

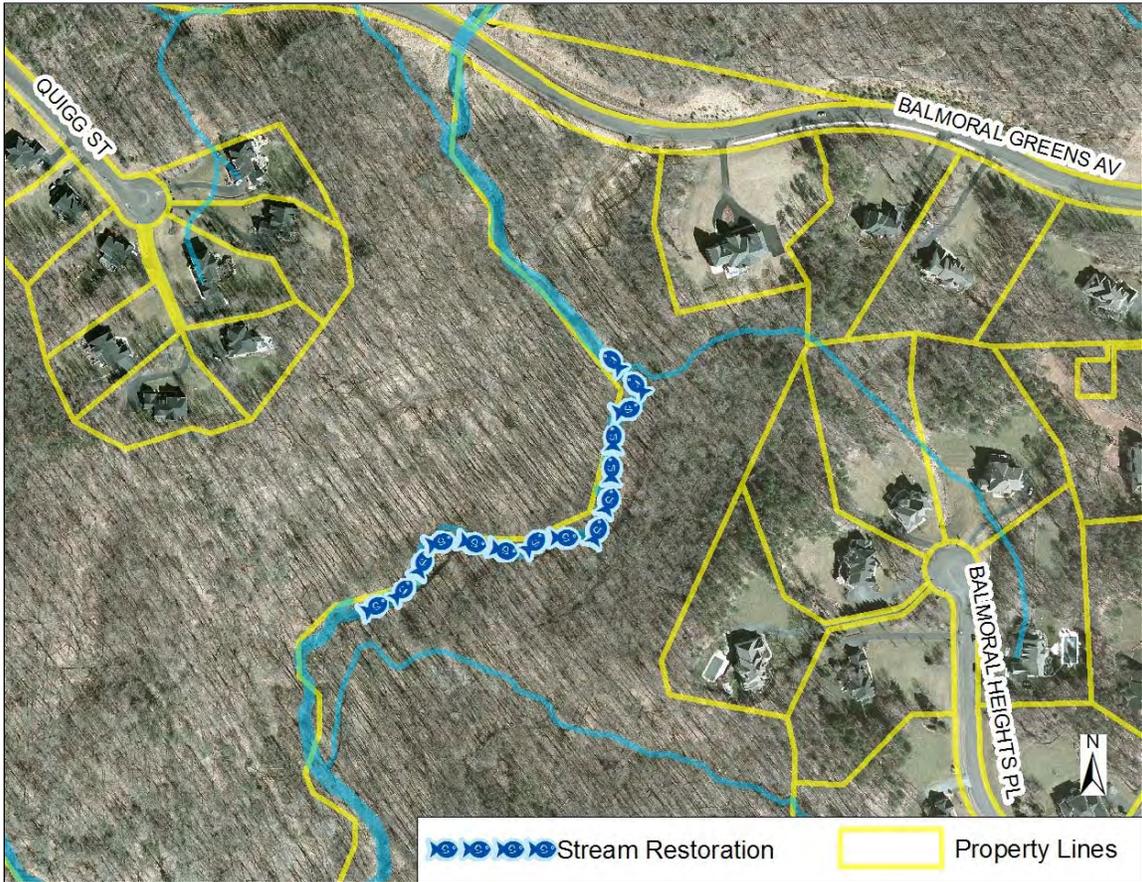
JM9200 Stream Restoration



Vicinity Map

Address	13309 Balmoral Greens Ave
Location	Stream valley park
Landowner	Fairfax County Park Authority
PIN	0744 03 V 0851 07 G
Control Type	Water quality control
Drainage Area	2984 acres
Receiving Waters	Johnny Moore Creek

Description: Johnny Moore Creek suffers from severe bank erosion in the area shown below. Project JM9200 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity.



Project Area Map

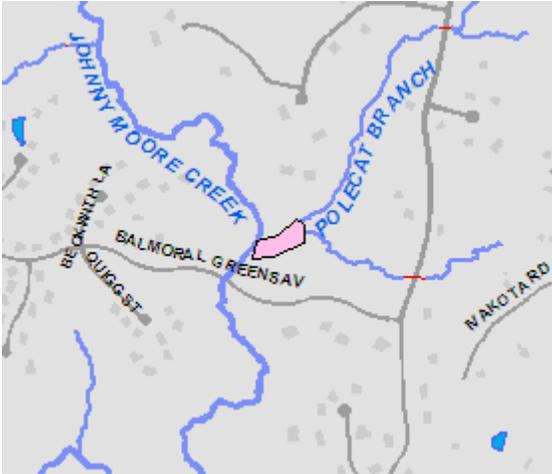
Project Benefits: JM9200 will remove a very large amount of water pollution caused by instream erosion. Higher quality habitat for fish and wildlife will also be provided.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Suspended Solids Removed (tons/yr)
299.08	115.90	186.93

