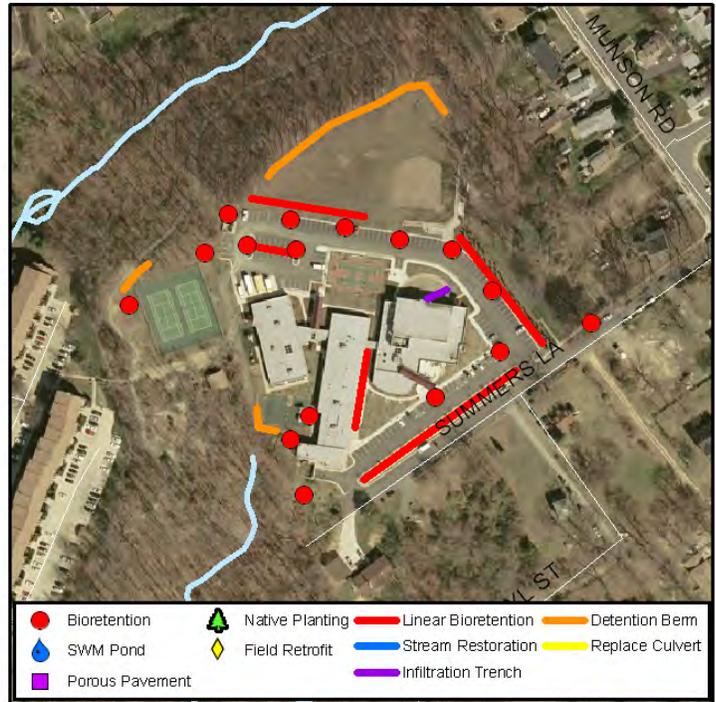
Project Location:



Proposed Action:

Construct linear and area bioretention areas in traffic islands along front and east sides, by tennis courts, west side of building, and end of Summers Lane; build detention micro-berm along north side of baseball field, NW corner of tennis court, and edge of southwestern lot; install tree box filter in inlet on Summers Ln.

Proposed Project:



Linear bioretention can be added to this ditch surrounding the tennis courts



Convert street inlet to a tree box filter

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$351,000

Baileys Community Center LID

Project ID: CA9877

Project Name: Baileys Community Center LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	465	LF	\$2.00	\$930
Bioretention Area, Linear	4760	SF	\$25.00	\$119,000
Bioretention Area	2450	SF	\$25.00	\$61,250
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Base Cost =				\$184,180
Mobilization (5%) =				\$9,209
Subtotal 1 =				\$193,389
Contingency (25%) =				\$48,347
Subtotal 2 =				\$241,736
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$108,781
Total =				\$350,518
Estimated Project Cost =				\$351,000

Baileys Elementary School LID

Project ID: CA9879
Project Name: Baileys Elementary School LID
Project Location: Baileys Elementary School
Parcel ID No.: 0612 01 0002

Project Type: Low Impact Development
Subwatershed: Holmes Run - Lower
Drainage Area: 9.6 acres

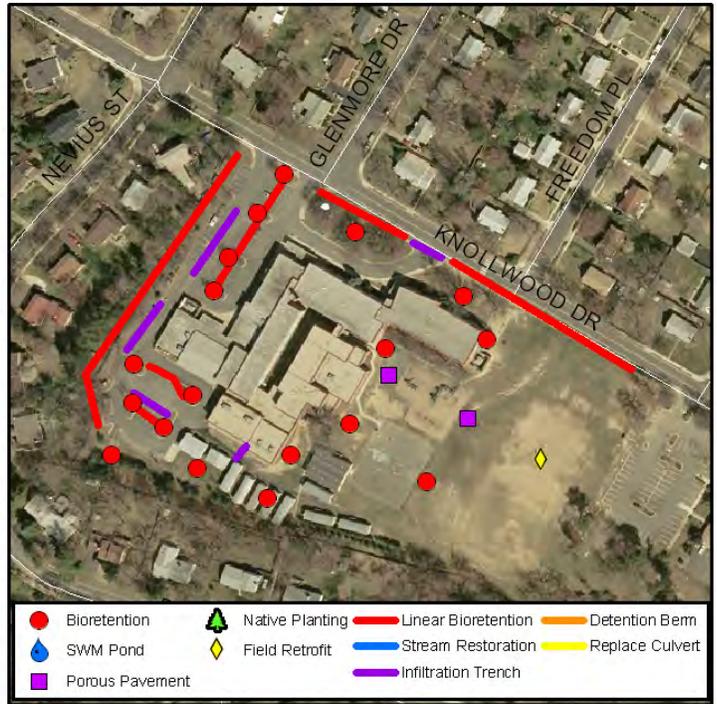
Project Location:



Proposed Action:

Construct bioretention areas in traffic islands for bus loop and parking lots, near asphalt courts, and near portable classrooms; install infiltration trenches in parking areas and porous pavement in play yards; create artificial turf field with underdrains and cistern.

Proposed Project:



Asphalt play yard with athletic field in background



Traffic islands for the bus loop

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$1,535,000

Baileys Elementary School LID

Project ID: CA9879

Project Name: Baileys Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Bioretention Area, Linear	3050	SF	\$25.00	\$76,250
Porous Pavement	1640	SY	\$15.00	\$24,600
Bioretention Area	2700	SF	\$25.00	\$67,500
Infiltration Trench	380	LF	\$100.00	\$38,000

Base Cost = \$806,350

Mobilization (5%) = \$40,318

Subtotal 1 = \$846,668

Contingency (25%) = \$211,667

Subtotal 2 = \$1,058,334

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$476,250

Total = \$1,534,585

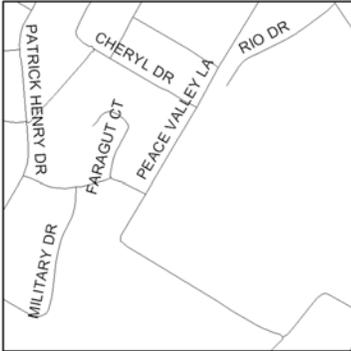
Estimated Project Cost = \$1,535,000

JEB Stuart High School LID

Project ID: CA9882
Project Name: JEB Stuart High School LID
Project Location: JEB Stuart High School
Parcel ID No.: 0611 01 0013

Project Type: Low Impact Development
Subwatershed: Tripps Run
Drainage Area: 23.6 acres

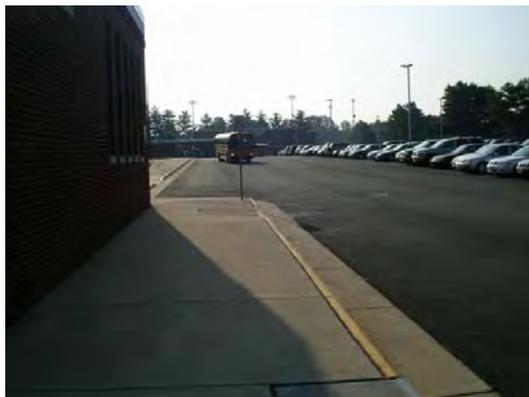
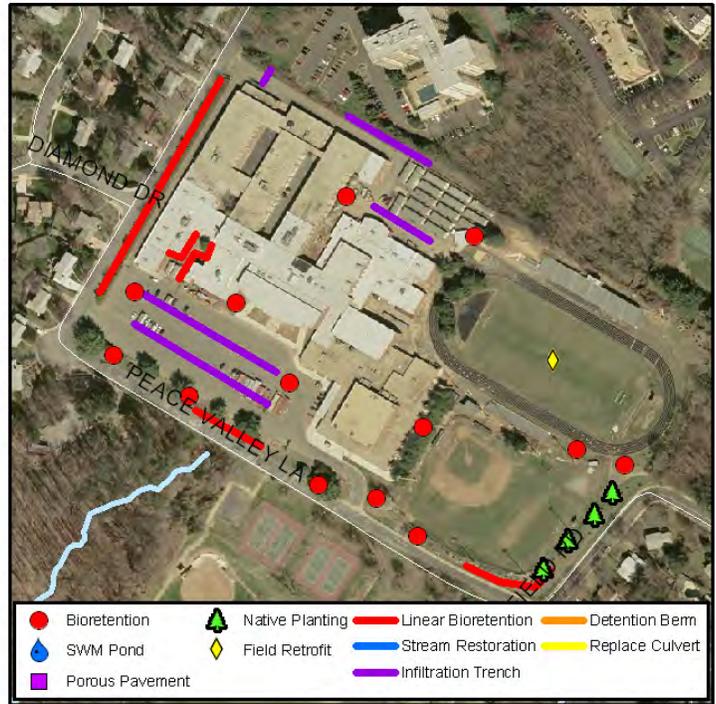
Project Location:



Proposed Action:

Construct linear bioretention area along Peace Valley Ln. median; construct a stepped bioretention areas along S edge of parking lot and SE corner of fields; construct bioretention areas in parking islands and around playing fields; plant wildflowers along SE side of baseball field; upgrade fields to multisport artificial turf with underdrains and cistern.

Proposed Project:



Infiltration trenches could be incorporated into parking lots



Bioretention gardens could be incorporated into traffic islands

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$1,881,000

JEB Stuart High School LID

Project ID: CA9882

Project Name: JEB Stuart High School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	6275	SF	\$25.00	\$156,875
Infiltration Trench	1060	LF	\$100.00	\$106,000
Bioretention Area	5000	SF	\$25.00	\$125,000
Wildflower Planting	0.03	AC	\$3,000.00	\$90
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Base Cost =				\$987,965
Mobilization (5%) =				\$49,398
Subtotal 1 =				\$1,037,363
Contingency (25%) =				\$259,341
Subtotal 2 =				\$1,296,704
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$583,517
Total =				\$1,880,221
Estimated Project Cost =				\$1,881,000

Sleepy Hollow Elementary School LID

Project ID: CA9885
Project Name: Sleepy Hollow Elementary School LID
Project Location: Sleepy Hollow Road
Parcel ID No.: 0602 01 0039

Project Type: Low Impact Development
Subwatershed: Tripps Run
Drainage Area: 9.2 acres

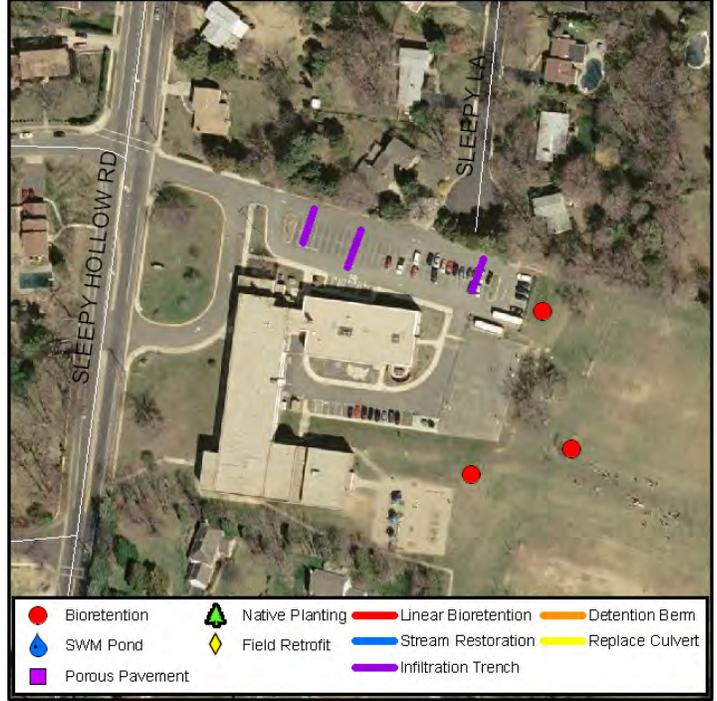
Project Location:



Proposed Action:

Install infiltration trenches in parking lot and bioretention areas at yard drain inlets.

Proposed Project:



Construct bioretention area at yard drain inlet



Convert traffic island to a bioretention area

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$455,000

Sleepy Hollow Elementary School LID

Project ID: CA9885

Project Name: Sleepy Hollow Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	8100	SF	\$25.00	\$202,500
Infiltration Trench	365	LF	\$100.00	\$36,500
Base Cost =				\$239,000
Mobilization (5%) =				\$11,950
Subtotal 1 =				\$250,950
Contingency (25%) =				\$62,738
Subtotal 2 =				\$313,688
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$141,159
Total =				\$454,847
Estimated Project Cost =				\$455,000

Nicholson St - Ch. 2 Street LID

Project ID: CA9886

Project Type: Low Impact Development

Project Name: Nicholson St - Ch. 2 Street LID

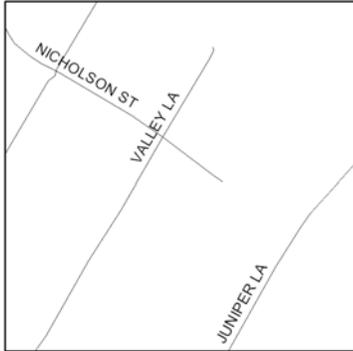
Subwatershed: Tripps Run

Project Location: Nicholson St. east of Valley Ln.

Drainage Area: 2.4 acres

Parcel ID No.:

Project Location:



Proposed Action:

Construct bioretention area in Chapter-2 street lot, divert road runoff into area.

Proposed Project:



Potential location for bioretention area in unfinished road



View looking into street

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$100,000

Nicholson St - Ch. 2 Street LID

Project ID: CA9886

Project Name: Nicholson St - Ch. 2 Street LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2090	SF	\$25.00	\$52,250
			Base Cost =	\$52,250
			Mobilization (5%) =	\$2,613
			Subtotal 1 =	\$54,863
			Contingency (25%) =	\$13,716
			Subtotal 2 =	\$68,578
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$30,860
			Total =	\$99,438
			Estimated Project Cost =	\$100,000

Westlawn Elementary School LID

Project ID: CA9892
Project Name: Westlawn Elementary School LID
Project Location: Westley Rd. & Ridge Rd.
Parcel ID No.: 0504 01 0002

Project Type: Low Impact Development
Subwatershed: Tripps Run
Drainage Area: 8 acres

Project Location:



Proposed Action:

Install bioretention area, infiltration trenches, and tree box filters in parking lots; construct linear bioretention along asphalt courts; and construct grass swale around two sides of fields.

Proposed Project:



Potential location for infiltration trench



Convert concrete ditch to linear bioretention area

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.
 Opportunity for public education.

Estimated Cost: \$117,000

Westlawn Elementary School LID

Project ID: CA9892

Project Name: Westlawn Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	150	SF	\$25.00	\$3,750
Infiltration Trench	225	LF	\$100.00	\$22,500
Tree Box Filter	3	EA	\$3,000.00	\$9,000
Bioretention Area, Linear	900	SF	\$25.00	\$22,500
Grass Swale	535	LF	\$6.00	\$3,210
			Base Cost =	\$60,960
			Mobilization (5%) =	\$3,048
			Subtotal 1 =	\$64,008
			Contingency (25%) =	\$16,002
			Subtotal 2 =	\$80,010
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$36,005
			Total =	\$116,015
			Estimated Project Cost =	\$117,000

Fire Station - Company No. 28 LID

Project ID: CA9897

Project Type: Low Impact Development

Project Name: Fire Station - Company No. 28 LID

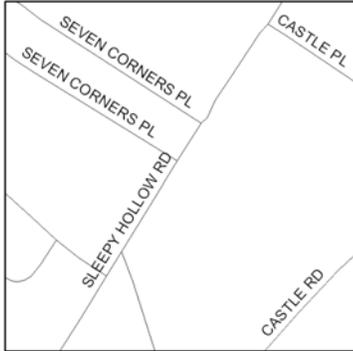
Subwatershed: Tripps Run

Project Location: Fire Station - Company No. 28 - Sleepy Hollow Rd

Drainage Area: 0.5 acres

Parcel ID No.: 0513 15 0004

Project Location:



Proposed Action:

At Fire Station, divert roof drains to cistern for filling fire trucks; construct bioretention areas in SW and SE corners of traffic islands in parking lot; construct linear bioretention areas on S side of truck entrance and S side of parking lot.

Proposed Project:



Rain gutter on side of building



Back parking lot

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Opportunity for public education.

Estimated Cost: \$23,000

Fire Station - Company No. 28 LID

Project ID: CA9897

Project Name: Fire Station - Company No. 28 LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Cistern	1	EA	\$5,000.00	\$5,000
Bioretention Area, Linear	140	SF	\$25.00	\$3,500
Bioretention Area	140	SF	\$25.00	\$3,500
Base Cost =				\$12,000
Mobilization (5%) =				\$600
Subtotal 1 =				\$12,600
Contingency (25%) =				\$3,150
Subtotal 2 =				\$15,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$7,088
Total =				\$22,838
Estimated Project Cost =				\$23,000

Larry Graves Park LID

Project ID: CA9901
Project Name: Larry Graves Park LID
Project Location: Hillwood Ave. & Hunton Ave.
Parcel ID No.:

Project Type: Low Impact Development
Subwatershed: Tripps Run
Drainage Area: 1.2 acres

Project Location:



Proposed Action:

Construct bioretention areas in grass along Hillwood Ave. and replace inlet with tree box filter.

Proposed Project:



Add bioretention areas to parking lot islands



Add bioretention areas along northern parking lot margin

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$41,000

Larry Graves Park LID

Project ID: CA9901

Project Name: Larry Graves Park LID

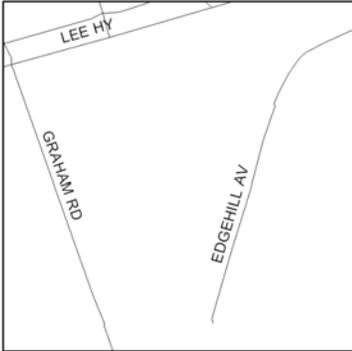
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	850	SF	\$25.00	\$21,250
			Base Cost =	\$21,250
			Mobilization (5%) =	\$1,063
			Subtotal 1 =	\$22,313
			Contingency (25%) =	\$5,578
			Subtotal 2 =	\$27,891
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$12,551
			Total =	\$40,441
			Estimated Project Cost =	\$41,000

Devonshire Administration Center (School) LID

Project ID:	CA9904	Project Type:	Low Impact Development
Project Name:	Devonshire Administration Center (School) LID	Subwatershed:	Tripps Run
Project Location:	Devonshire Administration Center (School)	Drainage Area:	5.3 acres
Parcel ID No.:	0501 01 0052		

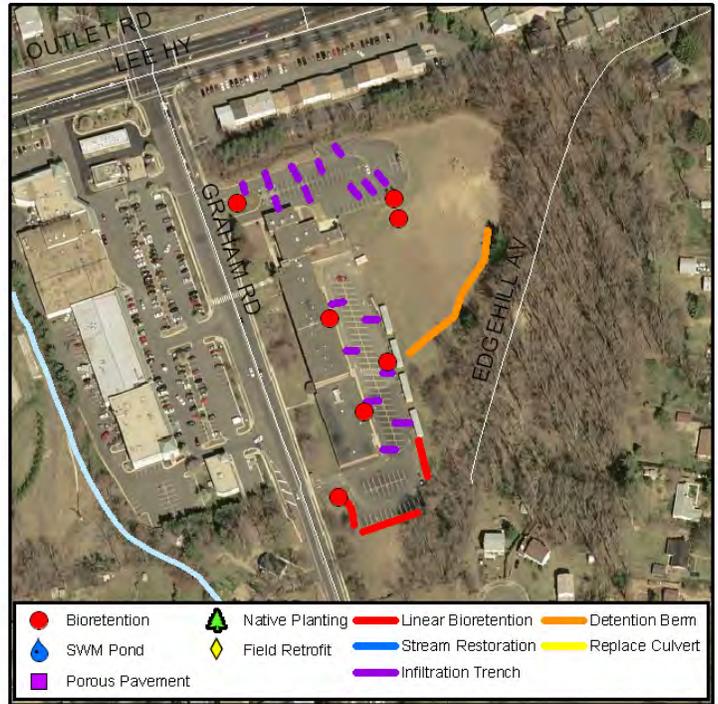
Project Location:



Proposed Action:

Construct bioretention areas in traffic circle and in grass areas next to N and S parking lots; construct linear bioretention areas at edges of S lot; construct infiltration trenches and filter strips in N and rear lots; build detention micro-berm along tree line.

