5.0 Watershed Management Area Restoration Strategies

The Lower Occoquan includes eight of the 30 watersheds located within Fairfax County. These eight watersheds drain into the Occoquan River. For planning and management purposes, the County has defined drainage units called watershed management areas (WMAs), which are typically a few square miles of land area. For most of the small watersheds in Lower Occoquan, the entire watersheds are defined as WMAs. The larger Mill branch watershed has been divided into 3 individual WMAs. Figure 5-1 identifies the 10 WMAs within Lower Occoquan, their drainage area size and the number of proposed structural and non-structural projects. Summaries of Lower Occoquan's 10 WMAs are listed in the following WMA sections including field reconnaissance findings, existing and future land use, stream conditions, and stormwater infrastructure. Each WMA was examined at the subwatershed level in order to capture as much data as possible. The subwatershed conditions were reviewed and problems areas were highlighted. Projects were proposed in problematic subwatersheds. The Lower Occoquan Draft Watershed Workbook, which includes the full watershed characterization, can be found in Appendix A.

The restoration strategies proposed for the Lower Occoquan consist of 21 structural projects that should be implemented within the next ten years (0-10 year plan); 62 structural projects that should be implemented over the next 25 years (11-25 year plan) and 19 non-structural projects. This section contains project maps of the WMAs, descriptions of the WMAs, and individual project descriptions. Additionally, more detailed fact sheets for the 0-10 year plan projects are provided at the end of this section. The restoration projects proposed in this watershed management plan are distributed to the subwatersheds with poor conditions, not necessarily throughout the entire WMA.

Figure 5-1: Lower Occoquan Watershed Management Areas

WMA:		Acres	10-Year Plan	25-Year Plan	Non-Structural
1	High Point	3,555.0	0	0	1
2	Kane Creek	3,076.0	1	5	0
3	Mill Branch - Giles Run North	2,002.0	2	13	10
4	Mill Branch - Giles Run South	2,328.0	8	3	3
5	Mill Branch - Mill Branch	1,268.0	0	5	2
6	Occoquan	2,126.0	0	6	0
7	Old Mill Branch	2,724.0	0	6	0
8	Ryans Dam	2,262.0	0	2	0
9	Sandy Run	5,198.1	5	11	3
10	Wolf Run	3,761.7	5	11	0
Totals		**28,300.8**	**21**	**62**	**19**

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.1 High Point Watershed Management Area

The High Point WMA has a total area of approximately 6.28 square miles. It is located on a peninsula in the southeastern corner of Fairfax County. More than two-thirds of High Point's boundary is surrounded by the Potomac River. It is bound to the north end by Pohick Bay Drive (Route 721) and on the west by Gunston Road (Route 242) down to the point at the confluence of Gunston Cove and the Potomac River. The High Point WMA also extends to points south and west along High Point Road, adjacent to the Kane Creek WMA to the north and the Potomac River to the south. The High Point WMA is a portion of the 800-acre Mason Neck peninsula.

The majority of the High Point watershed is covered by wetlands and is protected as part of the Elizabeth Hartwell Mason Neck National Wildlife Refuge and State Park. The streams are almost flowing wetlands. Development in this WMA has been limited to the areas east of Gunston Road and south of the Gunston Hall Plantation site in the lower end of the Mason Neck peninsula. Two primary residential subdivisions have been developed in this WMA, Hallowing Point River Estates and Gunston Manor. Residential subdivision streets lack curb and gutter and no sidewalks were observed. Stormwater infrastructure consists primarily of open channel drainage to Gunston Cove, the Potomac River and to Belmont Bay.

In the High Point WMA, the most prevalent stream conditions include disturbed stream buffers, stream channel erosion and/or widening, and crossing impacts from roads and utilities. Channel incision conditions and crossing impacts are noted in a tributary stream along Gunston Road draining into Gunston Cove. Channel incision was also noted on a tributary running through portions of the Mason Neck State Park and the Mason Neck National Wildlife Refuge. Very few pipe discharges are noted in the WMA, and road crossing impacts in the High Point WMA are generally minor. Stream buffer deficiencies are noted sporadically around the WMA, with the most significant, contiguous deficiencies noted in the residential area around Hallowing Point River Estates.

The only project proposed for this WMA, which has been preserved by the Mason Neck Park, is a buffer restoration project. No structural projects are proposed in the High Point WMA due to its preserved natural state in comparison to other watersheds. A map of this WMA and a proposed project list is provided.

5.1.1 0 – 10 Year Structural Projects

No projects proposed

5.1.2 11 – 25 Year Structural Projects

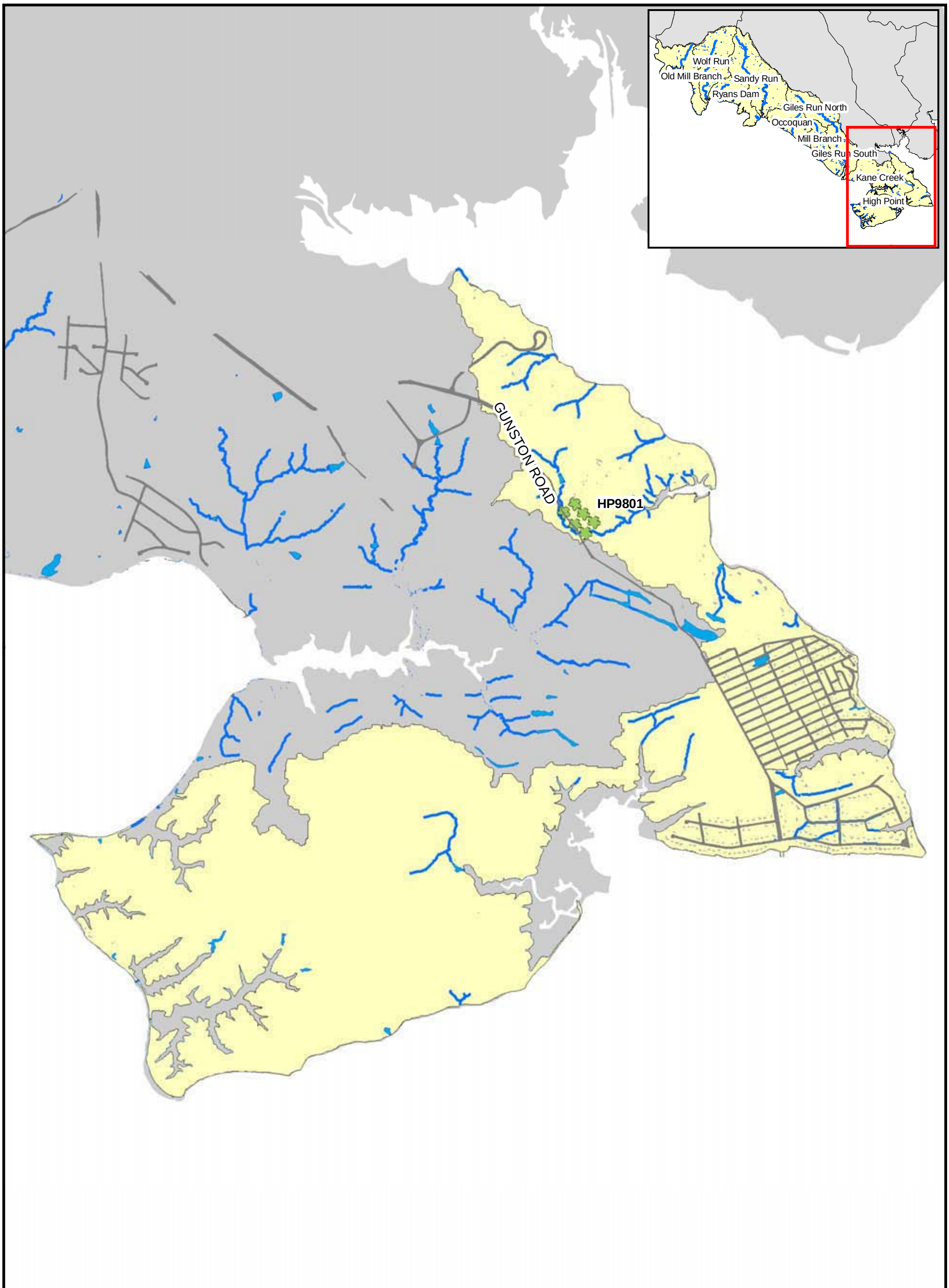
No projects proposed

5.1.3 Non-Structural Projects

<u>HP9801 Buffer Restoration</u>

This project proposes the repair of a stream buffer along Gunston Road near Gunston Hall Plantation. Repairing the buffer will re-establish the RPA. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.

[THIS PAGE INTENTIONALLY LEFT BLANK]



N

0 0.1250.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.1

High Point
WMA
Proposed Projects

Table 5-1: Project List - WMA (High Point)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
No Structural projects were ranked as a priority for this watershed due to its low density						

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
HP9801	Buffer Restoration	HP-PO-0018	Near 10709 Gunston Rd. (Gunston Hall Plantation)	Water quality control	Public/State - Commonwealth of VA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK

5.2 Kane Creek Watershed Management Area

Kane Creek is located on a peninsula in the southeastern corner of Fairfax County, covers 4.84 square miles, and includes 21 subwatersheds. The Kane Creek WMA consists of several small independent streams which discharge into the Belmont Bay along the Potomac River. The Kane Creek WMA is roughly bounded on the north end by Gunston Road (Route 242) and to the west by Belmont Boulevard (Route 601) and by Belmont Bay, to which Kane Creek's tributaries drain. The Kane Creek WMA is roughly bounded to the south by High Point Road and extends east into portions of the Mason Neck National Wildlife Refuge. Kane Creek is tidally influenced well into Mason Neck State Park. Kane Creek one of the highest quality Coastal Plain basins within Fairfax County and has been used as a source for reference conditions for other watersheds.

In the Kane Creek WMA, the most prevalent stream condition features noted include stream channel erosion, widening, and incision, and crossing impacts from roads and utilities. Channel incision conditions and crossing impacts are noted in most of the upstream tributaries in the Kane Creek WMA, including Thompson Creek in the Meadowood property. Stream buffer disturbance has been noted in a few of the upstream tributaries, but is less prevalent than in other lower Occoquan WMAs. Where stream buffer deficiencies are noted, they appear more sporadically around the WMA, with no significant, contiguous deficiencies noted.

The only projects proposed for this WMA are stream restorations. All of this WMA's streams are classified as stage II or III. Streams with these classifications are the best candidates for stream restorations. Below is a descriptions of a stream restoration proposed in the 0-10 year plan. No non-structural projects are proposed, such as buffer restorations, since this WMA is such a high quality coastal basin. A map of this WMA and a list of all the projects proposed in this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.2.1 0 – 10 Year Structural Projects

<u>KC9209 Stream Restoration</u>

Stream south of Springfield Drive in Lorton shows indicators of poor channel morphology. Stream is downstream of two ponds. A project is proposed to repair bank and bed erosion to restore channel morphology. Stream ultimately discharges into Belmont Bay. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

5.2.2 11 – 25 Year Structural Projects

<u>KC9203 Stream Restoration</u>

Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed erosion for the southeastern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.

<u>KC9204 Stream Restoration</u>

Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed

erosion for the eastern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.

KC9205 Stream Restoration

Three streams located west of High Point Road in Lorton feed into Belmont Bay and show indications of poor channel morphology. This project proposes repairing the bank and bed erosion for the northern stream branch to restore channel morphology. This restoration will reduce sediment loads to the stream and help control unwanted meander.