Project Design Considerations: Buffer restoration JM8800 is located just upstream of the project site, where Balmoral Greens Avenue crosses Johnny Moore Creek. Stream restoration JM9201 is also located further upstream. Coordination of these three projects should be considered. The project site can be accessed from Balmoral Greens Avenue, and is located within floodplain/stormwater and conservation easements. Significant construction issues exist – especially site access – such that it may be worthwhile to extend the restoration project even further upstream to where Balmoral Greens Avenue crosses Johnny Moore Creek. 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 the short-term environmental costs. The site has an extremely high potential to contain Native American, historic and Civil War Sites. The Park Authority recommends that Phase I surveys be conducted prior to any work done in these areas. If sites of interest are found, Phase II archaeological testing should be conducted to determine eligibility for inclusion into the National Register of Historic Places. If sites are found eligible, avoidance or Phase III archaeological data recovery is recommended.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1.5	AC	\$10,000.00	\$15,000.00
Construct New Channel	1000	LF	\$200.00	\$200,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	1.5	AC	\$25,000.00	\$37,500.00
		Base Construction Cost		\$352,500.00
		Mobilization (5%)		\$17,625.00
		Ancillary Items (5%)		\$17,625.00
		Erosion & Sediment Control (10%)		\$35,250.00
		Subtotal 1		\$423,000.00
		Contingency (25%)		\$105,750.00
		Subtotal 2		\$528,750.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$237,937.50
		Total		\$766,687.50
		Estimated Project Cost		\$770,000.00

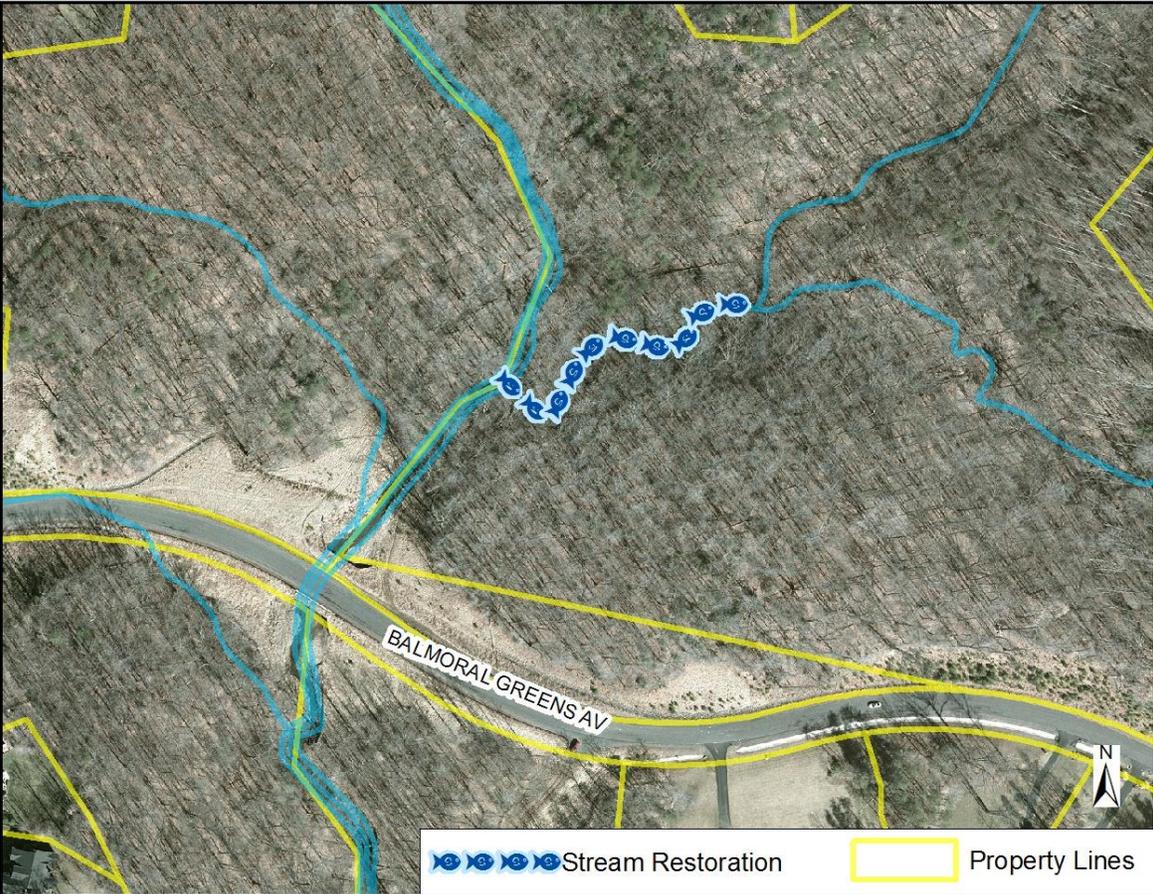
JM9201 Stream Restoration



Vicinity Map

Address	13309 Balmoral Greens Ave
Location	Wooded area
Landowner	Fairfax County Park Authority
PIN	0753 08 A
Control Type	Water quality control
Drainage Area	310 acres
Receiving Waters	Johnny Moore Creek

Description: Stream restoration project JM9201 addresses erosion in the downstream portion of Polecat Branch. Project JM9201 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 JM9201 will reduce phosphorus and nitrogen loading in the Polecat Branch. Higher quality habitat for wildlife will also be provided.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
4.59	1.78	2.87