Proposed Project:



Add bioretention areas to traffic circle



Potential bioretention area at stormwater outlet

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$288,000

Devonshire Administration Center (School) LID

Project ID: CA9904

Project Name: Devonshire Administration Center (School) LID

Estimated Project Cost:

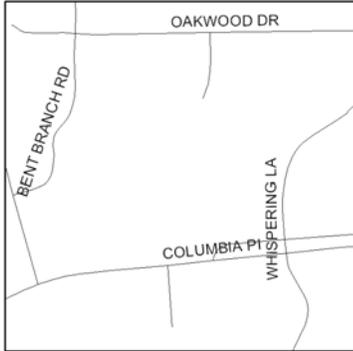
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	3065	SF	\$25.00	\$76,625
Bioretention Area, Linear	1530	SF	\$25.00	\$38,250
Infiltration Trench	350	LF	\$100.00	\$35,000
Filter Strip	200	LF	\$2.00	\$400
Detention Berm	270	LF	\$2.00	\$540
Base Cost =				\$150,815
Mobilization (5%) =				\$7,541
Subtotal 1 =				\$158,356
Contingency (25%) =				\$39,589
Subtotal 2 =				\$197,945
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$89,075
Total =				\$287,020
Estimated Project Cost =				\$288,000

Belvedere Elementary School LID

Project ID: CA9911
Project Name: Belvedere Elementary School LID
Project Location: Belvedere Elementary School
Parcel ID No.: 0604 01 0037

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 9.9 acres

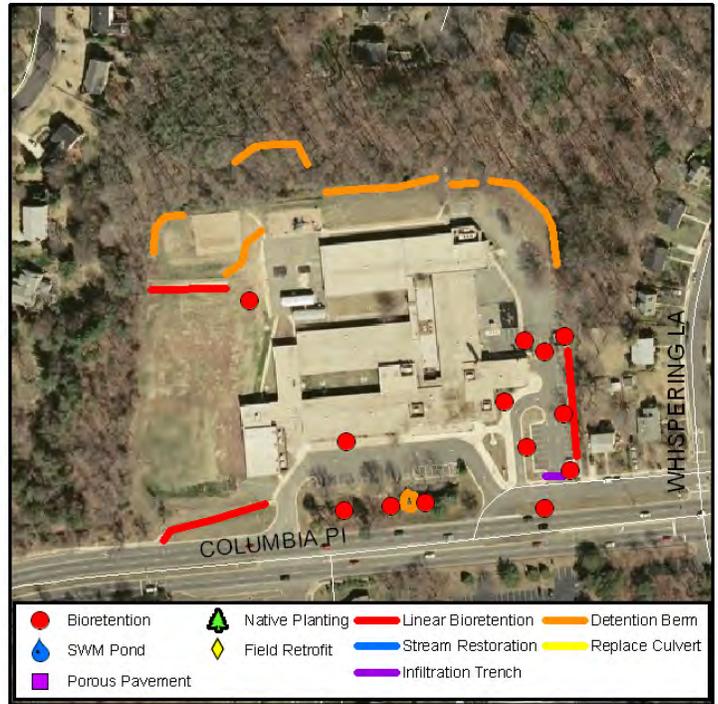
Project Location:



Proposed Action:

Construct bioretention areas in bus loop island, traffic island, along back edge in side lot, and in landscape islands around bldg.; build detention micro-berm along north side of property; install linear bioretention area and infiltration trench in side parking lot; and convert concrete ditches to grass swales.

Proposed Project:



Potential bioretention area in bus loop island



Divert downspouts into bioretention areas alongside building

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$325,000

Belvedere Elementary School LID

Project ID: CA9911

Project Name: Belvedere Elementary School LID

Estimated Project Cost:

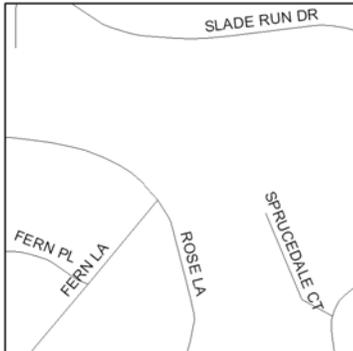
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	3260	SF	\$25.00	\$81,500
Detention Berm	790	LF	\$2.00	\$1,580
Bioretention Area	3300	SF	\$25.00	\$82,500
Infiltration Trench	30	LF	\$100.00	\$3,000
Grass Swale	290	LF	\$6.00	\$1,740
Base Cost =				\$170,320
Mobilization (5%) =				\$8,516
Subtotal 1 =				\$178,836
Contingency (25%) =				\$44,709
Subtotal 2 =				\$223,545
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$100,595
Total =				\$324,140
Estimated Project Cost =				\$325,000

Columbia Pines LID

Project ID: CA9914
Project Name: Columbia Pines LID
Project Location: Rose La. & Fern La.
Parcel ID No.: 0602 30 P

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 28.1 acres

Project Location:



Proposed Action:

Construct off-line bioretention areas to capture end-of-pipe stormwater prior to entering the stream.

Proposed Project:



Stream below outfall



Evidence of bank erosion

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Improve floodplain and nutrient cycling functions.

Estimated Cost: \$96,000

Columbia Pines LID

Project ID: CA9914

Project Name: Columbia Pines LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	2000	SF	\$25.00	\$50,000
			Base Cost =	\$50,000
			Mobilization (5%) =	\$2,500
			Subtotal 1 =	\$52,500
			Contingency (25%) =	\$13,125
			Subtotal 2 =	\$65,625
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$29,531
			Total =	\$95,156
			Estimated Project Cost =	\$96,000

Beech Tree Elementary School LID

Project ID: CA9917
Project Name: Beech Tree Elementary School LID
Project Location: Beech Tree Elementary School
Parcel ID No.: 0602 38 A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 7.8 acres

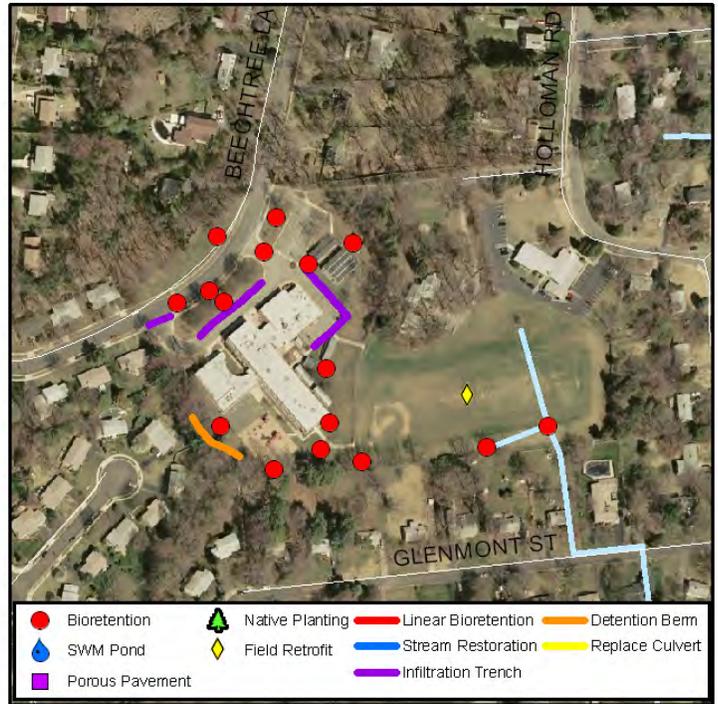
Project Location:



Proposed Action:

Construct bioretention areas along Beechtree Ln. and in landscape islands around bldg. and trailers; install infiltration trenches in bus loop and drive; install two tree box filters at stormdrain inlets; install filter strip along Beechtree Ln.; build detention micro-berm along SW side of bldg.; convert playing fields to artificial turf with cistern.

Proposed Project:



Traffic islands provide space for bioretention areas



Grate inlet on athletic field could be surrounded by a rain garden

Benefits: Provide stormwater quality controls.
 Improve stormwater quantity controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$1,409,000

Beech Tree Elementary School LID

Project ID: CA9917

Project Name: Beech Tree Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	3550	SF	\$25.00	\$88,750
Infiltration Trench	450	LF	\$100.00	\$45,000
Tree Box Filter	2	EA	\$3,000.00	\$6,000
Filter Strip	150	LF	\$2.00	\$300
Detention Berm	130	LF	\$2.00	\$260
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000

Base Cost = \$740,310

Mobilization (5%) = \$37,016

Subtotal 1 = \$777,326

Contingency (25%) = \$194,331

Subtotal 2 = \$971,657

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$437,246

Total = \$1,408,902

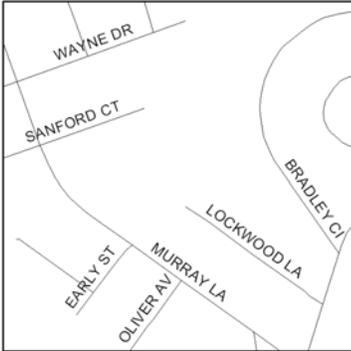
Estimated Project Cost = \$1,409,000

Broyhill Crest Park LID

Project ID: CA9921
Project Name: Broyhill Crest Park LID
Project Location: Lockwood LA at community garden
Parcel ID No.: 0603 20 B

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 2.4 acres

Project Location:



Proposed Action:

Develop detention micro-berm along tree line to slow runoff and induce infiltration; construct bioretention areas with small cistern for watering community garden.

Proposed Project:



Berms developed along streambanks will capture runoff and induce infiltration.



Community garden at end of street

- Benefits:**
- Provide stormwater quantity controls.
 - Provide stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Improve community usage.
 - Opportunity for public education.

Estimated Cost: \$132,000

Broyhill Crest Park LID

Project ID: CA9921

Project Name: Broyhill Crest Park LID

Estimated Project Cost:

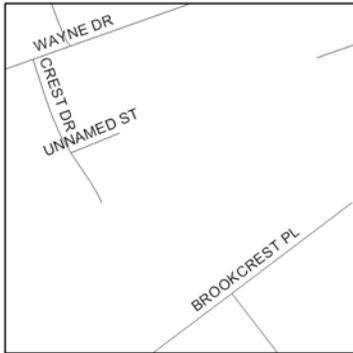
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	225	LF	\$2.00	\$450
Bioretention Area	2750	SF	\$25.00	\$68,750
Base Cost =				\$69,200
Mobilization (5%) =				\$3,460
Subtotal 1 =				\$72,660
Contingency (25%) =				\$18,165
Subtotal 2 =				\$90,825
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$40,871
Total =				\$131,696
Estimated Project Cost =				\$132,000

Lacey Admin Center LID

Project ID: CA9922
Project Name: Lacey Admin Center LID
Project Location: Crest Dr. & Wayne Dr.
Parcel ID No.: 0603 24 0004A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 6.7 acres

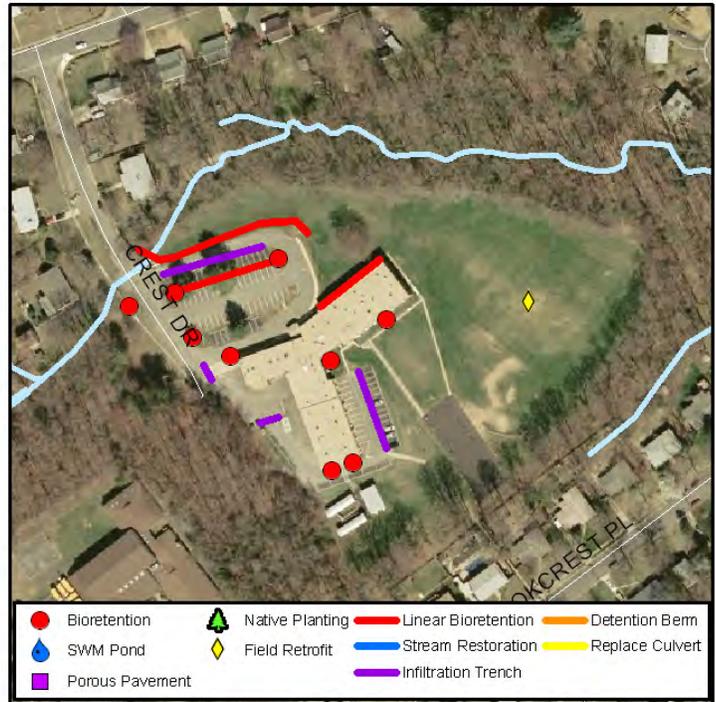
Project Location:



Proposed Action:

Develop playing field using artificial turf with underdrain/cistern system for use as soccer and football field; add bioretention areas and infiltration strips in parking lot islands and margins.

Proposed Project:



Divert downspouts into linear bioretention areas alongside building



Potential bioretention area at stormwater inlet

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$1,317,000

Lacey Admin Center LID

Project ID: CA9922

Project Name: Lacey Admin Center LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Bioretention Area, Linear	510	SF	\$25.00	\$12,750
Bioretention Area	1900	SF	\$25.00	\$47,500
Infiltration Trench	315	LF	\$100.00	\$31,500
Base Cost =				\$691,750
Mobilization (5%) =				\$34,588
Subtotal 1 =				\$726,338
Contingency (25%) =				\$181,584
Subtotal 2 =				\$907,922
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$408,565
Total =				\$1,316,487
Estimated Project Cost =				\$1,317,000

Holmes Run Stream Valley Park LID

Project ID: CA9925

Project Type: Low Impact Development

Project Name: Holmes Run Stream Valley Park LID

Subwatershed: Holmes Run - Upper

Project Location: Charleson St & Masonville Dr.

Drainage Area: 0.9 acres

Parcel ID No.: 0601 01 0063

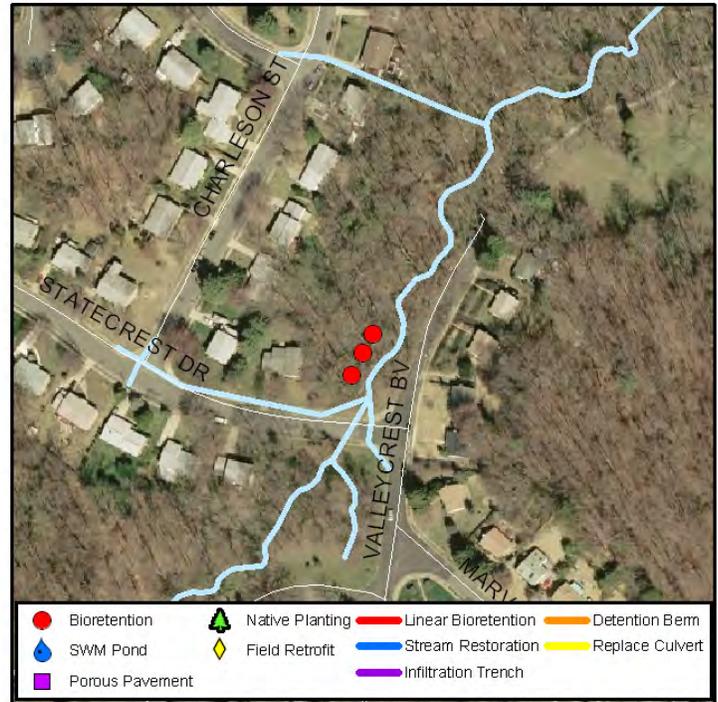
Project Location:



Proposed Action:

Construct off-line bioretention areas (stepped) to capture end-of-pipe stormwater prior to entering the stream.

Proposed Project:



Stormwater pipe outfall

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Improve floodplain and nutrient cycling functions.

Estimated Cost: \$87,000

Holmes Run Stream Valley Park LID

Project ID: CA9925

Project Name: Holmes Run Stream Valley Park LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	1815	SF	\$25.00	\$45,375
			Base Cost =	\$45,375
			Mobilization (5%) =	\$2,269
			Subtotal 1 =	\$47,644
			Contingency (25%) =	\$11,911
			Subtotal 2 =	\$59,555
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$26,800
			Total =	\$86,354
			Estimated Project Cost =	\$87,000

Round Tree Park LID - C

Project ID: CA9927
Project Name: Round Tree Park LID - C
Project Location: Round Tree Park
Parcel ID No.: 0601 01 0069

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 6.8 acres

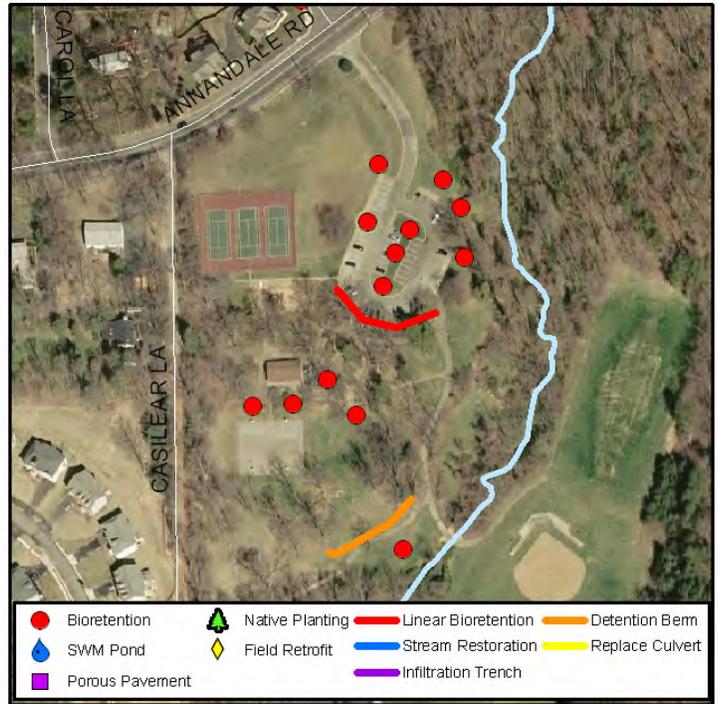
Project Location:



Proposed Action:

Convert parking lot traffic islands to bioretention areas and re-route field and court drainage to bioretention areas; construct detention micro-berm in open area along stream.

Proposed Project:



Potential bioretention areas in parking lot traffic islands



Potential bioretention areas next to field and court areas

Benefits: Provide stormwater quality controls.
 Improve stormwater quantity controls.
 Opportunity for public education.

Estimated Cost: \$195,000

Round Tree Park LID - C

Project ID: CA9927

Project Name: Round Tree Park LID - C

Estimated Project Cost:

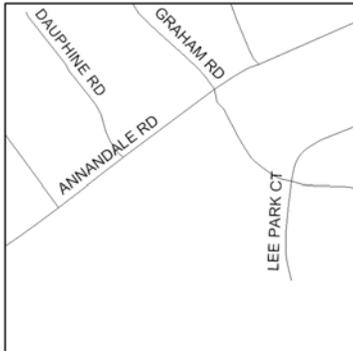
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	160	LF	\$2.00	\$320
Bioretention Area, Linear	480	SF	\$25.00	\$12,000
Bioretention Area	3600	SF	\$25.00	\$90,000
Base Cost =				\$102,320
Mobilization (5%) =				\$5,116
Subtotal 1 =				\$107,436
Contingency (25%) =				\$26,859
Subtotal 2 =				\$134,295
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$60,433
Total =				\$194,728
Estimated Project Cost =				\$195,000

Round Tree Park LID - A

Project ID: CA9929
Project Name: Round Tree Park LID - A
Project Location: Annandale Rd. & Lee Park Ct.
Parcel ID No.: 0601 01 0069

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 16 acres

Project Location:



Proposed Action:

Install off-line bioretention area to capture end of pipe stormwater prior to entering the stream.

Proposed Project:



Stormwater pipe outfall



Bluestar Ivy alongside stream

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Improve floodplain and nutrient cycling functions.

Estimated Cost: \$52,000

Round Tree Park LID - A

Project ID: CA9929

Project Name: Round Tree Park LID - A

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	1090	SF	\$25.00	\$27,250
			Base Cost =	\$27,250
			Mobilization (5%) =	\$1,363
			Subtotal 1 =	\$28,613
			Contingency (25%) =	\$7,153
			Subtotal 2 =	\$35,766
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$16,095
			Total =	\$51,860
			Estimated Project Cost =	\$52,000

Walnut Hill Admin Center LID - B

Project ID: CA9937
Project Name: Walnut Hill Admin Center LID - B
Project Location: Camp Alger Ave & Holly Hill Dr.
Parcel ID No.: 0601 01 0004

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 8.7 acres

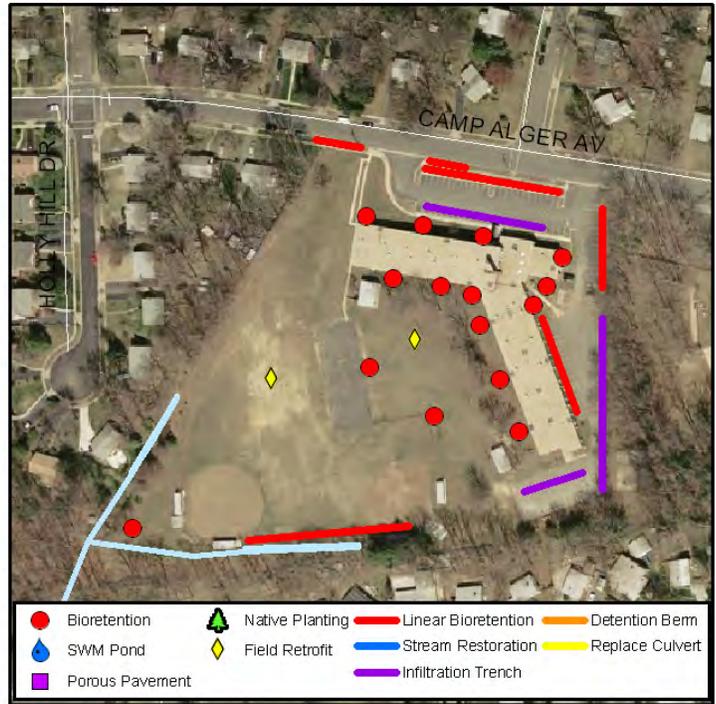
Project Location:



Proposed Action:

Construct linear bioretention strips along road, parking lots, and south side of playing fields; install infiltration trenches in front and rear lots; divert 12 roof drains and courts to bioretention areas; convert fields to artificial turf with underdrains; plantings in unused open space.

