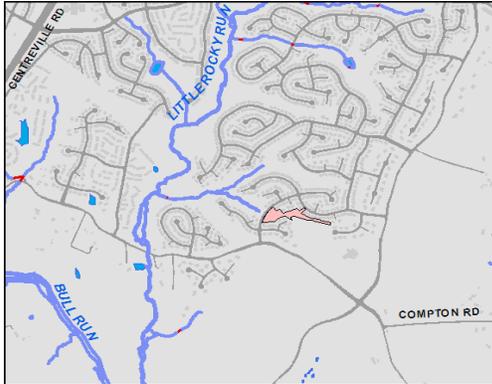


**LR9504 BMP/LID**



Vicinity Map

<b>Address</b>	13916 Rock Brook Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run Homeowner's Association
<b>PIN</b>	0654 07 E
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	56 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Proposed project is to retrofit existing culvert crossing to allow for water quality control. Use a gabion wall to create shallow wetland marsh upstream.



Property Lines    Berm    Wetland Detention    Grading

Project Area Map

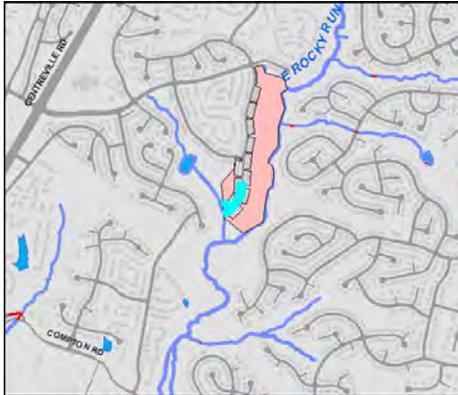
**Project Benefits:** An estimated 5.7 lb/yr of phosphorus will be removed. The created wetland provides ideal environment for gravitational settling, biological uptake, and microbial activity. Project will provide habitat enhancement for insects, amphibians, and birds.

**Project Design Considerations:** This project is within an existing storm drainage easement and part of Little Rocky Run Homeowner’s association, but the implementability is still low based on the proposal to remove mature trees in favor of a created wetland environment. The long-term benefits will outweigh the short-term environmental costs. There are a few different access options. There is a proposed retrofit (LR9100) in the same subwatershed, but sequencing/coordination is not an issue since they are both proposed quality control measures only.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road	250	SY	\$25.00	\$6,250.00
Access Road Gate	1	EA	\$2,500.00	\$2,500.00
Clear and Grub	0.45	AC	\$8,500.00	\$3,825.00
Grading and Excavation	450	CY	\$35.00	\$15,750.00
New Storm Pipe		LF	\$100 - \$300	
Organic Compost Soil Amendment	100	CY	\$40.00	\$4,000.00
		<b>Base Construction Cost</b>		<b>\$32,325.00</b>
		Mobilization (5%)		\$1,616.25
		Plantings (5%)		\$1,616.25
		Ancillary Items (5%)		\$1,616.25
		Erosion & Sediment Control (10%)		\$3,232.50
		<b>Subtotal 1</b>		<b>\$40,406.25</b>
		Contingency (25%)		\$10,101.56
		<b>Subtotal 2</b>		<b>\$50,507.81</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits				
		(45%)		\$22,728.52
		<b>Total</b>		<b>\$73,236.33</b>
		<b>Estimated Project Cost</b>		<b>\$80,000.00</b>

**LR9508 BMP/LID**



Vicinity Map

<b>Address</b>	6612 Creek Run Drive
<b>Location</b>	Subdivision
<b>Landowner</b>	Green Trails Homeowner's Association
<b>PIN</b>	0654 0304 K
<b>Control Type</b>	Water Quality
<b>Drainage Area</b>	1 Acre
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** LR9508 will construct a vegetated swale to collect runoff from backside of townhouses (~0.2 acres of impervious surface) and direct flow to small (~80 square yards) bioretention area. A new pipe will need to be placed through the existing paved trail to outlet to pond outfall. A tree box filter will also be placed at the bottom of the cul-de-sac.



Project Area Map

**Project Benefits:** An estimated 0.6 lb/yr of phosphorus will be removed. The bioretention area creates an ideal environment for filtration, biological uptake and microbial activity.

**Project Design Considerations:** LR9508 is in the vicinity of a large stormwater pond and adjacent to its associated easement(s), but is bordered on the opposite side by private property. Access won't be an issue, but project resides primarily in HOA property. There are no known permitting issues. Sequencing/coordination with neighboring projects is not critical for the proposed water quality measures.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale	275	SY	\$50.00	\$13,750.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	80	SY	\$150.00	\$12,000.00
Manufactured BMP (ie:Tree Box Filter)	1	EA	\$10,000.00	\$10,000.00
Organic Compost Soil Amendment	20	CY	\$40.00	\$800.00
		<b>Base Construction Cost</b>		<b>\$36,550.00</b>
		Mobilization (5%)		\$1,827.50
		Plantings (5%)		\$1,827.50
		Ancillary Items (5%)		\$1,827.50
		Erosion & Sediment Control (10%)		\$3,655.00
		<b>Subtotal 1</b>		<b>\$45,687.50</b>
		Contingency (25%)		\$11,421.88
		<b>Subtotal 2</b>		<b>\$57,109.38</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$25,699.22
		<b>Total</b>		<b>\$82,808.59</b>
		<b>Estimated Project Cost</b>		<b>\$90,000.00</b>