KC9208 Stream Restoration

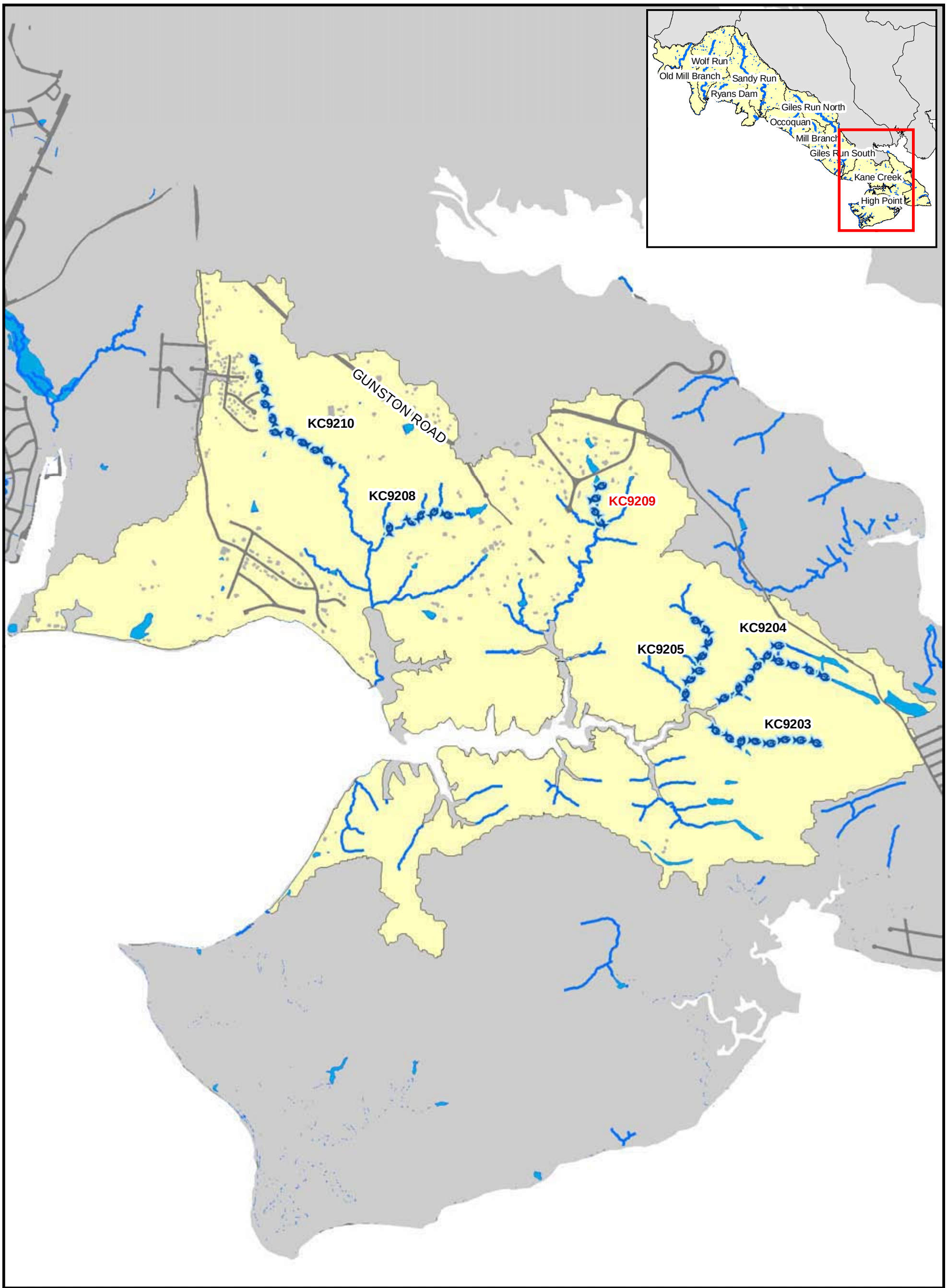
The Stream north of Harley Road in Lorton shows indicators of poor channel morphology. A project is proposed to repair bank and bed erosion to restore channel morphology. Restoration will minimize sediment loads to stream while maintaining capacity and controlling unwanted meander. This stream outfalls into Belmont Bay.

KC9210 Stream Restoration

The Stream southwest of Gunston Road flowing south east has indicators of poor channel morphology. This project proposes repairing bank and bed erosion, thereby restoring channel morphology. This will reduce sediment loads while maintaining capacity and controlling unwanted meander.

5.2.3 Non-Structural Projects

No non-structural projects are proposed for this watershed.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.2

Kane Creek
WMA
Proposed Projects

Table 5-2: Project List – WMA (Kane Creek)

Structural Projects[1]						
Project #	**Project Type**	**Sub-water-shed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
KC9209	Stream Restoration	KC-KC-0006	Behind 10809 Harley Rd.	Water quality control	Public/State/Private - Department of Conservation and Economic Department, Residential	0 – 10
KC9203	Stream Restoration	KC-KC-0013	6407 High Point Rd. (Mason Neck State Park)	Water quality control	Public/Federal - USA	11 – 25
KC9204	Stream Restoration	KC-KC-0012	6408 High Point Rd. (Mason Neck State Park)	Water quality control	Public/State/Federal - Commonwealth of VA, USA	11 – 25
KC9205	Stream Restoration	KC-KC-0009	6409 High Point Rd. (Mason Neck State Park)	Water quality control	Public/State/Federal - Commonwealth of VA, Department of Conservation and Economic Development, USA	11 – 25
KC9208	Stream Restoration	KC-TC-0004	Behind 10800 Harley Rd.	Water quality control	Public/Federal/Private - USA, Residential	11 – 25
KC9210	Stream Restoration	KC-TC-0006	Across from 10417 Gunston Rd.	Water quality control	Public/State/Federal/Private - VDOT, USA, Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
No non-structural projects are proposed for this Watershed.					

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.3 Mill Branch – Giles Run North Watershed Management Area

The Giles Run North WMA is located in the eastern reaches of the collection of the Lower Occoquan watersheds and is a portion of the Mill Branch watershed. Giles Run North consists of 11 subwatersheds. The Giles Run North WMA is roughly bounded by Silverbrook Road to the north and northeast. The western border is roughly formed by Ox Road (Route 123) and the southern border of the WMA essentially follows Furnace Road east to Lorton Road. Giles Run North WMA lies entirely within the Coastal Plain physiographic province, characterized by relatively gentle topography.

This WMA is comprised primarily of single-family, detached residential properties in a number of established subdivisions, including Giles Runs, Crosspointe, Lorfax Heights, Silverbrook Estates, Spring Hill and Gunston Corner. There is also a significant amount of single-family attached homes (i.e. townhouses) development, especially in the Gunston Corner area, at the southeastern end of the WMA. Non-residential land uses include: low intensity commercial developments, schools, the Laurel Hill Golf Course, and the Christ United Methodist Church. The Giles Run North (MB) is fairly developed in certain areas; therefore, the WMA has relatively high levels of imperviousness when compared to the Lower Occoquan watershed as a whole.

The high residential development in this WMA has resulted in a stormwater infrastructure consisting primarily of curb and gutter collection through piped stormwater networks discharging to either best management practices (BMPs) or directly to Giles Run and its tributaries. In areas that developed earlier, stormwater management facilities, where present, consist primarily of dry detention basins designed to curb peak storm flows (quantity management). For areas that developed more recently, stormwater management facilities are more likely to include a water quality component.

The Giles Run North WMA contains approximately 14 dry detention and extended dry detention facilities designed to manage stormwater quantity and quality. In addition, the WMA contains three wet detention facilities, also designed for water quality and quantity management, as well as one underground chamber, which provides quantity management. As part of the Laurel Hill redevelopment project, a number of additional stormwater management facilities appear planned for construction.

The most prevalent stream impacts include disturbed stream buffers and stream channel widening. Channel widening, coincident with poor overall stream habitat, is the primary impact for the main stem of Giles Run through the WMA. Channel incision is noted for tributaries running through the Laurel Hill Park area to the south and east. Pipes discharge in streams have demonstrated an impact as well, as these pipes discharge stormwater runoff directly into the streams in areas that were developed prior to current stormwater management requirements for post-construction controls. These discharges contribute to the noted, upstream widening and erosive conditions. In addition, several 1- to 2-foot head cuts were noted on downstream tributaries in the WMA.

The watershed restoration structural projects for this WMA includes: retrofitting stormwater ponds, restoring streams, and BMP/ LID projects at school sites. Non-structural projects include street sweeping programs and buffer restorations. These projects are well suited for existing residential development. Below are descriptions of the 0-10 year plan projects and non-structural projects. Also a map of this WMA and a list of all the projects proposed in this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.3.1 0 – 10 Year Structural Projects

MB9122 Stormwater Pond Retrofit

This project proposes the retrofit of an existing public pond east of Cross Chase Circle to create a wetland system with sediment forebays and bench planting. The existing dry pond receives runoff from two pipes, a channel and sheet flow from the back of the residential houses. The wetland retrofit will include adding two sediment forebays for the stormwater inflows, expanding the pond to provide more time to treat stormwater in the pond, and the creation of high and low marsh areas in the pond to increase the biological uptake in the pond.

MB9510 BMP/ LID

This project proposes the construction of a bioretention area at Silverbrook Elementary School on Crosspointe Drive. The bioretention landscaping feature will receive runoff from the parking lot and building. A filter layer made of 18-48 inches of sand is placed below a mulch layer. During a storm, the runoff ponds 6-9 inches in the bioretention area, is filtered by the bioretention media soil, and outfalls either to the existing storm system or infiltrates into the native soil. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorous.

5.3.2 11 – 25 Year Structural Projects

MB9119 Stormwater Pond Retrofit

This project proposes the retrofitting of the existing pond near Cardinal Forest Lane at Mid Atlantic Petroleum and creating an extended detention pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better temporary ponding using a control structure, which promotes particulate pollutant settlement.

MB9120 Stormwater Pond Retrofit

This project proposes the retrofit of an existing wet pond behind Southpointe Lane to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen, and phosphorus. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity with a permanent pool. The pool prevents re-suspension of sediments and other pollutants.

MB9121 Stormwater Pond Retrofit

This project proposes the retrofit of an existing dry pond at William Halley Elementary School to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and provide better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.

MB9123 Stormwater Pond Retrofit

This project proposes the retrofit of an existing public pond northwest of Meadow Edge Terrace to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen and phosphorus. The wetland retrofit will provide increase in

shade, detritus, woody plant material and cooler water temperatures which will improve habitat. Pollutant removal will be achieved through settling and biological uptake within the wetland, while reducing volume and peak runoff rates.

MB9124 Stormwater Pond Retrofit

This project proposes the retrofit of an existing public pond northeast of Cross Oaks Court in Fairfax Station to create a wetland system, sediment forebay and bench planting. The primary indicators are pollutants, including nitrogen and phosphorus. The retrofit will modify the existing pond to increase pollutant removal and to provide adequate channel protection. The retrofit will create a better-functioning environment for gravitational settling, biological uptake and microbial activity with a permanent pool of standing water. The permanent pool prevents re-suspension of sediments and other pollutants. A large berm currently divides the pond.

MB9125 Stormwater Pond Retrofit

This project proposes the retrofit of an existing pond in front of Silverbrook Elementary School to an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out. The small dry pond is just upstream of large wet pond. Improving the quality of the upstream pond will have positive effects on the large downstream pond.

MB9208 Stream Restoration

This project proposes the restoration of the stream east of Windermere Hill Drive that flows from north to south. The project proposes to restore poor channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Project should be coordinated with the downstream property owners to consider extending the area of restoration and/or spot improvements further downstream. Representatives of the landfill located near I-95 have expressed support for extending the restoration downstream.

MB9209 Stream Restoration

This project proposes the restoration of the stream north of Cumbia Valley Drive that runs parallel to Lorton Road. The project proposes to restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. This project is located on the Giles Run Main Stem just downstream from Lorton Road. Laurel Hill Park is located along this segment of Lorton Road opposite of the proposed project. The current road improvement project for the Lorton Road widening will result in major alignment shifts in this area and may result in a portion, or all, of this stream project being located on Laurel Hill Park. In consideration of this road alignment change, DPWES should coordinate closely with the Park Authority in the design of this project.

MB9210 Stream Restoration

This project proposes the restoration of the stream at Laurel Hill Golf Club in Lorton. The stream flows west to east. The project proposes to restore poor channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

MB9212 Stream Restoration

This project proposes the restoration of the stream east of Cross Chase Circle in Lorton by restoring channel morphology and reducing bed and bank erosion. The stream stabilization will reduce downstream sediment loads, maintain capacity of the stream channel, and control unwanted meander. The stream flows southwest to northeast and outfalls into a pond.

MB9213 Stream Restoration

This project proposes daylighting an outfall pipe further upstream, providing outfall protection, installing an energy dissipation device and constructing an open channel. The pipe is located north of Cross View in Fairfax Station. The primary indicators are poor channel morphology downstream. Daylighting redirects a closed system back to an aboveground channel, returning water to its natural state, reducing runoff rates, encouraging infiltration and minimizing downstream erosion.

MB9509 BMP/ LID

This project proposes the construction of a bioretention area at Christ United Methodist Church on Glen Eagles Court in Fairfax Station. The bioretention landscaping feature will receive runoff from the parking lot and building. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce the outflow to the storm system.

MB9511 BMP/ LID

This project proposes pervious pavement for the parking lot at Crosspointe Swim and Racquet Club on Glen Eagles Lane. The project will replace the existing pavement with pervious pavement or pavers. Additional underground detention may be provided as site conditions permit. The primary indicators are total impervious area and total urban land cover. Pervious pavement will reduce runoff rates using porous materials that allow runoff to infiltrate so pollutants may be trapped in the soil.

