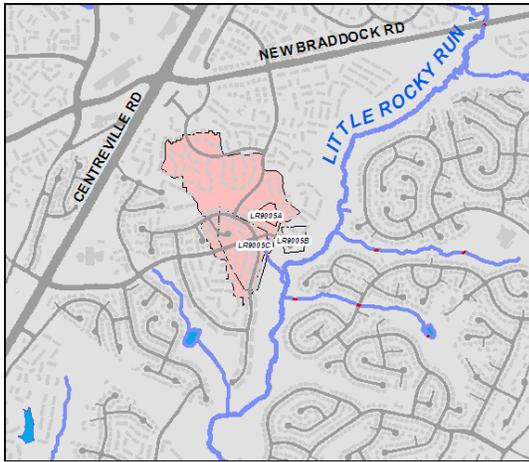


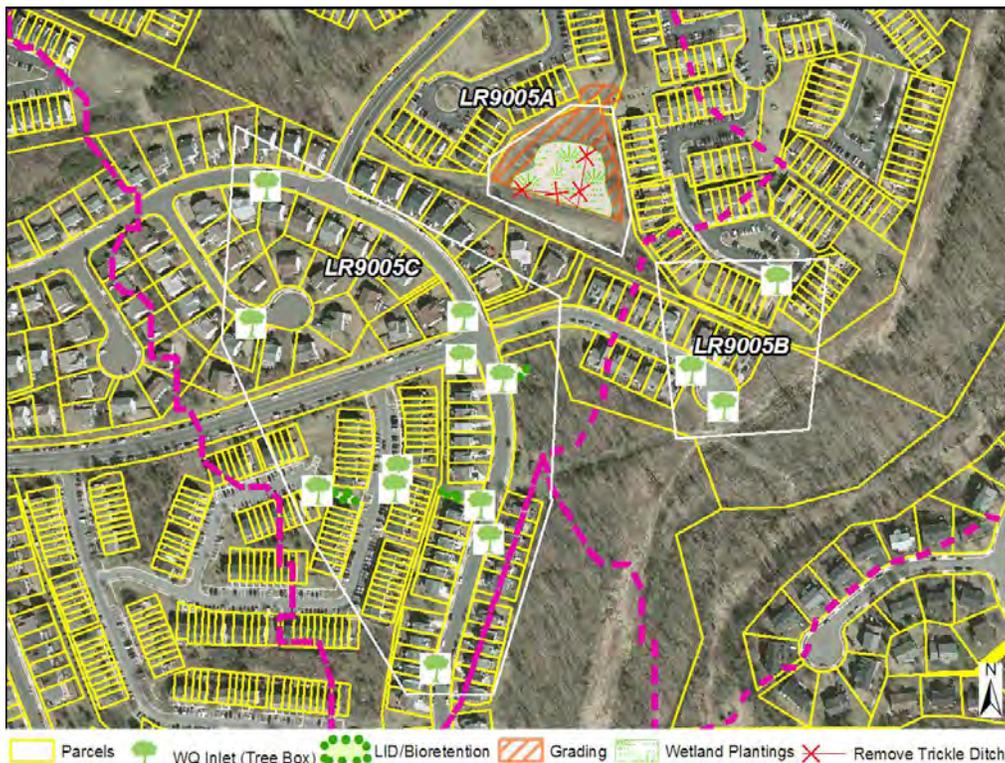
## LR9005 Regional Pond Alternative Group



Vicinity Map

<b>Address</b>	13915 Green Trails Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Green Trails Homeowner's Association/Heritage Forest Homeowner's Association
<b>PIN</b>	0654 0304 K 0654 1004 A 0652 09 L
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	65 Acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** Project suite is alternative to Regional Pond R-05. LR9005A is a retrofit to existing facility 0829DP. Quality enhancements as well as storage increases are proposed. LR9005B is an LID application (3 tree box filters to replace curb drop inlets) to a small untreated portion of the subdivision. This area was not originally expected to be treated by the regional facility, but was added to the alternative suite because it is a strategic location to manage untreated runoff to obtain similar cumulative pollutant removal results as the original proposed pond. LR9005C involves treating the portion of the drainage area intended to drain to R-05 that is not treated by existing facility 0829DP for water quality. A combination of tree box filters (11) and bioretention areas (3) are proposed in order to eliminate the need for a pond at the outfall.



Project Area Map

**Project Benefits:** Project suite will simulate removal efficiencies from inactive Regional Pond R-05. Loading summaries can be found in Section 6 of the Watershed Management Plan. 9005B is below the cost threshold and thus was not broken out separately below, but proposes three tree box filters as shown in the Project Area Map.

**Project Design Considerations:** 9005A - Adding storage to existing facility (0829DP) encroaches into HOA property and is not contained within existing easement. 9005C - Bioretention areas are proposed within HOA property and outside of existing easements and in some cases are close in proximity to private property as well as existing utilities. Treatment was provided throughout subbasin to reduce footprint of treatment at the outfall (where the original regional facility was proposed).

**Total Cost (9005A-9005C):**

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	275	SY	\$150.00	\$41,250.00
Manufactured BMP (ie:Tree Box Filter)	14	EA	\$10,000.00	\$140,000.00
Grading and Excavation	2500	CY	\$35.00	\$87,500.00
Remove Trickle Ditch	150	SY	\$10.71	\$1,606.50
Organic Compost Soil Amendment	320	CY	\$40.00	\$12,800.00
			<b>Base Construction Cost</b>	<b>\$283,156.50</b>
			Mobilization (5%)	\$14,157.83
			Plantings (5%)	\$14,157.83
			Ancillary Items (5%)	\$14,157.83
			Erosion & Sediment Control (10%)	\$28,315.65
			<b>Subtotal 1</b>	<b>\$353,945.63</b>
			Contingency (25%)	\$88,486.41
			<b>Subtotal 2</b>	<b>\$442,432.03</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$199,094.41
			<b>Total</b>	<b>\$641,526.45</b>
			<b>Estimated Project Cost</b>	<b>\$650,000.00</b>

**Project LR9005A:**



**Description:** LR9005A is a proposed retrofit to existing facility 0829DP. Remove the existing trickle ditches. Add micropools and wetland plantings. Modify internal pond geometry – focus on extending the low flow path. Adding storage will depend on cooperation from HOA. Costs are summarized below:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub		AC	\$8,500.00	\$0.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	2500	CY	\$35.00	\$87,500.00
Embankment		CY	\$50.00	\$0.00
Remove Trickle Ditch	150	SY	\$10.71	\$1,606.50
Organic Compost Soil Amendment	250	CY	\$40.00	\$10,000.00
			<b>Base Construction Cost</b>	<b>\$99,106.50</b>
			Mobilization (5%)	\$4,955.33
			Plantings (5%)	\$4,955.33
			Ancillary Items (5%)	\$4,955.33
			Erosion & Sediment Control (10%)	\$9,910.65
			<b>Subtotal 1</b>	<b>\$123,883.13</b>
			Contingency (25%)	\$30,970.78
			<b>Subtotal 2</b>	<b>\$154,853.91</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$69,684.26
			<b>Total</b>	<b>\$224,538.16</b>
			<b>Estimated Project Cost</b>	<b>\$230,000.00</b>

**Project LR9005C:**



*Project Area Map*

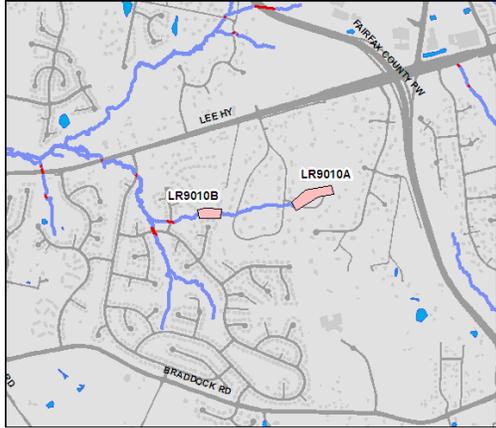
**Description:** LR9005C treats all of the area that drains to the proposed regional facility that is not treated by existing 0829DP. The HOA is on record saying that a pond is not a viable solution, so LID measures are proposed throughout the subbasin. Treatment is still proposed at the outfall, but only a bioretention area that can be constructed with minimal impact to mature trees. The existing StormNet data is inaccurate in this area.

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	275	SY	\$150.00	\$41,250.00
Manufactured BMP (ie:Tree Box Filter)	11	EA	\$10,000.00	\$110,000.00
Organic Compost Soil Amendment	70	CY	\$40.00	\$2,800.00
			<b>Base Construction Cost</b>	<b>\$154,050.00</b>
			Mobilization (5%)	\$7,702.50
			Plantings (5%)	\$7,702.50
			Ancillary Items (5%)	\$7,702.50
			Erosion & Sediment Control (10%)	\$15,405.00
			<b>Subtotal 1</b>	<b>\$192,562.50</b>
			Contingency (25%)	\$48,140.63
			<b>Subtotal 2</b>	<b>\$240,703.13</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$108,316.41
			<b>Total</b>	<b>\$349,019.53</b>
			<b>Estimated Project Cost</b>	<b>\$350,000.00</b>

Little Rocky Run Watershed  
Little Rocky Run – Upper Watershed Management Area

## LR9010 Regional Pond Alternative Group

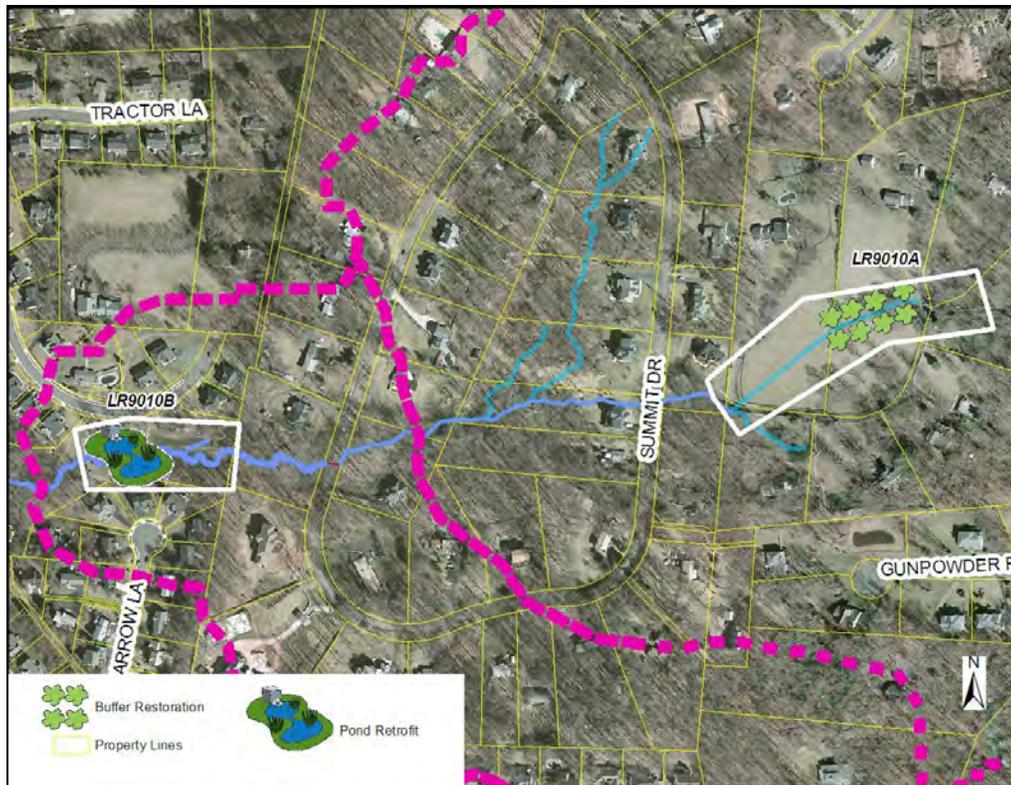
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Vicinity Map

<b>Address</b>	5378 Harrow Lane
<b>Location</b>	Subdivision
<b>Landowner</b>	Hampton Woods II Homeowner's Association Ellsworth Steven K Smith Arthur Jr (Heirs of)
<b>PIN</b>	0554 13 A 0554 05 0001 0554 05 0002
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	162 acres
<b>Receiving Waters</b>	Unnamed Tributary to Willow Springs Branch

**Description:** Project suite is alternative to Regional Pond R-10. LR9010A is a buffer restoration project that resides on private property. Just downstream of the proposed buffer restoration, the stream is piped for approximately 350 feet and would benefit from being daylighted, but it also resides on private property. LR9010B is a retrofit of existing stormwater pond 1452DP which proposes removing existing trickle ditches, increasing storage capacity, adding micropools and wetland plantings and altering pond geometry.