Project Design Considerations: Buffer restoration JM8800 is located about 250 feet downstream of the project site, where Balmoral Greens Avenue crosses Johnny Moore Creek. Stream restoration JM9200 is also located further downstream on Johnny Moore Creek. Coordination and sequencing of these three projects should be considered, especially due to site access issues for JM9201 and JM9200 – both are densely wooded and somewhat remote. As with any stream restoration, there are significant environmental permitting requirements for this project. Impacts to mature trees will be inevitable, but the long-term environmental benefits of the Polecat Creek Stream Restoration will outweigh the short-term environmental costs. This project area contains many known cultural resources sites. They consist of important Native American soapstone (steatite) quarries and campsites. The Detwiler Mill Complex is located downstream of the confluence of Johnny Moore Creek and Polecat Branch. It is recommended that the known sites be evaluated with Phase II archaeological testing for eligibility to the National Register of Historic Places prior to any ground disturbing activity. If the sites are found eligible, avoidance or Phase III data recovery is recommended.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.57	AC	\$10,000.00	\$5,700.00
Construct New Channel	425	LF	\$200.00	\$85,000.00
Add'l Cost, first 500 LF	425	LF	\$200.00	\$85,000.00
Plantings	0.57	AC	\$25,000.00	\$14,250.00
		Base Construction Cost		\$189,950.00
		Mobilization (5%)		\$9,497.50
		Ancillary Items (5%)		\$9,497.50
		Erosion & Sediment Control (10%)		\$18,995.00
		Subtotal 1		\$227,940.00
		Contingency (25%)		\$56,985.00
		Subtotal 2		\$284,925.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$128,216.25
		Total		\$413,141.25
		Estimated Project Cost		\$420,000.00

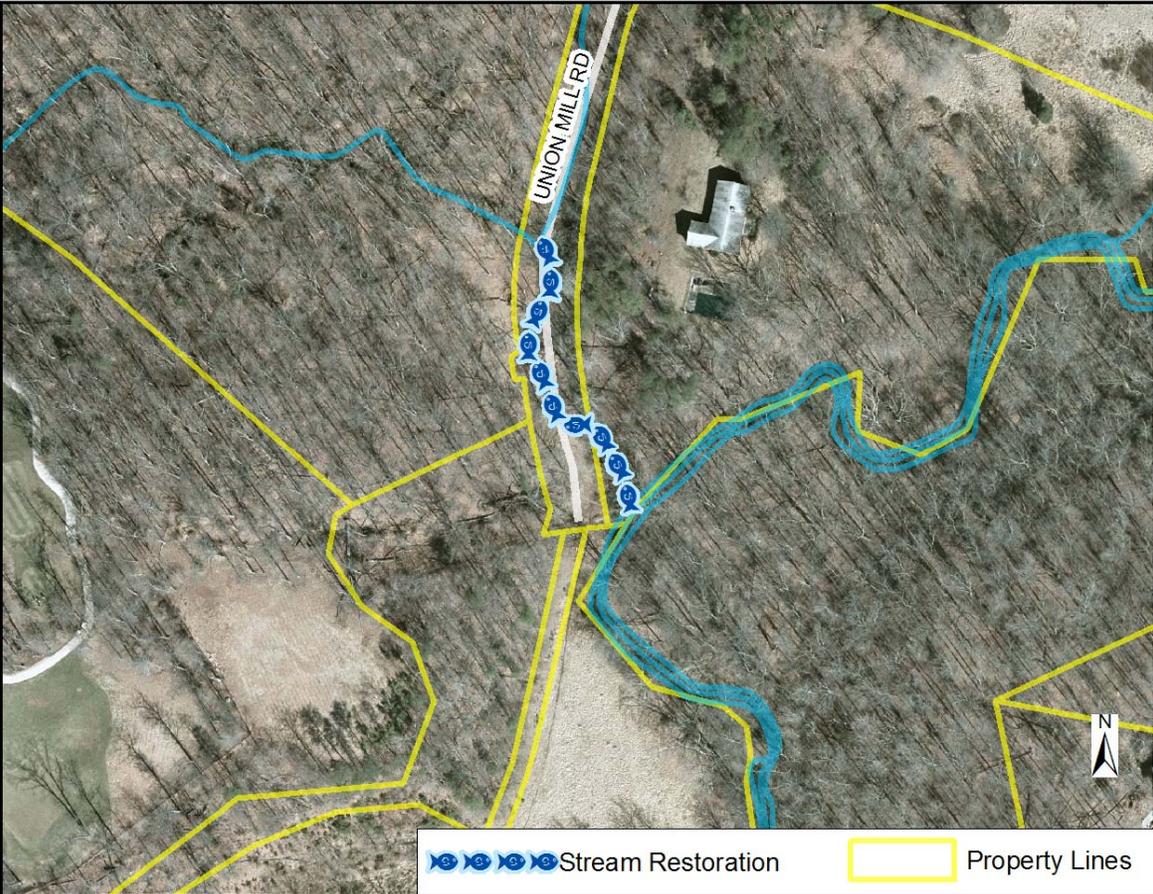
JM9202 Stream Restoration



Vicinity Map

Address	7029 Union Mill Rd
Location	Stream valley park
Landowner	Fairfax County Park Authority Garfield Henry TR
PIN	0744 03 S 0751 06 E
Control Type	Water quality control
Drainage Area	174 acres
Receiving Waters	Johnny Moore Creek

Description: The tributary to Johnny Moore Creek that crosses Union Mill Rd (as shown below) suffers from erosion. Project JM9202 will restore the stream to a more stable, natural state to prevent future erosion and promote habitat health and diversity.