5.3.3 Non-Structural Projects

MB9507 BMP/ LID

This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at William Halley Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.

MB9512 BMP/ LID

This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at Silverbrook Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.

MB9805 Street Sweeping Program

This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Cardinal Forest Lane and consists of 35 acres. The area is a multifamily housing development. The

primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.

MB9806 Buffer Restoration

This suite of projects proposes to repair deficient stream buffers at Laurel Hill Golf Club in Lorton in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, thereby increasing surface storage and infiltration.

MB9807 Buffer Restoration

This Buffer Restoration suite of projects proposes repairing a deficient stream buffers at Laurel Hill Golf Club in Lorton. Increased vegetation from the buffer repairs will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration.

MB9808 Street Sweeping Program

This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is off of Lorfax Drive and consists of 125 acres. The area is mostly single-family residential development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.

MB9809 Street Sweeping Program

This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Chase Glenn Circle and consists of 230 acres. The area is mostly single-family residential and very small area of commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.

MB9810 Street Sweeping Program

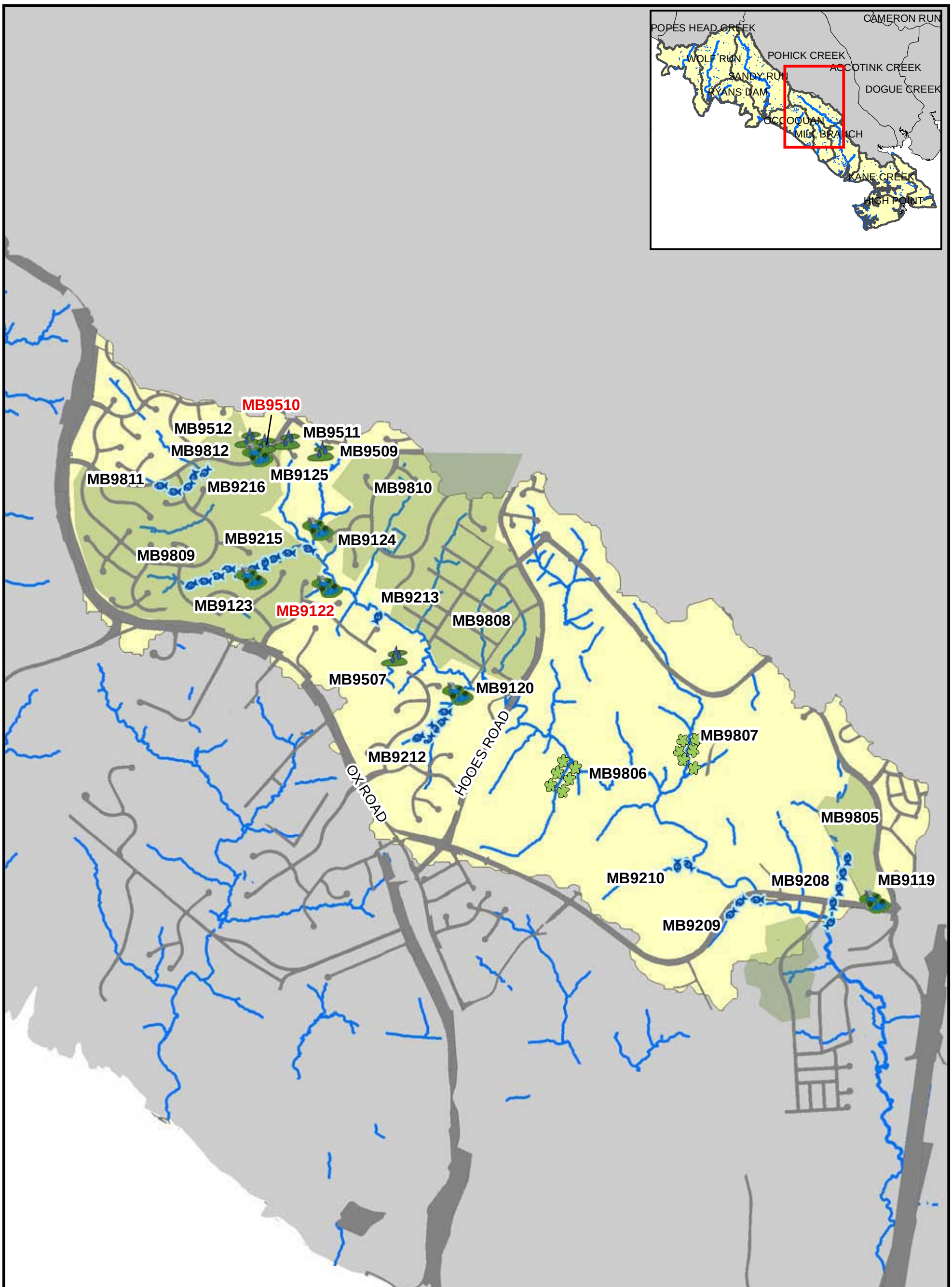
This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Cross Chase Circle and consists of 135 acres. The area is single-family residential and commercial development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.

MB9811 Buffer Restoration

This project proposes to repair a deficient stream buffer south of Crosspointe Drive in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration.

MB9812 Street Sweeping Program

This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is along Crosspointe Drive near Silverbrook Elementary School and consists of 45 acres; however, there is not very much roadway within drainage area. The area is single-family residential, a school and a very large wet pond. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.3

Mill Branch - Giles Run North WMA
Proposed Projects

Table 5-3: Project List – WMA (Mill Branch – Giles Run North)

Structural Projects[1]						
Project #	**Project Type**	**Sub-water-shed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
MB9122	Stormwater Pond Retrofit	MB-GR-0016	Behind 8605 Cross Chase Court	Water quality and quantity control	Private - Commercial	0 – 10
MB9510	BMP/LID	MB-GR-0019	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity control	Public/Local - FCPS	0 – 10
MB9119	Stormwater Pond Retrofit	MB-GR-0010	Near 9300 Cardinal Forest La.	Water quality and quantity control	Private - Commercial	11 – 25
MB9120	Stormwater Pond Retrofit	MB-GR-0015	9001 Southpointe La. (Behind Cul-de-sac)	Water quality and quantity control	Private - Commercial	11 – 25
MB9121	Stormwater Pond Retrofit	MB-GR-0016	8850 Cross Chase Circle (William Halley Elementary School)	Water quality and quantity control	Public/Local - FCPS	11 – 25
MB9123	Stormwater Pond Retrofit	MB-GR-0017	Behind 8628 Meadow Edge Terr.	Water quality and quantity control	Private - Commercial	11 – 25
MB9124	Stormwater Pond Retrofit	MB-GR-0018	Behind 9210 Cross Oaks Ct.	Water quality and quantity control	Private - Commercial	11 – 25
MB9125	Stormwater Pond Retrofit	MB-GR-0019	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity control	Public/Local-FCPS	11 – 25
MB9208	Stream Restoration	MB-GR-0010	8301 Lorton Rd.	Water quality control	Public/Local/ State/Private - FCPA, VDOT, Residential	11 – 25
MB9209	Stream Restoration	MB-GR-0009	8300 Newby Bridge Dr.	Water quality control	Public/Local - FCPA	11 – 25
MB9210	Stream Restoration	MB-GR-0011	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 1)	Water quality control	Public/Local - FCPA	11 – 25
MB9212	Stream Restoration	MB-GR-0015	8921 Cross Chase Cir.	Water quality control	Private - Commercial	11 – 25
MB9213	Stream Restoration	MB-GR-0016	8601 Cross View	Water quality and quantity control	Private - Commercial	11 – 25

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

Structural Projects[1]						
Project #	**Project Type**	**Sub-water-shed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
MB9509	BMP/LID	MB-GR-0018	8285 Glen Eagles La. (Christ Church United Methodist Inc.)	Water quality and quantity control	Private - Church	11 – 25
MB9511	BMP/LID	MB-GR-0018	8275 Glen Eagles La. (Crosspointe Swim and Racquet Club)	Water quality and quantity control	Private - Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**
MB9507	BMP/LID	MB-GR-0016	8850 Cross Chase Circle (William Halley Elementary School)	Water quality and quantity control	Public/Local - FCPS
MB9512	BMP/LID	MB-GR-0019	9350 Crosspointe Dr. (Silverbrook Elementary School)	Water quality and quantity control	Public/Local - FCPS
MB9805	Street Sweeping Program	MB-GR-0010	Near 8327 Bluebird Way	Water quality control	Public/State - VDOT
MB9806	Buffer Restoration Suite	MB-GR-0013	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 1)	Water quality control	Public/Local - FCPA
MB9807	Buffer Restoration Suite	MB-GR-0012	8700 Laurel Crest Dr. (Laurel Hill Golf Club, Site 2)	Water quality control	Public/Local - FCPA
MB9808	Street Sweeping Program	MB-GR-0016	Near 8709 Lorfax Dr.	Water quality control	Public/State - VDOT
MB9809	Street Sweeping Program	MB-GR-0017	Near 9413 Eagle Glen Ter.	Water quality control	Public/State - VDOT
MB9810	Street Sweeping Program	MB-GR-0018	Behind 9105 Oak Chase Ct.	Water quality control	Public/State - VDOT
MB9811	Buffer Restoration	MB-GR-0019	Next to 9527 Crosspointe Dr.	Water quality control	Private - Residential
MB9812	Street Sweeping Program	MB-GR-0019	Near 8409 Crosslake Dr.	Water quality control	Public/State - VDOT

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

5.4 Mill Branch – Giles Run South Watershed Management Area

The Giles Run South WMA is a portion of the Mill Branch watershed and is located in the eastern reaches of the Lower Occoquan watersheds. Giles Run South has an area of 3.64 square miles and contains 14 subwatersheds. The Giles Run South WMA is roughly bounded by Lorton Road (Route 642) to the extreme north. The western border is roughly formed by a portion of Interstate 95 in the southern end and Furnace Road (Route 611) on the central and northern end. The eastern boundary of the WMA is formed by Gunston Road (Route 242) and Belmont Boulevard (Route 601) to the southern end of the WMA. The WMA discharges to the Occoquan River to the south, and is bisected by both Interstate 95 and the Richmond Highway (U.S. Route 1). Old Colchester Road also bisects the WMA south and east of U.S. Route 1. Giles Run South lies entirely within the Coastal Plain physiographic province, characterized by relatively gentle topography.

Land uses range from single family residential to industrial park land. Residential developments include portions of the Laurel Hill redevelopment project in the extreme north, the more established Colchester neighborhood to the south near the Occoquan River, and other, newer single family developments to the south and east including the western end of Gunston Heights to the east and Harbor View, which abuts Massey Creek. The majority of the observed single-family detached dwellings were constructed on lots estimated to be less than a quarter to one acre in size.

Impervious cover estimates in the WMA vary significantly based on the land use. In residential developments, approximately 10 to 15 percent impervious cover exists, whereas non-residential, such as industrial lands, may be as high as 70 percent in some cases. Giles Run South contains limited, low intensity commercial development, primarily associated with industries/activities supporting residential development. The largest commercial complex observed was the Lorton Station Marketplace, off Gunston Road. The Giles Run South WMA also includes the Mason Neck West Area Park.

The Giles Run South WMA contains a variety stormwater infrastructure and BMPs, which track with the watershed's development history. In areas that developed earlier, stormwater management facilities, where present, consist primarily of dry detention basins designed to curb peak storm flows (quantity management). For areas that developed more recently, stormwater management facilities are more likely to include a water quality component, and the variety of facility types increases. Facilities found in these areas include underground chambers, parking lot detention, rooftop detention, and manufactured BMP systems. The majority of stormwater in Giles Run South WMA is uncontrolled and drains untreated to receiving waters which is consistent with the small percentage of impervious area within the WMA and the overall age of development.

Stream impacts noted include disturbed stream buffers and stream channel widening. Buffer disturbances appear coincident with roadways, including residential streets as well as major road arteries in the WMA. Channel widening, coincident with poor overall stream habitat, is the primary feature for the main stem of Giles Run through the WMA. Finally, some obstructions and dump site impacts were noted throughout the WMA.

The watershed restoration projects for this WMA include: retrofitting stormwater ponds, restoring streams and BMP/ LID projects. Below are descriptions of the 0-10 year structural projects and non-structural projects. Also a map of this WMA and a list of all the projects proposed in this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.4.1 0 – 10 Year Structural Projects

MB9104 Stormwater Pond Retrofit

Dry pond retrofit proposed at Mason Neck West Park located off of Old Colchester Road in Lorton. The project proposes to create an extended detention dry pond with sediment forebays. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.