Project Area Map

**Project Benefits:** Project suite will partially simulate pollutant removal of inactive Regional Pond R-10. Loading summaries can be found in Section 6 of the Watershed Management Plan. The drainage area consists primarily of private property and the retrofit of the downstream facility is the most practical option. While this suite doesn't achieve the same results as the hypothetical regional, it will still positively impact water quality issues, as described in the individual project components below.

**Project Design Considerations:** LR9010A - Main obstacle is that the proposed buffer restoration is on private property. The downstream reach that is piped is currently a mowed lawn for recreational purposes possibly horseriding. There is no existing easement but the site is accessible through Chronical Drive. There are no permitting/sequencing issues. LR9010B - This facility (R-19) is downstream of proposed regional facility R-10. The drainage area primarily consists of low density residential areas. Proposed grading limits are restricted by property boundaries. The available storage volume without acquiring land is small. There are no sequencing/ access issues. A wetland permit may be needed.

**Total Cost (9010A & 9010B):**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.5	AC	\$8,500.00	\$4,250.00
Grading and Excavation	2500	CY	\$35.00	\$87,500.00
Structural BMP Retrofit and Incidentals		LS	\$10,000 - \$20,000	\$0.00
Embankment		CY	\$50.00	\$0.00
Outflow Pipe		LF	\$125.00	\$0.00
Rip Rap Stabilization		SY	\$100.00	\$0.00
Organic Compost Soil Amendment	900	CY	\$40.00	\$36,000.00
Remove Trickle Ditch	335	SY	\$10.71	\$3,587.85
Plantings		1 AC	\$25,000.00	\$25,000.00
			<b>Base Construction Cost</b>	<b>\$156,337.85</b>
			Mobilization (5%)	\$7,816.89
			Ancillary Items (5%)	\$7,816.89
			Erosion & Sediment Control (10%)	\$15,633.79
			<b>Subtotal 1</b>	<b>\$187,605.42</b>
			Contingency (25%)	\$46,901.36
			<b>Subtotal 2</b>	<b>\$234,506.78</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$105,528.05
			<b>Total</b>	<b>\$340,034.82</b>
			<b>Estimated Project Cost</b>	<b>\$350,000.00</b>

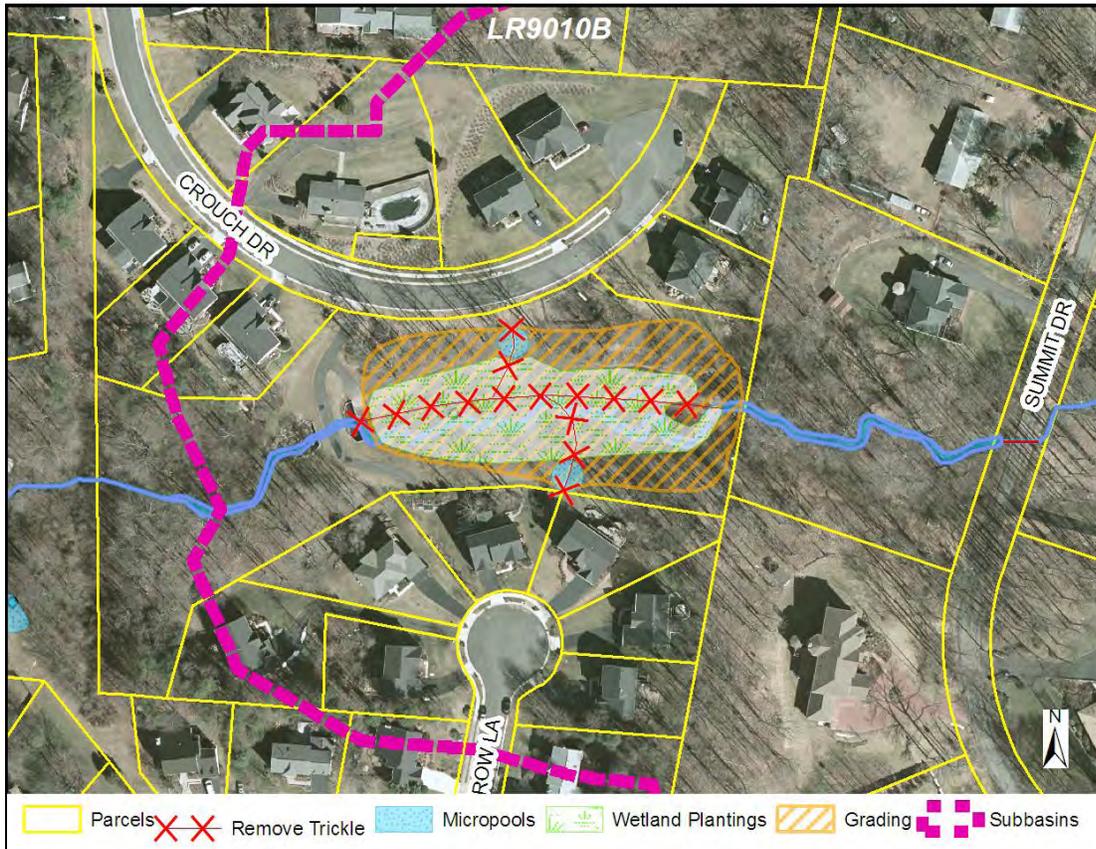
**Project LR9010A:**



**Description:** LR9010A is a proposed buffer restoration. There is insufficient riparian buffer for a 260' reach upstream of Chronical Drive.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Plantings	1	AC	\$25,000.00	\$25,000.00
Organic Compost Soil Amendment	600	CY	\$40.00	\$24,000.00
			<b>Base Construction Cost</b>	<b>\$49,000.00</b>
			Mobilization (5%)	\$2,450.00
			Ancillary Items (5%)	\$2,450.00
			Invasive Plant Eradication (10%)	\$4,900.00
			Erosion & Sediment Control (10%)	\$4,900.00
			<b>Subtotal 1</b>	<b>\$63,700.00</b>
			Contingency (25%)	\$15,925.00
			<b>Subtotal 2</b>	<b>\$79,625.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$35,831.25
			<b>Total</b>	<b>\$115,456.25</b>
			<b>Estimated Project Cost</b>	<b>\$120,000.00</b>

**Project LR9010B:**



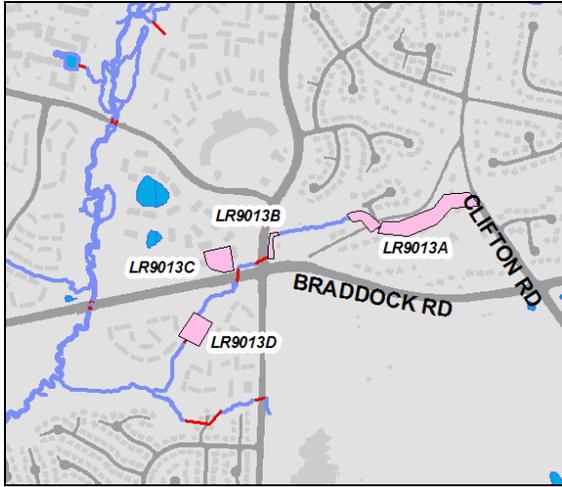
**Description:** LR9010B is a retrofit to existing facility R-19. Remove the existing trickle ditches. Add micropools and wetland plantings. Modify internal pond geometry – focus on extending the low flow path.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.5	AC	\$8,500.00	\$4,250.00
Grading and Excavation	2500	CY	\$35.00	\$87,500.00
Structural BMP Retrofit and Incidentals		LS	\$10,000 - \$20,000	\$0.00
Embankment		CY	\$50.00	\$0.00
Outflow Pipe		LF	\$125.00	\$0.00
Rip Rap Stabilization		SY	\$100.00	\$0.00
Organic Compost Soil Amendment	300	CY	\$40.00	\$12,000.00
Remove Trickle Ditch	335	SY	\$10.71	\$3,587.85
			<b>Base Construction Cost</b>	<b>\$107,337.85</b>
			Mobilization (5%)	\$5,366.89
			Ancillary Items (5%)	\$5,366.89
			Erosion & Sediment Control (10%)	\$10,733.79
			<b>Subtotal 1</b>	<b>\$128,805.42</b>
			Contingency (25%)	\$32,201.36
			<b>Subtotal 2</b>	<b>\$161,006.78</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$72,453.05
			<b>Total</b>	<b>\$233,459.82</b>
			<b>Estimated Project Cost</b>	<b>\$240,000.00</b>



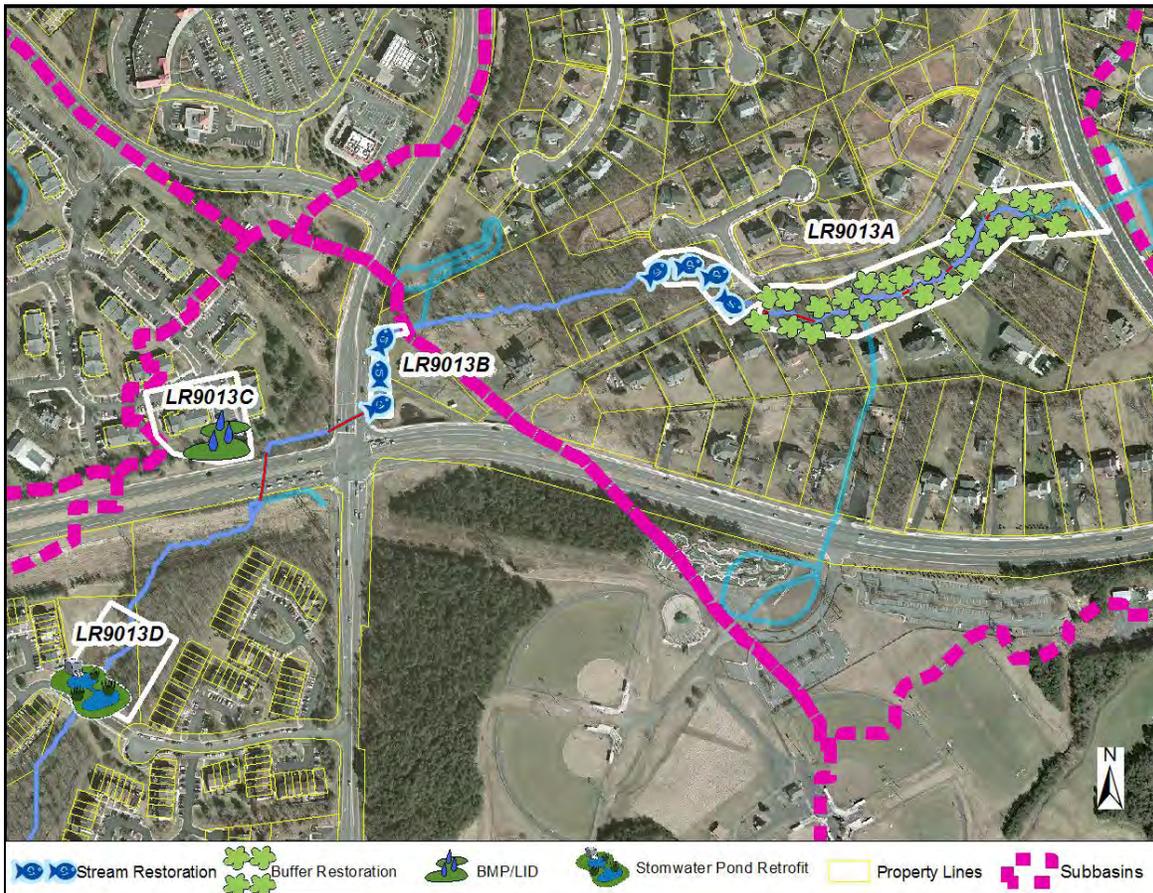
## LR9013 Regional Pond Alternative Group



Vicinity Map

<b>Address</b>	13400 Braddock Rd
<b>Location</b>	Subdivision
<b>Landowner</b>	Clifton Pines II HOA VDOT Little Rocky Run HOA The Ponds at Centreville Multiple private landowners
<b>PIN</b>	Multiple PINs
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	185 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** The LR9013 Regional Pond Alternative Group is a replacement for regional pond R-13. It consists of a stream and buffer restoration (LR9013A), a second stream restoration (LR9013B), a new BMP (LR9013C), and a pond retrofit (LR9013D).