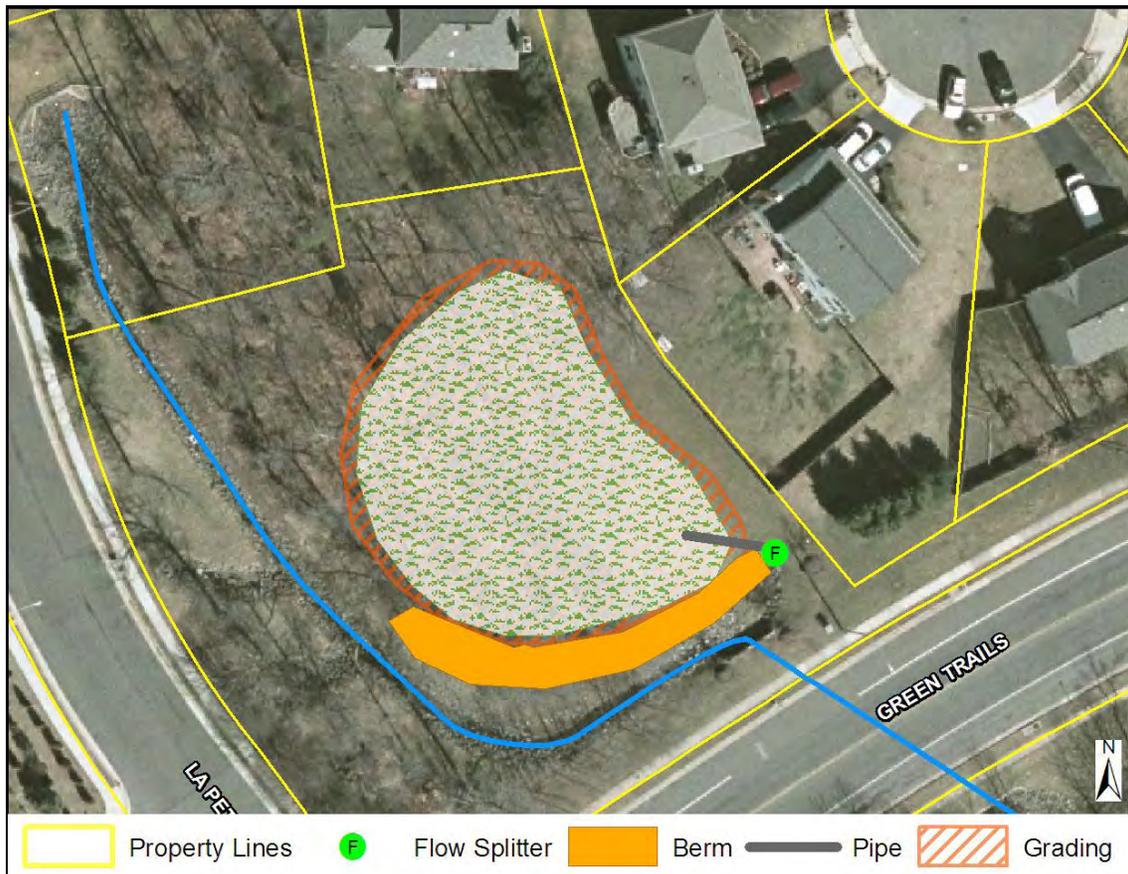
**LR9509 BMP/LID**



Vicinity Map

<b>Address</b>	6600 La Petite Place
<b>Location</b>	Subdivision
<b>Landowner</b>	Green Trails Homeowner's Association
<b>PIN</b>	0651 0403 F
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	78 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Divert flow from outlet into a created wetland detention system, designed for water quality and channel protection treatment. Approximately 24 ac (6 acres of impervious runoff) will be diverted to the proposed facility. Relief is set by culvert invert, but there is room to add storage because common area inside easement averages 4 ft above invert.



Property Lines    F Flow Splitter    Berm    Pipe    Grading

Project Area Map

**Project Benefits:** An estimated 4.6 lbs/yr of phosphorus will be removed. Project will result in reduced 2-yr peak flow to degrading stream reach immediately downstream. System drains to existing facility downstream for quality and quantity control. There is an existing facility just upstream that treats most of the 78 acres that aren't proposed to be diverted into this wetland cell.

**Project Design Considerations:** Proposed Stream Restoration LR9201L is immediately downstream and addresses erosion area. Adding channel protection at existing culvert will impact this design and footprint. The site can be accessed from several locations; the cost estimate is based on access by way of Green Trails Boulevard (floodplain and storage easement exists). Common area is approximately 4 ft above culvert invert and is full of mature trees. Access and requirement to remove mature trees result in low implementability score.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road	100	SY	\$25.00	\$2,500.00
Access Road Gate	1	EA	\$2,500.00	\$2,500.00
Structural BMP and Incidentals	1	LS	\$10,000 - \$20,000	\$10,000.00
Clear and Grub	0.2	AC	\$8,500.00	\$1,700.00
Organic Compost Soil Amendment	300	CY	\$40.00	\$12,000.00
Grading and Excavation	800	CY	\$35.00	\$28,000.00
New Storm Pipe	25	LF	\$100 - \$300	\$5,000.00
			<b>Base Construction Cost</b>	<b>\$61,700.00</b>
			Mobilization (5%)	\$3,085.00
			Plantings (5%)	\$3,085.00
			Ancillary Items (5%)	\$3,085.00
			Erosion & Sediment Control (10%)	\$6,170.00
			<b>Subtotal 1</b>	<b>\$77,125.00</b>
			Contingency (25%)	\$19,281.25
			<b>Subtotal 2</b>	<b>\$96,406.25</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits			(45%)	\$43,382.81
			<b>Total</b>	<b>\$139,789.06</b>
			<b>Estimated Project Cost</b>	<b>\$140,000.00</b>