Project Area Map

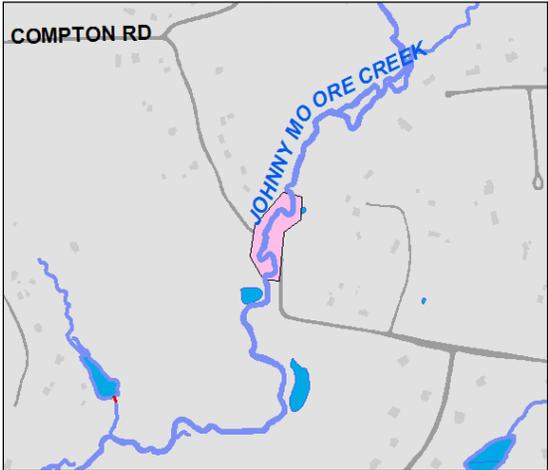
Project Benefits: The Tributary to Johnny Moore Creek Stream Restoration (JM9202) will reduce phosphorus, nitrogen and sediment loading, and restore approximately 325 linear feet of degraded stream channel. Higher quality habitat for fish and wildlife will also be provided.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
3.31	1.28	2.07

Project Design Considerations: Buffer restoration JM8801 is located approximately 500' downstream of JM9202 – coordination of these two projects should be considered. JM9202 is located partially within floodplain/stormwater and conservation easements, and is also partially located on private property. The project site can be accessed from Union Mill Rd. Significant construction issues exist – especially site access. 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 the short-term environmental costs. This area has many known historical sites primarily consisting of important Native American soapstone (steatite) quarries and campsites. In addition, the entire area has potential Civil War resources. The Clifton Soapstone Quarry Complex is located within the project area. It is recommended that all project sites be evaluated with Phase II archaeological testing for eligibility to the National Register of Historic Places prior to any ground disturbing activity. If the sites are found eligible, avoidance or Phase III data recovery is recommended.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	0.45	AC	\$10,000.00	\$4,500.00
Construct New Channel	325	LF	\$200.00	\$65,000.00
Add'l Cost, first 500 LF	325	LF	\$200.00	\$65,000.00
Plantings	0.45	AC	\$25,000.00	\$11,250.00
		Base Construction Cost		\$145,750.00
		Mobilization (5%)		\$7,287.50
		Ancillary Items (5%)		\$7,287.50
		Erosion & Sediment Control (10%)		\$14,575.00
		Subtotal 1		\$174,900.00
		Contingency (25%)		\$43,725.00
		Subtotal 2		\$218,625.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$98,381.25
		Total		\$317,006.25
		Estimated Project Cost		\$320,000.00

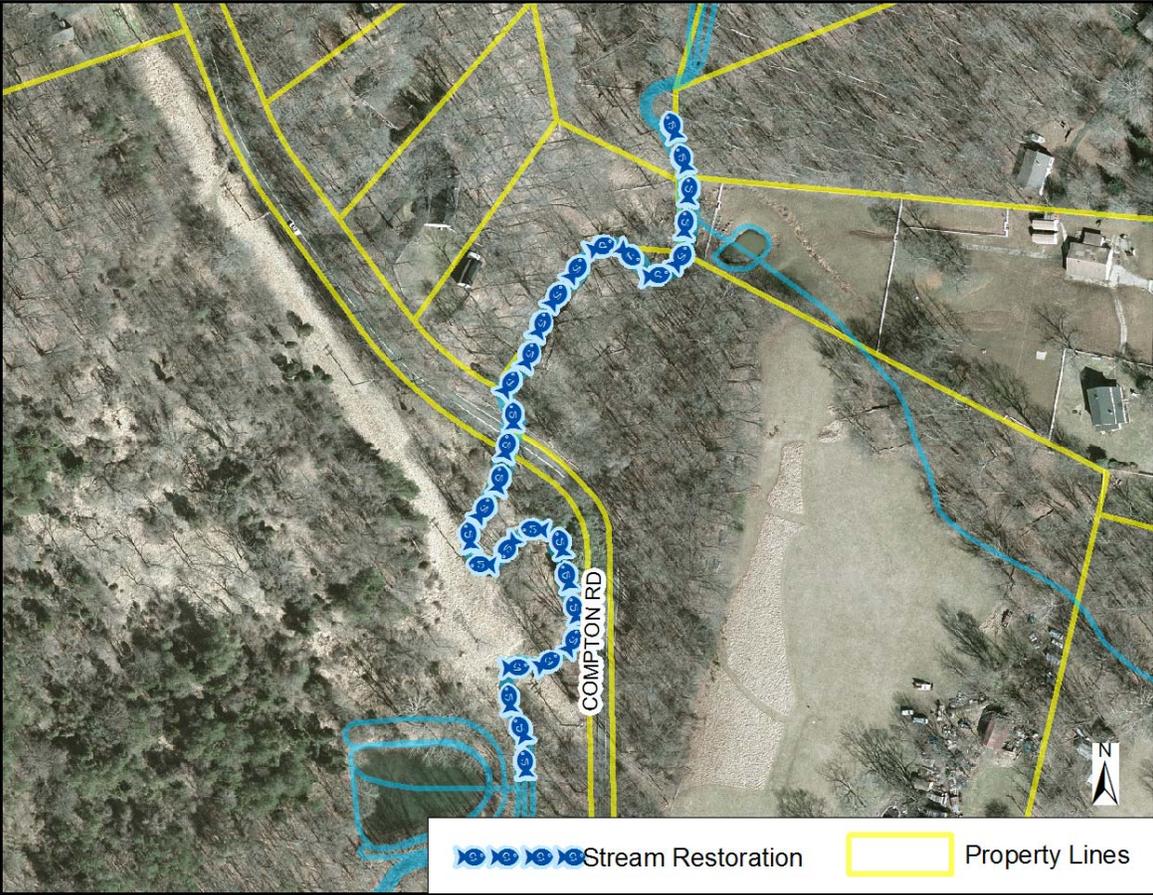
JM9203 Stream Restoration



Vicinity Map

Address	13400 Compton Rd
Location	Private property
Landowner	Boyd, Donald E. TR MA Properties
PIN	0751 01 0026 0751 01 0011Z
Control Type	Water quality control
Drainage Area	2022 acres
Receiving Waters	Bull Run