LR9013 Project Area Map

**Project Benefits:** Project suite will simulate removal efficiencies from inactive Regional Pond R-13. Loading summaries can be found in Section 6 of the Watershed Management Plan.

**Design Considerations:** LR9013A: The stream restoration portion of LR9013A is located within a floodplain and stormwater easement on Clifton Pines II HOA property, but most of the buffer restoration is not located within an easement. The County will need to coordinate with landowners to restore the riparian buffer. LR9013B: Steep side slopes make access to the project site difficult, and must be accounted for in the restoration design, along with the narrow site footprint. LR9013B is partially located on private property (within a storm drainage easement), and is also partially located on VDOT property. LR9013C: LR9013C is not located within an existing easement. The site can be accessed from Orchard Dr. LR9013D: LR9013D is located on Little Rocky Run HOA property, within an existing stormwater management easement. The designer must be cautious about expanding either the pond footprint or the floodplain – there appears to be ample room for increased detention, but the pond is still surrounded by houses.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Construct New Channel	480	LF	\$200.00	\$96,000.00
Add'l Cost, first 500 LF	480	LF	\$200.00	\$96,000.00
Bioretention Filters & Basin	220	SY	\$150.00	\$33,000.00
Clear and Grub	0.3	AC	\$10,000.00	\$3,000.00
Grading and Excavation	1400	CY	\$35.00	\$49,000.00
Organic Compost Soil Amendment	370	CY	\$40.00	\$14,800.00
Plantings	1	AC	\$25,000.00	\$25,000.00
Structural BMP Retrofit and Incidentals	1	LS	\$10,000 - \$20,000	\$15,000.00
Vegetated Swale	90	SY	\$50.00	\$4,500.00
		<b>Base Construction Cost</b>		<b>\$336,300.00</b>
		Mobilization (5%)		\$16,815.00
		Ancillary Items (5%)		\$16,815.00
		Erosion & Sediment Control (10%)		\$33,630.00
		<b>Subtotal 1</b>		<b>\$403,560.00</b>
		Contingency (25%)		\$100,890.00
		<b>Subtotal 2</b>		<b>\$504,450.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$227,002.50
		<b>Total</b>		<b>\$731,452.50</b>
		<b>Estimated Project Cost</b>		<b>\$740,000.00</b>



LR9013A Project Area Map

**LR9013A Description:** LR9013A will reduce pollutant loading, restore eroded areas and prevent future erosion, and create important riparian habitat for native wildlife. It will also provide the opportunity to educate property owners about the importance of preserving stream buffers.

**LR9013A Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.2	AC	\$10,000.00	\$2,000.00
Construct New Channel	250	LF	\$200.00	\$50,000.00
Add'l Cost, first 500 LF	250	LF	\$200.00	\$50,000.00
Plantings	1	AC	\$25,000.00	\$25,000.00
			<b>Base Construction Cost</b>	<b>\$127,000.00</b>
			Mobilization (5%)	\$6,350.00
			Ancillary Items (5%)	\$6,350.00
			Erosion & Sediment Control (10%)	\$12,700.00
			<b>Subtotal 1</b>	<b>\$152,400.00</b>
			Contingency (25%)	\$38,100.00
			<b>Subtotal 2</b>	<b>\$190,500.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$85,725.00
			<b>Total</b>	<b>\$276,225.00</b>
			<b>Estimated Project Cost</b>	<b>\$280,000.00</b>



LR9013B Project Area Map

**LR9013B Description:** LR9013B will reduce pollutant loading, provide higher-quality habitat for native wildlife, and reduce the potential for future erosion problems.

**LR9013B Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.1	AC	\$10,000.00	\$1,000.00
Construct New Channel	230	LF	\$200.00	\$46,000.00
Add'l Cost, first 500 LF	230	LF	\$200.00	\$46,000.00
Plantings	0.1	AC	\$25,000.00	\$2,500.00
		<b>Base Construction Cost</b>		<b>\$95,500.00</b>
		Mobilization (5%)		\$4,775.00
		Ancillary Items (5%)		\$4,775.00
		Erosion & Sediment Control (10%)		\$9,550.00
		<b>Subtotal 1</b>		<b>\$114,600.00</b>
		Contingency (25%)		\$28,650.00
		<b>Subtotal 2</b>		<b>\$143,250.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$64,462.50
		<b>Total</b>		<b>\$207,712.50</b>
		<b>Estimated Project Cost</b>		<b>\$210,000.00</b>



LR9013C Project Area Map

**LR9013C Description:** Project LR9013C will provide new water quality treatment for previously untreated stormwater runoff.

**LR9013C Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Vegetated Swale	90	SY	\$50.00	\$4,500.00
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	220	SY	\$150.00	\$33,000.00
Manufactured BMP (ie: Tree Box Filter)	0	EA	\$10,000.00	\$0.00
Organic Compost Soil Amendment	20	CY	\$40.00	\$800.00
<b>Base Construction Cost</b>				<b>\$38,300.00</b>
Mobilization (5%)				\$1,915.00
Plantings (5%)				\$1,915.00
Ancillary Items (5%)				\$1,915.00
Erosion & Sediment Control (10%)				\$3,830.00
<b>Subtotal 1</b>				<b>\$47,875.00</b>
Contingency (25%)				\$11,968.75
<b>Subtotal 2</b>				<b>\$59,843.75</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$26,929.69
<b>Total</b>				<b>\$86,773.44</b>
<b>Estimated Project Cost</b>				<b>\$90,000.00</b>



LR9013D Project Area Map

**LR9013D Description:** Project LR9013D will essentially upgrade an existing pond to a new regional facility. It will eliminate a large amount of phosphorus pollution and will increase storage volume and decrease peak flow. It will also create higher-quality wetland habitat for native wildlife.

**LR9013D Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub		AC	\$8,500.00	\$0.00
Grading and Excavation	1400	CY	\$35.00	\$49,000.00
Structural BMP Retrofit and Incidentals	1	LS	\$10,000 - \$20,000	\$15,000.00
Embankment		CY	\$50.00	\$0.00
Outflow Pipe		LF	\$125.00	\$0.00
Rip Rap Stabilization		SY	\$100.00	\$0.00
Organic Compost Soil Amendment	350	CY	\$40.00	\$14,000.00
Remove Trickle Ditch		SY	\$10.71	\$0.00
			<b>Base Construction Cost</b>	<b>\$78,000.00</b>
			Mobilization (5%)	\$3,900.00
			Plantings (5%)	\$3,900.00
			Ancillary Items (5%)	\$3,900.00
			Erosion & Sediment Control (10%)	\$7,800.00
			<b>Subtotal 1</b>	<b>\$97,500.00</b>
			Contingency (25%)	\$24,375.00
			<b>Subtotal 2</b>	<b>\$121,875.00</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$54,843.75
			<b>Total</b>	<b>\$176,718.75</b>
			<b>Estimated Project Cost</b>	<b>\$180,000.00</b>

## LR9100 Stormwater Pond Retrofit



Vicinity Map

<b>Address</b>	13943 Stonefield Dr
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run Homeowner's Association
<b>PIN</b>	0654 02 H1
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	75 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Project LR9100 involves the retrofit of an existing pond to include wetland plantings and alter the existing pond geometry to extend the flow path. The project will also include removal of existing trickle ditches and the addition of micropools.



Project Area Map

**Project Benefits:** An estimated 5.5 lbs/yr of phosphorus will be removed. Nutrient uptake, gravitational settling and sediment trapping improved along with pond aesthetics. Wetland plantings can replicate ecosystems for a variety of wildlife (insects, birds, amphibians, etc.).

**Project Design Considerations:** Permitting and access issues are minimal for this existing facility. Stream/Buffer Restoration LR9200 is downstream of this project, but because only quality measures have been proposed, sequencing is not critical. This project can be considered independent from other proposed sites.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	0.05	AC	\$8,500.00	\$425.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	933	CY	\$35.00	\$32,655.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	233	CY	\$40.00	\$9,320.00
Remove Trickle Ditch	25	SY	\$10.71	\$267.75
			<b>Base Construction Cost</b>	<b>\$42,667.75</b>
			Mobilization (5%)	\$2,133.39
			Plantings (5%)	\$2,133.39
			Ancillary Items (5%)	\$2,133.39
			Erosion & Sediment Control (10%)	\$4,266.78
			<b>Subtotal 1</b>	<b>\$53,334.69</b>
			Contingency (25%)	\$13,333.67
			<b>Subtotal 2</b>	<b>\$66,668.36</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$30,000.76
			<b>Total</b>	<b>\$96,669.12</b>
			<b>Estimated Project Cost</b>	<b>\$100,000.00</b>

## LR9102 Stormwater Pond Retrofit



Vicinity Map

<b>Address</b>	6579 Rockland Dr
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run HOA
<b>PIN</b>	0654 02 A
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	57 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9102 is a retrofit of an existing stormwater pond. LR9102 will remove existing trickle ditches, increase storage capacity and lower peak flows, and will add micropools and wetland plantings.



Project Area Map

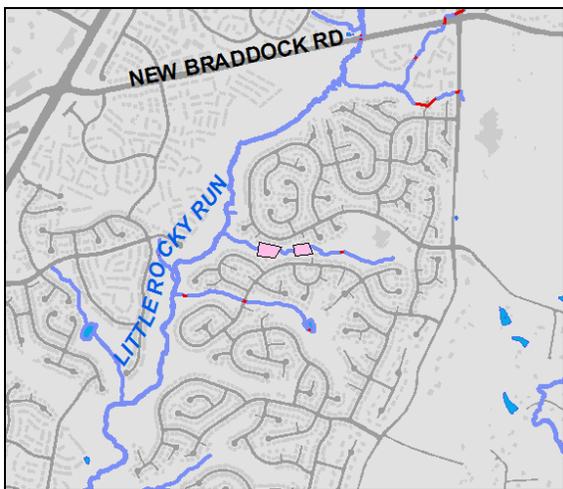
**Project Benefits:** LR9102 will eliminate approximately 3 lbs/yr of phosphorus pollution, and will increase storage volume and decrease peak flow. It will also create higher-quality wetland habitat for native wildlife.

**Project Design Considerations:** LR9102 is located upstream of stream restoration project LR9202. Since LR9102 will reduce peak flow, these projects should be coordinated and sequenced so as not to overdesign LR9202. LR9102 is located on Little Rocky Run HOA property, within a stormwater management easement.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	0.75	AC	\$8,500.00	\$6,375.00
Structural BMP and Incidentals	1	LS	\$10,000 - \$20,000	\$15,000.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	1750	CY	\$35.00	\$61,250.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	290	CY	\$40.00	\$11,600.00
			<b>Base Construction Cost</b>	<b>\$94,225.00</b>
			Mobilization (5%)	\$4,711.25
			Plantings (5%)	\$4,711.25
			Ancillary Items (5%)	\$4,711.25
			Erosion & Sediment Control (10%)	\$9,422.50
			<b>Subtotal 1</b>	<b>\$117,781.25</b>
			Contingency (25%)	\$29,445.31
			<b>Subtotal 2</b>	<b>\$147,226.56</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$66,251.95
			<b>Total</b>	<b>\$213,478.52</b>
			<b>Estimated Project Cost</b>	<b>\$220,000.00</b>

## LR9103 Pond Retrofit



Vicinity Map

<b>Address</b>	13815 Springstone Dr
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run HOA
<b>PIN</b>	0652 07 E 0654 04 L 0654 04 O 0654 04 P
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	147 acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** The LR9103 project area suffers from channel erosion and a clogged pond riser structure. LR9103 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity, clear the riser structure, and retrofit the pond with micropools and wetland plantings.