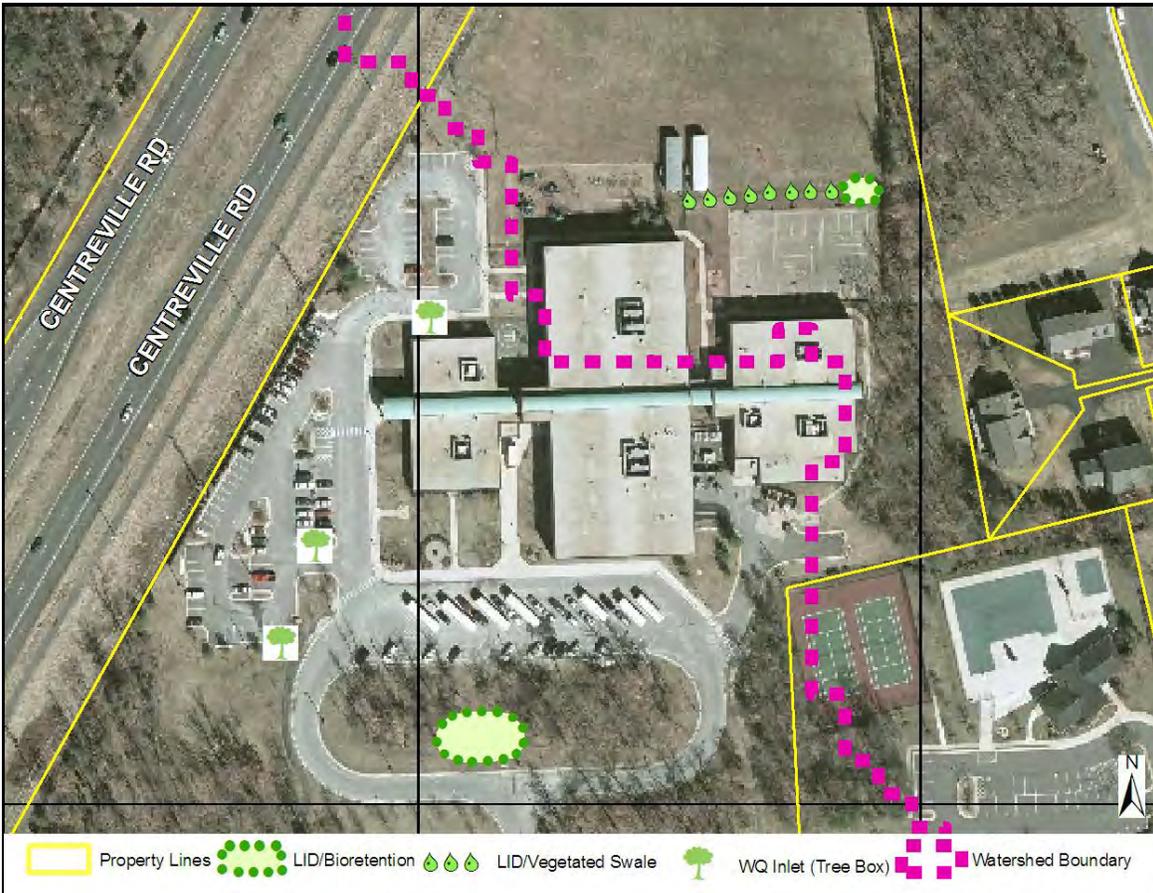
**LR 9510 Low Impact Development Project Suite**



Vicinity Map

<b>Address</b>	14330 Green Trails Bv
<b>Location</b>	Centreville Elementary School
<b>Landowner</b>	School Board of Fairfax County
<b>PIN</b>	0653 04 A
<b>Control Type</b>	Water Quality
<b>Drainage Area</b>	4.5
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Construct bioretention areas and a vegetated swale to treat runoff from roof, parking lots, and all-purpose courts. Replace three curb inlets with tree box filters. This is a school site, allowing for high visibility and affording educational opportunities.



Project Area Map

**Project Benefits:** An estimated 1.6 lbs/yr of phosphorus will be removed. Project will enhance filtration, biological uptake, and microbial activity. Educational opportunities exist for the students.

**Project Design Considerations:** This is a headwater site, but the school resides only partially within the Little Rocky Run watershed. It is adjacent to the Cub Run watershed, where a project was not originally proposed. A field visit was conducted to verify stormwater infrastructure outside of Little Rocky Run and additional LID measures have been included to treat the site as a whole. Bioretention areas were sized based on approximating impervious drainage area and determining the water quality volume, but additional effort is required to accurately determine roof top drainage. Within the Little Rocky Run watershed there are two downstream projects along this tributary, an additional LID retrofit (LR9509L) and a Stream Restoration (LR9201L) that is located downstream of both retrofit sites – coordination and sequencing should be considered. The curb will have to be cut to allow drainage to the larger proposed bioretention area.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale	120	SY	\$50.00	\$6,000.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	480	SY	\$150.00	\$72,000.00
Manufactured BMP (ie:Tree Box Filter)	3	EA	\$10,000.00	\$30,000.00
Organic Compost Soil Amendment	150	CY	\$40.00	\$6,000.00
		<b>Base Construction Cost</b>		<b>\$114,000.00</b>
		Mobilization (5%)		\$5,700.00
		Plantings (5%)		\$5,700.00
		Ancillary Items (5%)		\$5,700.00
		Erosion & Sediment Control (10%)		\$11,400.00
		<b>Subtotal 1</b>		<b>\$142,500.00</b>
		Contingency (25%)		\$35,625.00
		<b>Subtotal 2</b>		<b>\$178,125.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$80,156.25
		<b>Total</b>		<b>\$258,281.25</b>
		<b>Estimated Project Cost</b>		<b>\$260,000.00</b>