MB9105 Stormwater Pond Retrofit

This project proposes the retrofit of an existing pond between Richmond Highway and west of the Old Colchester Road ramp to create a wetland system with sediment forebay and bench planting. The primary problem indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to increase the time stormwater travels through the facility. The retrofit will add areas of high marsh and low marsh to the pond with tree peninsulas and will create a better functioning environment for gravitational settling, biological uptake and microbial activity.

MB9107 Stormwater Pond Retrofit

Dry pond located in industrial area off of Richmond Highway. Project proposes retrofitting existing dry pond to create an extended detention dry pond with sediment forebays. The retrofit will modify the existing discharge structure to increase the time stormwater is detained in the pond. The pond will be expanded to handle this larger treatment volume. This retrofit will provide better downstream channel protection and promote particulate pollutant settlement. Pollutant indicators include nitrogen, phosphorous and total suspended solids.

MB9109 Stormwater Pond Retrofit

This project proposes retrofitting the existing pond west of Mims Street to create an extended detention pond with a sediment forebay. The pond currently receives stormwater runoff from a private concrete company. The primary problem indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The pond's existing discharge structure will be modified to increase the time stormwater is treated in the facility. This will provide better downstream channel protection and will promote particulate settlement.

MB9111 Stormwater Pond Retrofit

This project proposes retrofitting an existing wet pond east of Mims Street to create a constructed wetland system, with sediment forebay and engineered landscaping plan. The retrofit will extend the flow path of stormwater runoff in the wetland by enlarging the facility's size and creating high and low marsh areas. The primary pollutant indicators are nitrogen, phosphorous and total suspended solids. The retrofit will increase pollutant removal and provide better channel protection above the permanent pool of standing water. The pool prevents re-suspension of sediments and other pollutants.

MB9114 Stormwater Pond Retrofit

This project proposes to retrofit an existing dry pond at the Fairfax County Landfill off of Furnace Road in Lorton. A sediment forebay will be added to provide pretreatment to the pond's two inflows. The pond's existing discharge structure will be modified to increase the time water is detained in the pond. To handle the larger detention volume the pond will be enlarged. Lastly, an aquatic bench will be added to increase biological uptake of pollutants.

MB9202 Stream Restoration

This project proposes the restoration of a stream southeast of Old Colchester Road that flows from east to west. The project proposes to restore channel morphology by improving bed and bank erosion. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent. Stream receives runoff from residential housing to the east and surrounding wooded areas.

MB9506 BMP/ LID

This project proposes the construction of a bioretention area at Fairfax County Landfill. The bioretention landscaping feature will receive runoff from parking lots. Filter layer made of 18-48 inches of sand is placed below a mulch layer. During a storm, the runoff ponds 6-9 inches drains through the bioretention filter media, and outfalls or infiltrates into the native soil. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorous.

5.4.2 11 – 25 Year Structural Projects

MB9106 Stormwater Pond Retrofit

This project proposes retrofitting an existing dry pond south of Hassett Street to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.

MB9108 Stormwater Pond Retrofit

This project proposes retrofitting an existing pond located off of Giles Run Road near a parking lot of an industrial area to create an extended detention pond with a sediment forebay. The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settlement of particulate pollutants.

MB9201 Stream Restoration

This project proposes the restoration of a large portion of the stream west of Anita Drive. The project proposes to restore channel morphology by reducing bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander.

MB9504 BMP/ LID

This project proposes the construction of a bioretention area at Gunston Elementary School. The bioretention landscaping feature will receive runoff from impervious areas, including the parking lot and the school building. The primary indicators are upland sediment, total suspended solids and pollutants including nitrogen and phosphorus. The bioretention area will create an ideal environment for filtration, biological uptake and microbial activity. It will also reduce runoff to the storm system.

5.4.3 Non-Structural Projects

MB9505 BMP/ LID

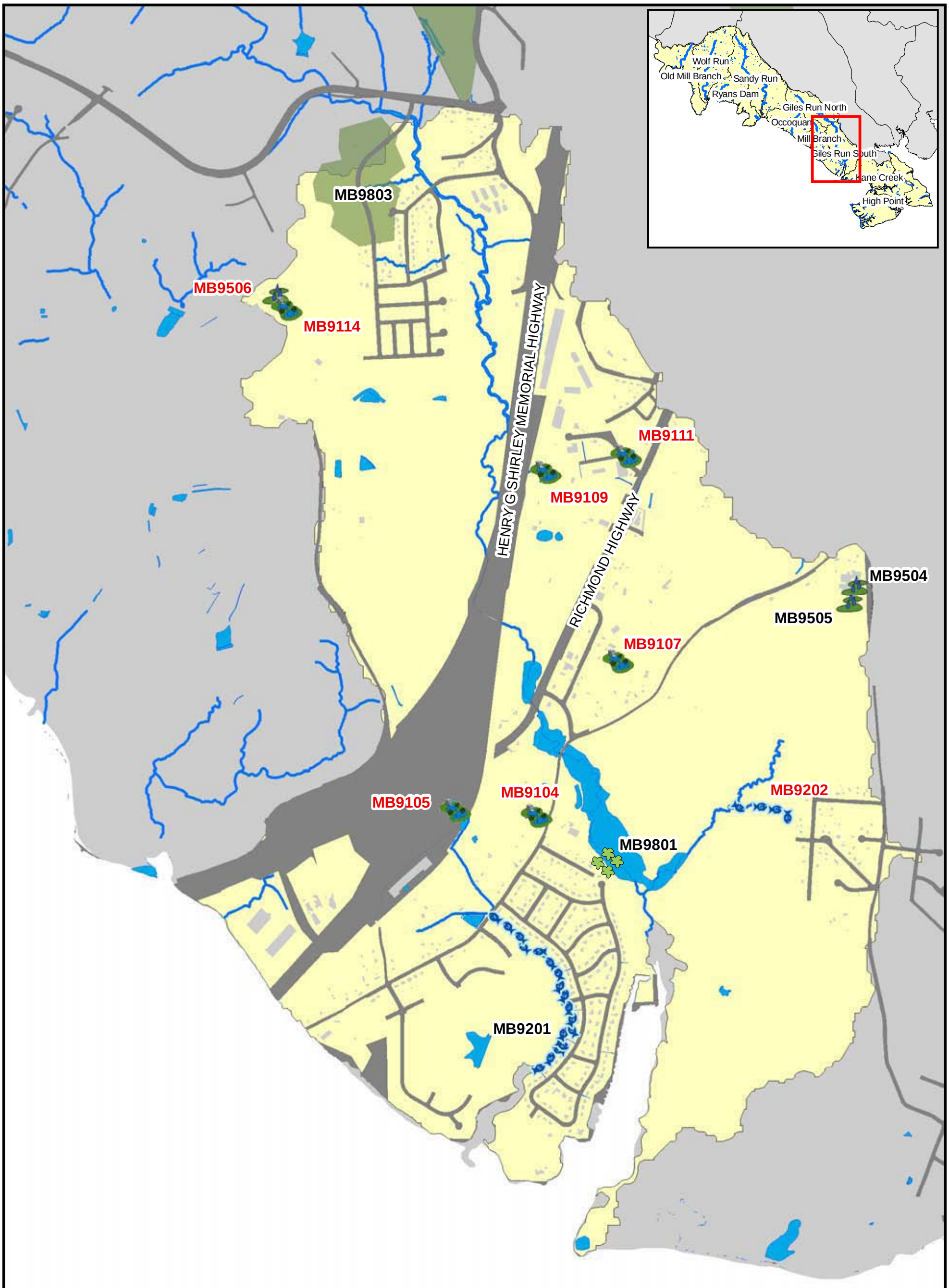
This project proposes the collection of downspouts in rain barrels or roof drains in underground cisterns for reuse in irrigation at Gunston Elementary School. A rain barrel/cistern program will capture, store and reuse rooftop runoff. The rain barrels can be used by students as a hands-on educational program.

MB9801 Buffer Restoration

This project proposes to repair a deficient stream buffer northeast of Greene Drive in order to re-establish the RPA and provide reforestation to a partially bare area. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration.

MB9803 Street Sweeping Program

This project proposes a street sweeping program to help reduce the amount of potential pollutants from entering the nearby streams and storm systems. The area is near Wind mere Hill Drive and consists of 40 acres. The area is a townhouse development. The primary indicators are upland sediment and total suspended solid load. A street sweeping program will improve water quality in residential areas by capturing and preventing potential pollutants from entering the nearby streams and storm systems.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.4

Mill Branch - Giles Run South WMA
Proposed Projects

Table 5-4: Project List – WMA (Mill Branch – Giles Run South)

Structural Projects[1]						
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
MB9104	Stormwater Pond Retrofit	MB-GR-0001	10418 Old Colchester Rd. (Mason Neck West Park)	Water quality and quantity control	Public/Local - FCPA	0 – 10
MB9105	Stormwater Pond Retrofit	MB-OC-0005	Across from 10555 Furnace Rd.	Water quality and quantity control	Public/State - VDOT	0 – 10
MB9107	Stormwater Pond Retrofit	MB-GR-0001	10119 Giles Run Rd.	Water quality and quantity control	Private - Residential	0 – 10
MB9109	Stormwater Pond Retrofit	MB-GR-0003	8115 Mims St.	Water quality and quantity control	Private - Industrial	0 – 10
MB9111	Stormwater Pond Retrofit	MB-GR-0003	9816 Richmond Hwy.	Water quality and quantity control	Private - Commercial	0 – 10
MB9114	Stormwater Pond Retrofit	MB-GR-0007	9850 Furnace Rd. (I-95 Landfill)	Water quality and quantity control	Public/Local - FCPS	0 – 10
MB9202	Stream Restoration	MB-SB-0001	10207 Old Colchester Rd.	Water quality control	Public/Federal - USA	0 – 10
MB9506	BMP/LID	MB-GR-0007	9850 Furnace Rd, Lorton (I-95 Landfill)	Water quality and quantity control	Public/Local - FCPS	0 – 10
MB9106	Stormwater Pond Retrofit	MB-GR-0001	10301 Richmond Hwy	Water quality and quantity control	Public/Local/Private - FCPA, Industrial	11 – 25
MB9108	Stormwater Pond Retrofit	MB-GR-0001	10109 Giles Run Rd.	Water quality and quantity control	Private - Industrial	11 – 25
MB9504	BMP/LID	MB-SB-0001	10100 Gunston Rd. (Gunston Elementary School)	Water quality and quantity control	Public/Local - FCPS	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**
MB9505	BMP/LID	MB-SB-0001	10100 Gunston Rd. (Gunston Elementary School)	Water quality and quantity control	Public/Local - FCPS
MB9801	Buffer Restoration	MB-GR-0001	Behind 10463 Greene Dr.	Water quality control	Public/Local/ Federal - FCPA, USA
MB9803	Street Sweeping Program	MB-GR-0008	8386 Old Vicarage St.	Water quality control	Public/State - VDOT

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.5 Mill Branch – Mill Branch Watershed Management Area

The Mill Branch WMA is a portion of the larger Mill Branch watershed and is located in the eastern reaches of the Lower Occoquan watersheds. Mill Branch WMA consists of nine subwatersheds. The Mill Branch WMA is roughly bounded by Furnace Road (Route 611) to the north and east. The western border is roughly formed by a portion of Ox Road (Route 123). The southern border is formed by Interstate 95 to the southeast and the Occoquan River to the southwest.

The Mill Branch WMA contains a wide variety of land uses including: single family residential, an inactive landfill, a sewage treatment plant, portions of the Laurel Hill redevelopment project, and the Occoquan Regional Park. In the landfill area, many of stream segments are piped. In areas of residential development, approximately 20 to 25 percent impervious cover exists based on an average lot size of a quarter- to half-acre lot sizes. The majority of stormwater in Mill Branch WMA is uncontrolled and drains untreated to receiving waters, however, as the Laurel Hill redevelopment process continues, stormwater treatment will increase.

Stream impacts include disturbed stream buffers and stream channel incision. Buffer disturbances appear coincident with channel widening and incision on the tributaries in this WMA, but appear limited to the downstream channels. An extreme head cut impact was noted at the downstream end of an existing pond in the southern end of the WMA. Minor to moderate crossing and pipe impacts have been observed throughout the WMA. With so much planned redevelopment activity in this WMA, stream conditions are subject to significant change based on grading activities and other physical amendments to the topography in the area.

This watershed management plan proposes structural watershed restoration projects in the next 11-25 years, but no structural projects are proposed in the next 0 – 10 years. The Laurel Hill redevelopment process will provide some watershed restoration benefits. Non-structural projects proposed include two buffer restoration projects. Below are descriptions of the non-structural projects. Also, a map of this WMA and a list of all the projects proposed in this WMA are provided.

5.5.1 0 – 10 Year Structural Projects

No structural projects are proposed in the next ten years.