Project Area Map

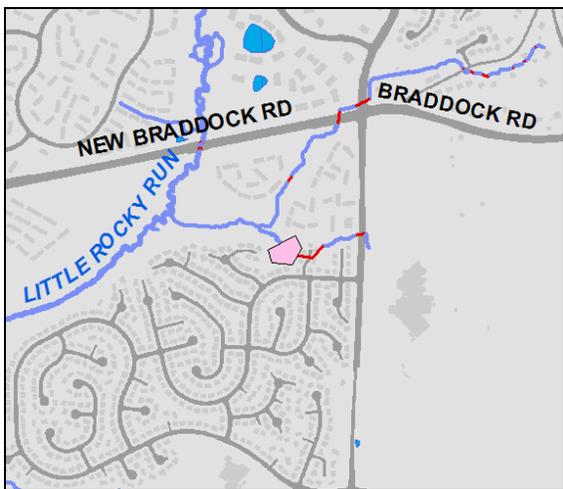
**Project Benefits:** With new micropools and wetland plantings, project LR9103 will prevent approximately 2.5 pounds of phosphorus and 11 pounds of nitrogen per year from reaching Little Rocky Run, and also will restore approximately 340 linear feet of stream channel. Higher quality habitat for fish and wildlife will also be provided.

**Project Design Considerations:** Projects LR9511 and LR9514 are both located along Springstone Dr. Coordination and sequencing of these projects should be considered. LR9103 is accessible from Springstone Dr, and is located on Little Rocky Run HOA property within floodplain and stormwater management easements. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of the LR9103 stream restoration project will outweigh its short-term environmental costs.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate	1	EA	\$2,500.00	\$2,500.00
Clear and Grub	1	AC	\$8,500.00	\$8,500.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	1025	CY	\$35.00	\$35,875.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	512.5	CY	\$40.00	\$20,500.00
Construct New Channel	340	LF	\$200.00	\$68,000.00
Add'l Cost, first 500 LF	340	LF	\$200.00	\$68,000.00
Plantings	0.5	AC	\$25,000.00	\$12,500.00
		<b>Base Construction Cost</b>		<b>\$215,875.00</b>
		Mobilization (5%)		\$10,793.75
		Plantings (5%)		\$10,793.75
		Ancillary Items (5%)		\$10,793.75
		Erosion & Sediment Control (10%)		\$21,587.50
		<b>Subtotal 1</b>		<b>\$269,843.75</b>
		Contingency (25%)		\$67,460.94
		<b>Subtotal 2</b>		<b>\$337,304.69</b>
		Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)		\$151,787.11
		<b>Total</b>		<b>\$489,091.80</b>
		<b>Estimated Project Cost</b>		<b>\$490,000.00</b>

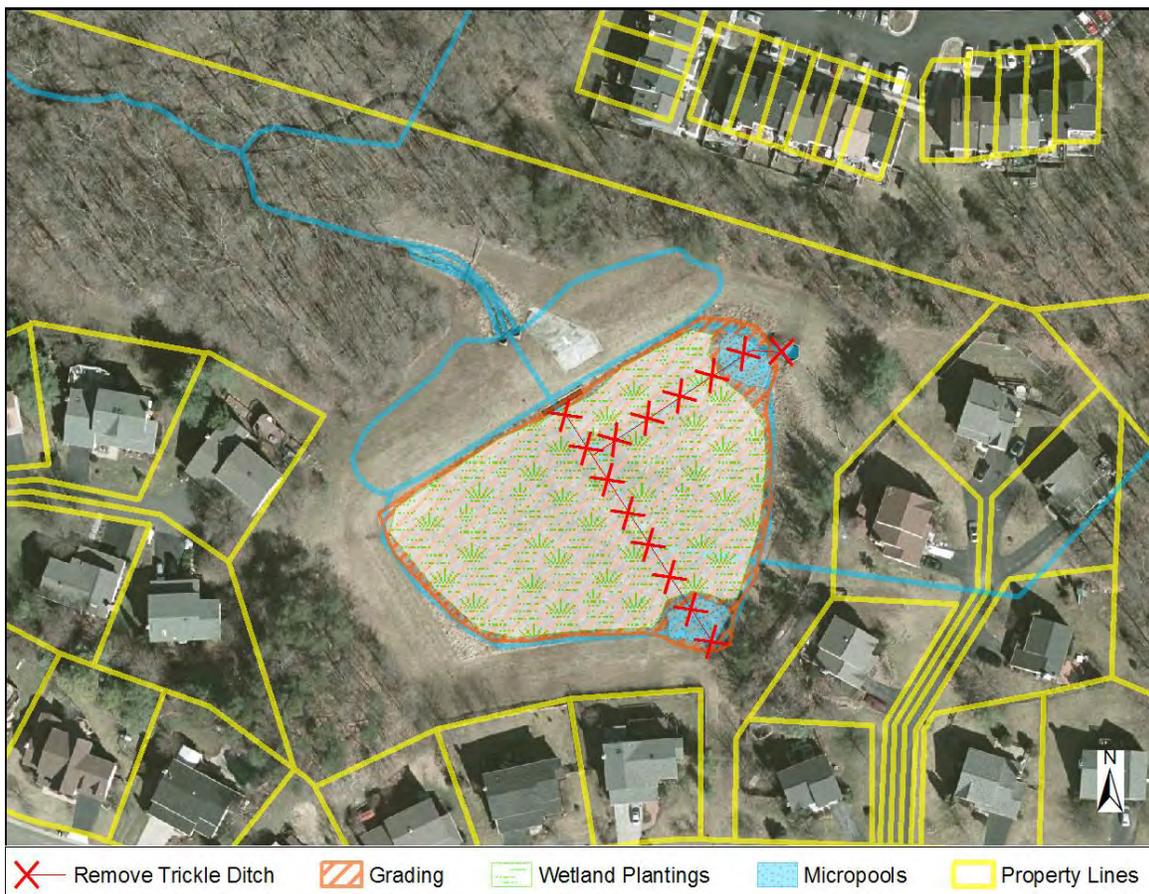
## LR9106 Pond Retrofit



Vicinity Map

<b>Address</b>	13534 Union Village Circle
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run HOA
<b>PIN</b>	0661 04 B1
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	103 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9106 will retrofit an existing stormwater pond to provide improved water quality control. Existing concrete trickle ditches will be removed, and new micropools and wetland plantings will be added.



✕ Remove Trickle Ditch   
   Grading   
   Wetland Plantings   
   Micropools   
   Property Lines

Project Area Map

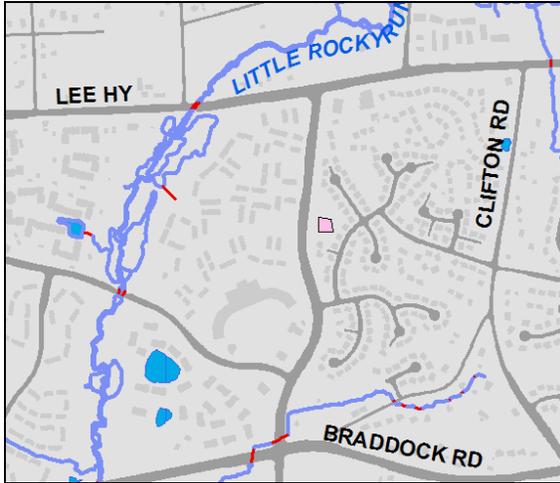
**Project Benefits:** Pond retrofit LR9106 will remove approximately 4 lb/yr of phosphorus. Nutrient uptake, sediment trapping, pond aesthetics, and wildlife habitat will be improved.

**Project Design Considerations:** New BMP/LID LR9515 is located approximately 700 ft west of LR9106. Coordination of LR9106 and LR9515 should be considered. Permitting factors should be minimal. The pond is located near several houses, and care should be taken not to disturb nearby private property.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	1	AC	\$8,500.00	\$8,500.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	1670	CY	\$35.00	\$58,450.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	420	CY	\$40.00	\$16,800.00
Remove Trickle Ditch	250	SY	\$10.71	\$2,677.50
			<b>Base Construction Cost</b>	<b>\$83,750.00</b>
			Mobilization (5%)	\$4,187.50
			Plantings (5%)	\$4,187.50
			Ancillary Items (5%)	\$4,187.50
			Erosion & Sediment Control (10%)	\$8,375.00
			<b>Subtotal 1</b>	<b>\$104,687.50</b>
			Contingency (25%)	\$26,171.88
			<b>Subtotal 2</b>	<b>\$130,859.38</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$58,886.72
			<b>Total</b>	<b>\$189,746.09</b>
			<b>Estimated Project Cost</b>	<b>\$190,000.00</b>

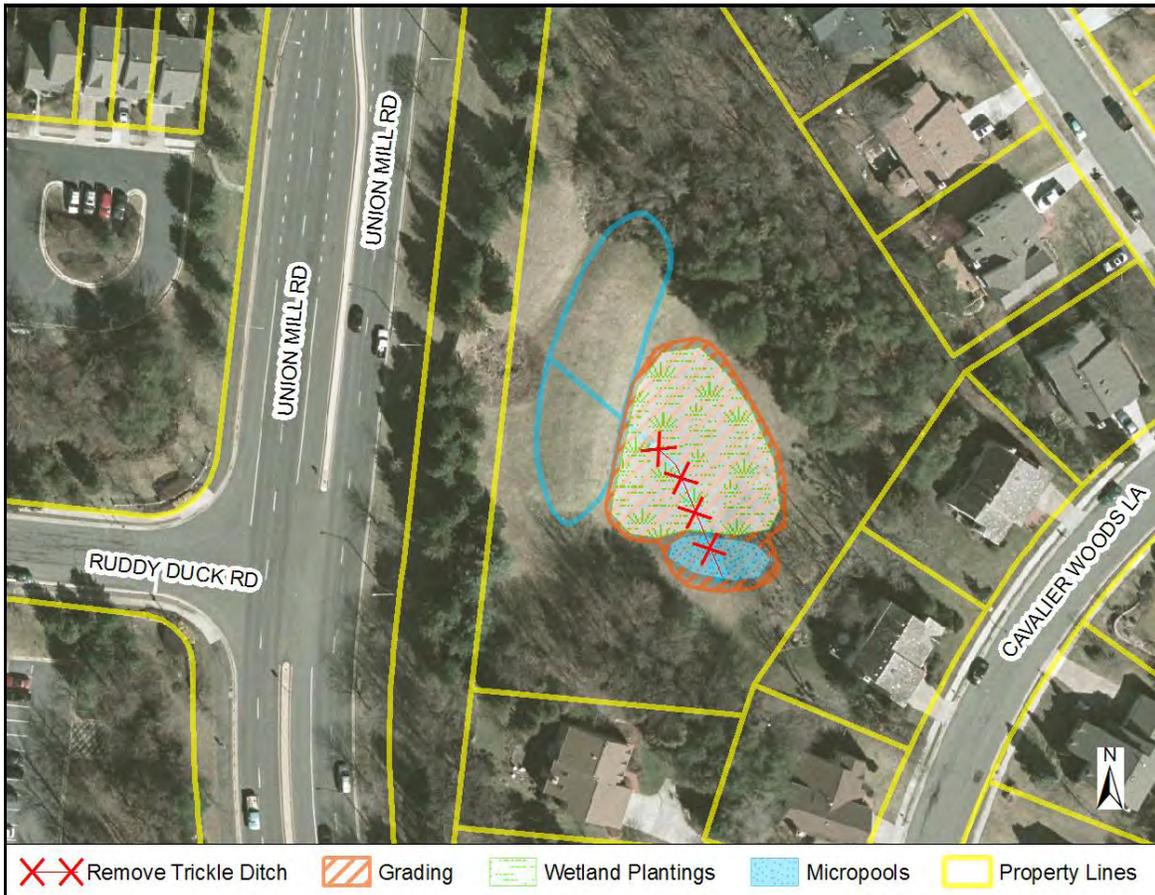
## LR9109 Pond Retrofit



Vicinity Map

<b>Address</b>	5604 Cavalier Woods La
<b>Location</b>	Subdivision
<b>Landowner</b>	Cavalier Woods HOA
<b>PIN</b>	0553 05 A
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	10 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9109 is a retrofit of the existing stormwater pond shown below. The existing trickle ditch will be removed, and micropools and wetland plantings will be added.