**LR9514 BMP/LID**



*Vicinity Map*

<b>Address</b>	13611 Springstone Dr
<b>Location</b>	Union Mills Elementary School
<b>Landowner</b>	School Board of Fairfax County
<b>PIN</b>	0652 07 B
<b>Control Type</b>	Water Quality
<b>Drainage Area</b>	1 acre
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** The site drains to existing facility 0612DP. Construct two bioretention areas to collect runoff from highly impervious areas. One will collect runoff currently entering a curb inlet. Two tree box filters will replace existing curb drop inlets.



*Project Area Map*

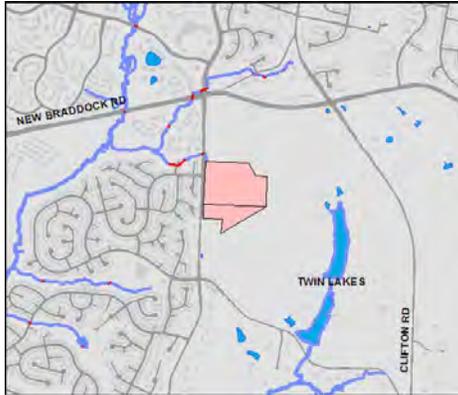
**Project Benefits:** An estimated 0.8 lbs/yr of phosphorus will be removed. The bioretention areas promote filtration, biological uptake and microbial activity. Bioretention areas can also have high amenity value. The project affords educational opportunities at the school.

**Project Design Considerations:** This site drains directly to existing facility 0612DP. Though for smaller storm events there will be runoff reduction, the primary goal is to provide water quality benefits at an accessible and visible site. As a result, this project is independent of the proposed projects downstream, requiring little emphasis on sequencing/coordination. There are no known construction or permitting constraints. Replacement of existing pavement with pervious pavement can be incorporated into the design, but should be coordinated with typical maintenance/repaving activities and was not included specifically in this conceptual layout.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	130	SY	\$150.00	\$19,500.00
Manufactured BMP (ie:Tree Box Filter)	2	EA	\$10,000.00	\$20,000.00
Organic Compost Soil Amendment	11	CY	\$40.00	\$440.00
		<b>Base Construction Cost</b>		<b>\$39,940.00</b>
		Mobilization (5%)		\$1,997.00
		Plantings (5%)		\$1,997.00
		Ancillary Items (5%)		\$1,997.00
		Erosion & Sediment Control (10%)		\$3,994.00
		<b>Subtotal 1</b>		<b>\$49,925.00</b>
		Contingency (25%)		\$12,481.25
		<b>Subtotal 2</b>		<b>\$62,406.25</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$28,082.81
		<b>Total</b>		<b>\$90,489.06</b>
		<b>Estimated Project Cost</b>		<b>\$100,000.00</b>

**LR9516 BMP/LID**



Vicinity Map

<b>Address</b>	6001 Union Mill Road
<b>Location</b>	Centreville High School
<b>Landowner</b>	School Board of Fairfax County
<b>PIN</b>	0661 01 0012A 0661 01 0012B
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	4 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** This site drains to existing facility 0325DP. Replace five curb drop inlets with tree box filters. Construct bioretention area near the parking lot. Proposed measures drain areas that are nearly 100% impervious.



Project Area Map

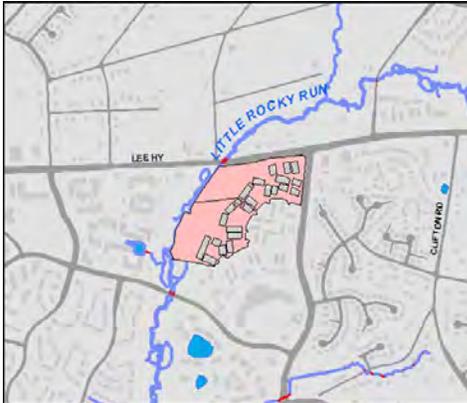
**Project Benefits:** An estimated 19 lbs/yr of phosphorus will be removed on a yearly basis. The bioretention area will promote filtration, biological uptake and microbial activity and has a high amenity value. The project also affords educational opportunities at the school.

**Project Design Considerations:** This site drains directly to existing facility 0325DP. Though for smaller storm events there will be runoff reduction, the primary goal is to provide water quality benefits at an accessible and visible site. As a result, this project is independent of the proposed projects downstream, requiring little emphasis on sequencing/coordination. There are no known construction or permitting constraints. Replacement of existing pavement with pervious pavement can be incorporated into the design, but should be coordinated with typical maintenance/repaving activities and was not included specifically in this conceptual layout.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	605	SY	\$150.00	\$90,750.00
Manufactured BMP (ie:Tree Box Filter)	5	EA	\$10,000.00	\$50,000.00
Organic Compost Soil Amendment	101	CY	\$40.00	\$4,040.00
		<b>Base Construction Cost</b>		<b>\$144,790.00</b>
		Mobilization (5%)		\$7,239.50
		Plantings (5%)		\$7,239.50
		Ancillary Items (5%)		\$7,239.50
		Erosion & Sediment Control (10%)		\$14,479.00
		<b>Subtotal 1</b>		<b>\$180,987.50</b>
		Contingency (25%)		\$45,246.88
		<b>Subtotal 2</b>		<b>\$226,234.38</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$101,805.47
		<b>Total</b>		<b>\$328,039.84</b>
		<b>Estimated Project Cost</b>		<b>\$330,000.00</b>