Proposed Project:



Install linear bioretention areas along Camp Alger Ave



Convert concrete ditch along back of school property to infiltration trench

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$2,953,000

Walnut Hill Admin Center LID - B

Project ID: CA9937

Project Name: Walnut Hill Admin Center LID - B

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	10420	SF	\$25.00	\$260,500
Infiltration Trench	510	LF	\$100.00	\$51,000
Artificial Turf, Underdrains and Cistern	2	EA	\$600,000.00	\$1,200,000
Bioretention Area	1590	SF	\$25.00	\$39,750
Base Cost =				\$1,551,250
Mobilization (5%) =				\$77,563
Subtotal 1 =				\$1,628,813
Contingency (25%) =				\$407,203
Subtotal 2 =				\$2,036,016
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$916,207
Total =				\$2,952,223
Estimated Project Cost =				\$2,953,000

Woodburn Elementary School LID

Project ID: CA9941
Project Name: Woodburn Elementary School LID
Project Location: Hemlock Dr. & Gallows Rd.
Parcel ID No.: 0592 01 0044

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 6.1 acres

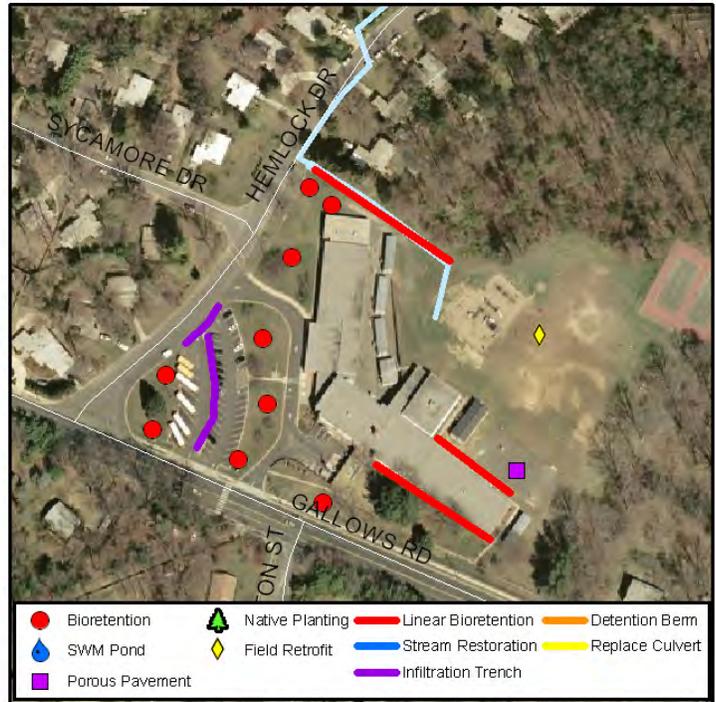
Project Location:



Proposed Action:

Install bioretention areas in landscaped islands along Gallows Rd., Hemlock Dr., and bus loop; install infiltration trenches in front parking lot; install linear bioretention area along bldg. in downspout areas and ditch to N; install porous pavement in asphalt play area; convert soccer/football field from grass to artificial turf.

Proposed Project:



Divert downspouts into linear bioretention areas alongside building



Install linear bioretention areas along roadway incorporating increased tree density

- Benefits:**
- Provide stormwater quantity controls.
 - Provide stormwater quality controls.
 - Improve stream stability and instream habitat. Reduce erosion.
 - Improve community usage.
 - Opportunity for public education.

Estimated Cost: \$1,342,000

Woodburn Elementary School LID

Project ID: CA9941

Project Name: Woodburn Elementary School LID

Estimated Project Cost:

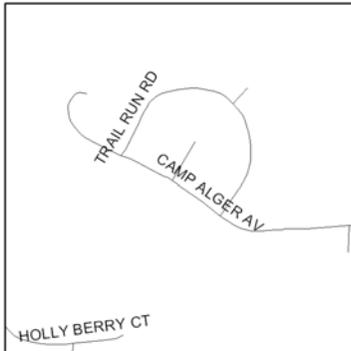
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	100	SF	\$25.00	\$2,500
Infiltration Trench	240	LF	\$100.00	\$24,000
Porous Pavement	1230	SY	\$15.00	\$18,450
Artificial Turf, Underdrains and Cistern	1	EA	\$600,000.00	\$600,000
Bioretention Area, Linear	2390	SF	\$25.00	\$59,750
Base Cost =				\$704,700
Mobilization (5%) =				\$35,235
Subtotal 1 =				\$739,935
Contingency (25%) =				\$184,984
Subtotal 2 =				\$924,919
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$416,213
Total =				\$1,341,132
Estimated Project Cost =				\$1,342,000

Luria Park LID

Project ID: CA9942
Project Name: Luria Park LID
Project Location: Luria Park
Parcel ID No.: 0592 19 B

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 57.1 acres

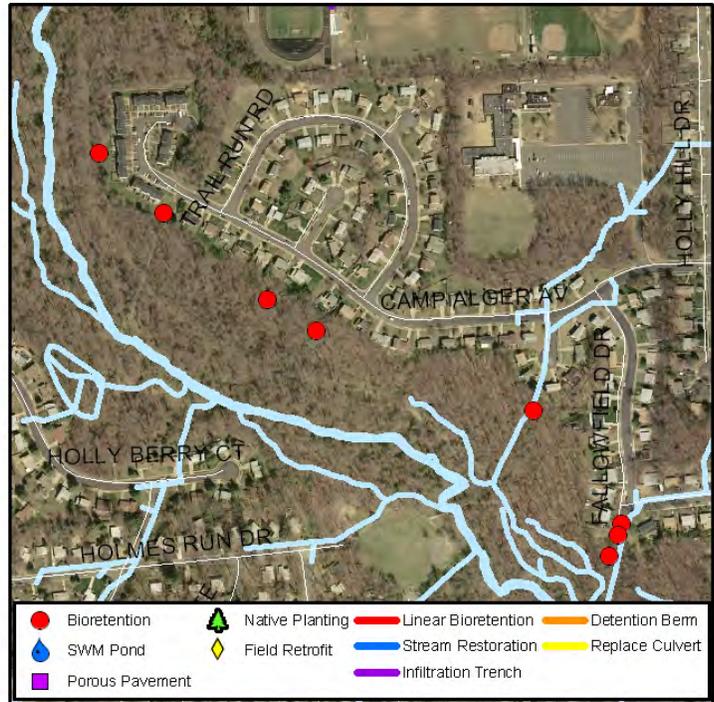
Project Location:



Proposed Action:

Install off-line bioretention areas at stormwater pipe outfalls and area bioretention areas at end of streets at Fallowfield Dr., Oak Run Ct., E end of Trail Run Rd., Crest Haven Ct., and W end of Camp Alger Av.

Proposed Project:



Outfall at end of Trail Run Road



Potential location for off-line bioretention area next to outfall

Benefits: Provide stormwater quality controls.
Improve stormwater quantity controls.
Opportunity for public education.

Estimated Cost: \$355,000

Luria Park LID

Project ID: CA9942

Project Name: Luria Park LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Off-line	7460	SF	\$25.00	\$186,500
			Base Cost =	\$186,500
			Mobilization (5%) =	\$9,325
			Subtotal 1 =	\$195,825
			Contingency (25%) =	\$48,956
			Subtotal 2 =	\$244,781
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$110,152
			Total =	\$354,933
			Estimated Project Cost =	\$355,000

Falls Church High School LID

Project ID: CA9946
Project Name: Falls Church High School LID
Project Location: Falls Church High School
Parcel ID No.: 0503 01 0001A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 38.1 acres

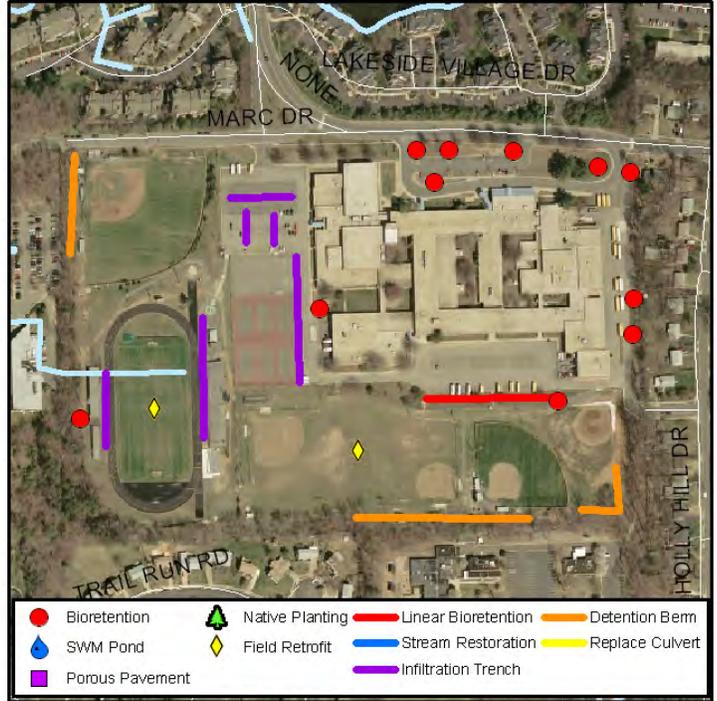
Project Location:



Proposed Action:

Construct bioretention areas in traffic islands along front of school, in landscape beds, and along side of E parking lot; install infiltration trench along E side of tennis courts, in NW parking lot, and in paved grandstand areas; create two multisport athletic fields with artificial turf; construct linear bioretention areas along S side of rear parking lot; build detention microberms around field margins and yard drain.

Proposed Project:



Potential bioretention areas in traffic islands along front of school



Convert asphalt apron west of track to a bioretention area

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$2,772,000

Falls Church High School LID

Project ID: CA9946

Project Name: Falls Church High School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2200	SF	\$25.00	\$55,000
Infiltration Trench	1210	LF	\$100.00	\$121,000
Artificial Turf, Underdrains and Cistern	2	EA	\$600,000.00	\$1,200,000
Bioretention Area, Linear	3125	SF	\$25.00	\$78,125
Detention Berm	980	LF	\$2.00	\$1,960

Base Cost = \$1,456,085

Mobilization (5%) = \$72,804

Subtotal 1 = \$1,528,889

Contingency (25%) = \$382,222

Subtotal 2 = \$1,911,112

Engineering Design, Surveys, Land Acquisition,
Utility Relocation, and Permits (45%) = \$860,000

Total = \$2,771,112

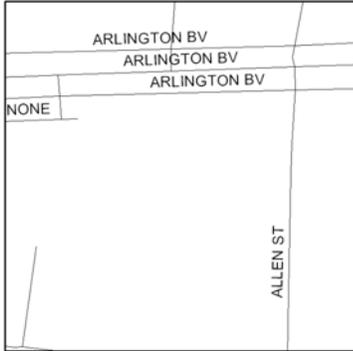
Estimated Project Cost = \$2,772,000

Thomas Jefferson Library LID

Project ID: CA9947
Project Name: Thomas Jefferson Library LID
Project Location: Thomas Jefferson Library
Parcel ID No.: 0503 01 0004

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 2.2 acres

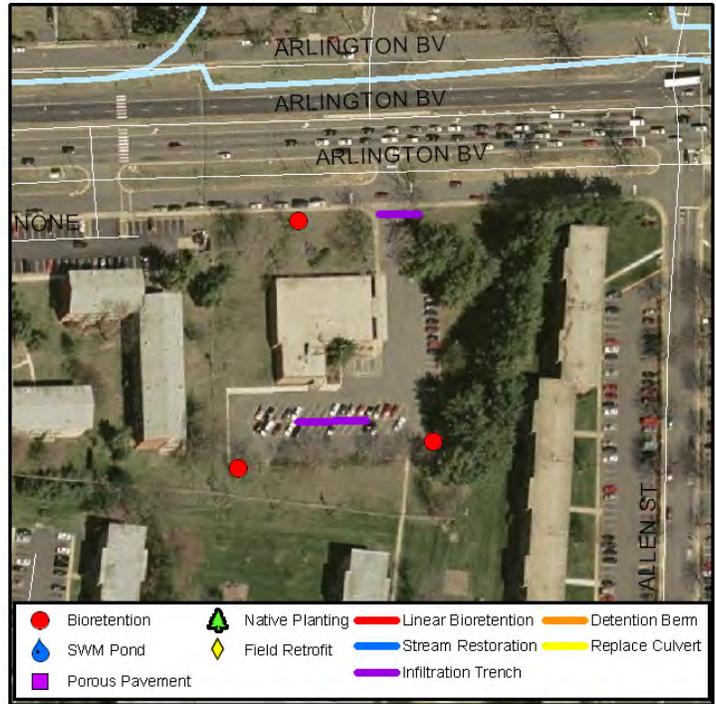
Project Location:



Proposed Action:

Construct bioretention areas in front of library for roof drainage, along row of head-on parking spaces, and at SW and SE corners of lot; install infiltration trench across entrance road.

Proposed Project:



Install infiltration trench across entrance



Bioretention areas and infiltration trenches to be installed in rear parking lot

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$179,000

Thomas Jefferson Library LID

Project ID: CA9947

Project Name: Thomas Jefferson Library LID

Estimated Project Cost:

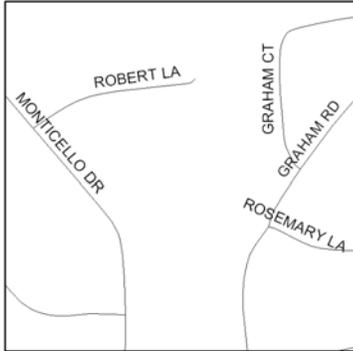
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2500	SF	\$25.00	\$62,500
Infiltration Trench	315	LF	\$100.00	\$31,500
Base Cost =				\$94,000
Mobilization (5%) =				\$4,700
Subtotal 1 =				\$98,700
Contingency (25%) =				\$24,675
Subtotal 2 =				\$123,375
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$55,519
Total =				\$178,894
Estimated Project Cost =				\$179,000

Graham Road Elementary School LID

Project ID: CA9949
Project Name: Graham Road Elementary School LID
Project Location: Graham Road Elementary School
Parcel ID No.: 0503 12 0011A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 4.7 acres

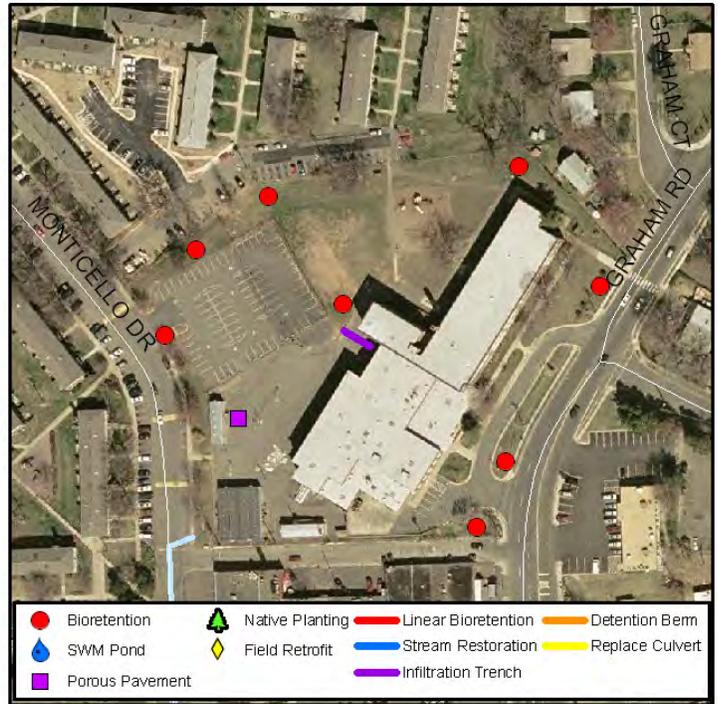
Project Location:



Proposed Action:

Construct bioretention areas in traffic island for bus loop, between sidewalk and building in front, along Monticello Dr., and along north side of back lot; install porous pavement and infiltration trench in deteriorated asphalt play yard.

Proposed Project:



Bioretention areas and swales to be installed in traffic island for bus loop



Divert downspouts into bioretention areas alongside building

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$127,000

Graham Road Elementary School LID

Project ID: CA9949

Project Name: Graham Road Elementary School LID

Estimated Project Cost:

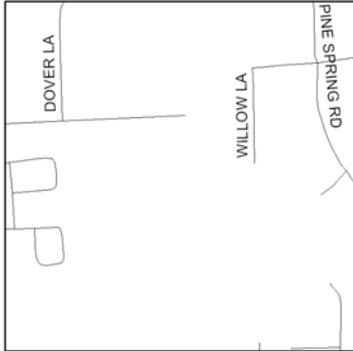
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	2400	SF	\$25.00	\$60,000
Porous Pavement	190	SY	\$15.00	\$2,850
Infiltration Trench	35	LF	\$100.00	\$3,500
Base Cost =				\$66,350
Mobilization (5%) =				\$3,318
Subtotal 1 =				\$69,668
Contingency (25%) =				\$17,417
Subtotal 2 =				\$87,084
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$39,188
Total =				\$126,272
Estimated Project Cost =				\$127,000

Pine Spring Elementary School LID

Project ID: CA9950
Project Name: Pine Spring Elementary School LID
Project Location: Pine Spring Elementary School
Parcel ID No.: 0494 01 0060

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 11.1 acres

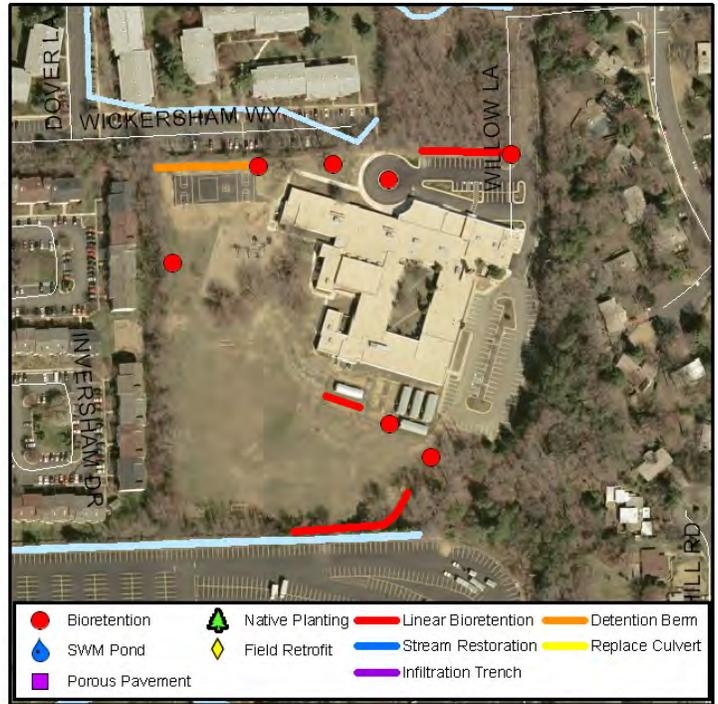
Project Location:



Proposed Action:

Construct detention micro-berm and bioretention areas along NW property line; construct bioretention areas in bus loop and parking lot islands, NW outfall, and trailers; construct linear bioretention along N parking lot, trailers, and in existing swale on S edge of property; construct off-line bioretention area at outfall S of rear parking lot.

Proposed Project:



Potential bioretention area in traffic island



Potential location for bioretention area and detention berm along tree line

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Improve community usage.
 Opportunity for public education.

Estimated Cost: \$576,000

Pine Spring Elementary School LID

Project ID: CA9950

Project Name: Pine Spring Elementary School LID

Estimated Project Cost:

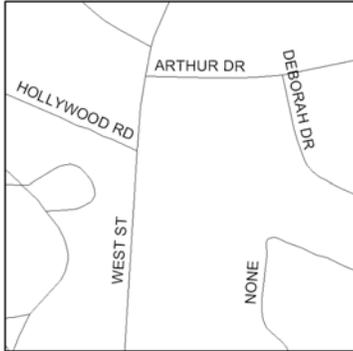
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	175	LF	\$2.00	\$350
Bioretention Area	2500	SF	\$25.00	\$62,500
Bioretention Area, Linear	5520	SF	\$25.00	\$138,000
Bioretention Area, Off-line	4060	SF	\$25.00	\$101,500
Base Cost =				\$302,350
Mobilization (5%) =				\$15,118
Subtotal 1 =				\$317,468
Contingency (25%) =				\$79,367
Subtotal 2 =				\$396,834
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$178,575
Total =				\$575,410
Estimated Project Cost =				\$576,000

Timber Lane Elementary School LID

Project ID: CA9952
Project Name: Timber Lane Elementary School LID
Project Location: Timber Lane Elementary School
Parcel ID No.: 0501 01 0044

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 9.7 acres

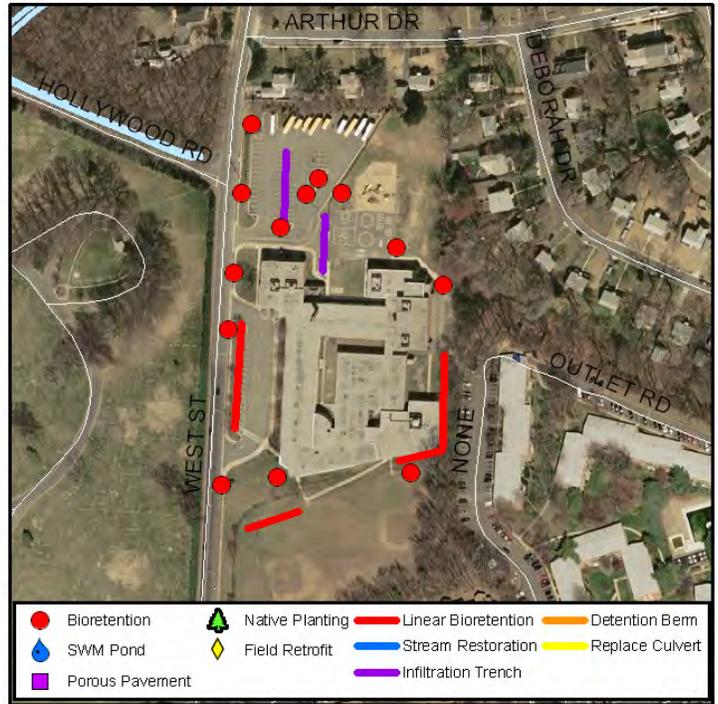
Project Location:



Proposed Action:

Construct bioretention areas in lawn and traffic islands along West Street, in N parking lot, behind bldg., and next to fields; construct linear bioretention areas around building; install infiltration trench and tree box filter in N parking lot.