Project Area Map

**Project Benefits:** Stormwater pond retrofit LR9109 will eliminate approximately 1 lb/yr of phosphorus pollution, and will provide critical habitat for birds and other wildlife.

**Project Design Considerations:** The stormwater pond, which can be accessed from Cavalier Woods Drive, is located on Cavalier Woods HOA property, within a storm drainage easement.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	0.2	AC	\$8,500.00	\$1,700.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	300	CY	\$35.00	\$10,500.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	75	CY	\$40.00	\$3,000.00
			<b>Base Construction Cost</b>	<b>\$15,200.00</b>
			Mobilization (5%)	\$760.00
			Plantings (5%)	\$760.00
			Ancillary Items (5%)	\$760.00
			Erosion & Sediment Control (10%)	\$1,520.00
			<b>Subtotal 1</b>	<b>\$19,000.00</b>
			Contingency (25%)	\$4,750.00
			<b>Subtotal 2</b>	<b>\$23,750.00</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$10,687.50
			<b>Total</b>	<b>\$34,437.50</b>
			<b>Estimated Project Cost</b>	<b>\$40,000.00</b>

## LR9110 Pond Retrofit



Vicinity Map

<b>Address</b>	13214 Kilby Landing Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Clifton Manor Homeowners Association, Inc.
<b>PIN</b>	0661 12 A
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	82 Acres
<b>Receiving Waters</b>	Unnamed Tributary to Little Rocky Run

**Description:** Project LR9110 includes the retrofit of an existing facility to include wetland plantings and micropools, removal of trickle ditches and modification of the pond geometry to extend the low flow path.



Project Area Map

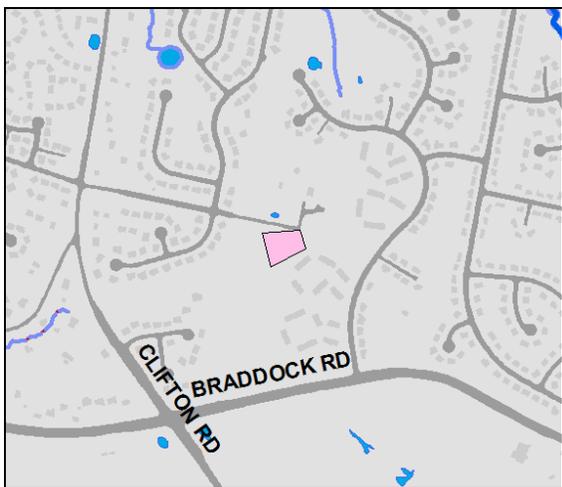
**Project Benefits:** An estimated 8.0lbs/yr of phosphorus will be removed. Nutrient uptake, gravitational settling and sediment trapping will be improved along with pond aesthetics. Wetland plantings can replicate ecosystems for a variety of wildlife (insects, birds, amphibians, etc.).

**Project Design Considerations:** No increase in storage volume has been proposed, but pond geometry changes can be made without affecting storage volumes. Emergency spillway directs the flow across Clifton Road. There is no room to expand the foot print without tree impacts. The project is furthest upstream of a series of projects along this tributary to Little Rocky Run. The proposed measures benefit water quality only and therefore sequencing/coordination with neighboring projects is not critical.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub		AC	\$8,500.00	\$0.00
Grading and Excavation	1150	CY	\$35.00	\$40,250.00
Structural BMP Retrofit and Incidentals		LS	\$10,000 - \$20,000	\$0.00
Embankment		CY	\$50.00	\$0.00
Outflow Pipe		LF	\$125.00	\$0.00
Rip Rap Stabilization		SY	\$100.00	\$0.00
Organic Compost Soil Amendment	290	CY	\$40.00	\$11,600.00
Remove Trickle Ditch	270	SY	\$10.71	\$2,891.70
			<b>Base Construction Cost</b>	<b>\$54,741.70</b>
			Mobilization (5%)	\$2,737.09
			Ancillary Items (5%)	\$2,737.09
			Erosion & Sediment Control (10%)	\$5,474.17
			<b>Subtotal 1</b>	<b>\$65,690.04</b>
			Contingency (25%)	\$16,422.51
			<b>Subtotal 2</b>	<b>\$82,112.55</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$36,950.65
			<b>Total</b>	<b>\$119,063.20</b>
			<b>Estimated Project Cost</b>	<b>\$120,000.00</b>

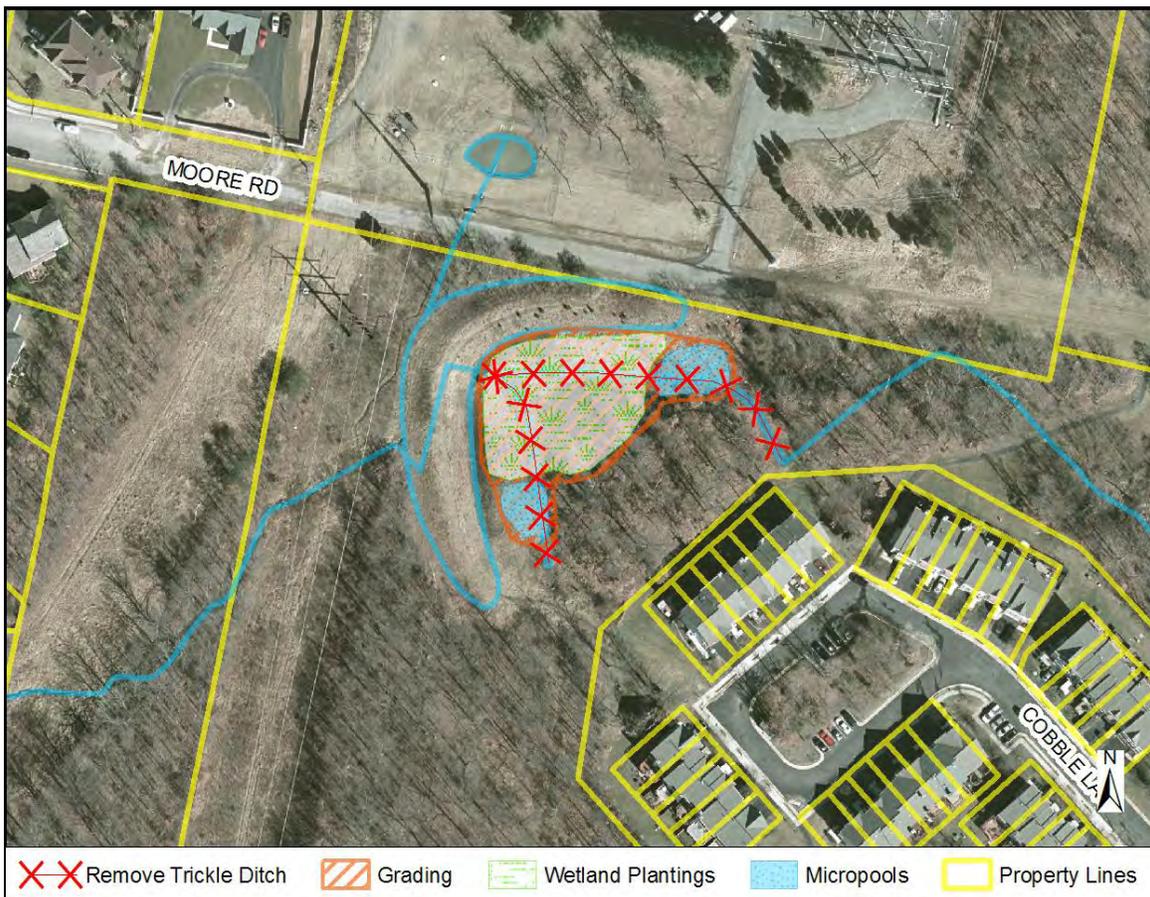
## LR9111 Pond Retrofit



Vicinity Map

<b>Address</b>	13022 Cobble La
<b>Location</b>	Subdivision
<b>Landowner</b>	Hayden Village Community Association
<b>PIN</b>	0661 10 A
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	25 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9111 will retrofit an existing stormwater pond to provide improved water quality control. Existing concrete trickle ditches will be removed, and new micropools and wetland plantings will be added.



Project Area Map

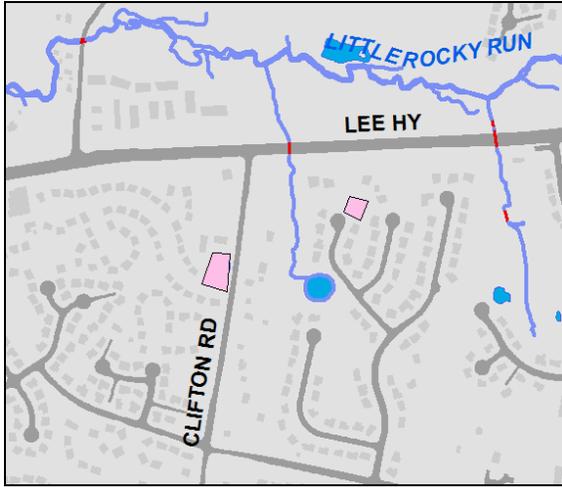
**Project Benefits:** Pond retrofit LR9111 will remove approximately 1 lb/yr of phosphorus. Nutrient uptake, sediment trapping, pond aesthetics, and wildlife habitat will be improved.

**Project Design Considerations:** Spatial constraints for pond retrofit LR9111 should be considered, but are not anticipated to be severe enough to limit the project scope. Overhead lines located approximately 100 feet west of the project site should be avoided.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	0.5	AC	\$8,500.00	\$4,250.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	800	CY	\$35.00	\$28,000.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	200	CY	\$40.00	\$8,000.00
Remove Trickle Ditch	100	SY	\$10.71	\$1,071.00
			<b>Base Construction Cost</b>	<b>\$40,250.00</b>
			Mobilization (5%)	\$2,012.50
			Plantings (5%)	\$2,012.50
			Ancillary Items (5%)	\$2,012.50
			Erosion & Sediment Control (10%)	\$4,025.00
			<b>Subtotal 1</b>	<b>\$50,312.50</b>
			Contingency (25%)	\$12,578.13
			<b>Subtotal 2</b>	<b>\$62,890.63</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$28,300.78
			<b>Total</b>	<b>\$91,191.41</b>
			<b>Estimated Project Cost</b>	<b>\$100,000.00</b>

## LR9114 Pond Retrofit



Vicinity Map

<b>Address</b>	13114 Blue Willow Pl 5574 Clifton Crest Way
<b>Location</b>	Subdivision
<b>Landowner</b>	Clifton Farm HOA Clifton Crest HOA
<b>PIN</b>	0553 06 C 0553 16 B
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	13 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9114 will retrofit two existing stormwater ponds to provide improved water quality control. Existing concrete trickle ditches will be removed, and new micropools and wetland plantings will be added.