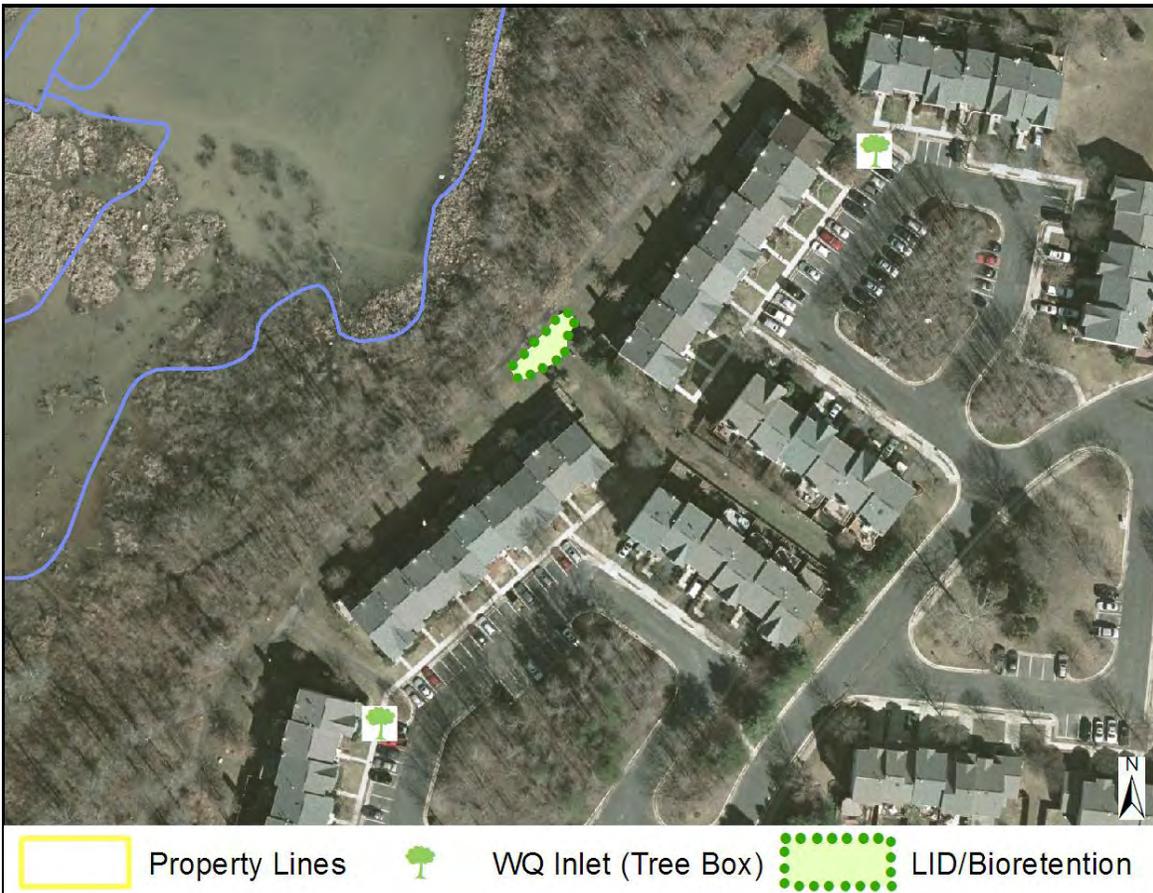
**LR9521 BMP/LID**



*Vicinity Map*

<b>Address</b>	13516 Canada Goose Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Union Mills Community Association
<b>PIN</b>	0553 0701 A1 0553 0702 A1
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	2 Acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** LID stormwater treatment is proposed for Project LR9521 for this uncontrolled area near Canada Goose Court. The project includes collecting runoff from an existing grassed swale in a bioretention area and replacing two curb inlets with tree box filters.



*Project Area Map*

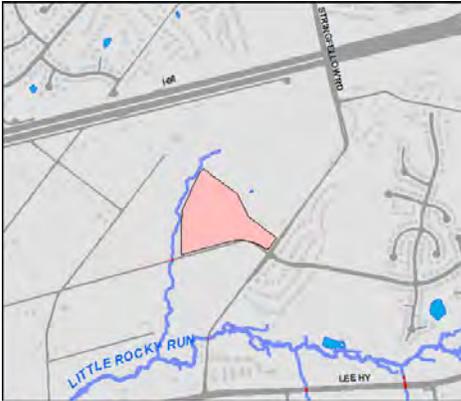
**Project Benefits:** An estimated 4lb/yr of phosphorus will be removed. The bioretention area will enhance filtration, biological uptake and microbial activity