5.5.2 11 – 25 Year Structural Projects

<u>MB9117 Stormwater Pond Retrofit</u>

This project proposes retrofitting an existing public dry pond, situated behind houses on the south end of High Grove Court in Lorton, to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants including nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide downstream channel protection and allow for better function of temporary ponding using a control structure, which promotes particulate pollutant settlement.

<u>MB9205 Stream Restoration</u>

This project proposes restoring the stream, west of a parking lot at Occoquan Park, improving channel morphology and reducing bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Since the stream directly outfalls into Occoquan River, improving this stream will directly benefit the overall condition of the larger body of water.

MB9206 Stream Restoration

This project proposes restoring the stream, west of a parking lot at Occoquan Park, improving channel morphology and reducing bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. Since the stream directly outfalls into Occoquan River, improving this stream will directly benefit the overall condition of the larger body of water.

MB9207 Stream Restoration

This project proposes the restoration of a stream east of Ox Road at Lower Occoquan Park and will restore channel morphology by improving bed and bank erosion. The stream stabilization will reduce sediment loads to the stream while maintaining capacity of the stream channel and controlling unwanted meander. The stream directly outfalls into Occoquan River. Improving the outfall into the river will benefit the overall condition of the larger body of water. (Coordination with the Fairfax County Park Authority should be done to prevent any potential conflicts.)

MB9502 BMP/ LID

This project proposes pervious pavement at parking lot at Occoquan Park. The project will replace the existing pavement with pervious pavement or pavers. Additional underground detention may be provided as site conditions permit. The primary indicators are total impervious area and total urban land cover. Pervious pavement will reduce runoff rates using porous materials that allow runoff to infiltrate so pollutants may be trapped in the soil.

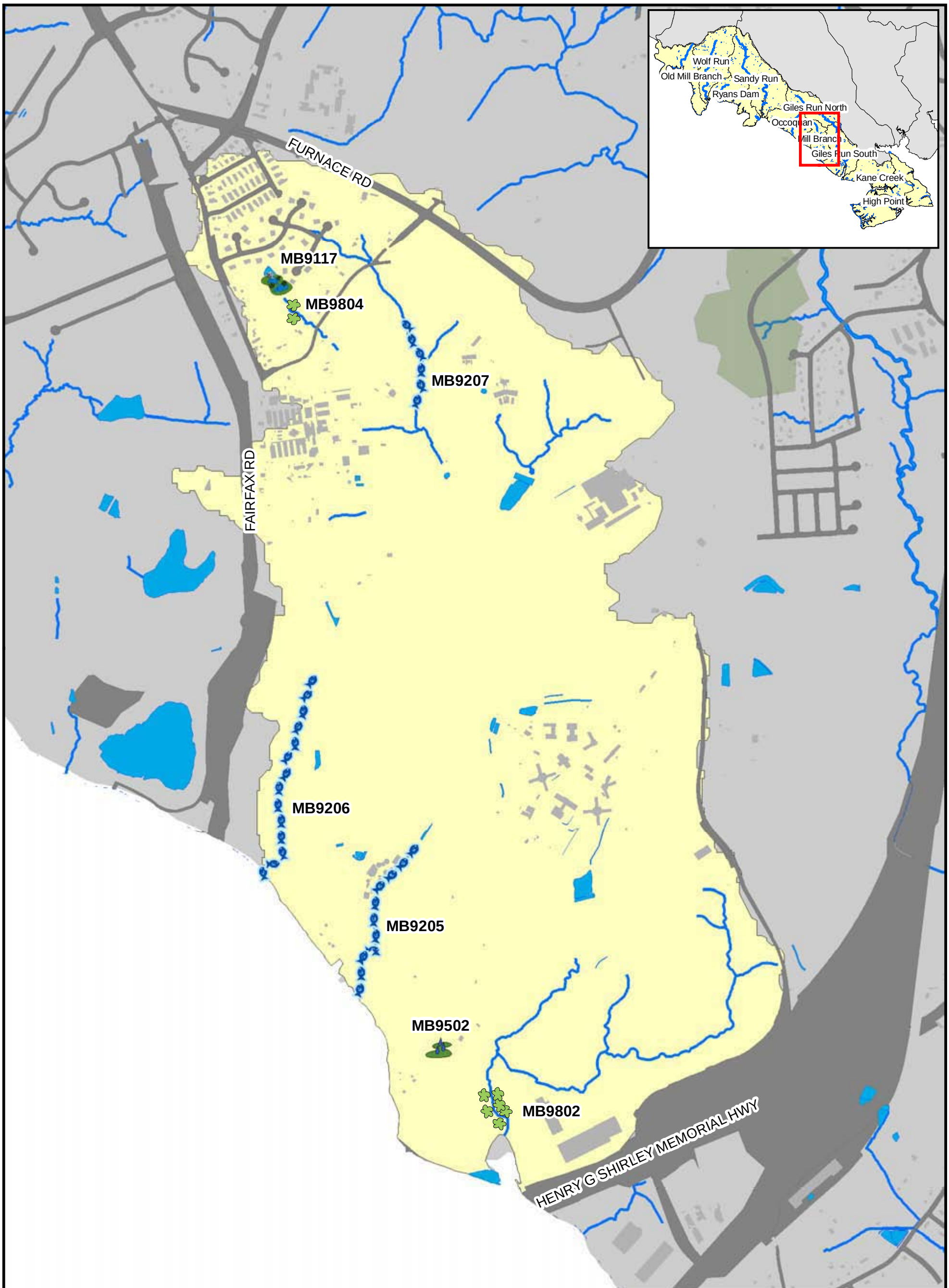
5.5.3 Non-Structural Projects

MB9802 Buffer Restoration

This project proposes to repair a deficient stream buffer at Occoquan Regional Park in order to re-establish the RPA. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration.

MB9804 Buffer Restoration

This project proposes to repair a deficient stream buffer northwest of Lorton Road. Increased vegetation from the buffer repair will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. Stream buffer area is located in the yards of private houses.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.5

Mill Branch -
Mill Branch
WMA
Proposed Projects

Table 5-5: Project List – WMA (Mill Branch – Mill Branch)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
MB9117	Stormwater Pond Retrofit	MB-MB-0005	Behind 8940 Highgrove Ct.	Water quality and quantity control	Private - Residential, HOA	11 – 25
MB9205	Stream Restoration	MB-MB-0001	9751 Ox Rd (Occoquan Regional Park, Site 1)	Water quality control	Public/Local - FCPS	11 – 25
MB9206	Stream Restoration	MB-OC-0009	9751 Ox Rd. (Occoquan Regional Park, Site 3)	Water quality control	Public/Local - FCPS	11 – 25
MB9207	Stream Restoration	MB-MB-0004	Across street from 8932 Lorton Rd.	Water quality control	Public/Local - FCPA	11 – 25
MB9502	BMP/LID	MB-OC-0006	9751 Ox Rd. (Occoquan Regional Park, Site 5)	Water quality and quantity control	Public/Local - FCPS	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
MB9802	Buffer Restoration	MB-OC-0006	9751 Ox Rd. (Occoquan Regional Park, Site 2)	Water quality control	Public/Local/Private - FCPS, Industrial
MB9804	Buffer Restoration	MB-MB-0005	Next to 8936 Lorton Rd.	Water quality control	Private - Residential

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.6 Occoquan Watershed Management Area

The Occoquan watershed is adjacent to the Occoquan River, covers 3.36 square miles, and is the smallest WMA. The Occoquan WMA is roughly bounded on the northern and eastern ends by Ox Road (Route 123), to the north by Hampton Road (Route 647), and to the extreme west by Van Thompson Road. The Occoquan WMA contains 14 subwatersheds and contains approximately six miles of stream that discharge directly into the Occoquan River.

The Occoquan WMA lies partially within the area down-zoned by Fairfax County in 1982 to protect the Occoquan Reservoir, which supplies water to well over one million people. As a result, development in the western reaches of the Occoquan WMA is primarily estate residential, which includes several established, estate subdivisions such as Hampton Hunt Estates, Hampton Woods West and Hampton Woods East. The majority of the observed single-family residential parcels are over one acre in size and are primarily newer residential development, constructed in the early 2000s (less than 10 years old). Residential subdivision streets lack curb and gutter and no sidewalks were observed. These larger lot developments also demonstrated significant grass and tree cover, with impervious cover estimates at 10 percent or lower.

Institutional uses in the Occoquan WMA appear to be limited to parkland, as part of the Sandy Run Regional Park, the Vulcan Quarry facility, and the Fairfax Water supply facility. The Occoquan dam is located on the Occoquan River upstream of Route 123. No schools, shopping centers, or other institutional or commercial developments are in this WMA. As such, grass and some tree cover are prevalent throughout the Occoquan WMA.

Approximately five dry, extended detention basins are located in the WMA, with one of those basins owned by the Virginia Department of Transportation (VDOT). Other stormwater infrastructure consists primarily of open channel drainage to main stem tributaries and eventually to the Occoquan River. Limited stormwater pipe infrastructure is present in the WMA.

The most prevalent stream impacts noted were channel widening coincident with poor overall stream habitat, and crossing impacts from roads and utilities. Disturbed stream buffers were noted in the headwaters of the tributaries. Some moderate head cutting (1 to 2 feet) and stream obstructions also occurred.

No watershed restorations strategies are proposed for this WMA within the next 10 years. Only structural projects are proposed for this watershed in the next 25 years. These projects include retrofitting stormwater ponds and stream restorations. A map of this WMA and a list of all the projects proposed are provided.

5.6.1 0 – 10 Year Structural Projects

No projects proposed

5.6.2 11 – 25 Year Structural Projects

<u>OC9101 Stormwater Pond Retrofit</u>

This project proposes retrofitting an existing pond, on the north of Davis Drive in Lorton, to create a wetland system, sediment forebay and addition of bench planting. The pond collects runoff from adjacent residential neighborhoods. The primary indicators are pollutants, including nitrogen, phosphorus and total suspended solids. The retrofit will create a better-functioning

environment for gravitational settling, biological uptake and microbial activity. The permanent pool prevents re-suspension of sediments and other pollutants.

OC9102 Stormwater Pond Retrofit

A small dry pond located northwest of Davis Drive in Lorton collects runoff from adjacent residential neighborhoods and outfalls into a stream. This project proposes retrofitting this pond to create an extended detention pond with a sediment forebay. The primary indicators are pollutants such as nitrogen, phosphorus and total suspended solids. The retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure. This will promote the settlement of particulate pollutants.

OC9203 Stream Restoration Suite

Subproject A proposes repairing bank and bed erosion to restore channel morphology for the stream north of Elkhorne Run Court has indications of poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes removing an obstruction in stream west of Dogue Hollow Road. Stream conveys runoff from wooded area, houses and open space. This will remove trees and debris blocking the stream channel and restore natural conditions. The primary indicator is flood complaints and has been field verified.

OC9204 Stream Restoration

This project proposes restoring the stream west and south of Hampton Woods Drive in Lorton. This Stream flows to the south west and discharges directly into the Occoquan Reservoir. The primary indicator is poor channel morphology. Stream stabilization will reduce sediment loads to the stream while maintaining capacity on controlling unwanted meander.