Project Area Map

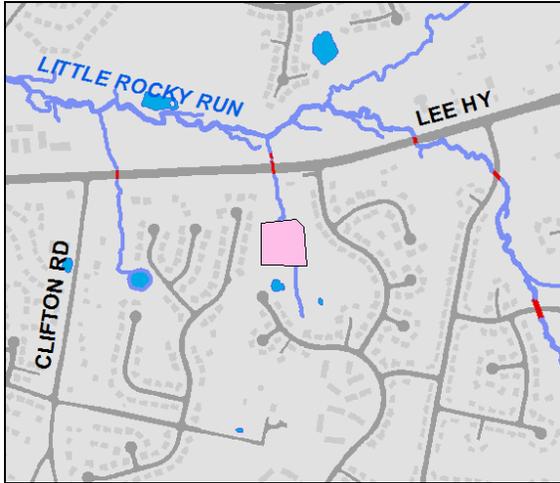
**Project Benefits:** Pond retrofit suite LR9114 will remove approximately 1 lb/yr of phosphorus. Nutrient uptake, sediment trapping, pond aesthetics, and wildlife habitat will be improved.

**Project Design Considerations:** LR9114A is located on Clifton Crest HOA property and LR9114B is located on Clifton Farm HOA property. Both are located within stormwater management easements. As space is somewhat limited at both pond retrofit locations, care should be taken to limit increases in ponded area.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub		AC	\$8,500.00	\$0.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	500	CY	\$35.00	\$17,500.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	125	CY	\$40.00	\$5,000.00
Remove Trickle Ditch	100	SY	\$10.71	\$1,071.00
			<b>Base Construction Cost</b>	<b>\$23,571.00</b>
			Mobilization (5%)	\$1,178.55
			Plantings (5%)	\$1,178.55
			Ancillary Items (5%)	\$1,178.55
			Erosion & Sediment Control (10%)	\$2,357.10
			<b>Subtotal 1</b>	<b>\$29,463.75</b>
			Contingency (25%)	\$7,365.94
			<b>Subtotal 2</b>	<b>\$36,829.69</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$16,573.36
			<b>Total</b>	<b>\$53,403.05</b>
			<b>Estimated Project Cost</b>	<b>\$60,000.00</b>

## LR9115 Stormwater Pond Retrofit



Vicinity Map

<b>Address</b>	5403 Willow Valley Rd
<b>Location</b>	Subdivision
<b>Landowner</b>	Hayden Village Community Association
<b>PIN</b>	0553 08 L 0553 08 D1
<b>Control Type</b>	Water quality and quantity control
<b>Drainage Area</b>	39 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9115 is a retrofit of an existing stormwater pond. Storage volume will be increased, existing trickle ditches will be removed, and micropools and wetland plantings will be added.



Project Area Map

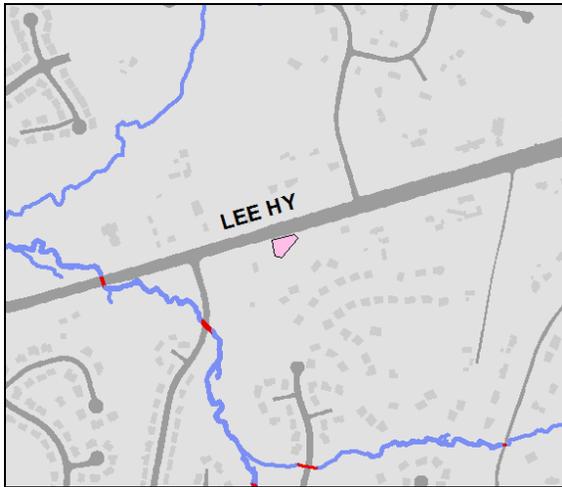
**Project Benefits:** LR9115 will eliminate approximately 2 lb/yr of phosphorus pollution, and will increase storage volume and decrease peak flow. It will also create higher-quality wetland habitat for native wildlife.

**Project Design Considerations:** Pond retrofit LR9115 is located on Hayden Village Community Association property within a storm drainage easement. Sufficient space is available to increase the ponded area. The project site can be easily accessed from Sandy Point Lane. Some impacts to mature trees may occur.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	1	AC	\$8,500.00	\$8,500.00
Structural BMP and Incidentals	1	LS	\$10,000 - \$20,000	\$15,000.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	2420	CY	\$35.00	\$84,700.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	400	CY	\$40.00	\$16,000.00
			<b>Base Construction Cost</b>	<b>\$124,200.00</b>
			Mobilization (5%)	\$6,210.00
			Plantings (5%)	\$6,210.00
			Ancillary Items (5%)	\$6,210.00
			Erosion & Sediment Control (10%)	\$12,420.00
			<b>Subtotal 1</b>	<b>\$155,250.00</b>
			Contingency (25%)	\$38,812.50
			<b>Subtotal 2</b>	<b>\$194,062.50</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$87,328.13
			<b>Total</b>	<b>\$281,390.63</b>
			<b>Estimated Project Cost</b>	<b>\$290,000.00</b>

## LR9117 Pond Retrofit



Vicinity Map

<b>Address</b>	12837 Lee Hwy
<b>Location</b>	Highway
<b>Landowner</b>	Herring W W LLLP
<b>PIN</b>	0554 01 0037
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	29 acres
<b>Receiving Waters</b>	Unnamed tributary to Willow Spring Branch

**Description:** Project LR9117 will retrofit an existing stormwater pond to provide improved water quality control. Existing concrete trickle ditches will be removed, and new micropools and wetland plantings will be added.



Remove Trickle Ditch   Grading   Wetland Plantings   Micropools   Property Lines

Project Area Map

**Project Benefits:** Pond retrofit LR9117 will remove approximately 5 lb/yr of phosphorus. Nutrient uptake, sediment trapping, pond aesthetics, and wildlife habitat will be improved.

**Project Design Considerations:** Due to space constraints, the footprint of the pond in question cannot be significantly increased. LR9117 is located on private property within a storm drainage and detention pond easement.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Access Road		SY	\$25.00	\$0.00
Access Road Gate		EA	\$2,500.00	\$0.00
Clear and Grub	0.2	AC	\$8,500.00	\$1,700.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	280	CY	\$35.00	\$9,800.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment	70	CY	\$40.00	\$2,800.00
Remove Trickle Ditch	100	SY	\$10.71	\$1,071.00
			<b>Base Construction Cost</b>	<b>\$14,300.00</b>
			Mobilization (5%)	\$715.00
			Plantings (5%)	\$715.00
			Ancillary Items (5%)	\$715.00
			Erosion & Sediment Control (10%)	\$1,430.00
			<b>Subtotal 1</b>	<b>\$17,875.00</b>
			Contingency (25%)	\$4,468.75
			<b>Subtotal 2</b>	<b>\$22,343.75</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$10,054.69
			<b>Total</b>	<b>\$32,398.44</b>
			<b>Estimated Project Cost</b>	<b>\$40,000.00</b>

## LR9201 Stream Restoration



Vicinity Map

<b>Address</b>	14104 Sorrel Chase Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Green Trails HOA
<b>PIN</b>	0654 03 C 0654 0304 M
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	188 acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** The Green Trails Homeowners Association has noted that the tributary to Little Rocky Run shown below suffers from erosion and poor flow. Subsequent field visits confirmed a stagnant system with little habitat support. Project LR9201 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity.



Project Area Map

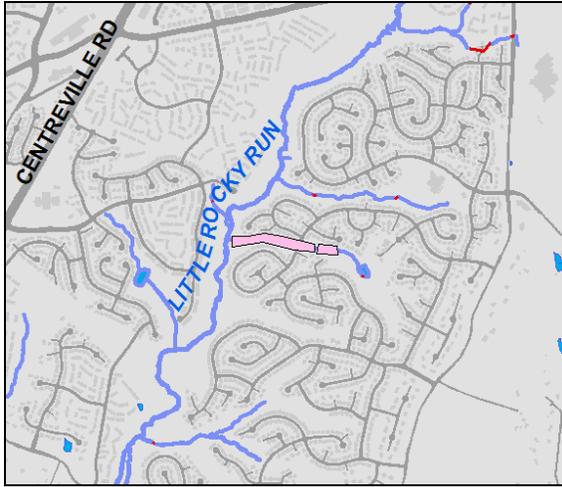
**Project Benefits:** Project LR9201 will reduce phosphorus, nitrogen and sediment loading in the tributary to Johnny Moore Creek, and restore 1250 linear feet of stream channel. Higher quality habitat for fish and wildlife will also be provided. Successful implementation of LR9201 may also have positive effects on nearby property values.

**Project Design Considerations:** New BMP/LID project LR9509 is located just upstream of LR9201, on the north side of Green Trails Blvd. Coordination and sequencing of these two projects should be considered. The project site is accessible from Green Trails Blvd or Palisades Dr, and is located on Green Trails HOA property within floodplain/storm drainage easements. Given that the Green Trails HOA brought attention to the site, significant landowner support is likely. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of the LR9201 stream restoration project will outweigh its short-term environmental costs.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.85	AC	\$10,000.00	\$8,500.00
Construct New Channel	1250	LF	\$200.00	\$250,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	0.85	AC	\$25,000.00	\$21,250.00
			<b>Base Construction Cost</b>	<b>\$379,750.00</b>
			Mobilization (5%)	\$18,987.50
			Ancillary Items (5%)	\$18,987.50
			Erosion & Sediment Control (10%)	\$37,975.00
			<b>Subtotal 1</b>	<b>\$455,700.00</b>
			Contingency (25%)	\$113,925.00
			<b>Subtotal 2</b>	<b>\$569,625.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$256,331.25
			<b>Total</b>	<b>\$825,956.25</b>
			<b>Estimated Project Cost</b>	<b>\$830,000.00</b>

## LR9202 Stream Restoration Project Suite



Vicinity Map

<b>Address</b>	6419 Stonehaven Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Little Rocky Run HOA
<b>PIN</b>	0654 04 N 0654 02 B 0654 04 Q 0654 04 R
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	141 acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** Project suite LR9202 will provide improved water quality control. It includes stream restoration, buffer restoration, and pond retrofit components.



Project Area Map

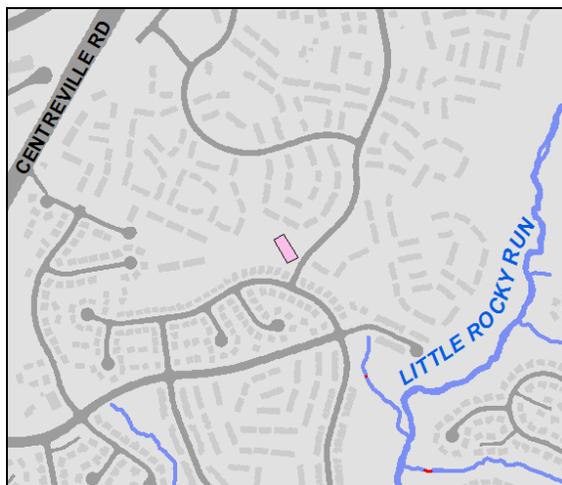
**Project Benefits:** Project LR9202 will improve phosphorus, nitrogen, and sediment uptake in the unnamed tributary to Little Rocky Run shown in the project area map. It will also provide improved habitat for wildlife.

**Project Design Considerations:** New BMP/LID project LR9507 is located approximately 0.3 miles southwest of LR9202 along South Springs Drive. Pond retrofit LR9102 is also located approximately 0.2 miles upstream of LR9202. Coordination and sequencing of these projects should be considered. Due to ongoing channel erosion, a more extensive site investigation should be conducted before implementation to determine the necessary extent of new stream channel design and construction. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of the Johnny Moore Creek Stream Restoration will outweigh its short-term environmental costs.