Proposed Project:



Add infiltration trench to parking rows



Convert traffic islands in parking lot to bioretention areas

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$606,000

Timber Lane Elementary School LID

Project ID: CA9952

Project Name: Timber Lane Elementary School LID

Estimated Project Cost:

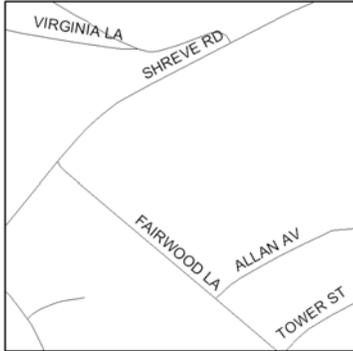
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	8045	SF	\$25.00	\$201,125
Bioretention Area	3570	SF	\$25.00	\$89,250
Infiltration Trench	250	LF	\$100.00	\$25,000
Tree Box Filter	1	EA	\$3,000.00	\$3,000
Base Cost =				\$318,375
Mobilization (5%) =				\$15,919
Subtotal 1 =				\$334,294
Contingency (25%) =				\$83,573
Subtotal 2 =				\$417,867
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$188,040
Total =				\$605,907
Estimated Project Cost =				\$606,000

Shrevewood Elementary School LID

Project ID: CA9953
Project Name: Shrevewood Elementary School LID
Project Location: Shrevewood Elementary School
Parcel ID No.: 0501 01 0002

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 11.8 acres

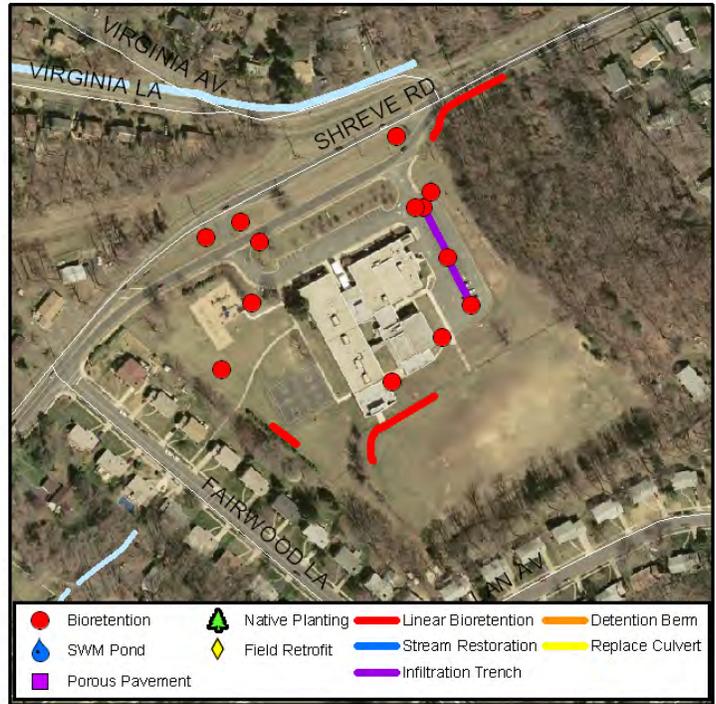
Project Location:



Proposed Action:

Construct bioretention areas in Shreve Rd. median islands, bus loop island, east side of parking lot, near playground, and at rear of bldg.; construct linear bioretention along NW corner of back field, next to asphalt courts, and in swale at NE corner along road.

Proposed Project:



Install linear bioretention area next to asphalt courts



Potential bioretention areas located behind school building

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$359,000

Shrevewood Elementary School LID

Project ID: CA9953

Project Name: Shrevewood Elementary School LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	1450	SF	\$25.00	\$36,250
Bioretention Area, Linear	5245	SF	\$25.00	\$131,125
Infiltration Trench	210	LF	\$100.00	\$21,000
Base Cost =				\$188,375
Mobilization (5%) =				\$9,419
Subtotal 1 =				\$197,794
Contingency (25%) =				\$49,448
Subtotal 2 =				\$247,242
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$111,259
Total =				\$358,501
Estimated Project Cost =				\$359,000

Jefferson District Park & Golf Course LID

Project ID: CA9954

Project Type: Low Impact Development

Project Name: Jefferson District Park & Golf Course LID

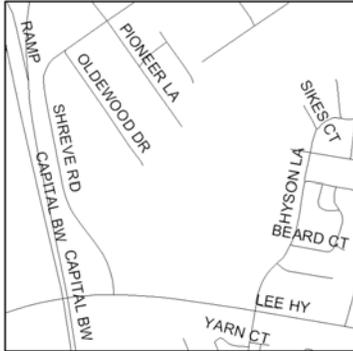
Subwatershed: Holmes Run - Upper

Project Location: Lee Hwy. & Shreve Rd.

Drainage Area: 59.7 acres

Parcel ID No.: 0492 01 0088

Project Location:



Proposed Project:



Proposed Action:

Install filter strips around SWM pond and 2 central water hazards; construct linear and area bioretention areas and infiltration trenches along parking lots and court surfaces; depress footpath to avoid directing flow from ponds to stream.



Existing stormwater pond on golf course could be surrounded by filter strips



Infiltration trenches could be installed along parking lot

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve community usage.
Opportunity for public education.

Estimated Cost: \$236,000

Jefferson District Park & Golf Course LID

Project ID: CA9954

Project Name: Jefferson District Park & Golf Course LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	370	SF	\$25.00	\$9,250
Bioretention Area	2000	SF	\$25.00	\$50,000
Filter Strip	750	LF	\$2.00	\$1,500
Infiltration Trench	630	LF	\$100.00	\$63,000
Base Cost =				\$123,750
Mobilization (5%) =				\$6,188
Subtotal 1 =				\$129,938
Contingency (25%) =				\$32,484
Subtotal 2 =				\$162,422
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$73,090
Total =				\$235,512
Estimated Project Cost =				\$236,000

Dunn Loring Center (School) LID

Project ID: CA9955
Project Name: Dunn Loring Center (School) LID
Project Location: Dunn Loring Center (School)
Parcel ID No.: 0394 01 0024

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 9.1 acres

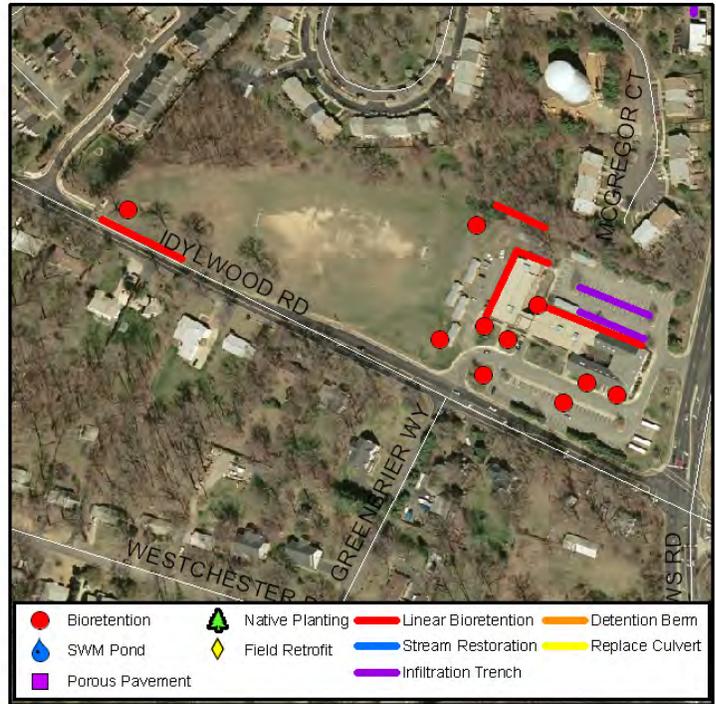
Project Location:



Proposed Action:

Disconnect downspouts and redirect to bioretention areas in landscape beds; construct linear bioretention areas around NW corner of bldg., above berm N of bldg., and at W end of fields; install infiltration trench in N parking lot; construct bioretention areas in traffic islands SW of bldg. and trailers.

Proposed Project:



Existing infiltration trench alongside parking lot



Potential bioretention area in traffic island

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$722,000

Dunn Loring Center (School) LID

Project ID: CA9955

Project Name: Dunn Loring Center (School) LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area, Linear	12115	SF	\$25.00	\$302,875
Infiltration Trench	290	LF	\$100.00	\$29,000
Bioretention Area	1890	SF	\$25.00	\$47,250
Base Cost =				\$379,125
Mobilization (5%) =				\$18,956
Subtotal 1 =				\$398,081
Contingency (25%) =				\$99,520
Subtotal 2 =				\$497,602
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$223,921
Total =				\$721,522
Estimated Project Cost =				\$722,000

Fire Station - Company No. 13 LID

Project ID: CA9957
Project Name: Fire Station - Company No. 13 LID
Project Location: Gallows Rd. and Wolftrap Rd.
Parcel ID No.: 0392 08 0007

Project Type: Low Impact Development
Subwatershed: Holmes Run - Upper
Drainage Area: 1.5 acres

Project Location:



Proposed Action:

Construct bioretention areas on W side of parking lot prior to inlets; provide rain barrels for downspouts from overhangs at front and rear entrances; install infiltration trenches along N side and in front of bldg.; install linear bioretention area in median along Gallows Rd.

Proposed Project:



Install bioretention areas in traffic islands and along center of parking rows



Divert downspouts into linear bioretention areas alongside building

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.

Estimated Cost: \$132,000

Fire Station - Company No. 13 LID

Project ID: CA9957

Project Name: Fire Station - Company No. 13 LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	1420	SF	\$25.00	\$35,500
Rain Barrel	2	EA	\$150.00	\$300
Infiltration Trench	225	LF	\$100.00	\$22,500
Bioretention Area, Linear	425	SF	\$25.00	\$10,625
Base Cost =				\$68,925
Mobilization (5%) =				\$3,446
Subtotal 1 =				\$72,371
Contingency (25%) =				\$18,093
Subtotal 2 =				\$90,464
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$40,709
Total =				\$131,173
Estimated Project Cost =				\$132,000

Lynbrook Subdivision LID - A

Project ID: CA9958

Project Type: Low Impact Development

Project Name: Lynbrook Subdivision LID - A

Subwatershed: Backlick Run

Project Location: Augusta Dr. & Flanders St.

Drainage Area: 14.7 acres

Parcel ID No.: 0804 0211 A1

Project Location:



Proposed Action:

Add 2 off-line bioretention areas below road to capture flow from two outfalls; repair concrete apron below road culvert.

Proposed Project:



Stream area



Outfall

Benefits: Improve stormwater quantity controls.
Improve stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$89,000

Lynbrook Subdivision LID - A

Project ID: CA9958

Project Name: Lynbrook Subdivision LID - A

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Grading and Excavation	425	CY	\$50.00	\$21,250
Structural Improvements & Incidentals	1	LS	\$20,000.00	\$20,000
Erosion & Sediment Control - Minimum	1	LS	\$3,000.00	\$3,000
Landscaping - Minimum	1	LS	\$2,000.00	\$2,000
Base Cost =				\$46,250
Mobilization (5%) =				\$2,313
Subtotal 1 =				\$48,563
Contingency (25%) =				\$12,141
Subtotal 2 =				\$60,703
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$27,316
Total =				\$88,020
Estimated Project Cost =				\$89,000

Anna Lee Heights LID

Project ID: CA9959
Project Name: Anna Lee Heights LID
Project Location: Blue Heron Dr. & Kingwood Dr.
Parcel ID No.:

Project Type: Low Impact Development
Subwatershed: Tripps Run
Drainage Area: 16.8 acres

Project Location:



Proposed Action:

Construct bioretention area within existing swale.

Proposed Project:



Existing swale



Outlet entering swale

Benefits: Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Cost: \$77,000

Anna Lee Heights LID

Project ID: CA9959

Project Name: Anna Lee Heights LID

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Bioretention Area	1600	SF	\$25.00	\$40,000
			Base Cost =	\$40,000
			Mobilization (5%) =	\$2,000
			Subtotal 1 =	\$42,000
			Contingency (25%) =	\$10,500
			Subtotal 2 =	\$52,500
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$23,625
			Total =	\$76,125
			Estimated Project Cost =	\$77,000

Mason District Park LID

Project ID: CA9960

Project Type: Low Impact Development

Project Name: Mason District Park LID

Subwatershed: Turkeycock Run

Project Location: Columbia Pike & Mason District Park Entrance

Drainage Area: 5.1 acres

Parcel ID No.: 0604 01 0028

Project Location:



Proposed Action:

Implement stormwater retrofits based on the Park Authority's existing LID retrofit concept plan.

Proposed Project:



Existing stormwater pond with roadway in background

Benefits: Provide stormwater quantity controls.
Provide stormwater quality controls.
Improve stream stability and instream habitat. Reduce erosion.
Opportunity for public education.

Estimated Cost: \$120,000

Mason District Park LID

Project ID: CA9960

Project Name: Mason District Park LID

Estimated Project Cost:

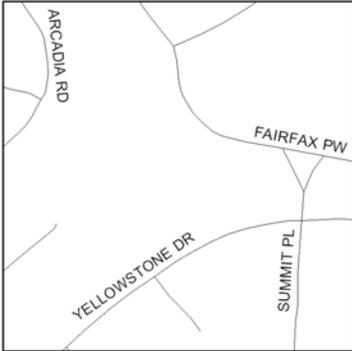
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
LID Retrofits	1	LS	\$63,000.00	\$63,000
			Base Cost =	\$63,000
			Mobilization (5%) =	\$3,150
			Subtotal 1 =	\$66,150
			Contingency (25%) =	\$16,538
			Subtotal 2 =	\$82,688
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$37,209
			Total =	\$119,897
			Estimated Project Cost =	\$120,000

Holmes Run Park LID

Project ID: CA9962
Project Name: Holmes Run Park LID
Project Location: Holmes Run Park near Fairfax Parkway
Parcel ID No.: 0613 16 A

Project Type: Low Impact Development
Subwatershed: Holmes Run - Lower
Drainage Area: 8 acres

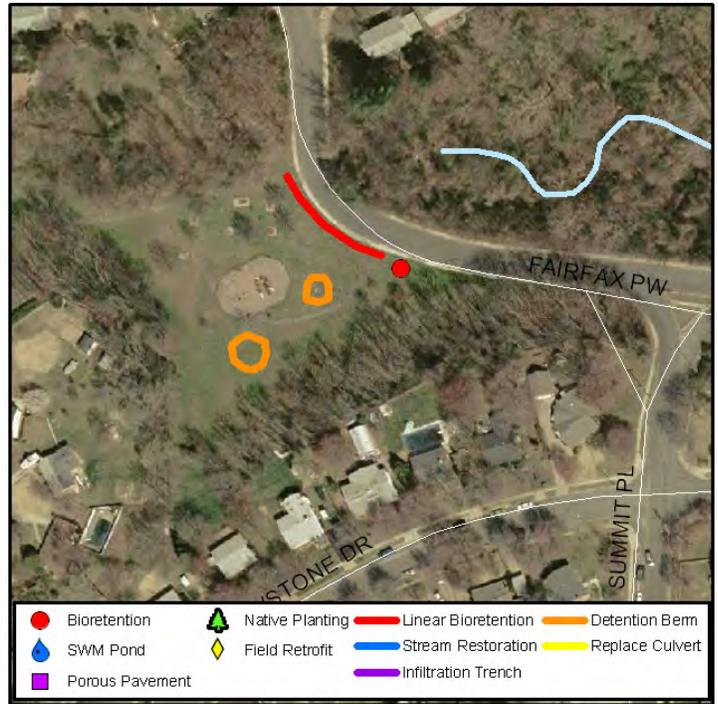
Project Location:



Proposed Action:

Install linear and circular bioretention areas along road and detention micro-berms around two stormwater area drains in park.

Proposed Project:



Detention berms can encircle grate inlets like this one to slow flows



Potential locations for linear bioretention area and tree box filter

Benefits: Provide stormwater quantity controls.
 Provide stormwater quality controls.
 Opportunity for public education.

Estimated Cost: \$158,000

Holmes Run Park LID

Project ID: CA9962

Project Name: Holmes Run Park LID

Estimated Project Cost:

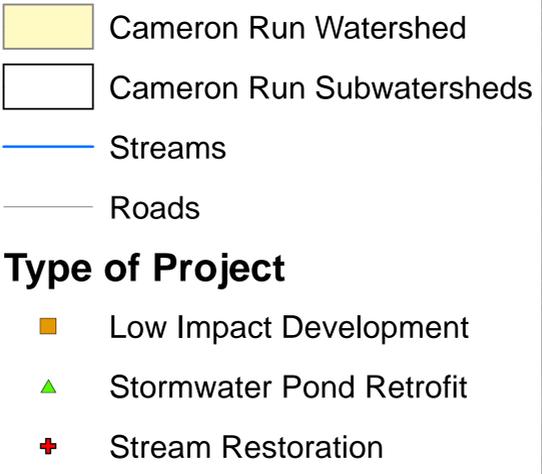
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Detention Berm	215	LF	\$2.00	\$430
Bioretention Area, Linear	1430	SF	\$25.00	\$35,750
Bioretention Area	1870	SF	\$25.00	\$46,750
Base Cost =				\$82,930
Mobilization (5%) =				\$4,147
Subtotal 1 =				\$87,077
Contingency (25%) =				\$21,769
Subtotal 2 =				\$108,846
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$48,981
Total =				\$157,826
Estimated Project Cost =				\$158,000

APPENDIX A-2

Tier 2 Projects

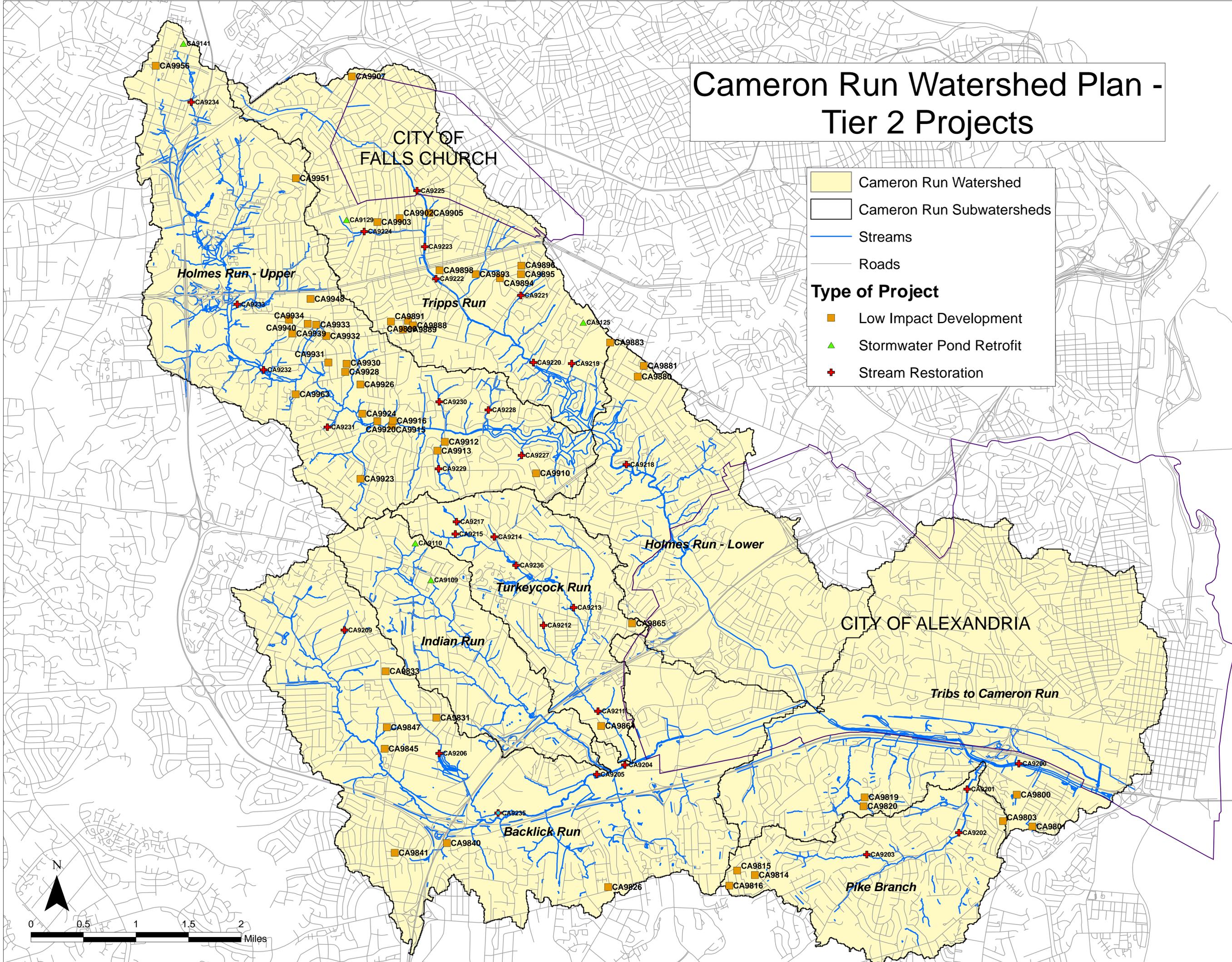
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Cameron Run Watershed Plan - Tier 2 Projects