**Project Design Considerations:** No permitting/construction/access limitations exist. Drainage swale draining to proposed bioretention area was surveyed for potential enhancement, but it likely impacted by existing utility crossings. Bioretention area proposed within floodplain easement, but outside 100-yr floodplain boundary.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	100	SY	\$150.00	\$15,000.00
Manufactured BMP (ie:Tree Box Filter)	2	EA	\$10,000.00	\$20,000.00
Organic Compost Soil Amendment	25	CY	\$40.00	\$1,000.00
		<b>Base Construction Cost</b>		<b>\$36,000.00</b>
		Mobilization (5%)		\$1,800.00
		Plantings (5%)		\$1,800.00
		Ancillary Items (5%)		\$1,800.00
		Erosion & Sediment Control (10%)		\$3,600.00
		<b>Subtotal 1</b>		<b>\$45,000.00</b>
		Contingency (25%)		\$11,250.00
		<b>Subtotal 2</b>		<b>\$56,250.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$25,312.50
		<b>Total</b>		<b>\$81,562.50</b>
		<b>Estimated Project Cost</b>		<b>\$90,000.00</b>

**LR9522 BMP/LID**



Vicinity Map

<b>Address</b>	13340 Leland Rd
<b>Location</b>	Colin Powell Elementary School
<b>Landowner</b>	School Board of Fairfax County
<b>PIN</b>	0553 01 0020A
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	3 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Project LR9522 provides stormwater retrofits at the Colin Powell Elementary School. Retrofits include: cutting curbs and installing bioretention areas in grassed medians in five locations and replacing one curb inlet with a tree box filter. This LID suite will treat most of the two parking lots.



Project Area Map

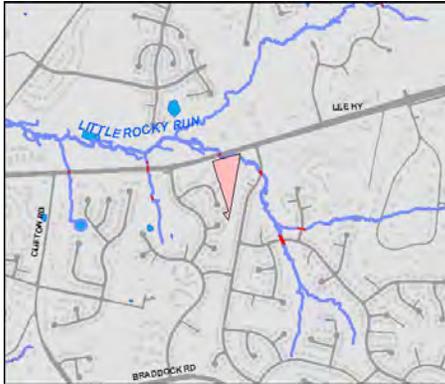
**Project Benefits:** An estimated 26 lb/yr of phosphorus will be removed. Project will enhance filtration, biological uptake and microbial activity. Educational opportunities exist for the students.

**Project Design Considerations:** There are existing yard inlets on either side of the front entrance and behind the school which could be retrofitted for water quality treatment, but additional information on the pipe configuration and depths is required to determine feasibility. Consider collecting and storing roof drainage onsite. This site drains to R-161, where additional plantings have been proposed, but the two projects should not impact one another nor do they need to be constructed in a particular order. No permitting/construction/access limitations exist.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	550	SY	\$150.00	\$82,500.00
Manufactured BMP (ie:Tree Box Filter)	1	EA	\$10,000.00	\$10,000.00
Organic Compost Soil Amendment	45	CY	\$40.00	\$1,800.00
		<b>Base Construction Cost</b>		<b>\$94,300.00</b>
		Mobilization (5%)		\$4,715.00
		Plantings (5%)		\$4,715.00
		Ancillary Items (5%)		\$4,715.00
		Erosion & Sediment Control (10%)		\$9,430.00
		<b>Subtotal 1</b>		<b>\$117,875.00</b>
		Contingency (25%)		\$29,468.75
		<b>Subtotal 2</b>		<b>\$147,343.75</b>
		Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)		\$66,304.69
		<b>Total</b>		<b>\$213,648.44</b>
		<b>Estimated Project Cost</b>		<b>\$220,000.00</b>

**LR9523 BMP/LID**



Vicinity Map

<b>Address</b>	13006 Feldspar Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Hayden Village Community Association
<b>PIN</b>	0553 08 G
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	43 Acres
<b>Receiving Waters</b>	Willow Springs Branch

**Description:** Project LR9523 is located near Feldspar Court and includes constructing a wetland detention cell to treat for water quality only. This is a large untreated area where more decentralized retrofits would be very difficult due to private property constraints.



Project Area Map

**Project Benefits:** An estimated 11.5 lb/yr of phosphorus will be removed. The constructed wetland will replicate natural wetland ecosystems while allowing for gravitational settling, biological uptake, and microbial activity. It will possess high amenity and habitat value.

**Project Design Considerations:** The feasibility of this project is low. There are significant access issues necessitating coordination with VDOT and the HOA (not a part of the WAG). A wetlands permit may need to be obtained. The footprint was selected to avoid the 100 year floodplain and to be set back from existing property owners to the maximum extent practicable. Many mature trees would need to be removed. The project can be designed for channel protection volume or larger events, but the focus of this conceptual was to treat for water quality only. Floodplain and storm drainage easements exist currently. There are no sequencing concerns for this project.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Access Road	1400	SY	\$25.00	\$35,000.00
Access Road Gate	1	EA	\$2,500.00	\$2,500.00
Clear and Grub	1.2	AC	\$8,500.00	\$10,200.00
Structural BMP and Incidentals	bmp riser	LS	\$10,000 - \$20,000	\$10,000.00
New Storm Pipe	40	LF	\$	\$8,000.00
Grading and Excavation	2100	CY	\$35.00	\$73,500.00
Embankment	800	CY	\$50.00	\$40,000.00
Organic Compost Soil Amendment	1100	CY	\$40.00	\$44,000.00
			<b>Base Construction Cost</b>	<b>\$223,200.00</b>
			Mobilization (5%)	\$11,160.00
			Plantings (5%)	\$11,160.00
			Ancillary Items (5%)	\$11,160.00
			Erosion & Sediment Control (10%)	\$22,320.00
			<b>Subtotal 1</b>	<b>\$279,000.00</b>
			Contingency (25%)	\$69,750.00
			<b>Subtotal 2</b>	<b>\$348,750.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$156,937.50
			<b>Total</b>	<b>\$505,687.50</b>
			<b>Estimated Project Cost</b>	<b>\$510,000.00</b>

**LR9524 BMP/LID**



Vicinity Map

<b>Address</b>	5355 Ashleigh Rd
<b>Location</b>	Subdivision
<b>Landowner</b>	Hampton Forest HOA
<b>PIN</b>	0554 07 B1
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	7 acres
<b>Receiving Waters</b>	Unnamed tributary to Willow Spring Branch

**Description:** The stormwater outfall shown below provides no water quality treatment and suffers from minor erosion. LR9524 will provide new water quality treatment with a constructed wetland area and will prevent future upstream and downstream erosion by dissipating excess energy.