OC9207 Stream Restoration Suite

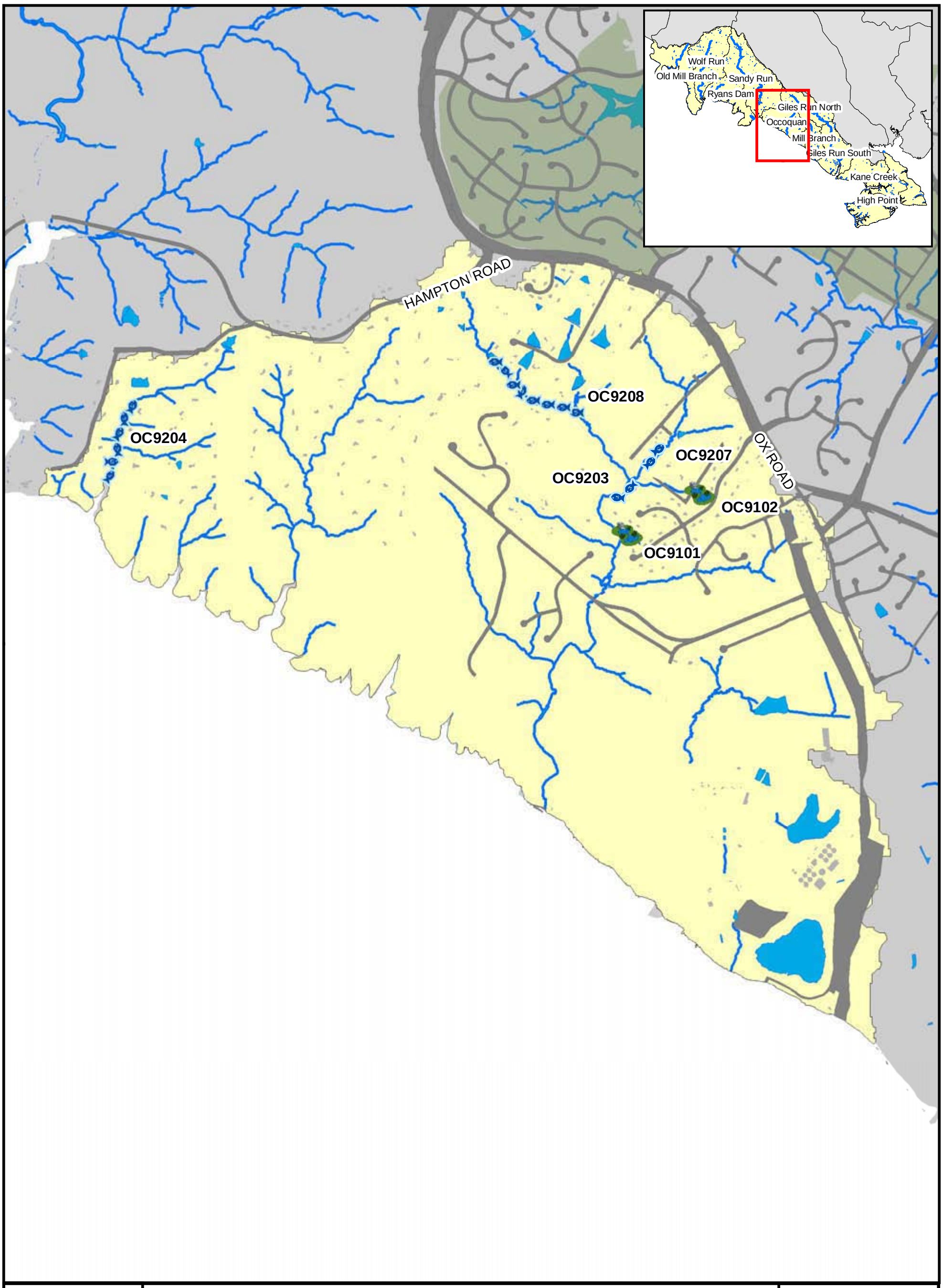
Subproject A proposes repairing bank and bed erosion of a stream south of Palmer Drive. The stream conveys runoff from wooded area and several houses downstream of a pond. Stream stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the removal of tires and 55-gallon drums blocking the stream channel to restore natural conditions in the stream north of Elk Horn Road. The primary indicator is flood complaints and has been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.

OC9208 Stream Restoration

This project proposes restoring the stream south of Lakehill Drive, which flows southeast in a heavily wooded area, downstream of multiple ponds, and collects runoff from woods and several houses. The primary indicator is poor channel morphology. Stream stabilization will reduce bed and bank erosion and sediment loads to stream, and will maintain conveyance capacity and control unwanted meander.

5.6.3 Non-Structural Projects

The non-structural projects have been grouped with structural projects for this WMA.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.6

Occoquan
WMA
Proposed Projects

Table 5-6: Project List – WMA (Occoquan)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
OC9101	Stormwater Pond Retrofit	OC-EH-0003	Behind 9340 Davis Dr.	Water quality and quantity control	Private - HOA	11 – 25
OC9102	Stormwater Pond Retrofit	OC-EH-0005	Behind 9270 Davis Dr.	Water quality and quantity control	Private - Residential	11 – 25
OC9203	Stream Restoration Suite	OC-EH-0003	Behind 9307 Denali Way	Water quality control	Private - Residential, HOA	11 – 25
OC9204	Stream Restoration	OC-OR-0007	10450 Van Thompson Rd.	Water quality control	Public/Local/Private - FCPA, Residential	11 – 25
OC9207	Stream Restoration Suite	OC-EH-0005	Behind 9035 Palmer Dr.	Water quality control	Private - Residential	11 – 25
OC9208	Stream Restoration	OC-EH-0006	Behind 9520 Elk Horn Rd.	Water quality control	Private - Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
The non-structural projects have been grouped with structural projects for this WMA.					

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.7 Old Mill Branch Watershed Management Area

Located along the central southwestern border of the county, the Old Mill Branch WMA covers 4.37 square miles and is adjacent to Bull Run and the Occoquan River. It is roughly bounded on the north end by Yates Ford Road (Route 615), on the east by Henderson Road (Route 643) to roughly the edge of Fountainhead Regional Park, to the west by Hemlock Overlook Regional Park and to the south by the Occoquan River. Old Yates Ford Road (Route 612) bisects the WMA from east to west.

The Old Mill Branch WMA is roughly half parkland/open space and half estate residential development. The Old Mill Branch WMA includes a portion of Fountainhead Regional Park at the downstream end of the WMA as well as portions of Hemlock Regional Overlook Park to the north and west and the entire Bull Run Marina Regional Park.

Due to the nature of development in the Old Mill Branch WMA, very little formal stormwater infrastructure exists today. Older development in the WMA likely pre-dates local requirements for stormwater management. For areas of the Old Mill Branch WMA that have been developed more recently, the stormwater management facilities present include both a water quality and water quantity management component. One wet detention facility is located in the Old Mill Branch WMA. Other stormwater infrastructure consists primarily of open channel drainage to main stem tributaries and eventually to Bull Run and to the Occoquan River. Limited stormwater pipe infrastructure is present in the WMA.

The most prevalent stream impacts noted include channel widening coincident with limited, poor overall stream habitat; disturbed stream buffers in the headwaters reaches of the tributaries, and crossing impacts from roads and utilities. Channels noted as widening almost universally appear to be located in the residentially developed areas of the WMA. The stream conditions in the public lands in the Old Mill Branch WMA are noted as generally healthy.

No watershed restorations strategies are proposed within the next 10 years for this WMA. Only structural projects are proposed in the next 25 years for this watershed. These projects are entirely stream restorations. A map of this WMA and a list of all the projects proposed are provided.

5.7.1 0 – 10 Year Structural Projects

No projects proposed

5.7.2 11 – 25 Year Structural Projects

<u>OM9201 Stream Restoration</u>

This project proposes repairing the stream south of Old Yates Ford Road at Fountainhead Regional Park. This stream conveys runoff from wooded area and several houses. Stream stabilization will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity and control unwanted meander.

<u>OM9202 Stream Restoration</u>

The stream south of Clifton Hunt Court has indicators of poor channel morphology. The stream conveys runoff from houses and wooded area. This project proposes reducing bank and bed erosion to restore channel morphology. Stream stabilization will reduce sediment load to the stream while maintaining capacity and controlling unwanted meander.

OM9203 Stream Restoration

This project proposes restoring the stream east of Kincheloe Road, which outfalls directly into the Occoquan Reservoir, conveying runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity and control unwanted meander.

OM9205 Stream Restoration

This project proposes restoring the stream west of Kincheloe Road that conveys runoff from wooded area and several houses and is immediately upstream of a pond. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and control unwanted meander.

OM9206 Stream Restoration

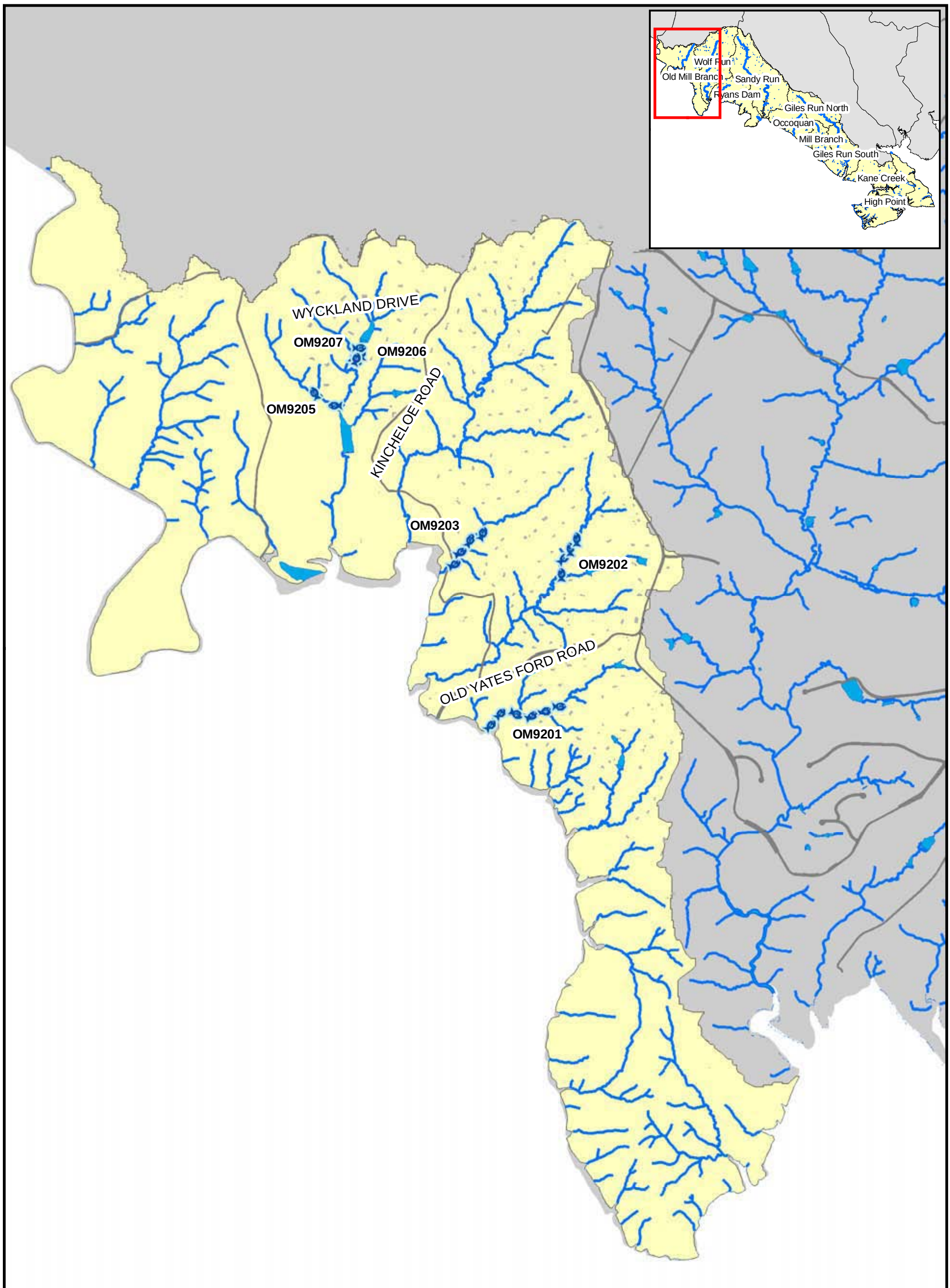
This project proposes restoring the stream south of Wyckland Drive where two streams converge. These streams convey runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and control unwanted meander. This project should be coordinated with project OM9207 to share mobilization costs.

OM9207 Stream Restoration

This project proposes restoring the stream south of Wyckland Drive and downstream of pond WP0267, which conveys runoff from houses and wooded area. Stabilizing this stream will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain conveyance capacity, and control unwanted meander. This project should be coordinated with project OM9206 to share mobilization costs.

5.7.3 Non-Structural Projects

No projects proposed



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.7

Old Mill Branch
WMA
Proposed Projects

Table 5-7: Project List – WMA (Old Mill Branch)

Structural Projects[1]						
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
OM9201	Stream Restoration	OM-BU-0004	Near 12505 Old Yates Ford Rd. (Fountainhead Regional Park)	Water quality control	Public/Local/Private - FCPA, Residential	11 – 25
OM9202	Stream Restoration	OM-BU-0005	Behind 8100 Flossie La.	Water quality control	Private - Residential	11 – 25
OM9203	Stream Restoration	OM-BU-0006	Behind 12606 Clifton Hunt La.	Water quality control	Private - Residential	11 – 25
OM9205	Stream Restoration	OM-BU-0008	Behind 12990 Wyckland Dr.	Water quality control	Private - Residential	11 – 25
OM9206	Stream Restoration	OM-BU-0008	Behind 12995 Wyckland Dr.	Water quality control	Private - Residential	11 – 25
OM9207	Stream Restoration	OM-BU-0008	Behind 7859 My Way Dr.	Water quality control	Private - Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
No non-structural projects are proposed for this WMA.					