Type of Project

- Low Impact Development
- Stormwater Pond Retrofit
- Stream Restoration



Candidate Watershed Restoration Projects - Tier 2

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9109	Indian Run	Brentleigh SWM Pond Retrofit	Brentleigh Ct & Little River Turnpike	Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.	3.1	\$67,000
CA9110	Indian Run	Wynfield SWM Pond Retrofit	Alpine Dr & Webster Ct	Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.	4.11	\$30,000
CA9125	Tripps Run	Vine Forest Court SWM Pond Retrofit	Vine Forest Ct & Peace Valley Ln	Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; infiltration trench in private road; bioretention area in grassy open space.	2.9	\$70,000
CA9129	Tripps Run	Lee Graham Shopping Center SWM Pond Retrofit	Graham Rd & Lee Hwy	Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality.	60.84	\$300,000
CA9135	Holmes Run - Upper	Luria Park - SWM Pond	Dye Dr & Brad St	Develop new "3-cell" stormwater bioretention; linear bioretention areas west along Brad St.	39.1	\$160,000
CA9141	Holmes Run - Upper	Parsons Grove SWM Pond Retrofit	Parsons Grove & Arden St	Retrofit SWM pond control structure to improve detention control and add micropool areas in pond bottom to improve water quality; add three detention micro-berms and bioretention area in flow path from north.	14.8	\$81,000
CA9200	Tributaries to Cameron Run	Mainstem Weir Removal	Off Huntington Avenue	Remove existing weirs that are barriers to fish passage and replace with bed-level grade control structures in the low flow channel; restore natural stream channel morphology to improve hydrologic and ecological function, and prevent in-channel erosion and downstream sedimentation; enhance riparian buffer; and integrate project design with the Huntington Stream Valley Trail, including the use of porous pavers.	0	\$4,700,000
CA9201	Pike Branch	Heritage Hill Stream Restoration	Confluence to Franconia Road	Restore stream channel morphology, stabilize eroding stream banks, enhance riparian buffer, remove invasive species.	0	\$1,800,000
CA9202	Pike Branch	Browne Academy Stream Restoration	Telegraph Road	Restore natural stream channel morphology and riparian buffer. Minimize stream bank erosion.	0	\$1,000,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9203	Pike Branch	Ridgewood Park Stream Restoration	Ridgewood Park	Restore stream channel morphology, plant enhance riparian buffer, stabilize eroding streambanks, re-establish connection with floodplain.	0	\$1,400,000
CA9204	Backlick Run	Fairfax County Park Authority Stream Restoration	Between confluences of Indian and Turkeycock Runs	Enhance riparian forested buffer. Minimize stream bank erosion and re-establish connection to floodplain.	0	\$1,500,000
CA9205	Backlick Run	Railroad Stream Restoration	Mar Drive, above confluence with Indian Run	Restore natural stream channel morphology and enhance riparian forested buffer. Minimize stream bank erosion and re-establish connection to floodplain.	0	\$850,000
CA9206	Backlick Run	Shirley Industrial Park Stream Restoration	Commercial Drive	Restore natural stream channel morphology and enhance riparian forested buffer. Minimize stream bank erosion and re-establish connection to floodplain.	0	\$60,000
CA9209	Backlick Run	Annandale Acres Stream Restoration	Calvert Street, Clemons Court	Plant 50-foot woody riparian buffer. Add micro-berm in back yards to slow stormwater flow. Stabilize stream banks to minimize erosion.	0	\$1,500,000
CA9211	Turkeycock Run	Turkeycock Run Stream Valley Park Restoration	Turkeycock Run Stream Valley Park	Restore natural stream channel morphology, plant riparian buffer, and reduce streambank erosion.	0	\$1,300,000
CA9212	Turkeycock Run	Hanna Park Stream Restoration	Valley Street	Restore natural stream channel morphology, plant riparian buffer, and reduce streambank erosion.	0	\$1,824,000
CA9213	Turkeycock Run	Autumn Glen Stream Restoration	Autumn Cove Court	Restore natural stream channel morphology, plant riparian buffer, and reduce streambank erosion.	0	\$562,000
CA9214	Turkeycock Run	Kings Mill Stream Restoration	Kings Mill Lane	Restore natural stream channel morphology, plant riparian buffer, reduce streambank erosion.	0	\$640,000
CA9215	Turkeycock Run	Mason District Park Stream Restoration - B	Mason District Park	Restore natural stream channel morphology, reconnect floodplain, enhance riparian buffer, and reduce stream bank erosion.	0	\$550,000
CA9217	Turkeycock Run	Mason District Park Stream Restoration - C	Mason District Park	Restore natural stream channel morphology, plant riparian buffer, reduce streambank erosion.	0	\$1,300,000
CA9218	Holmes Run - Lower	Holmes Run Park Stream Restoration	Holmes Run Park	Stabilize stream channel and prevent bank erosion, remove trash.	0	\$2,100,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9219	Tripps Run	JEB Stuart Park Riparian Buffer	JEB Stuart Park	Remove English Ivy and other invasive plant species; reforest mowed areas; remove log check dam; stabilize toe of several very steep banks with local wood found in/near stream; and off-line bioretention area at Peace Valley Ln outfall.	25.65	\$300,000
CA9220	Tripps Run	Lake Backwater Stream Restoration	Potterton Drive	Re-establish flow channel, enhance wetland plantings.	0	\$1,800,000
CA9221	Tripps Run	Sleepy Hollow Manor Stream Restoration	Sleepy Hollow Road (3100)	Mitigate channelization, re-establish channel connection with floodplain, reduce bank erosion, enhance riparian buffer.	0	\$800,000
CA9222	Tripps Run	Westlawn Stream Restoration	Barrett Rd Road, Mosby	Re-establish natural stream channel and floodplain, plant riparian buffer.	0	\$1,900,000
CA9223	Tripps Run	Jefferson Village Altered Channel Mitigation	Adams Place, Monroe Place	Dissipate flow energy, re-establish channel connection with floodplain, reduce bank and bed erosion, enhance riparian buffer.	0	\$1,100,000
CA9224	Tripps Run	Devonshire Gardens Stream Restoration	Rosemary Lane	Dissipate flow energy, re-establish channel connection with floodplain, reduce bank and bed erosion, enhance riparian buffer.	0	\$1,500,000
CA9225	Tripps Run	Lee Stream Bank Stabilization	Maple Street	Restore natural stream channel morphology and floodplain connections; enhance riparian buffer; and upgrade road culverts to convey bankfull discharge and sediment load, and provide floodplain drainage.	0	\$1,255,000
CA9227	Holmes Run - Upper	Lakeview Stream Restoration	Lakeview Drive	Stabilize stream channel to prevent erosion, enhance riparian buffer.	0	\$500,000
CA9228	Holmes Run - Upper	Crosswoods Stream Restoration	Crosswoods Drive	Restore natural stream channel morphology, enhance riparian buffer.	0	\$1,000,000
CA9229	Holmes Run - Upper	Holmes Run Stream Valley Park Restoration - B	Ivydale Drive	Restore natural stream channel morphology, enhance riparian buffer, reconnect floodplain.	0	\$1,000,000
CA9230	Holmes Run - Upper	Tansey Stream Restoration	Tansey Drive	Stabilize stream channel to prevent erosion, enhance riparian buffer.	0	\$400,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9231	Holmes Run - Upper	Holmes Run Stream Valley Park Restoration - A	Holmes Run Stream Valley Park, Joel Drive	Restore natural stream channel morphology, enhance riparian buffer, reduce bank erosion, reconnect floodplain.	0	\$900,000
CA9232	Holmes Run - Upper	Luria Park Stream Restoration	Luria Park	Restore natural stream channel morphology, consolidate multiple channels, stabilize banks, and enhance riparian buffer.	0	\$600,000
CA9233	Holmes Run - Upper	Willow Point Stream Restoration	Willow Point Drive	Restore natural stream channel morphology, stabilize banks, and enhance riparian buffer.	0	\$1,200,000
CA9234	Holmes Run - Upper	Idylwood Stream Restoration	Idylwood Road	Restore stream channel morphology; and upgrade road culverts to convey bankfull discharge and sediment load, and provide floodplain drainage.	0	\$533,000
CA9235	Backlick Run	Backlick Run Stream Restoration	Backlick Stream Valley Park	Restore natural stream channel morphology, protect adjacent railroad grade, and enhance riparian buffer.	0	\$910,000
CA9236	Turkeycock Run	Pinecrest Park Stream Restoration	Pinecrest Park at Braddock Road	Restore natural stream channel morphology and floodplain connections; enhance riparian buffer; and upgrade Braddock Road culverts to convey bankfull discharge and sediment load, and provide floodplain drainage.	0	\$1,399,000
CA9800	Tributaries to Cameron Run	Huntington Metro LID	Kings Highway & Shady Oak Dr	Install infiltration trenches in bus and car parking areas; and install two bioretention areas in traffic islands on S side of Huntington Ave.	6.5	\$75,000
CA9801	Tributaries to Cameron Run	Blane Drive LID	Blane Drive	Construct bioretention area in traffic island	3.2	\$125,000
CA9803	Pike Branch	Post Office LID - A	Kings Highway & Fort Dr	Provide infiltration trench along roadway, between parking rows, and along N and W sides; add bioretention areas to traffic islands in front parking lot.	3	\$52,000
CA9814	Pike Branch	Rose Hill Shopping Center LID	Rose Hill Dr and Franconia Rd	Add infiltration trenches in parking lot rows; linear bioretention areas behind building and along Franconia Rd; and bioretention areas in traffic islands in parking lot.	12.7	\$120,000
CA9815	Pike Branch	Post Office LID - B	Franconia Rd & Rose Hill Dr	Infiltration trenches should be installed along parking rows in W lot. Porous pavement should be used in vehicle parking area and front lot. Linear bioretention area along E side of property.	3.4	\$123,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9816	Pike Branch	Park Terrace Traffic Circle LID	Park Terrace	Redirect road drainage to bioretention area on north side of traffic circle; retain large trees in southern part of circle.	7.8	\$263,000
CA9819	Tributaries to Cameron Run	Towanda Road LID	Towanda Rd	Provide tree box insert in storm drain inlet.	3.9	\$12,000
CA9820	Tributaries to Cameron Run	Lakota Road LID	Lakota Rd	Provide tree box insert in storm drain inlets.	2.8	\$18,000
CA9826	Backlick Run	Franconia Station LID	Franconia Rd and Wild Way	Install infiltration trenches along parking rows and tree box filters at inlets.	2.04	\$90,000
CA9831	Backlick Run	Edsall Park Subdivision LID	Edsall Park Subdivision at Edsall Rd	Install tree box filters throughout neighborhood.	61.8	\$138,000
CA9833	Backlick Run	Bradlick Shopping Center LID	Braddock Rd & Backlick Rd	Incorporate infiltration trenches throughout parking lot and tree box filters at inlets.	11.8	\$147,000
CA9840	Backlick Run	Trailside Park LID	Trailside Park on Stagecoach St	Construct bioretention areas at two stormwater pipe outfalls; incorporate trash collection device/program to minimize trash from I-95	6.1	\$316,000
CA9841	Backlick Run	Lynbrook Subdivision LID - B	Edgebrook Dr and Backlick Rd	Enhance depressed median to improve bioretention functions.	3.7	\$317,000
CA9845	Backlick Run	Appomattox Court LID	Appomattox Ct and Leesburg Blvd	Convert traffic island at Appomattox Ct to bioretention area; construct infiltration trenches in median strip on Leesburg Blvd; and tree box filters in two curb inlets.	3.5	\$159,000
CA9847	Backlick Run	St. Johns Methodist Church LID	Woodland Dr and Backlick Rd	Construct bioretention areas in woods S of parking lot; add infiltration trenches along parking lot margins.	2	\$52,000
CA9864	Turkeycock Run	Bren Mar Park LID	Bren Mar Park	Redirect runoff from parking lots, courts, and Edsall Rd. to bioretention areas; expand capacity of possible existing bioretention area in parking lot median strip.	4.8	\$166,000
CA9865	Turkeycock Run	Plaza at Landmark LID	Little River Turnpike & Bearegard St	Development of parking lot islands into bioretention areas. Infiltration trenches under all parking areas. Replace inlets with tree box filters.	7.9	\$218,000
CA9880	Holmes Run - Lower	Culmore Subdivision LID	Glen Carlyn Drive - median	Construct linear bioretention areas in four median islands between traffic lanes.	1.8	\$253,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9881	Holmes Run - Lower	Culmore Shopping Center - Post Office LID	Culmore Shopping Center - Post Office	Create infiltration trenches and linear bioretention strips along parking rows; and bioretention areas in landscape/traffic islands.	6.4	\$60,000
CA9883	Tripps Run	Munson Hill Towers LID	Munson Hill Towers - Leesburg Pike	Bioretention areas in parking lots - along edges and down center of rows; detention micro-berm along S side of property.	13	\$90,000
CA9888	Tripps Run	Anna Lee Traffic Island LID - D	Driver Circle	Depress area of traffic islands and plant bioretention area.	4.7	\$96,000
CA9889	Tripps Run	Anna Lee Traffic Island LID - B	Glenroy Circle	Depress area of traffic island and plant bioretention area.	3	\$15,000
CA9890	Tripps Run	Anna Lee Traffic Island LID - C	Chepstown La & Kenfig Dr	Depress area of traffic island and plant bioretention area.	3.9	\$20,000
CA9891	Tripps Run	Anna Lee Traffic Island LID - A	Kenfig Dr	Depress area of traffic island and plant bioretention area.	3.5	\$8,000
CA9893	Tripps Run	Sleepy Hollow Traffic Island LID - C	Crane Dr	Depress area of traffic island and plant bioretention area.	5.8	\$86,000
CA9894	Tripps Run	Sleepy Hollow Traffic Island LID - B	Beechwood Lane	Depress area of traffic island and plant bioretention area.	2.8	\$20,000
CA9895	Tripps Run	Sleepy Hollow Traffic Island LID - A	Ichabod Place	Depress area of traffic island and plant bioretention area.	1	\$37,000
CA9896	Tripps Run	Sleepy Hollow Traffic Island LID - D	Quinch Pl	Depress area of traffic island and plant bioretention area.	6.4	\$48,000
CA9898	Tripps Run	Mosby Post Office LID	Westlawn Shopping Center - Annandale Rd & RT 50	Bioretention areas along center of 4 parking rows, edge of lot parallel to Tripps Run, and in traffic island along Rt 50.	3.05	\$90,000
CA9902	Tripps Run	Greenway Downs Subdivision LID	Greenway Blvd	Curbside bioretention areas.	20.19	\$135,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9903	Tripps Run	Devonshire Gardens Subdivision LID	Woodlawn Ave & Custis Pkwy	Bioretention areas in median between traffic lanes on Woodlawn Ave.	12.88	\$90,000
CA9905	Tripps Run	Great Oak LID	Raymond Ct	Divert discharge to bermed bioretention area.	13.61	\$15,000
CA9907	Tripps Run	George Mason Middle & High Schools LID	George Mason Middle & High Schools	Infiltration trenches in parking lots; linear and area bioretention areas in traffic islands; multi-sport artificial turf with underdrains and cisterns in center of track.	35.2	\$748,000
CA9910	Holmes Run - Upper	Belvedere Subdivision LID	Pinewood Terrace and Lakewood Drive	Replace 4 inlets along road with tree box filters.	21.2	\$76,000
CA9912	Holmes Run - Upper	Buckwood LID	Sleepy Hollow Rd & Fern La	Install off-line bioretention areas to capture end of pipe stormwater prior to entering the stream.	0.5	\$29,000
CA9913	Holmes Run - Upper	Chanel Road LID	Chanel Rd & Elwood Dr.	Install off-line bioretention area to capture end of pipe stormwater prior to entering the stream.	4.9	\$30,000
CA9915	Holmes Run - Upper	Columbia Pines Subdivision - Rose Ln LID	Rose Lane (south of Holmes Run) - Chapter 2 street	Construct off-line bioretention area at stormwater pipe outfall in Chapter 2 street	2.5	\$52,000
CA9916	Holmes Run - Upper	Valley Brook Subdivision LID	Rose Lane (north of Holmes Run) - Chapter 2 street	Construct off-line bioretention areas in Chapter 2 street and a bioretention area at N side of corner of Slade Run and Rose Ln	9.7	\$244,000
CA9920	Holmes Run - Upper	Mildred Drive LID - A	Elvira Ct & Mildred Dr	Install off-line bioretention area to capture end of pipe stormwater prior to entering the stream.	2.4	\$125,000
CA9923	Holmes Run - Upper	Latter Day Saints - Parking Lot LID	Latter Day Saints, off Gallows Road	Install bioretention areas (linear and area) and infiltration trenches in parking lots.	4.7	\$132,000
CA9924	Holmes Run - Upper	Mildred Drive LID - B	Mildred Dr & Elvira Ct	Install off-line bioretention areas to capture end of pipe stormwater prior to entering the stream.	14.2	\$920,000
CA9926	Holmes Run - Upper	Round Tree Park LID - B	Vagabond Dr & Roundtree Rd	Install off-line bioretention areas to capture end of pipe stormwater and area bioretention areas at end of street.	16.1	\$230,000
CA9928	Holmes Run - Upper	Raymondale LID - B	Brandy Court	Install linear bioretention areas in sidewalk median strips and replace two inlets with tree box filters.	2.5	\$65,000
CA9930	Holmes Run - Upper	Raymondale LID - A	Roundtree Estates Court	Install linear bioretention areas in sidewalk median strips.	3.3	\$24,000

Project ID	Subwatershed	Project Name	Location	Proposed Action	Drainage Area (acres)	Estimated Cost
CA9931	Holmes Run - Upper	Raymondale Sidewalk LID	Brandy Ct and St James Pl	Construct sidewalk bioretention areas along roads.	7	\$419,000
CA9932	Holmes Run - Upper	Broyhill Park Subdivision LID - D	Broyhill Park Subdivision - Dye Dr and Marc Dr	Construct sidewalk bioretention areas along roads and in traffic island at Marc Dr/Graham Rd/Strathmore St.	5.27	\$180,000
CA9933	Holmes Run - Upper	Broyhill Park Subdivision LID - B	Broyhill Park Subdivision - Nealon Dr	Construct sidewalk bioretention areas along roads.	9.1	\$142,000
CA9934	Holmes Run - Upper	Broyhill Park Subdivision LID - C	Broyhill Park Subdivision - Norfolk Ln	Construct sidewalk bioretention areas along roads.	8	\$374,000
CA9939	Holmes Run - Upper	Broyhill Park Subdivision LID - A	Broyhill Park Subdivision - Kenney Drive	Construct sidewalk bioretention areas along roads.	7.3	\$75,000
CA9940	Holmes Run - Upper	Broyhill Park Subdivision LID - E	Parkwood Terrace	Construct sidewalk bioretention areas along roads.	4.97	\$46,000
CA9948	Holmes Run - Upper	Loehmann's Plaza LID	Loehmann's Plaza, Arlington Blvd	Install infiltration trenches along parking rows and in alleys between buildings; add bioretention areas at front and rear of courtyard near County offices.	20.8	\$158,000
CA9951	Holmes Run - Upper	Hollywood Road Park LID	Fairwood Ln & West St	Provide off-line bioretention at pipe outfall and a linear bioretention area along Hollywood Rd.	31.8	\$222,000
CA9956	Holmes Run - Upper	Dunn Loring Post Office LID	Dunn Loring Post Office - Gallows Rd & Electric Av	Provide linear bioretention area along edge of parking lot by Electric Ave; infiltration trenches in W and E parking areas, and along N side of bldg.	0.3	\$32,000
CA9963	Holmes Run - Upper	Walnut Hill Lane LID	Walnut Hill La & Annandale Rd	Replace inlets along road with tree box filters; filter strip and bioretention area N of traffic circle; revegetate open areas with shade trees and wildflowers.	24.2	\$93,000