Project Area Map

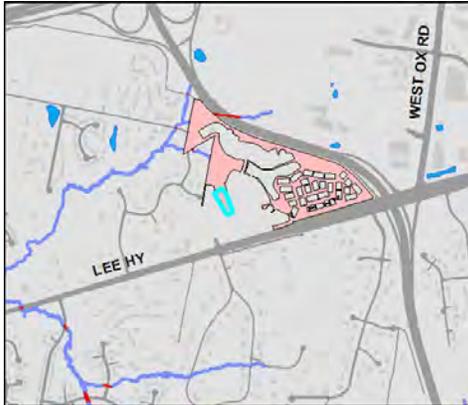
**Project Benefits:** LR9524 will improve water quality by removing approximately 1 lb of phosphorus per year. It will treat a portion of the flow draining from subbasin LR-WS-0002. It will also provide critical wetland habitat for native wildlife.

**Project Design Considerations:** LR9524 is located on Hampton Forest Homeowner's Association property, is mostly contained by a floodplain and storm drainage easement. If necessary, the project footprint can easily be manipulated to fit completely within the easement without sacrificing significant water quality treatment. Impacts to mature trees should be minimal.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Bioretention Filters & Basin	500	SY	\$150.00	\$75,000.00
Manufactured BMP (ie:Tree Box Filter)		EA	\$10,000.00	\$0.00
Organic Compost Soil Amendment		CY	\$40.00	\$0.00
Clear and Grub	0.2	AC	\$8,500.00	\$1,700.00
Grading and Excavation	250	CY	\$35.00	\$8,750.00
Embankment	100	CY	\$50.00	\$5,000.00
		<b>Base Construction Cost</b>		<b>\$90,450.00</b>
		Mobilization (5%)		\$4,522.50
		Plantings (5%)		\$4,522.50
		Ancillary Items (5%)		\$4,522.50
		Erosion & Sediment Control (10%)		\$9,045.00
		<b>Subtotal 1</b>		<b>\$113,062.50</b>
		Contingency (25%)		\$28,265.63
		<b>Subtotal 2</b>		<b>\$141,328.13</b>
		Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)		\$63,597.66
		<b>Total</b>		<b>\$204,925.78</b>
		<b>Estimated Project Cost</b>		<b>\$210,000.00</b>

**LR9526 BMP/LID**



*Vicinity Map*

<b>Address</b>	4864 Muddler Way
<b>Location</b>	Subdivision
<b>Landowner</b>	Buckley's Reserve Homeowner's Association
<b>PIN</b>	0554 17 A
<b>Control Type</b>	Water Quality
<b>Drainage Area</b>	22 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Divert flow from outfall into a wetland marsh area. Wetland marsh to treat water quality volume only, channel protection treatment will require removal of trees or realigning storm sewer/outfall. There is a trail and a workout station within the proposed footprint which will need to be relocated.



*Project Area Map*

**Project Benefits:** An estimated 4.6 lb/yr of phosphorus will be removed. Signage can be provided and trail can be routed through or around wetland cell to promote quality benefit. The created wetland provides ideal environment for gravitational settling, biological uptake, and microbial activity. Project will provide habitat enhancement for insects, amphibians, and birds.

**Project Design Considerations:** This is the only project proposed for this subwatershed and sequencing is not an issue. Though not included as part of this estimate, channel-protection may be achieved at this location. There is an existing storm drainage easement to provide access, but the bulk of the work is on HOA property, outside of the easement. This HOA was not represented on the WAG to provide input on this project.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Access Road	210	SY	\$25.00	\$5,250.00
Access Road Gate	1	EA	\$2,500.00	\$2,500.00
Clear and Grub	0.1	AC	\$8,500.00	\$850.00
Structural BMP and Incidentals	1	LS	\$10,000 - \$20,000	\$10,000.00
Grading and Excavation	675	CY	\$35.00	\$23,625.00
Embankment	100	CY	\$50.00	\$5,000.00
New Storm Pipe	50	LF	\$100 - \$300	\$5,000.00
Organic Compost Soil Amendment	60	CY	\$40.00	\$2,400.00
			<b>Base Construction Cost</b>	<b>\$54,625.00</b>
			Mobilization (5%)	\$2,731.25
			Plantings (5%)	\$2,731.25
			Ancillary Items (5%)	\$2,731.25
			Erosion & Sediment Control (10%)	\$5,462.50
			<b>Subtotal 1</b>	<b>\$68,281.25</b>
			Contingency (25%)	\$17,070.31
			<b>Subtotal 2</b>	<b>\$85,351.56</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$38,408.20
			<b>Total</b>	<b>\$123,759.77</b>
			<b>Estimated Project Cost</b>	<b>\$130,000.00</b>