**Costs:**

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub (stream restoration)	0.35	AC	\$10,000.00	\$3,500.00
Construct New Channel	300	LF	\$200.00	\$60,000.00
Add'l Cost, first 500 LF	300	LF	\$200.00	\$60,000.00
Plantings (stream and buffer restoration)	2.35	AC	\$25,000.00	\$58,750.00
Access Road	3280	SY	\$25.00	\$82,000.00
Access Road Gate	2	EA	\$2,500.00	\$5,000.00
Clear and Grub (pond retrofits)	0.8	AC	\$8,500.00	\$6,800.00
Structural BMP and Incidentals		LS	\$10,000 - \$20,000	\$0.00
New Storm Pipe		LF	\$100 - \$300	\$0.00
Grading and Excavation	1260	CY	\$35.00	\$44,100.00
Embankment		CY	\$50.00	\$0.00
Organic Compost Soil Amendment (pond retrofits and buffer restoration)	1120	CY	\$40.00	\$44,800.00
Remove Trickle Ditch	184	SY	\$10.71	\$1,970.64
			<b>Base Construction Cost</b>	<b>\$366,920.64</b>
			Mobilization (5%)	\$18,346.03
			Plantings (pond retrofits) (5%)	\$9,233.53
			Ancillary Items (5%)	\$18,346.03
			Erosion & Sediment Control (10%)	\$36,692.06
			<b>Subtotal 1</b>	<b>\$449,538.30</b>
			Contingency (25%)	\$112,384.58
			<b>Subtotal 2</b>	<b>\$561,922.88</b>
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$252,865.29
			<b>Total</b>	<b>\$814,788.17</b>
			<b>Estimated Project Cost</b>	<b>\$820,000.00</b>

## LR9203 Stream Restoration



Vicinity Map

<b>Address</b>	14100 Wood Rock Way
<b>Location</b>	Subdivision
<b>Landowner</b>	Heritage Forest HOA
<b>PIN</b>	0652 09 F2
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	20 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Project LR9203 will restore the existing paved ditch shown below with a natural channel system. This small stream restoration will use step pools to dissipate excess energy and prevent future erosion.



Project Area Map

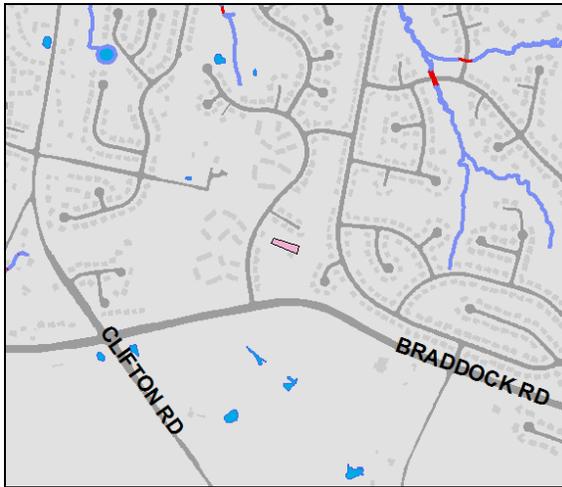
**Project Benefits:** LR9204 will reduce phosphorus, nitrogen, and sediment loading by restoring 330 feet of paved channel with a more natural, permeable system. Higher quality habitat for native wildlife will be created, and LR9204 may have beneficial effects on nearby property values.

**Project Design Considerations:** The LR9204 project site is located on Heritage Forest HOA property, within a storm drainage easement. The site can be easily accessed from Singletons Way. Permitting requirements and impacts to mature trees will be minimal, if any.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub		AC	\$10,000.00	\$0.00
Remove Concrete Ditch	380	SY	\$10.71	\$4,069.80
Construct New Channel	330	LF	\$200.00	\$66,000.00
Add'l Cost, first 500 LF	330	LF	\$200.00	\$66,000.00
Plantings	0.1	AC	\$25,000.00	\$2,500.00
		<b>Base Construction Cost</b>		<b>\$138,569.80</b>
		Mobilization (5%)		\$6,928.49
		Ancillary Items (5%)		\$6,928.49
		Erosion & Sediment Control (10%)		\$13,856.98
		<b>Subtotal 1</b>		<b>\$166,283.76</b>
		Contingency (25%)		\$41,570.94
		<b>Subtotal 2</b>		<b>\$207,854.70</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$93,534.62
		<b>Total</b>		<b>\$301,389.32</b>
		<b>Estimated Project Cost</b>		<b>\$310,000.00</b>

## LR9204 Stream Restoration



Vicinity Map

<b>Address</b>	5587A Rockpointe Dr
<b>Location</b>	Subdivision
<b>Landowner</b>	Hayden Village Community Association
<b>PIN</b>	0661 11 K1
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	4 acres
<b>Receiving Waters</b>	Unnamed tributary to Little Rocky Run

**Description:** Stream restoration LR9204 will restore the concrete ditch shown below to a natural stream channel. This small restoration stream restoration project will consist of linear bioretention basins – a unique stream restoration technique which will significantly reduce construction costs.



Project Area Map

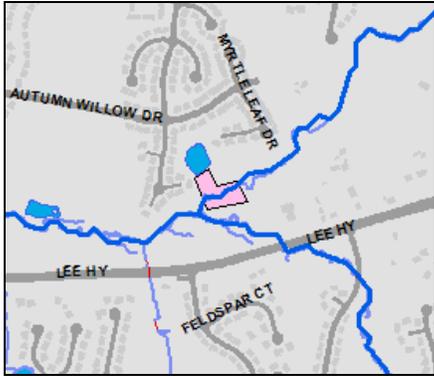
**Project Benefits:** LR9204 will reduce phosphorus, nitrogen, and sediment loading by restoring 230 feet of paved channel with a more natural, permeable system. Higher quality habitat for native wildlife will also be provided.

**Project Design Considerations:** Pond retrofit LR9111 is located approximately 1000 feet downstream of the LR9204 project site. Coordination of these two projects should be considered due to their proximity.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.1	AC	\$10,000.00	\$1,000.00
Remove Concrete Ditch	167	SY	\$10.71	\$1,788.57
Bioretention Filters & Basins	300	SY	\$150.00	\$45,000.00
		<b>Base Construction Cost</b>		<b>\$47,788.57</b>
		Mobilization (5%)		\$2,389.43
		Ancillary Items (5%)		\$2,389.43
		Erosion & Sediment Control (10%)		\$4,778.86
		<b>Subtotal 1</b>		<b>\$57,346.28</b>
		Contingency (25%)		\$14,336.57
		<b>Subtotal 2</b>		<b>\$71,682.86</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$32,257.28
		<b>Total</b>		<b>\$103,940.14</b>
		<b>Estimated Project Cost</b>		<b>\$110,000.00</b>

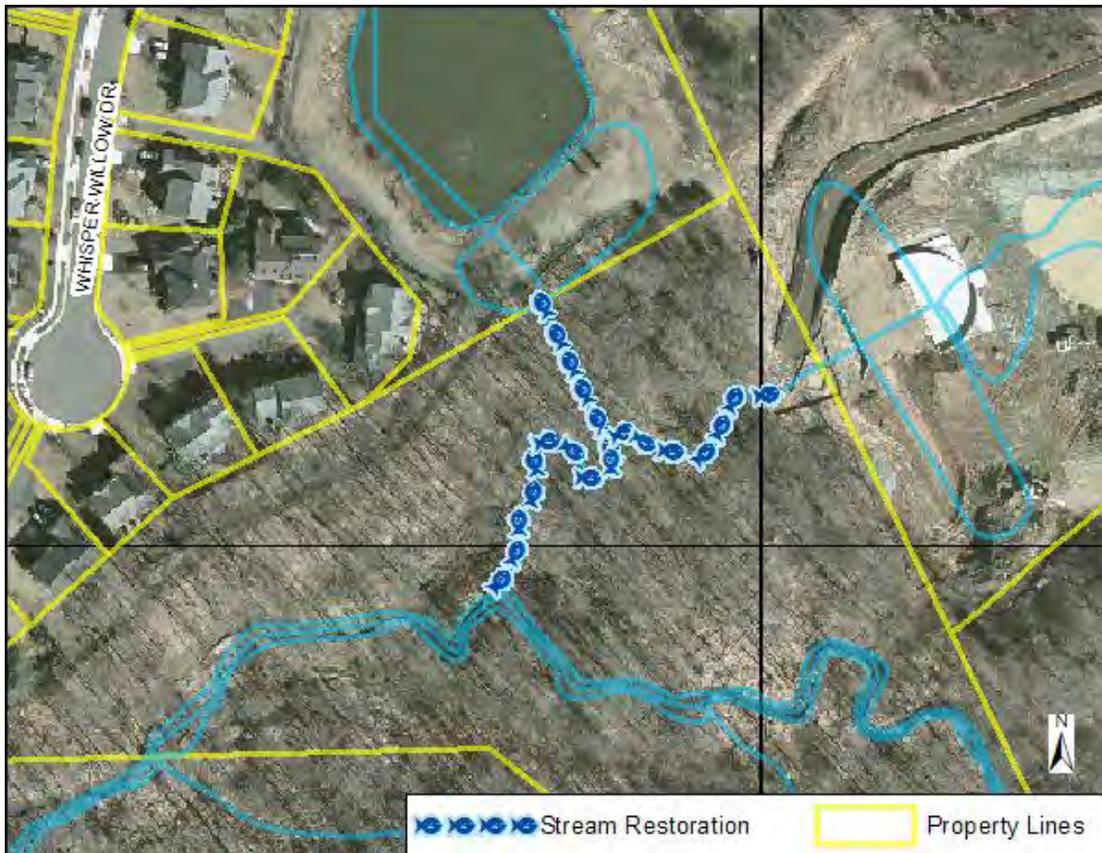
## LR9205 Stream Restoration



Vicinity Map

<b>Address</b>	5217 Whisper Willow Dr
<b>Location</b>	Pond outfalls near subdivision
<b>Landowner</b>	Fairfax County Park Authority
<b>PIN</b>	0553 10 S
<b>Control Type</b>	Water Quality
<b>Drainage Area</b>	632 acres
<b>Receiving Waters</b>	Little Rocky Run

**Description:** The pond outfalls shown below that drain to Little Rocky Run are causing scouring and erosion. Stream restoration project LR9205 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity.



Project Area Map

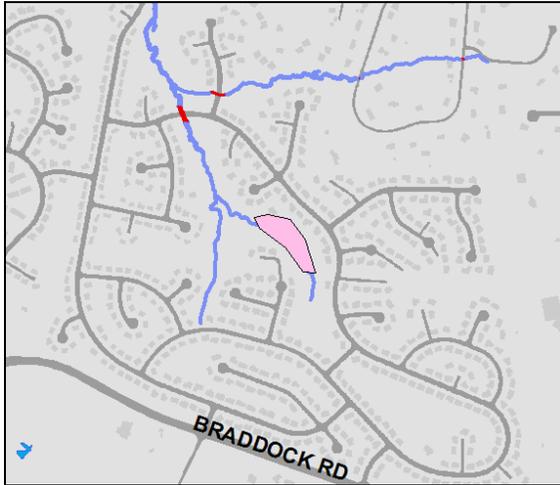
**Project Benefits:** Stream restoration project LR9205 will remove approximately 13 tons/yr of sediment pollution from erosion, and will restore approximately 580 feet of natural stream channel. Higher quality habitat for fish and wildlife will also be provided.

**Project Design Considerations:** Coordination with pond retrofit LR9116 should be considered, as the pond is located just upstream of the project site (and is visible on right side of the project area map for LR9205). The site is accessible from Whisper Willow Dr, and is located on Fairfax County Park Authority property. As with any stream restoration, there are significant potential permitting requirements for this project, including dam safety permits. Impacts to trees will be inevitable due to the densely wooded site, but the long-term environmental benefits of stream restoration LR9205 will outweigh its short-term environmental costs.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.46	AC	\$10,000.00	\$4,600.00
Construct New Channel	580	LF	\$200.00	\$116,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	0.46	AC	\$25,000.00	\$11,500.00
		<b>Base Construction Cost</b>		<b>\$232,100.00</b>
		Mobilization (5%)		\$11,605.00
		Ancillary Items (5%)		\$11,605.00
		Erosion & Sediment Control (10%)		\$23,210.00
		<b>Subtotal 1</b>		<b>\$278,520.00</b>
		Contingency (25%)		\$69,630.00
		<b>Subtotal 2</b>		<b>\$348,150.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$156,667.50
		<b>Total</b>		<b>\$504,817.50</b>
		<b>Estimated Project Cost</b>		<b>\$510,000.00</b>

## LR9207 Stream Restoration



Vicinity Map

<b>Address</b>	5378 Ashleigh Rd
<b>Location</b>	Subdivision
<b>Landowner</b>	Hampton Chase HOA Hampton Forest HOA
<b>PIN</b>	0662 05 G1 0662 05 D 0554 07 C2
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	152 acres
<b>Receiving Waters</b>	Unnamed tributary to Willow Spring Branch

**Description:** The unnamed tributary to Willow Spring Branch shown below suffers from channel erosion. LR9207 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity.