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.8 Ryans Dam Watershed Management Area

Also located along the central southwestern border of the county, Ryans Dam WMA has a total area of approximately 3.63 square miles and is adjacent to the Occoquan River and Reservoir. The Ryans Dam WMA is bounded on the north by Henderson Road (Route 643) and roughly to the west by Henderson Road as well. The WMA is bounded on the east by Hampton Road (Route 647) and to the south by the Occoquan Reservoir. The WMA contains a number of tributary streams and stream valleys, including Stilwell Run.

The majority of the Ryans Dam WMA is parkland/open space, including a significant portion of Fountainhead Regional Park, with the remaining portion estate residential development. The majority of the observed single-family residential parcels are over one acre in size and were primarily developed in the 1970s (30-plus years old) and 1980s (20-plus years old). Residential subdivision streets lack curb and gutter and no sidewalks were observed. These larger lot developments also demonstrated significant grass and some tree cover, with impervious cover estimates at 10 percent or lower based on the size of the lots and the amount of development present.

The most prevalent stream impacts noted include channel widening, disturbed stream buffers in the headwaters reaches of the Ryans Dam WMA and its tributaries, and crossing impacts from roads and utilities. Channels noted as widening are almost universally located in the residentially developed areas of the WMA, including almost the entire length of Stilwell Run. The stream conditions in the public lands in the Ryans Dam WMA are noted as generally healthy.

No watershed restorations strategies are proposed within the next 10 years for this WMA. Only structural projects are proposed in the next 25 years for this watershed. These projects are entirely stream restorations. A map of this WMA and a list of all the projects proposed are provided.

5.8.1 0 – 10 Year Structural Projects

No projects proposed

5.8.2 11 – 25 Year Structural Projects

<u>RD9201 Stream Restoration</u>

The stream west of Stillwell Acres Lane upstream of Occoquan Reservoir in Fountainhead Park has indicators of poor channel morphology and conveys runoff primarily from wooded and open space areas. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

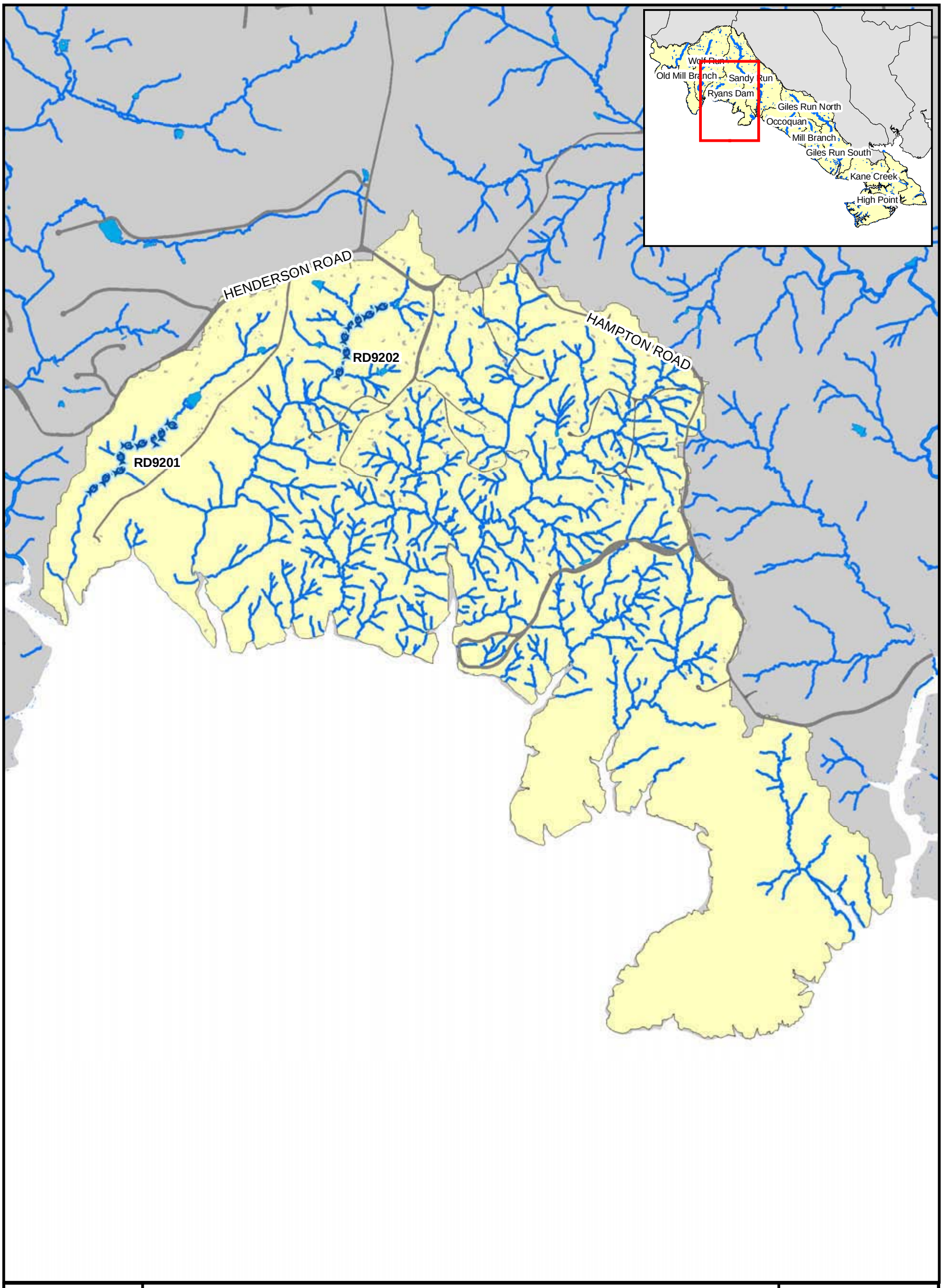
<u>RD9202 Stream Restoration</u>

The stream west of Crestridge Road conveys runoff from houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

5.8.3 Non-Structural Projects

No projects proposed.

[THIS PAGE INTENTIONALLY LEFT BLANK]



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.8

Ryans Dam
WMA
Proposed Projects

Table 5-8: Project List – WMA (Ryans Dam)

Structural Projects[1]						
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
RD9201	Stream Restoration	RD-OR-0016	Near 8517 Wolf Run Shoals Rd.	Water quality control	Pubic/Local/ Private - NVRPA, Residential	11 – 25
RD9202	Stream Restoration	RD-SW-0002	Behind 11470 Robert Stephens Dr.	Water quality control	Private - Residential, HOA	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
No non-structural projects are proposed for this watershed.					

[THIS PAGE INTENTIONALLY LEFT BLANK]

5.9 Sandy Run Watershed Management Area

Sandy Run WMA covers 8.77 square miles (5,229 acres) and is located along the central southwestern border of Fairfax County. Sandy Run is bounded on the northeast and east by Ox Road (Route 123), to the west and south by Hampton Road (Route 647). Henderson Road (Route 643) and Clifton Road (Route 645) both bisect the Sandy Run watershed's northern half.

Sandy Run consists of approximately 20 miles of stream and includes two main tributary systems. A small portion of southern Sandy Run is covered by Fountainhead Regional Park. The majority of the observed single-family residential parcels are over one acre in size, consistent with the zoning status, and were primarily developed in the 1980s and 1990s. The WMA includes some additional institutional uses, including several houses of worship along Ox Road (Route 123).

The stormwater infrastructure consists primarily of open channel drainage to either dry detention basins or directly into Sandy Run and its associated stream valleys and tributaries. Sandy Run contains approximately 22 dry detention facilities designed to manage stormwater quantity, several of which are owned/maintained by the VDOT.

The most prevalent stream impacts noted include disturbed stream buffers, stream channel erosion and/or widening, and crossing impacts from roads and utilities. Channel widening and incision conditions are noted in the head waters of the Sandy Run main stem, but the downstream main stem of Sandy Run, moving toward the park, generally appears more stable. Pipes discharging into the streams have demonstrated impacts as well, contributing to the upstream widening and erosive conditions.

The watershed restoration projects for this WMA include a host of projects such as: retrofitting stormwater ponds, restoring streams and outfall improvements. Non-structural projects include buffer restoration projects and a reforestation project. Below are descriptions of the 0-10 year structural projects and non-structural projects. Also, a map of this WMA and a list of all the projects proposed in this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.9.1 0 – 10 Year Structural Projects

<u>SA9201 Stream Restoration</u>

Stream near Birch Cliff Drive conveying runoff from houses, wooded area, and substation area upstream of outfall to Occoquan Reservoir has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid vegetation establishment.

<u>SA9209 Stream Restoration</u>

Stream section upstream of Beechnut Court in Fairfax Station conveys runoff from wooded area, housing, and Ox Road has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

<u>SA9211 Stream Restoration</u>

Stream section east of Streamwood Place in Fairfax Station where two streams converge, conveys runoff from adjacent houses, streets and wooded area has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

SA9213 Stream Restoration

Stream section east of Wolf Run Shoals Road in Fairfax Station conveying runoff primarily from wooded area, several houses, and a building with parking lot, has indicators of poor channel morphology. This project proposes spot improvements along the stream to restore channel morphology and repair eroded areas. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment.

SA9701 Outfall Improvement

This project proposes removing the outfall section of an existing concrete swale along Silverleaf Drive to reduce erosive velocities to the stream and reduce pollutants. Currently, stormwater runs off of Silverleaf Drive into the concrete swale and directly into the adjacent stream with no stormwater treatment. The receiving stream has poor channel morphology. Replacing the existing concrete swale with a natural swale with check dams and step pools to reduce velocity and encourage infiltration would help downstream erosion.

5.9.2 11 – 25 Year Structural Projects

SA9101 Stormwater Pond Retrofit

This project proposes the retrofit of an existing VDOT dry pond (VDOT29025) south of Thorn Bush Drive to create an extended detention dry pond with a sediment forebay. This pond receives runoff from the road and has pollutant indicators, including nitrogen and phosphorus. This retrofit will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which enables particulate pollutants to settle out.

SA9102 Stormwater Pond Retrofit

This project proposes the retrofit of an existing VDOT dry pond (VDOT29031) to create an extended detention dry pond with a sediment forebay. The primary indicators are pollutants included nitrogen and phosphorus. The pond treats a portion of Ox Road next to the stream in which it discharges. Dry pond retrofits will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure which enables particulate pollutants to settle out providing better removal for particulate pollutants.

SA9103 Stormwater Pond Retrofit

This project proposes the retrofit of an existing public dry pond (0209DP) east of Wayfarer Drive to create an extended detention dry pond with a sediment forebay. The pond receives runoff from an adjacent subdivision, wooded area and road. The pond outfalls into a stream that crosses Henderson Road. The primary indicators are pollutants including nitrogen and phosphorus. Dry pond retrofits will modify the existing pond to provide adequate downstream channel protection and allow for better function of temporary ponding using a control structure, which promote particulate pollutant settlement.

SA9105 Stormwater Pond Retrofit

This project proposes the retrofit of an existing dry pond (DP0535) near Virginia Korean Baptist Church to create a wetland system, sediment forebay and bench planting. The pond is located to the west of the church. The primary indicators are pollutants, including nitrogen and phosphorus. Wet pond retrofits will modify the existing pond to increase pollutant removal and to provide adequate channel protection above the permanent pool. The retrofit will create a better functioning environment for gravitational settling, biological uptake and microbial activity.

SA9205 Stream Restoration Suite

Subproject A proposes repairing bank and bed erosion to restore channel morphology for a stream between Henderson Roads and a pond. This project occurs where two streams converge and convey runoff from houses, open space and wooded area. The streams have indicators of poor channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the removal of concrete slabs blocking the channel behind stables northeast of Henderson Road to restore natural conditions. The stream is in a wooded area and collects runoff from a stable, houses, and wooded area. The primary indicators are flood complaints and have been field verified. Removal of obstructions will help restore the natural conditions of the stream and alleviate flooding problems.

SA9206 Stream Restoration

The stream section upstream of Henderson Road conveys runoff from houses, open space, a power line easement and wooded area. The stream has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

SA9207 Stream Restoration Suite

Subproject A proposes repairing bank and bed erosion to restore channel morphology of a stream section south of Silverleaf Drive, which conveys runoff from wooded areas and housing lots. The stream has indicators of poor channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. Subproject B proposes the repair of a stream buffer upstream of Hunting Horse Drive. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.

SA9208 Stream Restoration

The stream section upstream of Daysailer Drive conveys runoff from wooded area, housing and buildings with parking and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

SA9212 Stream Restoration

This project proposes restoring the stream section east of Streamwood Place in Fairfax Station where two streams converge. The streams conveys runoff from adjacent houses, streets and wooded area and has indicators of poor channel morphology. Stabilization will reduce bank and bed erosion, restore channel morphology, reduce sediment loads to the stream, maintain capacity and control unwanted meander.