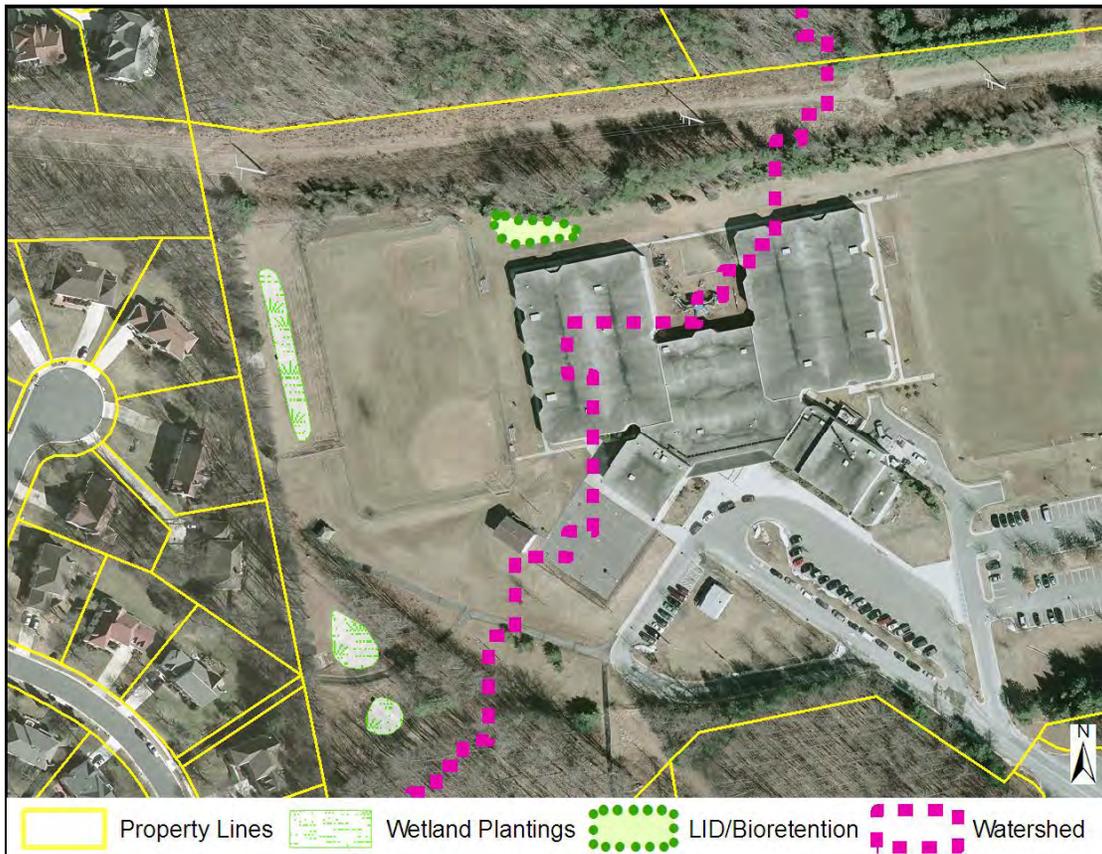
**LR9527 BMP/LID**



*Vicinity Map*

<b>Address</b>	5400 Willow Springs School Rd
<b>Location</b>	Willow Springs Elementary School
<b>Landowner</b>	School Board of Fairfax County
<b>PIN</b>	0662 01 0004A
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	7 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Willow Springs Branch

**Description:** Project LR9527 provides stormwater retrofits at the Willow Springs Elementary School. Retrofits include: altering the pond geometry and adding wetland plantings to three existing dry ponds and adding a bioretention area to capture impervious runoff from the roof.



*Project Area Map*

**Project Benefits:** Project will reduce phosphorus, nitrogen and sediment loads. Plantings/geometry adjustments will promote gravitational settling, biological uptake and microbial activity while providing habitat enhancement for insects, birds, amphibians, etc. The project will provide educational opportunities for students.

**Project Design Considerations:** School site on border between the Little Rocky Run watershed and the Pope's Head Run watershed. A project was proposed in the latter plan on the site, so this proposal focuses solely on the drainage to Little Rocky Run. Roof drainage may need to be diverted to a bioretention area. The proposed measures are for quality control only and therefore sequencing/coordination is not critical. There are no access/permitting issues.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale		SY	\$50.00	\$0.00
Pervious Pavement		SY	\$100.00	\$0.00
Vegetated Roof		SY	\$450.00	\$0.00
Percolation/Infiltration Trench		SY	\$75.00	\$0.00
Grading and Excavation	400	CY	\$35.00	\$14,000.00
Bioretention Filters & Basin	250	SY	\$150.00	\$37,500.00
Manufactured BMP (ie: Tree Box Filter)	0	EA	\$10,000.00	\$0.00
Organic Compost Soil Amendment	100	CY	\$40.00	\$4,000.00
		<b>Base Construction Cost</b>		<b>\$55,500.00</b>
		Mobilization (5%)		\$2,775.00
		Plantings (5%)		\$2,775.00
		Ancillary Items (5%)		\$2,775.00
		Erosion & Sediment Control (10%)		\$5,550.00
		<b>Subtotal 1</b>		<b>\$69,375.00</b>
		Contingency (25%)		\$17,343.75
		<b>Subtotal 2</b>		<b>\$86,718.75</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$39,023.44
		<b>Total</b>		<b>\$125,742.19</b>
		<b>Estimated Project Cost</b>		<b>\$130,000.00</b>