APPENDIX A-3

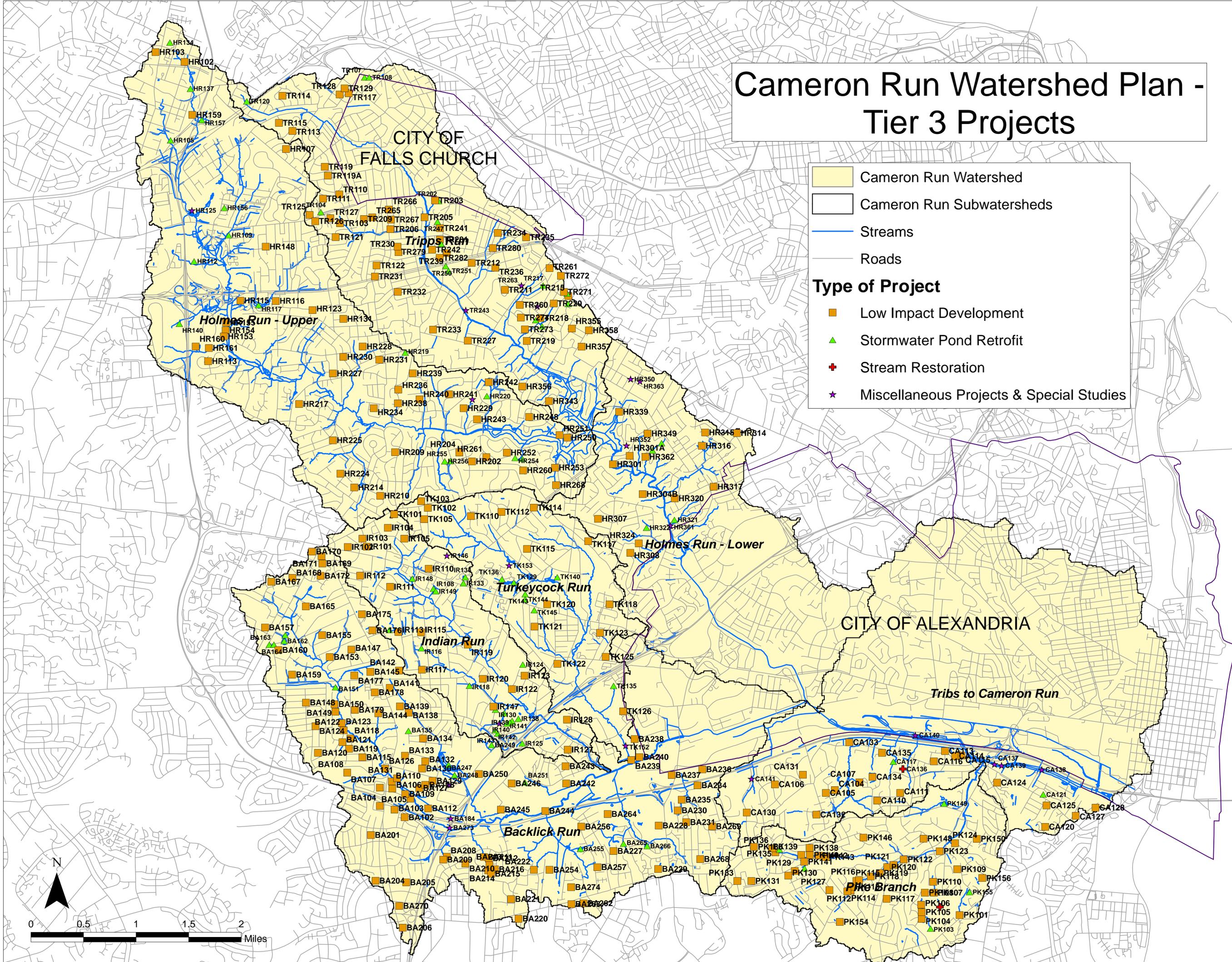
Tier 3 Projects

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Cameron Run Watershed Plan - Tier 3 Projects

Legend:

- Cameron Run Watershed
- Cameron Run Subwatersheds
- Streams
- Roads
- Type of Project**
 - Low Impact Development
 - Stormwater Pond Retrofit
 - Stream Restoration
 - Miscellaneous Projects & Special Studies



Candidate Watershed Restoration Projects - Tier 3

Site ID	Project Type	Proposed Action
Backlick Run		
BA102	Low Impact Development	Curb Gardens, Rain Barrels
BA103	Low Impact Development	Tree Boxes
BA104	Low Impact Development	Rain Garden
BA105	Low Impact Development	End of Pipe Rain Garden
BA106	Low Impact Development	Filter Strips, Median Gardens or Dry Pond
BA107	Low Impact Development	Tree Boxes, End of Pipe Rain gardens, Filter Strips
BA108	Low Impact Development	Green Roof, Median Gardens, End of Pipe
BA109	Low Impact Development	End of Pipe Rain Garden
BA110	Low Impact Development	End of Pipe Rain Garden
BA112	Low Impact Development	Dry Pond
BA115	Low Impact Development	Curb Gardens, Rain Barrels
BA118	Low Impact Development	End of Pipe Rain Garden
BA119	Low Impact Development	Curbside rain gardens
BA120	Low Impact Development	Curbside rain gardens
BA121	Low Impact Development	End of Pipe Rain Garden
BA122	Low Impact Development	End of Pipe Rain Garden
BA123	Low Impact Development	End of Pipe Rain Garden
BA124	Low Impact Development	Curbside rain gardens
BA126	Low Impact Development	End of Pipe Rain Garden
BA127	Low Impact Development	Green Roof
BA128	Low Impact Development	Area Drain Inserts, Median Gardens
BA129	Low Impact Development	Filter/Infiltration Trench
BA130	Low Impact Development	Green Roof
BA131	Low Impact Development	End of Pipe Rain Garden
BA132	Low Impact Development	Median Gardens, Trenches
BA133	Low Impact Development	Green Roofs, Filter Trenches
BA134	Low Impact Development	Median Gardens, Rain Barrels
BA135	Stormwater Pond Retrofit	Dry Pond
BA138	Low Impact Development	Median Garden
BA139	Low Impact Development	Median Gardens, Filter Strips
BA141	Low Impact Development	Median Gardens
BA142	Low Impact Development	Infiltration Trench
BA144	Low Impact Development	End of Pipe Rain Garden
BA145	Low Impact Development	Median Gardens, Rain Gardens
BA147	Low Impact Development	Rain Gardens, Curb Gardens
BA148	Low Impact Development	Rain Barrels, Curb Gardens
BA149	Low Impact Development	End of Pipe Rain Garden
BA150	Low Impact Development	End of Pipe Rain Garden
BA151	Stormwater Pond Retrofit	Dry Pond
BA153	Low Impact Development	Rain Gardens
BA155	Low Impact Development	Rain Gardens, Rain Barrels
BA157	Low Impact Development	Parking Lot Rain Gardens
BA159	Low Impact Development	Rain Barrels, Curb Rain Gardens

Site ID	Project Type	Proposed Action
BA160	Low Impact Development	Rain Barrels, Curb Rain Gardens
BA161	Stormwater Pond Retrofit	SWM Pond Retrofits
BA162	Stormwater Pond Retrofit	SWM Pond Retrofits
BA163	Stormwater Pond Retrofit	SWM Pond Retrofits
BA164	Stormwater Pond Retrofit	SWM Pond Retrofits
BA165	Low Impact Development	Roof Drains to Rain Gardens; Curb Rain Gardens
BA167	Low Impact Development	Rain Barrels and Sidewalk Rain Gardens
BA168	Low Impact Development	Rain Barrels, Yard Drains to Rain Gardens, Curb Rain Gardens
BA169	Low Impact Development	Roof Drains to Rain Gardens; Curb Rain Gardens
BA170	Low Impact Development	Roof Drains to Rain Gardens; Curb Rain Gardens
BA171	Low Impact Development	Roof Drains to Rain Gardens; Curb Rain Gardens
BA172	Low Impact Development	Rain Barrels, Yard Drains to Rain Gardens, Curb Rain Gardens
BA175	Low Impact Development	Rain Barrels; Sidewalk, Curb and Yard Drain Rain Gardens
BA176	Low Impact Development	Rain Barrels; Sidewalk, Curb and Yard Drain Rain Gardens
BA177	Low Impact Development	Green Roof, Cistern, Rain Gardens
BA178	Low Impact Development	Rain Barrels; Sidewalk, Curb and Yard Drain Rain Gardens
BA179	Low Impact Development	Rain Barrels; Rain Gardens at End of Pipe and Downspout
BA182	Other	Implement Pollution Prevention Programs; Control Runoff of Toxics
BA184	Other	Provide Additional Control of Highway Runoff at I-495 and I-395
BA201	Low Impact Development	Curb Gardens, Rain Barrels, Rain Gardens
BA204	Low Impact Development	Rain Gardens
BA205	Low Impact Development	Filter Strips, Infiltration Trench
BA206	Low Impact Development	Info Car Dealer - Porous Pavement
BA208	Low Impact Development	Berm with Gardens
BA209	Low Impact Development	End of Pipe Rain Garden
BA210	Low Impact Development	Curb Gardens, Rain Barrels
BA211	Low Impact Development	Rain Garden
BA212	Low Impact Development	End of Pipe Rain Garden
BA213	Low Impact Development	End of Pipe Rain Garden
BA214	Low Impact Development	End of Pipe Rain Garden
BA215	Low Impact Development	End of Pipe Rain Garden
BA216	Low Impact Development	End of Pipe Rain Garden
BA220	Low Impact Development	Curb Gardens, Rain Barrels
BA221	Low Impact Development	Curb Gardens, Rain Barrels
BA222	Low Impact Development	End of Pipe Rain Garden
BA227	Low Impact Development	Rain Garden
BA228	Low Impact Development	Rain Gardens
BA229	Low Impact Development	Retrofit Detention into Cistern to Water Fields
BA230	Low Impact Development	Paved Ditch into Grass Swale
BA231	Low Impact Development	Rain Barrel, Rain Gardens
BA234	Low Impact Development	Berm with Gardens
BA235	Low Impact Development	End of Pipe Rain Garden
BA236	Low Impact Development	Infiltration Ditches
BA237	Low Impact Development	Porous Pavement
BA238	Low Impact Development	Green Roof

Site ID	Project Type	Proposed Action
BA239	Low Impact Development	Filter Strips
BA240	Low Impact Development	Filter Berms
BA242	Low Impact Development	Green Roof, Median Gardens, Berms
BA243	Low Impact Development	Curb Gardens, Rain Barrels
BA244	Low Impact Development	Detention/ Rain Garden
BA245	Low Impact Development	Detention/ Rain Garden
BA246	Low Impact Development	Green Roofs, Infiltration
BA247	Stormwater Pond Retrofit	SWM Pond retrofits
BA248	Stormwater Pond Retrofit	SWM Pond retrofits
BA249	Stormwater Pond Retrofit	SWM Pond retrofits
BA250	Low Impact Development	Green Roof: Downspout and Traffic Island/Curb Rain Gardens with Infiltration
BA251	Stormwater Pond Retrofit	SWM Pond retrofit
BA254	Low Impact Development	Rain barrels; Sidewalk Rain Gardens
BA255	Stormwater Pond Retrofit	SWM Pond Retrofit
BA256	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
BA257	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
BA262	Low Impact Development	Downspout, Curb, Median and Island Rain Gardens
BA263	Low Impact Development	Downspout, Curb, Median and Island Rain Gardens
BA264	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
BA265	Stormwater Pond Retrofit	SWM Pond Retrofit
BA266	Stormwater Pond Retrofit	SWM Pond Retrofit
BA268	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
BA269	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
BA270	Low Impact Development	Green Roof; Downspout, Curb, Median, and Island Rain Gardens
BA273	Other	Work with VDOT to Provide Additional SWM Controls for I395 and I495
BA274	Low Impact Development	Rain Barrels; Sidewalk and Curb Rain Gardens
Holmes Run - Lower		
HR201	Stormwater Pond Retrofit	End of pipe - 1-yr EDD or rain garden
HR202	Low Impact Development	Grass median, rain garden, rain barrels
HR204	Low Impact Development	Backyard retention/rain garden/barrels
HR209	Low Impact Development	Curbside rain gardens
HR210	Low Impact Development	Filter strips, contours, and rain gardens
HR214	Low Impact Development	Rain barrels/gardens, curb gardens
HR217	Low Impact Development	Tree boxes, rain barrels, curb gardens
HR219	Stormwater Pond Retrofit	Pond retrofit
HR220	Stormwater Pond Retrofit	Pond retrofit
HR224	Low Impact Development	Island gardens
HR225	Low Impact Development	Rain barrels, sidewalk and curb gardens
HR227	Low Impact Development	Rain barrels, sidewalk and curb gardens
HR228	Low Impact Development	Church parking lot retrofit, curb rain garden
HR229	Low Impact Development	Church parking lot retrofit, curb rain garden
HR230	Low Impact Development	Rain barrels, sidewalk and curb gardens
HR231	Low Impact Development	Rain barrels, sidewalk and curb gardens
HR234	Low Impact Development	Yard draining to rain garden with under drains, rain barrels, curb rain garden

Site ID	Project Type	Proposed Action
HR236	Low Impact Development	Sidewalk rain garden and rain barrels
HR238	Low Impact Development	Sidewalk and curb rain gardens
HR239	Low Impact Development	Sidewalk and curb rain gardens
HR240	Low Impact Development	Rain barrels, sidewalk, and curb gardens
HR241	Low Impact Development	Yard drains to rain garden with under drains; rain barrels; curb and sidewalk rain gardens
HR242	Low Impact Development	Yard drains to rain garden with under drains; rain barrels; curb and sidewalk rain gardens; paved ditches to linear rain garden with cells
HR243	Low Impact Development	Rain barrels, curb rain garden
HR246	Other	Purchase 10 acre Glavis property for conservation
HR248	Low Impact Development	Rain barrels, rain garden
HR250	Low Impact Development	Backyard rain garden
HR251	Low Impact Development	Berm backyards
HR252	Low Impact Development	Street grass swale rain gardens
HR253	Low Impact Development	End of pipe rain garden
HR254	Stormwater Pond Retrofit	End of pipe - 1-yr EDD or rain garden
HR255	Stormwater Pond Retrofit	End of pipe - 1-yr EDD or rain garden
HR256	Stormwater Pond Retrofit	End of pipe - 1-yr EDD or rain garden
HR260	Low Impact Development	Grass median, rain garden, rain barrels
HR261	Low Impact Development	Backyard retention/rain garden/barrels
HR268	Low Impact Development	End of pipe rain garden
HR301	Low Impact Development	Extended retrofit, green roof, tree boxes
HR301A	Low Impact Development	Rain garden
HR304B	Low Impact Development	Strip filter in parking lot
HR307	Low Impact Development	Tree boxes at storm drain inlets
HR308	Low Impact Development	End of pipe rain garden
HR311	Stormwater Pond Retrofit	Pond Retrofit
HR312	Stormwater Pond Retrofit	Retention before pipe
HR314	Low Impact Development	Rain garden
HR315	Low Impact Development	Swale gardens or rain barrels
HR316	Low Impact Development	Dry pond rain garden
HR317	Low Impact Development	Swale Rain gardens
HR320	Low Impact Development	Rain barrels/rain gardens
HR321	Stormwater Pond Retrofit	New dry pond
HR322	Stormwater Pond Retrofit	Redirect stream into dry pond
HR324	Low Impact Development	Rain barrels
HR339	Low Impact Development	End of pipe rain garden - bacteria sewer tracking
HR343	Low Impact Development	Rain barrels, rain garden
HR349	Low Impact Development	Downspout and parking lot rain garden
HR350	Other	Signage and outreach on hazardous waste collections, especially motor oil disposal
HR352	Other	Marshall property dump site - inspection clean up
HR355	Low Impact Development	Sidewalk rain garden, rain barrels, tree box filters
HR356	Low Impact Development	Rain barrels and rain gardens
HR357	Low Impact Development	Green roof or route drainage to park via: cistern to water fields and park; infiltration; 1-year EDD

Site ID	Project Type	Proposed Action
HR358	Low Impact Development	Parking lot retrofit with: infiltration trench and rain gardens; cistern for building
HR360	Stormwater Pond Retrofit	Pond retrofit
HR361	Other	Extend stream valley park and trail to close last gap between parks
HR362	Low Impact Development	Outfall rain garden
HR363	Other	Signage and outreach on hazardous waste collections, especially motor oil disposal
Holmes Run - Upper		
HR102	Low Impact Development	End of pipe rain garden
HR103	Low Impact Development	Parking lot retrofits
HR105	Stormwater Pond Retrofit	End of pipe/dry pond
HR107	Low Impact Development	Rain barrels/gardens
HR109	Stormwater Pond Retrofit	Dry pond - off to side of main stream
HR112	Stormwater Pond Retrofit	Side discharge pond
HR113	Low Impact Development	Tree boxes, rain barrels
HR115	Low Impact Development	Overflow stream retention
HR116	Low Impact Development	Dry pond/tree boxes
HR117	Stormwater Pond Retrofit	BMP retrofit to increase retention quantity
HR123	Low Impact Development	Retention
HR125	Other	Locate dump site and clean up; provide information on collections
HR131	Low Impact Development	Sidewalk strip retention/rain barrels
HR134	Stormwater Pond Retrofit	Pond retrofit
HR137	Stormwater Pond Retrofit	Pond retrofit
HR140	Stormwater Pond Retrofit	Pond retrofit
HR148	Low Impact Development	Sidewalk strip retention/rain barrels
HR153	Low Impact Development	End of pipe retention/rain garden
HR154	Low Impact Development	End of pipe retention/rain garden
HR155	Low Impact Development	End of pipe retention/rain garden
HR156	Stormwater Pond Retrofit	End of pipe/dry pond
HR157	Stormwater Pond Retrofit	End of pipe/dry pond
HR159	Low Impact Development	End of pipe rain garden
HR160	Low Impact Development	End of pipe retention/rain garden
HR161	Low Impact Development	End of pipe retention/rain garden
Indian Run		
IR101	Low Impact Development	Green Roof (K-Mart)
IR102	Low Impact Development	Green Roof (Giant)
IR103	Low Impact Development	Filter Strips, Island Gardens
IR104	Low Impact Development	Roof Retrofit, Cistern
IR105	Low Impact Development	Grass Swale, Rain Gardens, Rain Barrels
IR108	Stormwater Pond Retrofit	Detention Pond Upgrade
IR110	Low Impact Development	Rain Barrels, Rain Gardens
IR111	Low Impact Development	Rain Barrels, Rain Gardens
IR112	Low Impact Development	Curb Gardens, Rain Barrels, Tree Boxes
IR113	Low Impact Development	Pre Pipe Rain Garden
IR115	Low Impact Development	Rain Gardens, Rain Barrels
IR116	Stormwater Pond Retrofit	End of Pipe Retention

Site ID	Project Type	Proposed Action
IR117	Low Impact Development	Tree Boxes, Curb Gardens, Rain Barrels
IR118	Stormwater Pond Retrofit	End of Pipe Retention
IR119	Low Impact Development	Backyard Rain Gardens
IR120	Low Impact Development	Rain Gardens
IR122	Low Impact Development	End of Pipe Rain Garden
IR123	Low Impact Development	Curb Gardens, Rain Barrel
IR124	Stormwater Pond Retrofit	Retention Pond
IR125	Stormwater Pond Retrofit	SWM Pond Retrofit
IR127	Low Impact Development	Sidewalk Rain Gardens, Curb Rain Gardens, Rain Barrels
IR128	Low Impact Development	Sidewalk Rain Gardens, Curb Rain Gardens, Rain Barrels
IR130	Stormwater Pond Retrofit	Pond retrofits
IR133	Stormwater Pond Retrofit	SWM Pond Retrofit
IR134	Stormwater Pond Retrofit	SWM Pond Retrofit
IR135	Stormwater Pond Retrofit	SWM Pond Retrofit
IR137	Stormwater Pond Retrofit	SWM Pond Retrofit
IR138	Stormwater Pond Retrofit	SWM Pond Retrofit
IR139	Stormwater Pond Retrofit	SWM Pond Retrofit
IR140	Stormwater Pond Retrofit	SWM Pond Retrofit
IR141	Stormwater Pond Retrofit	SWM Pond Retrofit
IR142	Stormwater Pond Retrofit	SWM Pond Retrofit
IR143	Stormwater Pond Retrofit	SWM Pond Retrofit
IR145	Other	Investigate Status of Atlantic Research Site for Potential Pollution Source to Indian Run and Opportunities to Improve Water Quality from Site
IR146	Other	Review Dog Park Management for Opportunities to Improve Water Quality
IR147	Low Impact Development	Island Gardens, Curb Gardens
IR148	Stormwater Pond Retrofit	Retrofit
IR149	Stormwater Pond Retrofit	Detention Pond Upgrade
Pike Branch		
PK101	Low Impact Development	End of Pipe Rain Garden/Detention
PK102	Stream Restoration	Tree Planting
PK103	Stormwater Pond Retrofit	Dry Pond/Rain Gardens
PK104	Low Impact Development	End of Pipe Rain Gardens
PK105	Low Impact Development	End of Pipe Rain Gardens
PK106	Low Impact Development	End of Pipe Rain Gardens
PK107	Low Impact Development	End of Pipe Rain Gardens
PK108	Low Impact Development	Rain Garden
PK109	Low Impact Development	Curb Gardens/Rain Barrels
PK110	Low Impact Development	Property Berms
PK112	Low Impact Development	End of Pipe Trench
PK113	Low Impact Development	End of Pipe Trench
PK114	Low Impact Development	End of Pipe Trench
PK115	Low Impact Development	Tree Box
PK116	Low Impact Development	End of Pipe Trench
PK117	Low Impact Development	Tree Boxes, Rain Barrels, Rain Gardens, Curb Gardens
PK118	Low Impact Development	End of Pipe Rain Garden