Project Area Map

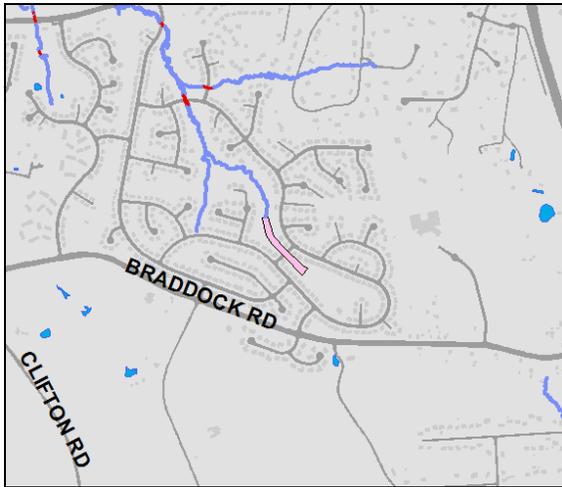
**Project Benefits:** LR9207 will reduce phosphorus, nitrogen and sediment loading, will and restore 850 linear feet of stream channel. Higher quality habitat for aquatic and terrestrial wildlife will also be provided. Successful implementation of LR9207 may also have positive effects on nearby property values.

**Project Design Considerations:** LR9207 is located on downstream of and in close proximity to stream restorations LR9208 and LR9209. Coordination of these projects should be considered to improve design and construction efficiency. It is also located on Hampton Chase HOA and Hampton Forest HOA property, within floodplain and stormwater easements. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of LR9207 will outweigh its short-term environmental costs.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.75	AC	\$10,000.00	\$7,500.00
Construct New Channel	850	LF	\$200.00	\$170,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	0.75	AC	\$25,000.00	\$18,750.00
			<b>Base Construction Cost</b>	<b>\$296,250.00</b>
			Mobilization (5%)	\$14,812.50
			Ancillary Items (5%)	\$14,812.50
			Erosion & Sediment Control (10%)	\$29,625.00
			<b>Subtotal 1</b>	<b>\$355,500.00</b>
			Contingency (25%)	\$88,875.00
			<b>Subtotal 2</b>	<b>\$444,375.00</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$199,968.75
			<b>Total</b>	<b>\$644,343.75</b>
			<b>Estimated Project Cost</b>	<b>\$650,000.00</b>

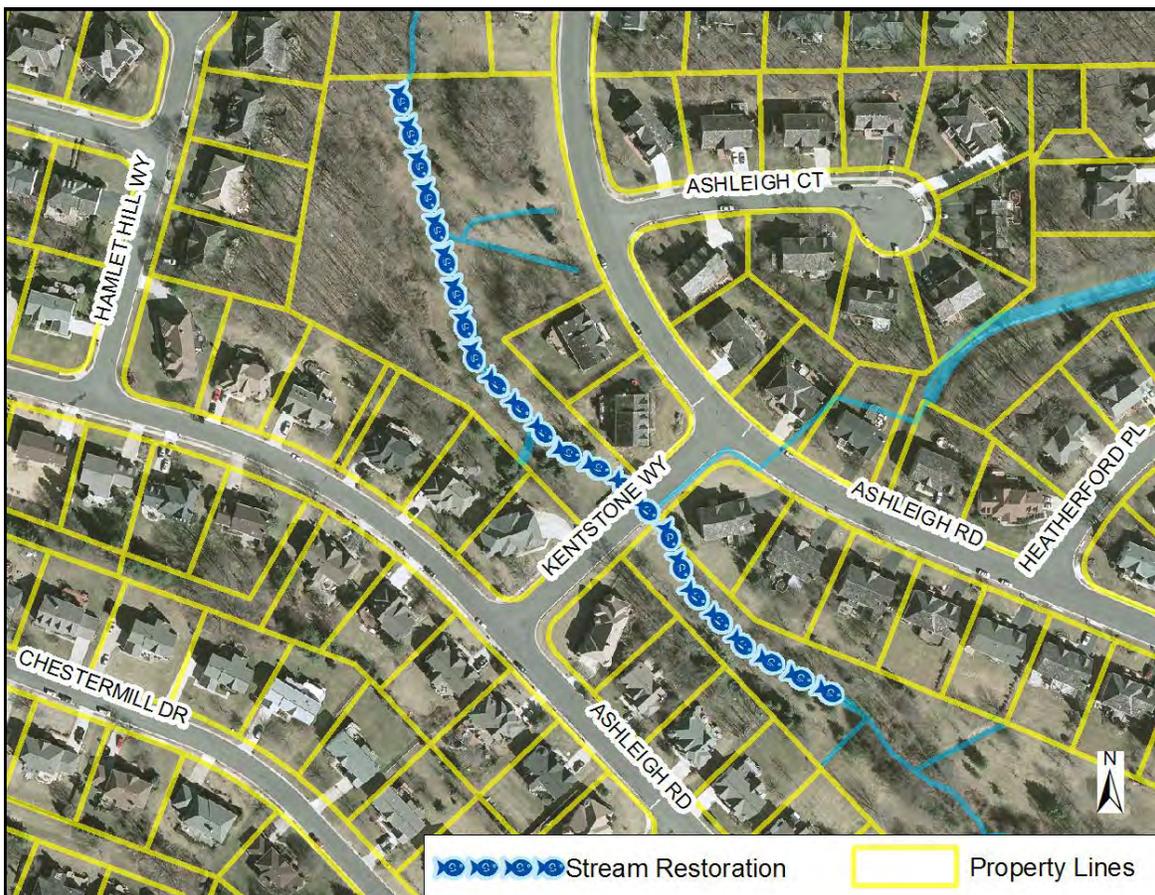
## LR9208 Stream Restoration



Vicinity Map

<b>Address</b>	5418 Ashleigh Rd
<b>Location</b>	Subdivision
<b>Landowner</b>	Hampton Forest HOA
<b>PIN</b>	0662 05 U 0662 05 V
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	152 acres
<b>Receiving Waters</b>	Willow Spring Branch

**Description:** The tributary to Willow Spring Branch shown below is lined by a concrete trapezoidal channel (currently being undermined) with turf grass on either side. Stream restoration project LR9208 will remove the concrete channel and restore a natural stream system and riparian buffer area.



Project Area Map

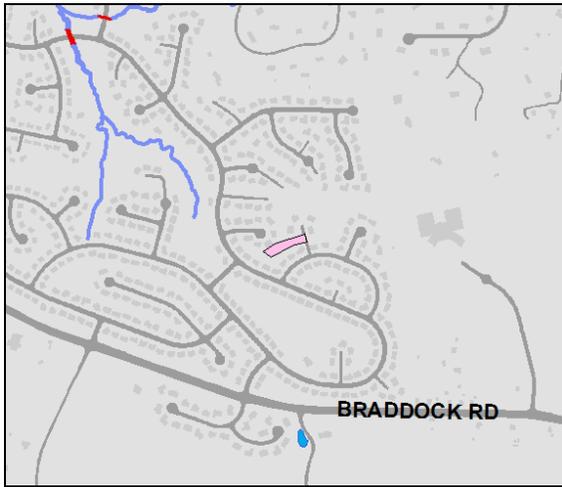
**Project Benefits:** Project LR9208 will reduce phosphorus and nitrogen loading in the tributary to Johnny Moore Creek, and will restore approximately 1020 linear feet of natural channel. Higher quality habitat for wildlife will also be provided. Successful implementation of LR9208 may also have positive effects on nearby property values.

**Project Design Considerations:** Stream restoration project LR9207 is located approximately 250 feet downstream of LR9208, and stream restoration and flood protection project LR9209 is located on a tributary of LR9208. Coordination and sequencing of these three projects should be considered. The project site is located within floodplain/storm drainage easements on Hampton Forest Homeowners Association property. Significant design and construction issues exist – especially space constraints. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of stream restoration LR9208 will outweigh its short-term environmental costs.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	1.1	AC	\$10,000.00	\$11,000.00
Removal of Concrete Channel	2040	SY	\$10.71	\$21,848.40
Construct New Channel	1020	LF	\$200.00	\$204,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	1.1	AC	\$25,000.00	\$27,500.00
			<b>Base Construction Cost</b>	<b>\$364,348.40</b>
			Mobilization (5%)	\$18,217.42
			Ancillary Items (5%)	\$18,217.42
			Erosion & Sediment Control (10%)	\$36,434.84
			<b>Subtotal 1</b>	<b>\$437,218.08</b>
			Contingency (25%)	\$109,304.52
			<b>Subtotal 2</b>	<b>\$546,522.60</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$245,935.17
			<b>Total</b>	<b>\$792,457.77</b>
			<b>Estimated Project Cost</b>	<b>\$800,000.00</b>

## LR9209 Stream Restoration



Vicinity Map

<b>Address</b>	12753 Ashleigh Ct
<b>Location</b>	Subdivision
<b>Landowner</b>	Hampton Forest HOA
<b>PIN</b>	0662 05 X
<b>Control Type</b>	Water quality control
<b>Drainage Area</b>	43 acres
<b>Receiving Waters</b>	Unnamed tributary to Willow Spring Branch

**Description:** The unnamed tributary to Willow Spring Branch shown below is lined by a concrete trapezoidal channel (currently being undermined) with turf grass on either side. Stream restoration project LR9209 will remove the concrete channel and recreate a natural stream system and riparian buffer area. A new channel with a plunge pool and several step pools will help dissipate erosive energy.



Project Area Map

**Project Benefits:** Project LR9209 will reduce phosphorus and nitrogen loading in the tributary to Johnny Moore Creek, and will restore approximately 400 linear feet of natural channel. Higher quality habitat for wildlife will also be provided. Successful implementation of LR9209 may also have positive effects on nearby property values.

**Project Design Considerations:** LR9209 is located approximately 250 upstream of stream restoration LR9208. Due to their proximity and similar design aspects (both involve the replacement of a concrete channel with a natural stream system), coordination and sequencing should be considered. The project site is located within a storm drainage easement on Hampton Forest Homeowners Association property. Significant design and construction issues exist – especially space constraints. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to trees will be inevitable, but the long-term environmental benefits of stream restoration LR9209 will outweigh its short-term environmental costs.

**Costs:**

<b>ITEM</b>	<b>QUANTITY</b>	<b>UNITS</b>	<b>UNIT COST</b>	<b>TOTAL</b>
Clear and Grub	0.3	AC	\$10,000.00	\$3,000.00
Construct New Channel	400	LF	\$200.00	\$80,000.00
Add'l Cost, first 500 LF	400	LF	\$200.00	\$80,000.00
Plantings	0.3	AC	\$25,000.00	\$7,500.00
Remove Concrete Ditch	230	SY	\$10.71	\$2,463.30
			<b>Base Construction Cost</b>	<b>\$172,963.30</b>
			Mobilization (5%)	\$8,648.17
			Ancillary Items (5%)	\$8,648.17
			Erosion & Sediment Control (10%)	\$17,296.33
			<b>Subtotal 1</b>	<b>\$207,555.96</b>
			Contingency (25%)	\$51,888.99
			<b>Subtotal 2</b>	<b>\$259,444.95</b>
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$116,750.23
			<b>Total</b>	<b>\$376,195.18</b>
			<b>Estimated Project Cost</b>	<b>\$380,000.00</b>