Description: Johnny Moore Creek suffers from moderate bank erosion in this area. Project JM9203 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 JM9203 will reduce pollutant loads caused by erosion by restoring about 1070 linear feet of stream channel. Higher quality habitat for fish and wildlife will also be provided.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
16.05	6.22	10.03

Project Design Considerations: Culvert retrofit JM9400 is located approximately 0.6 miles east of JM9203 on Compton Rd. Although these projects are located in separate sub-watersheds, their proximity to each other along Compton Rd. warrants consideration of coordination and sequencing. JM9203 is located on private property. 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 the short-term environmental costs.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
Clear and Grub	1.1	AC	\$10,000.00	\$11,000.00
Construct New Channel	1070	LF	\$200.00	\$214,000.00
Add'l Cost, first 500 LF	500	LF	\$200.00	\$100,000.00
Plantings	1.1	AC	\$25,000.00	\$27,500.00
		Base Construction Cost		\$352,500.00
		Mobilization (5%)		\$17,625.00
		Ancillary Items (5%)		\$17,625.00
		Erosion & Sediment Control (10%)		\$35,250.00
		Subtotal 1		\$423,000.00
		Contingency (25%)		\$105,750.00
		Subtotal 2		\$528,750.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$237,937.50
		Total		\$766,687.50
		Estimated Project Cost		\$770,000.00

LR9201 Stream Restoration



Vicinity Map

Address	14104 Sorrel Chase Ct
Location	Subdivision
Landowner	Green Trails HOA
PIN	0654 03 C 0654 0304 M
Control Type	Water quality control
Drainage Area	188 acres
Receiving Waters	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.

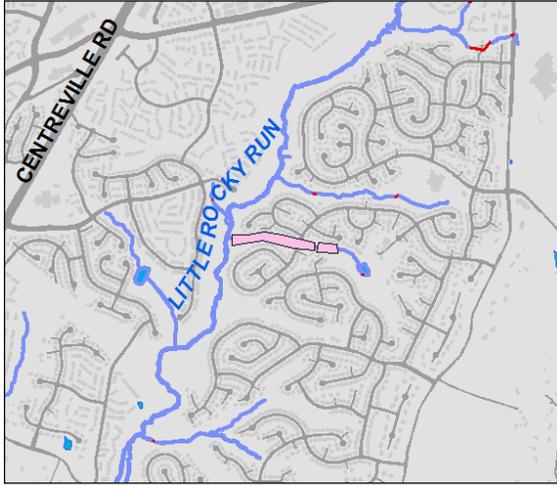
Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
12.58	4.87	7.86

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 existing 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 the short-term environmental costs.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
			Base Construction Cost	\$379,750.00
			Mobilization (5%)	\$18,987.50
			Ancillary Items (5%)	\$18,987.50
			Erosion & Sediment Control (10%)	\$37,975.00
			Subtotal 1	\$455,700.00
			Contingency (25%)	\$113,925.00
			Subtotal 2	\$569,625.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$256,331.25
			Total	\$825,956.25
			Estimated Project Cost	\$830,000.00

Little Rocky Run Watershed
Little Rocky Run - Lower Watershed Management Area

LR9202 Stream Restoration Project Suite



Vicinity Map

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

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



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.

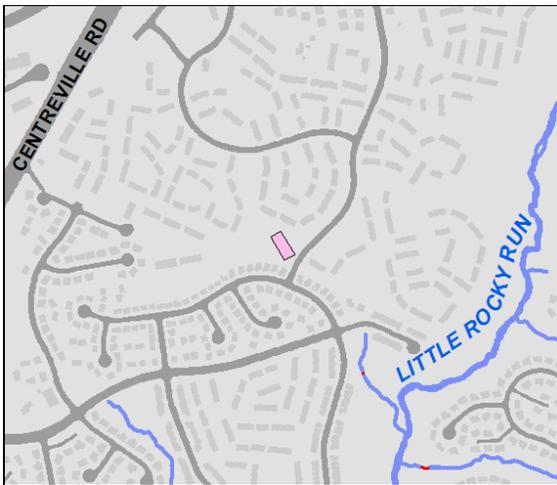
Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
69.41	10.53	0.54

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 Stream Restoration will outweigh the 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
			Base Construction Cost	\$366,920.64
			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
			Subtotal 1	\$449,538.30
			Contingency (25%)	\$112,384.58
			Subtotal 2	\$561,922.88
			Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)	\$252,865.29
			Total	\$814,788.17
			Estimated Project Cost	\$820,000.00

LR9203 Stream Restoration



Vicinity Map

Address	14100 Wood Rock Way
Location	Subdivision
Landowner	Heritage Forest HOA
PIN	0652 09 F2
Control Type	Water quality control
Drainage Area	20 acres
Receiving Waters	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