Site ID	Project Type	Proposed Action
PK119	Low Impact Development	End of Pipe Rain Garden
PK120	Low Impact Development	End of Pipe Rain Garden
PK121	Low Impact Development	End of Pipe Rain Garden
PK122	Low Impact Development	End of Pipe Rain Garden
PK123	Low Impact Development	End of Pipe Rain Garden
PK124	Low Impact Development	End of Pipe Rain Garden
PK127	Low Impact Development	Rain barrels, Curb Garden, Tree Boxes
PK129	Low Impact Development	Rain barrels, Curb Garden, Tree Boxes
PK130	Low Impact Development	School - Rain Garden/Cistern - Water Fields, Median Garden, Filter Strips
PK131	Low Impact Development	Rain Gardens, Filter Strips
PK133	Low Impact Development	Rain Garden, Rain Barrels
PK135	Low Impact Development	End of Pipe - Rain Garden
PK136	Low Impact Development	Filter Strips
PK137	Stormwater Pond Retrofit	Pond
PK138	Low Impact Development	Rain Barrels, Curb Garden
PK139	Low Impact Development	End of Pipe Rain Garden
PK140	Low Impact Development	End of Pipe Rain Garden
PK141	Low Impact Development	End of Pipe Rain Garden
PK142	Low Impact Development	End of Pipe Rain Garden
PK143	Low Impact Development	End of Pipe Rain Garden
PK146	Low Impact Development	Rain Barrels/Rain Gardens
PK148	Low Impact Development	Curbside rain gardens
PK149	Stormwater Pond Retrofit	Retrofit Pond
PK150	Low Impact Development	Rain Gardens/Barrels, Storm Drain Stenciling
PK152	Stormwater Pond Retrofit	1-yr EDD
PK154	Low Impact Development	Curb Gardens/Rain Barrels
PK155	Stormwater Pond Retrofit	Off Line EDD
PK156	Low Impact Development	Green Roof: Downspout and Curb Rain Gardens
PK160	Low Impact Development	Green Roof: Downspout and Curb Rain Gardens

Tributaries to Cameron Run

CA104	Low Impact Development	Grass Swale Infiltration Trench
CA105	Low Impact Development	Rain Garden
CA106	Low Impact Development	Rain Gardens, Curb Gardens, Rain Barrels
CA107	Low Impact Development	Rain Garden - End of Pipe
CA110	Low Impact Development	Curbside rain gardens
CA111	Low Impact Development	Rain Gardens, Curb Gardens, Rain Barrels
CA113	Low Impact Development	Rain Garden
CA114	Low Impact Development	Rain Garden
CA115	Low Impact Development	Rain Garden
CA116	Low Impact Development	Rain Gardens, Curb Gardens, Rain Barrels
CA117	Stormwater Pond Retrofit	Retrofit
CA120	Low Impact Development	Curb and End of Pipe, Rain Gardens
CA121	Stormwater Pond Retrofit	SWM Pond Retrofit
CA124	Low Impact Development	Downspout to Curb Rain Garden, Sidewalk Gardens
CA125	Low Impact Development	Downspout to Curb Rain Garden, Sidewalk Gardens

Site ID	Project Type	Proposed Action
CA127	Low Impact Development	Downspout and Curb Rain Garden
CA128	Low Impact Development	Downspout and Curb Rain Garden
CA130	Low Impact Development	Rain Barrels, Sidewalk and Curb Gardens, Tree Boxes
CA131	Low Impact Development	Rain Barrels, Sidewalk and Curb Gardens, Tree Boxes
CA132	Low Impact Development	Rain Barrels, Sidewalk and Curb Gardens, Tree Boxes
CA133	Low Impact Development	Rain Barrels, Sidewalk and Curb Gardens, Tree Boxes
CA134	Low Impact Development	Concrete v Ditches to Rain Gardens
CA135	Low Impact Development	Rain Barrels and Sidewalk Rain Gardens
CA136	Stream Restoration	Riprap Channel to Stepped Rain Garden
CA137	Other	Coordinate with Woodrow Wilson Bridge Project Consultants to Discuss and Mitigate Construction Impacts
CA138	Other	Integrate Recreational and Aesthetic Amenities into Ports along Mainstem Explore Redevelopment of Waterfront to Serve as Community Focal Point
CA139	Other	Provide Pedestrian Access to Stream; Connect to Eisenhower Ave. Across Stream
CA140	Other	Integrate Recreational and Aesthetic Amenities into Ports along Mainstem Explore Redevelopment of Waterfront to Serve as Community Focal Point
CA141	Other	Provide Access to Stream
Tripps Run		
TR103	Low Impact Development	BMP retrofit
TR104	Stormwater Pond Retrofit	BMP retrofit
TR107	Stormwater Pond Retrofit	BMP retrofit
TR108	Stormwater Pond Retrofit	BMP retrofit
TR110	Low Impact Development	Rain barrels, tree box filters, curb rain gardens
TR111	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR113	Low Impact Development	Rain barrels, tree box filters
TR114	Low Impact Development	Rain barrels, tree box filters, curb rain gardens
TR115	Low Impact Development	Rain barrels, tree box filters
TR117	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches; porous pavers for car dealership
TR119	Low Impact Development	Tree boxes, sidewalk garden rain barrels
TR119A	Low Impact Development	Area drain rain garden
TR120	Stormwater Pond Retrofit	BMP retrofit
TR121	Low Impact Development	Rain barrels, curb gardens
TR122	Low Impact Development	Rain barrels, curb gardens
TR125	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR126	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR127	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR128	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR129	Low Impact Development	Downspout, traffic island, and curb rain gardens; infiltration trenches
TR202	Stormwater Pond Retrofit	1-yr EDD pond
TR203	Low Impact Development	Divert discharge in garden to bermed rain garden
TR205	Low Impact Development	Divert discharge in garden to bermed rain garden
TR206	Low Impact Development	End of pipe restriction with water retention in pipe. Include tree or sediment trap boxes to filter sediment
TR209	Low Impact Development	Tree boxes, rain gardens

Site ID	Project Type	Proposed Action
TR211	Low Impact Development	Curb & downspout rain gardens; rain barrels; street sweeping and inlet cleanout program; start community trash collection events; provide trash bins and education information
TR212	Low Impact Development	Roof gardens, infiltration trench, parking lot islands
TR215	Low Impact Development	Parking lot retrofit - trench along front of parking spaces to rain gardens, curb rain gardens, tree box filters
TR217	Stormwater Pond Retrofit	Stilling basin - retrofit to provide detention
TR218	Low Impact Development	Rain barrels, tree box filters, curb rain garden
TR219	Low Impact Development	Sink traffic island to rain garden, rain barrels, curb rain garden
TR220	Low Impact Development	Rain barrels, retrofit controls on concrete ditch, curb rain gardens
TR227	Low Impact Development	Rain barrels, tree box filters, and rain garden; or EDD in park for riprap ditch and concrete ditch
TR228	Stormwater Pond Retrofit	Yard drain to EDD
TR230	Low Impact Development	Tree box filters; rain barrels; sidewalk, curb and traffic island rain gardens
TR231	Low Impact Development	Parking lot retrofit with infiltration trench and rain garden at lot margin
TR232	Low Impact Development	Tree box filters; rain barrels; sidewalk, curb and traffic island rain gardens
TR233	Low Impact Development	Tree box filters; rain barrels; sidewalk, curb and traffic island rain gardens
TR234	Low Impact Development	Tree box filters
TR235	Low Impact Development	Parking lot retrofit: infiltration trench; rain gardens and cistern for building; traffic island rain gardens; roof gardens; and permeable pavers at car dealership
TR236	Low Impact Development	Curb & downspout rain gardens; rain barrels; street sweeping and inlet cleanout program; start community trash collection events; provide trash bins and education information
TR239	Low Impact Development	Porous pavement/blocks under car dealerships
TR241	Low Impact Development	Green roof, downspout rain garden, parking lot rain garden with infiltration trenches
TR242	Low Impact Development	Trash collection - street sweeping and inlet cleanout program; start community trash collection events; provide trash bins and education information
TR243	Other	Locate and clean up leaking, abandoned sewer line
TR246	Other	Investigate hazardous waste dumping; provide outreach and hazardous/municipal waste collection information; street sweeping and inlet cleanout program; start community trash collection events
TR247	Stormwater Pond Retrofit	Pond retrofit
TR249	Stormwater Pond Retrofit	Pond retrofit
TR250	Stormwater Pond Retrofit	Pond retrofit
TR251	Stormwater Pond Retrofit	Pond retrofit
TR253	Stormwater Pond Retrofit	Pond retrofit
TR260	Low Impact Development	Rain barrels; retrofit yard drains to rain gardens; curb and tree box rain gardens
TR261	Low Impact Development	Rain barrels; retrofit yard drains to rain gardens; curb and tree box rain gardens
TR263	Other	Facilitate neighborhood watch and environmental groups; volunteer and County monitoring of pollution, trash, and stream health
TR265	Low Impact Development	Tree boxes, rain gardens
TR266	Low Impact Development	Tree boxes, rain gardens
TR267	Low Impact Development	Tree boxes, rain gardens
TR271	Low Impact Development	Parking lot retrofit - trench along front of parking spaces to rain gardens, curb rain gardens, tree box filters

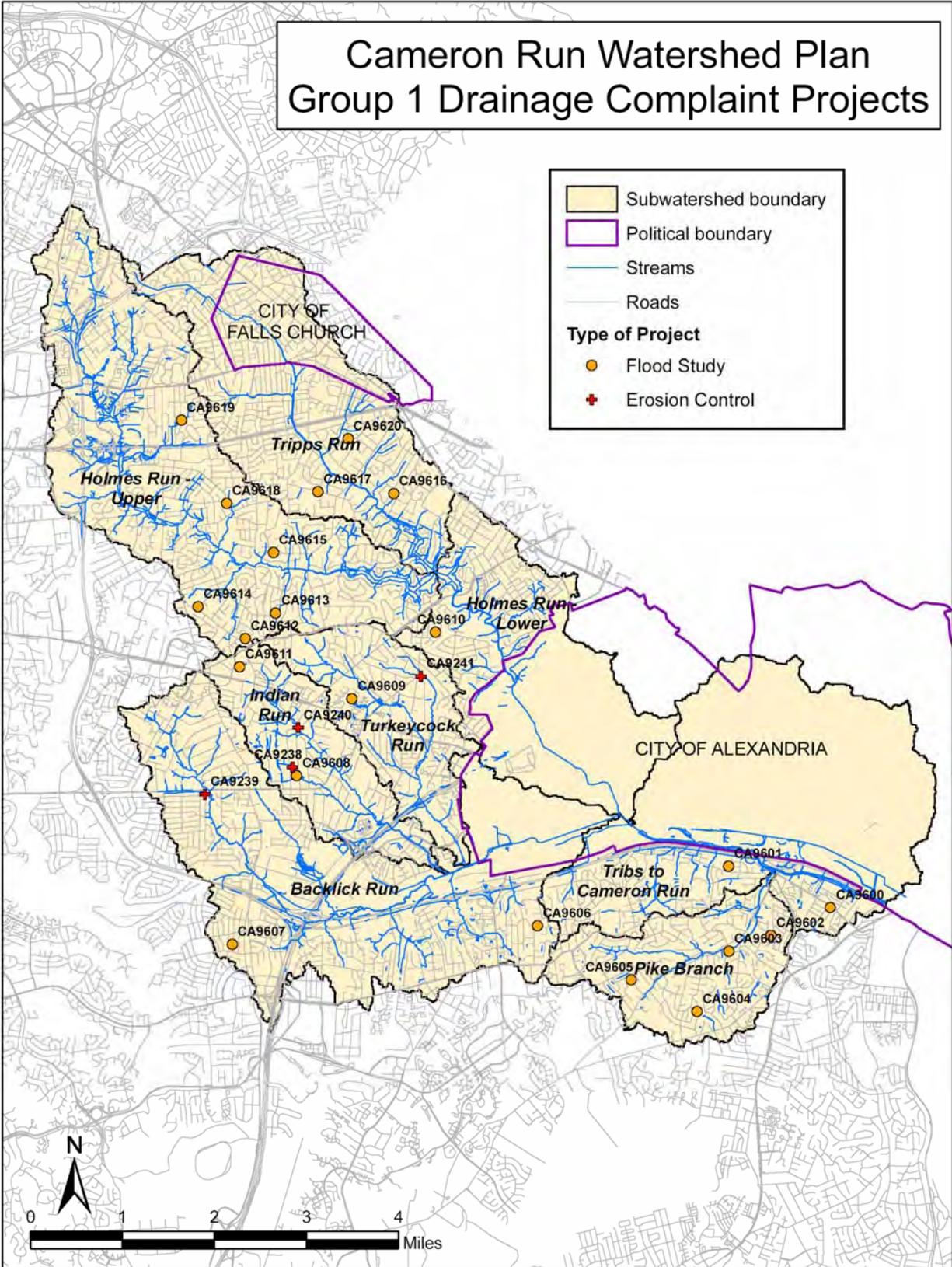
Site ID	Project Type	Proposed Action
TR272	Low Impact Development	Parking lot retrofit - trench along front of parking spaces to rain gardens, curb rain gardens, tree box filters
TR273	Low Impact Development	Rain barrels, tree box filters, curb rain garden
TR274	Low Impact Development	Rain barrels, tree box filters, curb rain garden
TR278	Stormwater Pond Retrofit	Yard drain to EDD
TR279	Low Impact Development	Tree box filters; rain barrels; sidewalk, curb and traffic island rain gardens
TR280	Low Impact Development	Parking lot retrofit: infiltration trench; rain gardens and cistern for building; traffic island rain gardens; roof gardens; and permeable pavers at car dealership
TR281	Low Impact Development	Green roof, downspout rain garden, parking lot rain garden with infiltration trenches
TR282	Low Impact Development	Green roof, downspout rain garden, parking lot rain garden with infiltration trenches
Turkeycock Run		
TK101	Low Impact Development	Rain Garden
TK102	Low Impact Development	Tree Boxes
TK103	Low Impact Development	Parking and Roof Retrofit Rain Garden
TK105	Low Impact Development	Tree Boxes, Rain Barrels
TK110	Low Impact Development	Rain Barrels, Curb Gardens, Tree Boxes
TK112	Low Impact Development	Rain Barrels, Curb Gardens, Tree Boxes
TK114	Low Impact Development	End of Pipe Rain Garden
TK115	Low Impact Development	Street Rain Gardens, Rain Barrels
TK117	Low Impact Development	Rain Gardens
TK118	Low Impact Development	Tree Boxes
TK120	Low Impact Development	Porous Pavers
TK121	Low Impact Development	Street Gardens, Rain Barrels
TK122	Low Impact Development	Street Gardens, Rain Barrels
TK123	Low Impact Development	Detention Ponds, Rain Barrels (End of Pipe & Median)
TK125	Low Impact Development	Roof Gardens, Cistern
TK126	Low Impact Development	Convert Concrete Swale into Grass Swale
TK129	Stormwater Pond Retrofit	Pond Retrofit
TK135	Stormwater Pond Retrofit	SWM Pond Retrofit
TK136	Stormwater Pond Retrofit	SWM Pond Retrofit
TK140	Stormwater Pond Retrofit	SWM Pond Retrofit
TK143	Stormwater Pond Retrofit	SWM Pond Retrofit
TK144	Stormwater Pond Retrofit	SWM Pond Retrofit
TK145	Stormwater Pond Retrofit	SWM Pond Retrofit
TK152	Other	Organize Stream Clean-up Program for Trash
TK153	Other	Pinecrest Park Golf Course - Pursue Audubon Certification; Provide Pet Waste Information and Clean-up Mitts

APPENDIX A-4

**Project Fact Sheets for Selected
Drainage Complaint Projects**

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Cameron Run Watershed Plan Group 1 Drainage Complaint Projects



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Indian Run Streambank Stabilization - B

Project ID:	CA9238	Project Type:	Erosion
Project Name:	Indian Run Streambank Stabilization - B	Subwatershed:	Indian Run
Project Location:	Montgomery Street	Study Area	acres
Parcel ID No.:	0714 10 0059		

Project Location:



Proposed Action:

Restore natural stream channel morphology, stabilize banks, and enhance riparian buffer.

Proposed Project:



Benefits: Prevent property and structural loss.
 Improve stream stability and instream habitat. Reduce erosion.
 Improve floodplain and nutrient cycling functions.

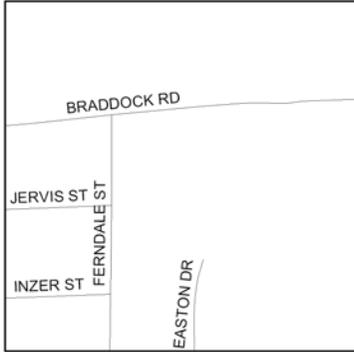
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Streambank Stabilization	325	LF	\$80.00	\$26,000
			Base Cost =	\$26,000
			Mobilization (5%) =	\$1,300
			Subtotal 1 =	\$27,300
			Contingency (25%) =	\$6,825
			Subtotal 2 =	\$34,125
			Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =	\$15,356
			Total =	\$49,481
			Estimated Project Cost =	\$50,000

Backlick Run Streambank Stabilization

Project ID:	CA9239	Project Type:	Erosion
Project Name:	Backlick Run Streambank Stabilization	Subwatershed:	Backlick Run
Project Location:	Braddock Road	Study Area	acres
Parcel ID No.:	0713 07 0030		

Project Location:



Proposed Action:

Restore natural stream channel morphology, stabilize banks, and enhance riparian buffer.

Proposed Project:



Benefits: Prevent property and structural loss.
 Improve stream stability and instream habitat. Reduce erosion.
 Improve floodplain and nutrient cycling functions.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Streambank Stabilization	450	LF	\$80.00	\$36,000
Base Cost =				\$36,000
Mobilization (5%) =				\$1,800
Subtotal 1 =				\$37,800
Contingency (25%) =				\$9,450
Subtotal 2 =				\$47,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$21,263
Total =				\$68,513
Estimated Project Cost =				\$69,000

Indian Run Streambank Stabilization - A

Project ID: CA9240

Project Type: Erosion

Project Name: Indian Run Streambank Stabilization - A

Subwatershed: Indian Run

Project Location: Indian Run below Columbia Road

Study Area acres

Parcel ID No.: 0712 08 0029A

Project Location:



Proposed Project:



Proposed Action:

Restore natural stream channel morphology, stabilize banks, and enhance riparian buffer.

Benefits: Prevent property and structural loss.
 Improve stream stability and instream habitat. Reduce erosion.
 Improve floodplain and nutrient cycling functions.

Estimated Project Cost:

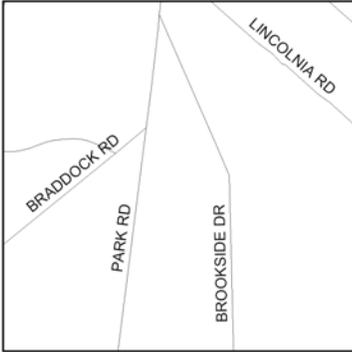
ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Streambank Stabilization	550	LF	\$80.00	\$44,000
Base Cost =				\$44,000
Mobilization (5%) =				\$2,200
Subtotal 1 =				\$46,200
Contingency (25%) =				\$11,550
Subtotal 2 =				\$57,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$25,988
Total =				\$83,738
Estimated Project Cost =				\$84,000

Turkeycock Run Stream Stabilization

Project ID: CA9241
Project Name: Turkeycock Run Stream Stabilization
Project Location: Brookside Drive
Parcel ID No.: 0721 06 0065B

Project Type: Erosion
Subwatershed: Turkeycock Run
Study Area acres

Project Location:



Proposed Project:



Proposed Action:

Restore natural stream channel morphology, stabilize banks, and enhance riparian buffer.

Benefits: Prevent property and structural loss.
 Improve stream stability and instream habitat. Reduce erosion.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Streambank Stabilization	200	LF	\$200.00	\$40,000
Base Cost =				\$40,000
Mobilization (5%) =				\$2,000
Subtotal 1 =				\$42,000
Contingency (25%) =				\$10,500
Subtotal 2 =				\$52,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (45%) =				\$23,625
Total =				\$76,125
Estimated Project Cost =				\$77,000

Huntington Drainage Study

Project ID:	CA9600	Project Type:	Flooding
Project Name:	Huntington Drainage Study	Subwatershed:	Tributaries to Cameron Run
Project Location:	Huntington Avenue	Study Area	53.22 acres
Parcel ID No.:	0831 10 0019A; 0831 10 0038A; 0831 10 0039B; 0831 12 0006A; 0831 14B 0058B; 0831 20 0003A; 0833 20 0015A; 0833 29 0010B		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements. This drainage study is being completed as part of an on-going flood damage reduction study for the Huntington community (see Section 4.2.7.1).