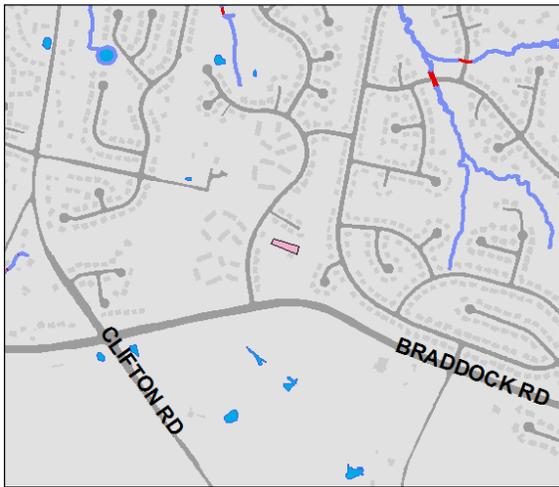
Project Benefits: LR9203 will reduce phosphorus, nitrogen and sediment loading by restoring 330 feet of paved channel with a more natural, permeable system. Higher quality habitat for native wildlife will be created and LR9203 may have beneficial effects on nearby property values.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
3.32	1.29	2.07

Project Design Considerations: The LR9203 project site is located on Heritage Forest HOA property, within an existing storm drainage easement. The site can be easily accessed from Singletons Way. Permitting requirements and impacts to mature trees will be minimal, if any.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$138,569.80
		Mobilization (5%)		\$6,928.49
		Ancillary Items (5%)		\$6,928.49
		Erosion & Sediment Control (10%)		\$13,856.98
		Subtotal 1		\$166,283.76
		Contingency (25%)		\$41,570.94
		Subtotal 2		\$207,854.70
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$93,534.62
		Total		\$301,389.32
		Estimated Project Cost		\$310,000.00

LR9204 Stream Restoration



Vicinity Map

Address	5587A Rockpointe Dr
Location	Subdivision
Landowner	Hayden Village Community Association
PIN	0661 11 K1
Control Type	Water quality control
Drainage Area	4 acres
Receiving Waters	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.

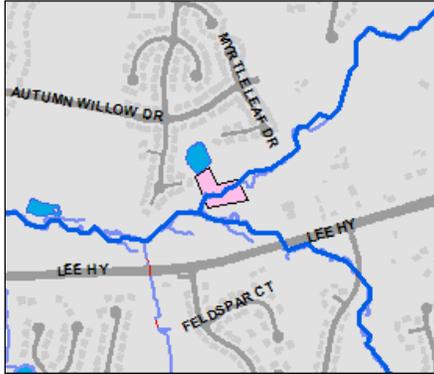
Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
2.44	0.95	1.53

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:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$47,788.57
		Mobilization (5%)		\$2,389.43
		Ancillary Items (5%)		\$2,389.43
		Erosion & Sediment Control (10%)		\$4,778.86
		Subtotal 1		\$57,346.28
		Contingency (25%)		\$14,336.57
		Subtotal 2		\$71,682.86
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$32,257.28
		Total		\$103,940.14
		Estimated Project Cost		\$110,000.00

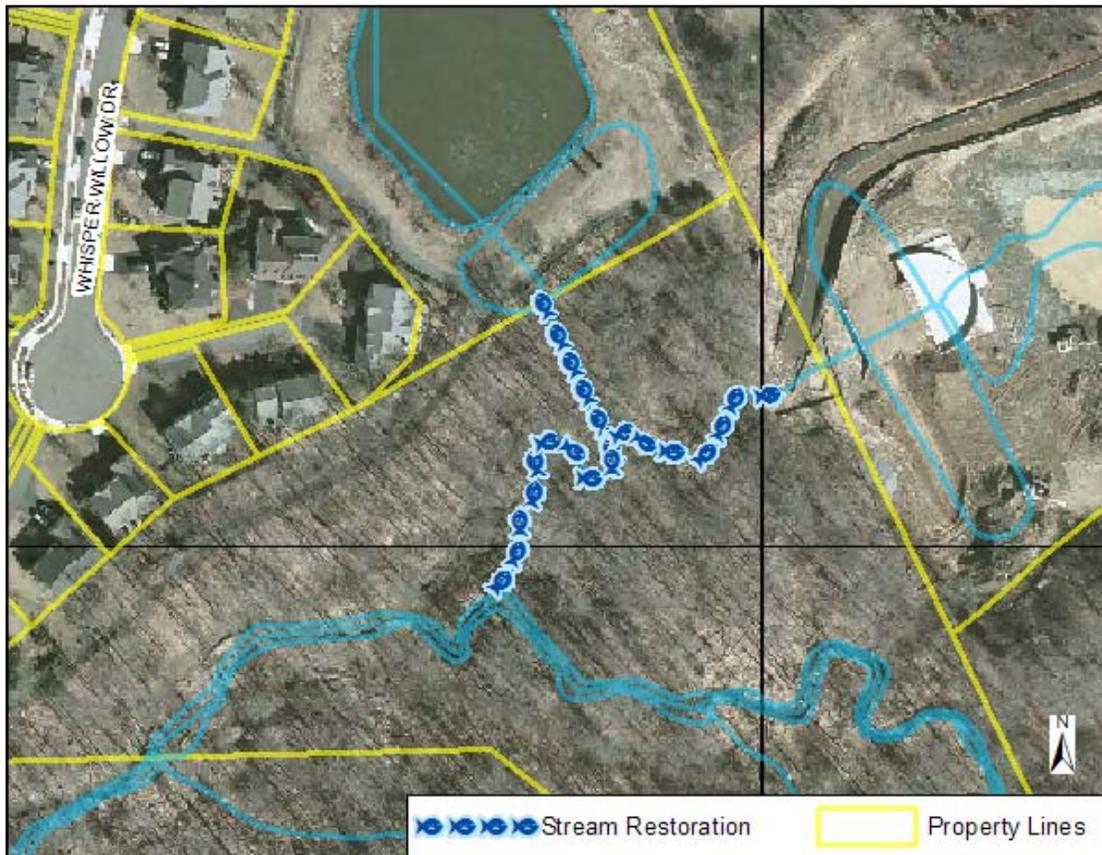
LR9205 Stream Restoration



Vicinity Map

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

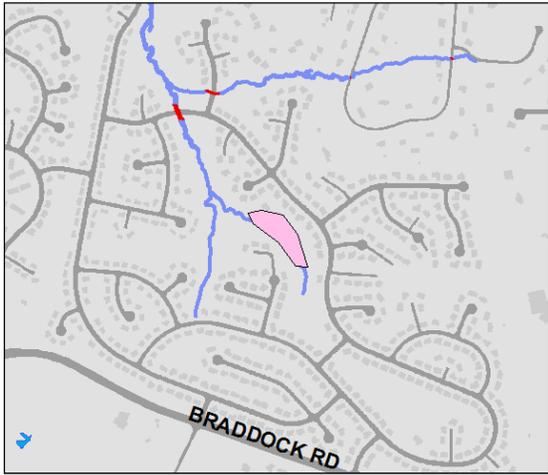
Project Benefits: Stream restoration project will remove nitrogen, phosphorus, and sediment pollution by restoring approximately 580 feet of natural stream channel. Higher quality habitat for fish and wildlife will also be provided.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
30.02	11.61	15.68

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 the short-term environmental costs. The project design/construction should include provisions to remove or trim trees which the Park Authority determines to have died or to have been irreparably damaged as a result of project impacts for a period of five years after completion of the project.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$232,100.00
		Mobilization (5%)		\$11,605.00
		Ancillary Items (5%)		\$11,605.00
		Erosion & Sediment Control (10%)		\$23,210.00
		Subtotal 1		\$278,520.00
		Contingency (25%)		\$69,630.00
		Subtotal 2		\$348,150.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$156,667.50
		Total		\$504,817.50
		Estimated Project Cost		\$510,000.00

LR9207 Stream Restoration



Vicinity Map

Address	5378 Ashleigh Rd
Location	Subdivision
Landowner	Hampton Chase HOA Hampton Forest HOA
PIN	0662 05 G1 0662 05 D 0554 07 C2
Control Type	Water quality control
Drainage Area	152 acres
Receiving Waters	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

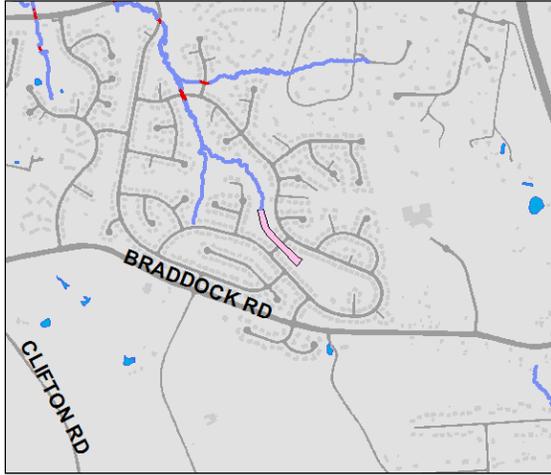
Project Benefits: LR9207 will restore 850 linear feet of stream channel to reduce phosphorus, nitrogen and sediment loading. Higher quality habitat for aquatic and terrestrial wildlife will also be provided. Successful implementation of LR9207 may also have positive effects on nearby property values.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
2.60	0.86	0.64

Project Design Considerations: LR9207 is located 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 existing 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 the short-term environmental costs.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$296,250.00
		Mobilization (5%)		\$14,812.50
		Ancillary Items (5%)		\$14,812.50
		Erosion & Sediment Control (10%)		\$29,625.00
		Subtotal 1		\$355,500.00
		Contingency (25%)		\$88,875.00
		Subtotal 2		\$444,375.00
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$199,968.75
		Total		\$644,343.75
		Estimated Project Cost		\$650,000.00