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

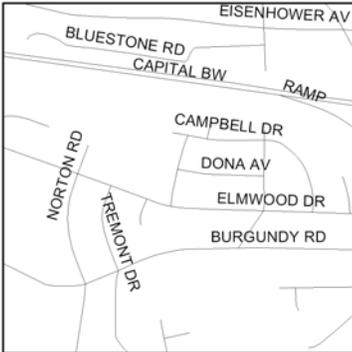
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Burgundy Village Drainage Study

Project ID:	CA9601	Project Type:	Flooding
Project Name:	Burgundy Village Drainage Study	Subwatershed:	Tributaries to Cameron Run
Project Location:	Elmwood Drive	Study Area	38.14 acres
Parcel ID No.:	0822 03A 0003; 0822 03B 0005; 0822 13 0147; 0822 13 0166; 0822 13 0194		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house, yard, and road flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Reduce road flooding.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Jefferson Garden & Wilton Hall Drainage Study

Project ID:	CA9602	Project Type:	Flooding
Project Name:	Jefferson Garden & Wilton Hall Drainage Study	Subwatershed:	Pike Branch
Project Location:	Fairhaven Avenue; Madison Hill Court	Study Area	47.96 acres
Parcel ID No.:	0824 30 0011; 0824 30 0017; 0833 02020003A; 0833 02020011A; 0833 02070019B; 0833 024B0030A		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements. Improvements to the curb and gutter system have been initiated in this area since the analysis was performed, and evaluation of their effectiveness and the need for any additional improvements should be considered during the recommended drainage study.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

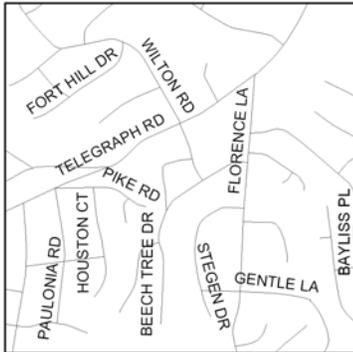
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Wilton Woods & Millwood Estates Drainage Study

Project ID:	CA9603	Project Type:	Flooding
Project Name:	Wilton Woods & Millwood Estates Drainage Stud	Subwatershed:	Pike Branch
Project Location:	Wilton Road; Beach Tree Drive	Study Area	99.56 acres
Parcel ID No.:	0824 01 0027; 0824 06 0017; 0824 07 0015; 0824 07 0016; 0824 07 0018; 0824 12 0012; 0824 35 0009; 0824 35 0014; 0824 35 0015; 0824 36 0010; 0824 36 0082; 0824 40 0007A		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

Benefits: Prevent property and structural loss.
 Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$45,000.00	\$45,000
Base Cost =				\$45,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$45,000
Contingency (25%) =				\$11,250
Subtotal 2 =				\$56,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$56,250
Estimated Project Cost =				\$57,000

Virginia Hills Drainage Study

Project ID:	CA9604	Project Type:	Flooding
Project Name:	Virginia Hills Drainage Study	Subwatershed:	Pike Branch
Project Location:	Berkshire Drive	Study Area	131.9 acres
Parcel ID No.:	0824 14010051; 0824 14070029; 0824 14160010; 0824 14170010; 0922 02010034; 0922 02010039; 0922 02010041; 0922 02070024; 0922 05 0501; 0922 06 0005; 0922 22 0020; 0922 23 0008; 0922 24 0083		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

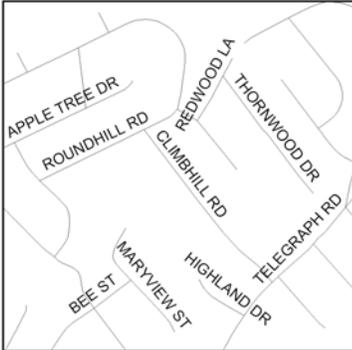
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$45,000.00	\$45,000
Base Cost =				\$45,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$45,000
Contingency (25%) =				\$11,250
Subtotal 2 =				\$56,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$56,250
Estimated Project Cost =				\$57,000

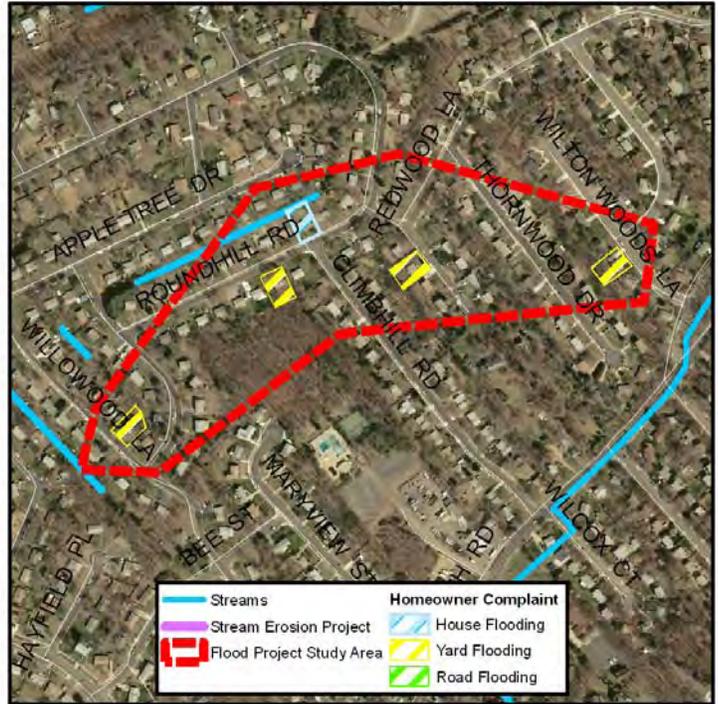
Rose Hill Drainage Study

Project ID:	CA9605	Project Type:	Flooding
Project Name:	Rose Hill Drainage Study	Subwatershed:	Pike Branch
Project Location:	Roundhill Road	Study Area	28.47 acres
Parcel ID No.:	0823 13 0071; 0823 13 0112; 0823 13 0141; 0823 13 0172; 0823 25 0008		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements. Additional complaints have been received from this area since the analysis was performed and all complaints will be considered during the detailed drainage study recommended for this area.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

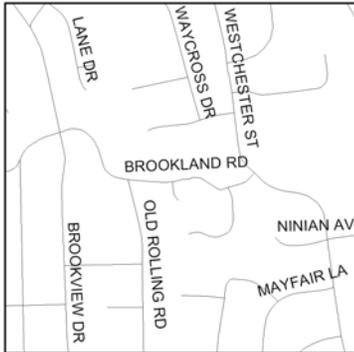
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Brookland Estates Drainage Study

Project ID:	CA9606	Project Type:	Flooding
Project Name:	Brookland Estates Drainage Study	Subwatershed:	Backlick Run
Project Location:	Brookland Road	Study Area	56.02 acres
Parcel ID No.:	0812 06080022; 0812 07 0127; 0814 01 0090; 0814 01 0090B; 0814 07 0048; 0814 18 0011; 0814 20 0114; 0814 20 0119		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Crestwood Drainage Study

Project ID:	CA9607	Project Type:	Flooding
Project Name:	Crestwood Drainage Study	Subwatershed:	Backlick Run
Project Location:	Floyd Avenue	Study Area	51.25 acres
Parcel ID No.:	0803 02050006; 0803 02050012; 0803 02190002; 0803 02200014; 0803 03110014; 0804 04020020		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements. Possible cross-connections between the storm drainage network and sanitary sewer system have also been reported for this area, and should be investigated as part of the recommended drainage study.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Braddock Hills Drainage Study

Project ID:	CA9608	Project Type:	Flooding
Project Name:	Braddock Hills Drainage Study	Subwatershed:	Indian Run
Project Location:	Dodson Drive	Study Area	93.2 acres
Parcel ID No.:	0714 06 A; 0714 06 0003A; 0714 09 0006; 0714 09 0030; 0714 10 0011; 0714 13 0017; 0714 13 0064; 0714 15 0005		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house, yard, and road flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Reduce road flooding.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

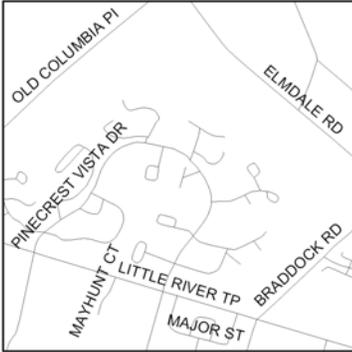
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$45,000.00	\$45,000
Base Cost =				\$45,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$45,000
Contingency (25%) =				\$11,250
Subtotal 2 =				\$56,250
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$56,250
Estimated Project Cost =				\$57,000

Pinecrest Drainage Study

Project ID:	CA9609	Project Type:	Flooding
Project Name:	Pinecrest Drainage Study	Subwatershed:	Turkeycock Run
Project Location:	Pinecrest Vista Drive	Study Area	22.93 acres
Parcel ID No.:	0712 34060053; 0712 34090047; 0721 26020001; 0721 26020027; 0721 26090035		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house, yard, and road flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Reduce road flooding.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Parklawn Drainage Study

Project ID:	CA9610	Project Type:	Flooding
Project Name:	Parklawn Drainage Study	Subwatershed:	Holmes Run - Lower
Project Location:	Arcadia Road	Study Area	17.27 acres
Parcel ID No.:	0613 07B 0001; 0613 07C 0010; 0613 16 0001		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

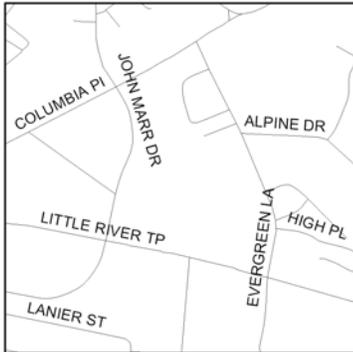
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$15,000.00	\$15,000
Base Cost =				\$15,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$15,000
Contingency (25%) =				\$3,750
Subtotal 2 =				\$18,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$18,750
Estimated Project Cost =				\$19,000

Evergreen Heights Drainage Study

Project ID:	CA9611	Project Type:	Flooding
Project Name:	Evergreen Heights Drainage Study	Subwatershed:	Indian Run
Project Location:	John Marr Drive	Study Area	44.19 acres
Parcel ID No.:	0711 01 0096; 0711 01 0110; 0712 02 0030; 0712 02 0034		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Webbwood Drainage Study

Project ID:	CA9612	Project Type:	Flooding
Project Name:	Webbwood Drainage Study	Subwatershed:	Holmes Run - Upper
Project Location:	Columbia Pike	Study Area	19.23 acres
Parcel ID No.:	0603 17 0010R; 0603 18 0052; 0604 04B 0001; 0604 04C 0001; 0604 06 0001; 0604 07 0118		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

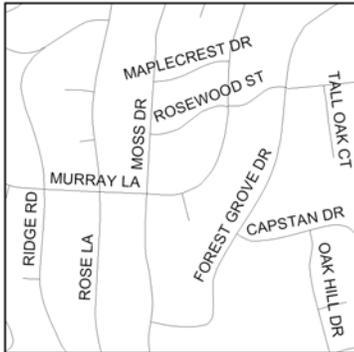
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$15,000.00	\$15,000
Base Cost =				\$15,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$15,000
Contingency (25%) =				\$3,750
Subtotal 2 =				\$18,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$18,750
Estimated Project Cost =				\$19,000

Sleepy Hollow Woods Drainage Study

Project ID:	CA9613	Project Type:	Flooding
Project Name:	Sleepy Hollow Woods Drainage Study	Subwatershed:	Holmes Run - Upper
Project Location:	Murray Lane	Study Area	32.19 acres
Parcel ID No.:	0604 04B 0008; 0604 16E 0003; 0604 16F 0018; 0604 16L 0012		

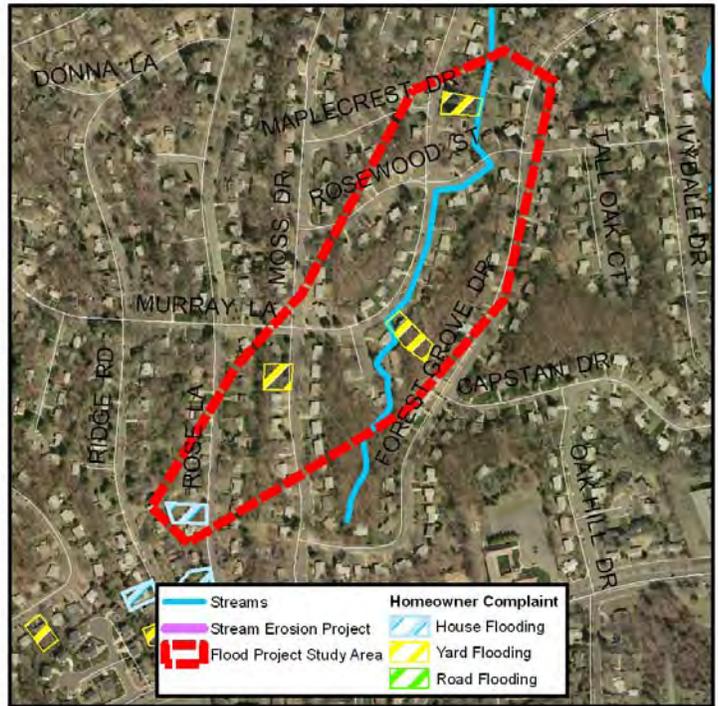
Project Location:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

Proposed Project:



Benefits: Prevent property and structural loss.
 Improve stormwater quantity controls.
 Improve stormwater quality controls.
 Opportunity for public education.

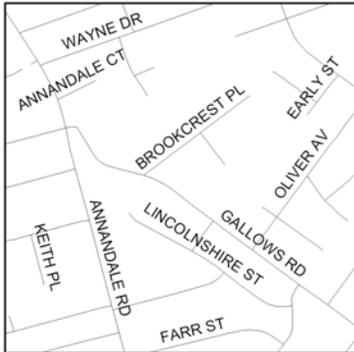
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Kenwood Drainage Study

Project ID:	CA9614	Project Type:	Flooding
Project Name:	Kenwood Drainage Study	Subwatershed:	Holmes Run - Upper
Project Location:	Gallows Road	Study Area	43.13 acres
Parcel ID No.:	0603 23 0002; 0603 27 0003; 0603 28 0017; 0603 28 0037; 0603 28 0042; 0603 28 0072; 0603 28 0073; 0603 34 0001		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

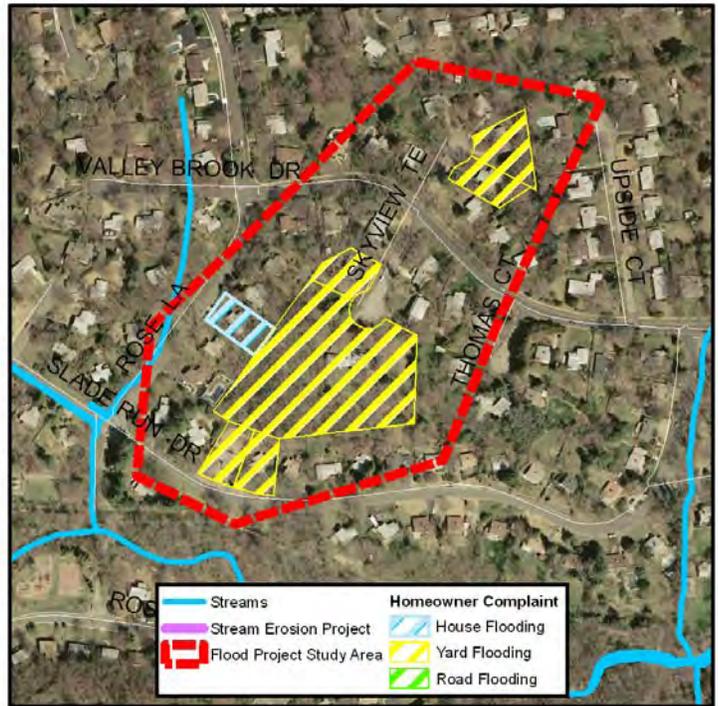
Valley Brook Drainage Study

Project ID:	CA9615	Project Type:	Flooding
Project Name:	Valley Brook Drainage Study	Subwatershed:	Holmes Run - Upper
Project Location:	Slade Run Drive	Study Area	19.17 acres
Parcel ID No.:	0602 30 C1; 0602 30 0019; 0602 30 0020; 0602 30 0031; 0602 30 0056; 0602 30 0057; 0602 30 0062		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

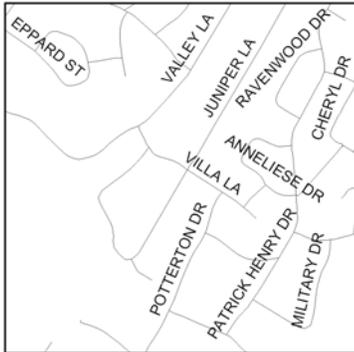
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$15,000.00	\$15,000
Base Cost =				\$15,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$15,000
Contingency (25%) =				\$3,750
Subtotal 2 =				\$18,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$18,750
Estimated Project Cost =				\$19,000

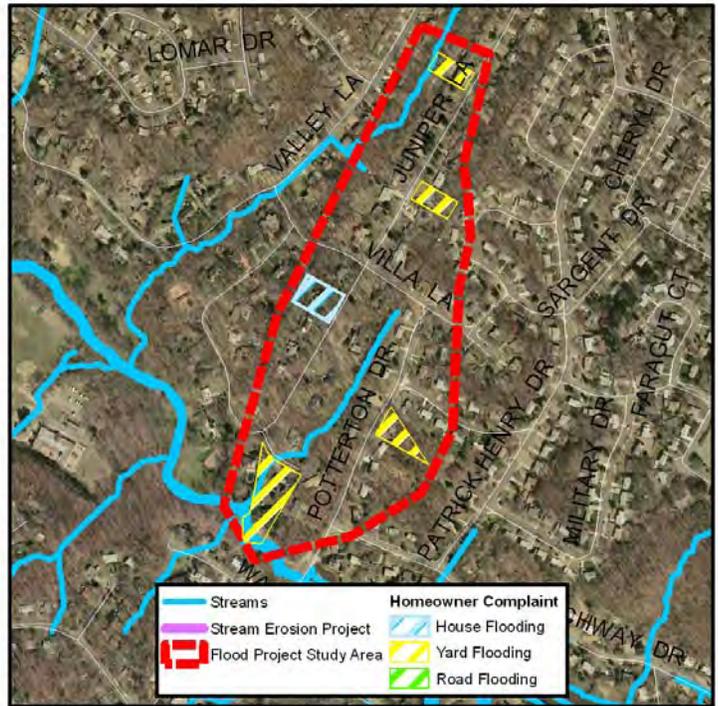
Ravenwood Drainage Study

Project ID:	CA9616	Project Type:	Flooding
Project Name:	Ravenwood Drainage Study	Subwatershed:	Tripps Run
Project Location:	Potterton Drive	Study Area	44.64 acres
Parcel ID No.:	0513 23 0088; 0611 03 0053A; 0611 03 0064; 0611 04 0075A; 0611 11 1052		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Marlo Heights Drainage Study

Project ID:	CA9617	Project Type:	Flooding
Project Name:	Marlo Heights Drainage Study	Subwatershed:	Tripps Run
Project Location:	Kerns Road	Study Area	67.32 acres
Parcel ID No.:	0504 20 0176; 0504 20 0158; 0602 13 0016; 0504 20 0160; 0504 20 0163; 0602 15 0079; 0602 12 0001; 0504 20 0162; 0504 20 0155; 0602 37 0037; 0602 40 0005		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Anna Lee Heights Drainage Study

Project ID: CA9618
Project Name: Anna Lee Heights Drainage Study
Project Location: Graham Road
Parcel ID No.: 0601 11 0005; 0601 20 0010; 0601 11 0016

Project Type: Flooding
Subwatershed: Holmes Run - Upper
Study Area 11.93 acres

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$15,000.00	\$15,000
Base Cost =				\$15,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$15,000
Contingency (25%) =				\$3,750
Subtotal 2 =				\$18,750
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$18,750
Estimated Project Cost =				\$19,000

Fenwick Park Drainage Study

Project ID:	CA9619	Project Type:	Flooding
Project Name:	Fenwick Park Drainage Study	Subwatershed:	Holmes Run - Upper
Project Location:	Elmwood Drive	Study Area	56.19 acres
Parcel ID No.:	0503 09 0198; 0503 15 0060; 0503 15 0067; 0503 15 0080; 0503 15 0108; 0503 15 0122; 0503 15 0133; 0503 15 0160; 0503 15 0161; 0503 15 0176; 0503 15 0187; 0503 17 0081		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

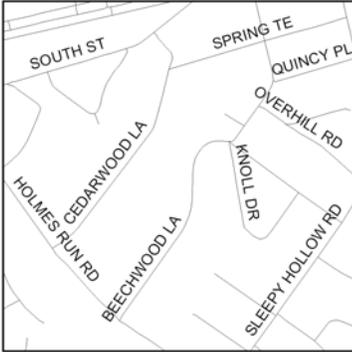
Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000

Sleepy Hollow Drainage Study

Project ID:	CA9620	Project Type:	Flooding
Project Name:	Sleepy Hollow Drainage Study	Subwatershed:	Tripps Run
Project Location:	Beechwood Land; Quincy Place	Study Area	30.54 acres
Parcel ID No.:	0504 23 0061; 0504 21 0029; 0513 07 0015; 0504 21 0043; 0513 06 0007; 0513 06 0008		

Project Location:



Proposed Project:



Proposed Action:

Conduct a neighborhood drainage improvement study to investigate reported house and yard flooding problems in the area, and develop preliminary plans and cost estimates to provide improvements.

- Benefits:**
- Prevent property and structural loss.
 - Improve stormwater quantity controls.
 - Improve stormwater quality controls.
 - Opportunity for public education.

Estimated Project Cost:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Neighborhood Drainage Improvement Study	1	EA	\$30,000.00	\$30,000
Base Cost =				\$30,000
Mobilization (0%) =				\$0
Subtotal 1 =				\$30,000
Contingency (25%) =				\$7,500
Subtotal 2 =				\$37,500
Engineering Design, Surveys, Land Acquisition, Utility Relocation, and Permits (0%) =				\$0
Total =				\$37,500
Estimated Project Cost =				\$38,000