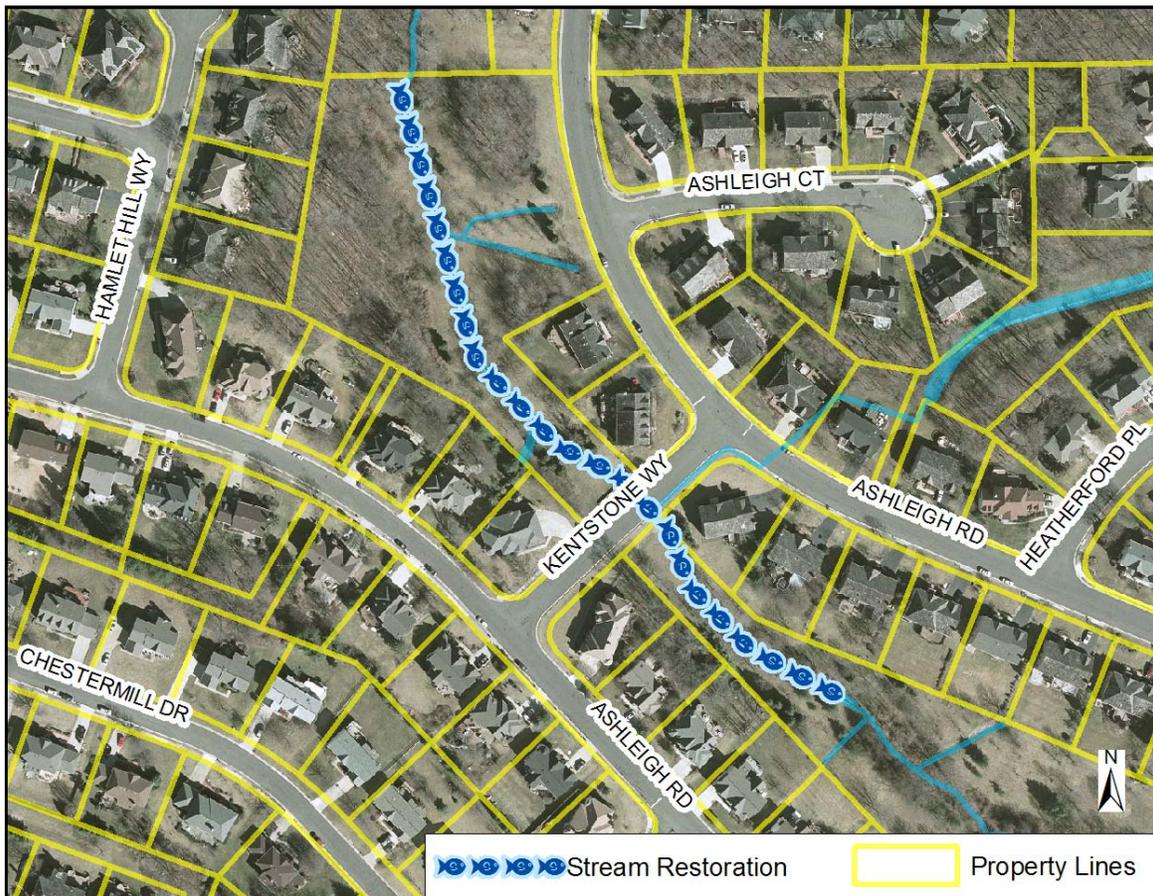
LR9208 Stream Restoration



Vicinity Map

Address	5418 Ashleigh Rd
Location	Subdivision
Landowner	Hampton Forest HOA
PIN	0662 05 U 0662 05 V
Control Type	Water quality control
Drainage Area	152 acres
Receiving Waters	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 both sides. Stream restoration project LR9208 will remove the concrete channel and restore a natural stream system and riparian buffer area.



Project Area Map

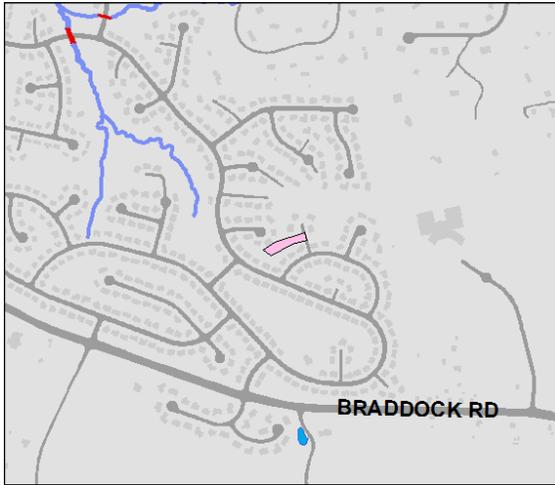
Project Benefits: Project LR9208 will reduce phosphorus and nitrogen loading in the tributary to Little Rocky Run, and will restore approximately 1020 linear feet of natural channel. Higher quality habitat for wildlife will also be provided. Successful implementation of LR9208 may also have positive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

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
10.87	4.21	6.80

Project Design Considerations: Stream restoration projects LR9207, LR9208 and LR9209 are located in close proximity to each other. LR9207 is located approximately 250 feet downstream of LR9208 and LR9209 is located on a tributary to the north of LR9208. Coordination and sequencing of these three projects should be considered. The project site is located within existing 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 the short-term environmental costs.

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$364,348.40
		Mobilization (5%)		\$18,217.42
		Ancillary Items (5%)		\$18,217.42
		Erosion & Sediment Control (10%)		\$36,434.84
		Subtotal 1		\$437,218.08
		Contingency (25%)		\$109,304.52
		Subtotal 2		\$546,522.60
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$245,935.17
		Total		\$792,457.77
		Estimated Project Cost		\$800,000.00

LR9209 Stream Restoration



Vicinity Map

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

Description: The unnamed tributary to Willow Springs Branch shown below is lined by a concrete trapezoidal channel (currently being undermined) with turf grass on both sides. 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.

Total Nitrogen Removed (lbs/yr)	Total Phosphorus Removed (lbs/yr)	Total Sediment Removed (tons/yr)
4.03	1.56	2.52

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 an existing 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:

ITEM	QUANTITY	UNITS	UNIT COST	TOTAL
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
		Base Construction Cost		\$172,963.30
		Mobilization (5%)		\$8,648.17
		Ancillary Items (5%)		\$8,648.17
		Erosion & Sediment Control (10%)		\$17,296.33
		Subtotal 1		\$207,555.96
		Contingency (25%)		\$51,888.99
		Subtotal 2		\$259,444.95
Engineering Design, Surveys, Land Acquisition, Utility Relocations and Permits (45%)				\$116,750.23
		Total		\$376,195.18
		Estimated Project Cost		\$380,000.00