SA9214 Stream Restoration

The stream section east of Wolf Shoals Road in Fairfax Station conveys runoff from a church site, major road, wooded area and houses and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

SA9702 Outfall Improvement

This project proposes the reconstruction of a swale southwest of Sandy Manor Drive that conveys runoff from street, adjacent houses and wooded area directly into stream. The primary indicator is poor channel morphology. Retrofitting the swale will reduce flow velocities and increase filtration capacities. This will provide some water treatment and protect the downstream channel against erosion.

5.9.3 Non-Structural Projects

SA9801 Buffer Restoration

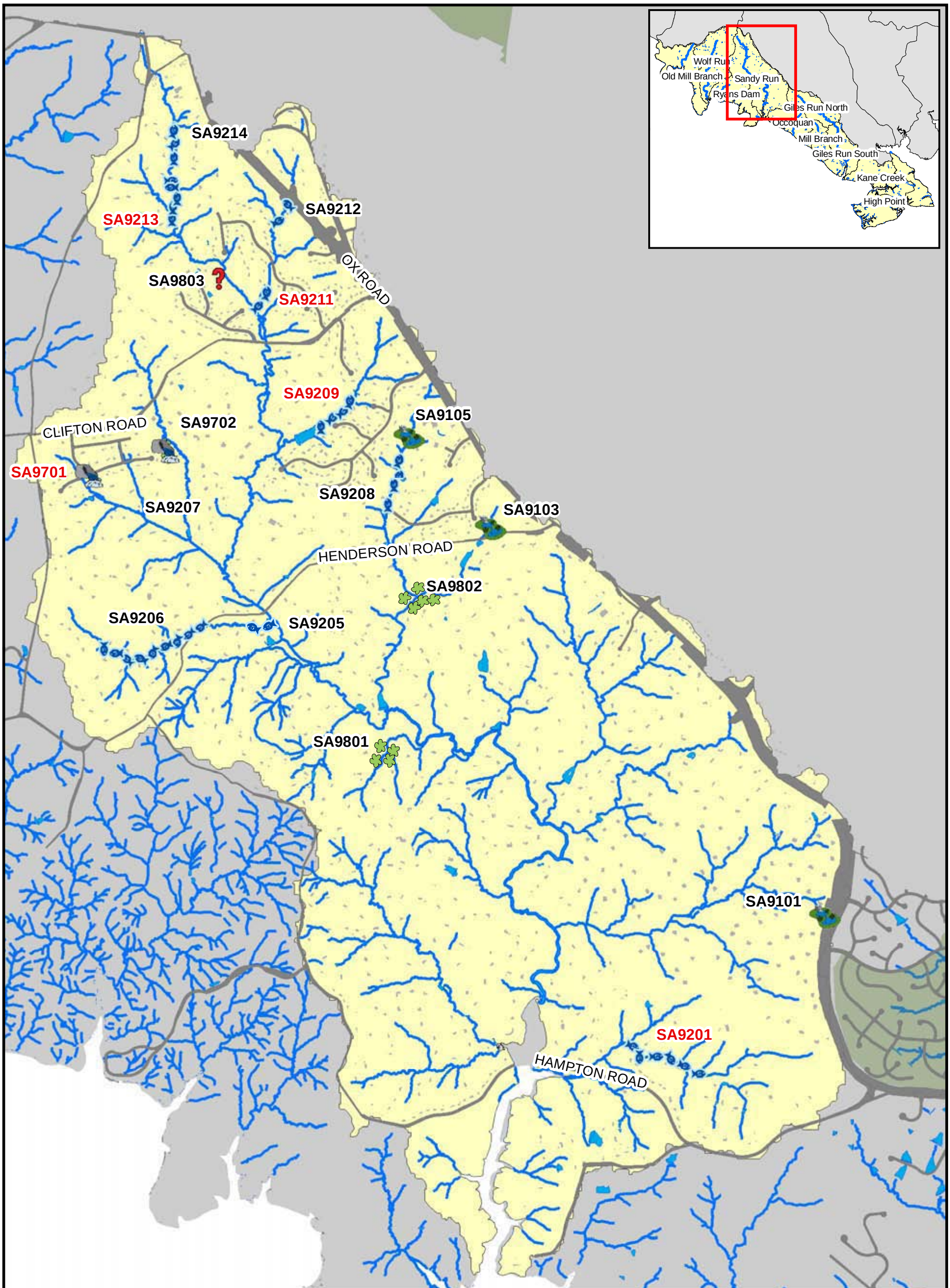
This project proposes the repair of a stream buffer south of Sandy Run Trail. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.

SA9802 Buffer Restoration

This project proposes the repair of a stream buffer east of Hunting Shire Lane. Repairing the buffer will re-establish the RPA and provide reforestation to a partially bare area. Primary indicators are streambank buffer deficiencies. Increased vegetation from buffer repair will provide additional buffer for filtration of pollutants and will reduce runoff by intercepting the water, increasing surface storage and infiltration. It will also reduce runoff rates to stream and minimize erosion.

SA9803 Other

This project proposes reforestation to a sparsely wooded area southwest of Old Stone Fence Road to provide natural runoff volume reduction and pollutant removal. The primary indicator is poor channel morphology. Increased vegetation from reforestation will provide additional stream buffer for filtration of pollutants and will reduce runoff by intercepting water, increasing surface storage and infiltration.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.9

Sandy Run
WMA
Proposed Projects

Table 5-9: Project List – WMA (Sandy Run)

Structural Projects[1]						
Project #	**Project Type**	**Sub-water-shed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
SA9201	Stream Restoration	SA-OR-0004	Next to 8721 Birch Cliff Dr.	Water quality control	Private - Residential	0 – 10
SA9209	Stream Restoration	SA-SA-0022	Near 10746 Beechnut Ct.	Water quality control	Private - Residential, HOA	0 – 10
SA9211	Stream Restoration	SA-SA-0025	Behind 6901 Streamwood Pl.	Water quality control	Public/Local - FCPA	0 – 10
SA9213	Stream Restoration	SA-SA-0026	6650 Rutledge Dr.	Water quality control	Private - Residential	0 – 10
SA9701	Outfall Improvement	SA-SA-0018	Near 11223 Silverleaf Dr.	Water quality and quantity control	Private - Residential	0 – 10
SA9101	Stormwater Pond Retrofit	SA-SA-0004	Next to 9699 Thorn Bush Dr.	Water quality and quantity control	Public/State - VDOT	11 – 25
SA9102	Stormwater Pond Retrofit	SA-SA-0004	8120 Ox Rd.	Water quality and quantity control	Public/State - Commonwealth of VA	11 – 25
SA9103	Stormwater Pond Retrofit	SA-SA-0012	Behind 7401 Wayfarer Rd.	Water quality and quantity control	Private - HOA	11 – 25
SA9105	Stormwater Pond Retrofit	SA-SA-0013	Behind 7200 Ox Rd.	Water quality and quantity control	Private - Church	11 – 25
SA9205	Stream Restoration Suite	SA-SA-0016	Behind 10901 Henderson Rd.	Water quality control	Private - Residential	11 – 25
SA9206	Stream Restoration	SA-SA-0016	Across street from 11100 Devereux Station La.	Water quality control	Private - Residential	11 – 25
SA9207	Stream Restoration Suite	SA-SA-0018	Near 11212 Hunting Horse Dr.	Water quality control	Private - Residential	11 – 25
SA9208	Stream Restoration	SA-SA-0013	10608 Daysailer Dr.	Water quality control	Private - Residential, HOA	11 – 25
SA9212	Stream Restoration	SA-SA-0025	6572 Ox Rd.	Water quality control	Private - Residential	11 – 25
SA9214	Stream Restoration	SA-SA-0026	6635 Rutledge Dr.	Water quality control	Private - Residential	11 – 25
SA9702	Outfall Improvement	SA-SA-0019	Behind 11204 Silver Leaf Dr.	Water quality and quantity control	Private - Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**
SA9801	Buffer Restoration	SA-SA-0010	Next to 10711 Sandy Run Trail	Water quality control	Private - Residential
SA9802	Buffer	SA-SA-	10600 Hunting	Water quality control	Private - Residential

[1] Only 10-yr structural projects will have associated project fact sheets at the end of section 5.

Non-Structural Projects[1]					
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**
	Restoration	0012	Shire La.		
SA9803	Other	SA-SA-0024	Behind 6909 Heathstone Ct.	Water quality and quantity control	Public/Local - FCPA

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

5.10 Wolf Run Watershed Management Area

The Wolf Run WMA has a total area of approximately 5.90 square miles and is located along the southwestern border of Fairfax County. The Wolf Run WMA is roughly bounded on the north end by Chapel Road (Route 641) east of the Town of Clifton, on the east by Wolf Run Shoals Road (Route 610) and roughly on the south and west by Henderson Road (Route 643), which bisects the extreme southern portion of the WMA. The Wolf Run WMA is bisected in the northern region by Clifton Road (Route 645) and Yates Ford Road (Route 612).

Development in the watershed is primarily estate residential, which includes several established, estate subdivisions such as Wolf Run Estates, Wolf Run, Wolf Run Hills, Lakewood Estates, Wolfs Landing, Plantation Hills, and Rose Hall. The majority of the observed single-family residential parcels are over one acre in size and were primarily developed in the 1980s (20-plus years old) and 1990s (10-plus years old). Residential subdivision streets lack curb and gutter and no sidewalks were observed. Non-residential uses in the Wolf Run WMA appear to be limited to parkland (portion of Fountainhead Regional Park) and a few small, private cemeteries. No schools, shopping centers, or other institutional or commercial developments were observed. As such, grass and tree cover is prevalent throughout the Wolf Run WMA.

Due to the nature of development in the Wolf Run WMA, very little formal stormwater infrastructure exists today. The stormwater management facilities present include two wet detention facilities. Other stormwater infrastructure consists primarily of open channel drainage to main stem tributaries and eventually to the Occoquan River. There are few large diameter stormwater pipes present in this WMA.

The most prevalent stream impacts noted include channel widening coincident with poor overall stream habitat, disturbed stream buffers in the headwaters reaches of Wolf Run and its tributaries, and crossing impacts from roads and utilities. Channels noted as widening are almost universally impacted by multiple crossing impacts, including widening noted on Swift Run, Maple Branch, and the unnamed tributary following Lakewood Lane in the southern end of the Wolf Run WMA. Crossing impacts are noted as primarily minor, with the exception of a pair in the southern end of Wolf Run. In addition, several moderate to severe obstructions are noted in two different Wolf Run tributaries. Head cuts, including one severe instance – over 2 feet, were noted in the upper reaches of Wolf Run and two dump sites were identified as well.

The watershed restoration projects proposed for this WMA are entirely stream restorations. No non-structural projects are proposed. Also, a map of this WMA and a list of all the projects proposed in this WMA are provided. Project Fact Sheets for this WMA are located in Section 5.11.

5.10.1 0 – 10 Year Structural Projects

<u>WR9201 Stream Restoration</u>

Stream section east of Wolf Valley Drive in Fairfax Station conveying runoff from wooded area and houses has indicators of poor channel morphology. Stream crosses under Henderson Road. Stream located upstream of outfall to Occoquan Reservoir and downstream of Henderson Road. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

<u>WR9208 Stream Restoration</u>

Stream section east of Turtle Valley Drive conveying runoff from open space and houses has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control

fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

WR9209 Stream Restoration

Stream section near Rose Hall Drive conveying runoff from upstream houses and wooded area has indicators of poor channel morphology. Stream is in a very steep wooded area and portions are close to homes and roadways. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

WR9211 Stream Restoration

Stream section west of Amkin Drive conveying runoff from upstream houses and wooded area has indicators of poor channel morphology. Stream receives runoff from adjacent residential areas and wooded areas and conveys stormwater from stream to the east. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

WR9212 Stream Restoration

Stream section near Maple Branch Road conveying runoff from upstream houses and wooded area has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Erosion will be stabilized through the use of bank shaping, toe protection, erosion control fabrics, and rapid vegetation establishment. The banks will be armored to reduce further erosion using geofabrics, fabric encapsulated rocks or equivalent.

5.10.2 11 – 25 Year Structural Projects

WR9206 Stream Restoration

The stream section near Winterway Road in Fairfax Station convey runoff from wooded area and houses and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9210 Stream Restoration

The stream section north of Amkin Court conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9213 Stream Restoration

The stream section west of Swift Run Trails Drive conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9214 Stream Restoration

The stream section upstream of Swift Run Trails Drive conveys runoff from upstream houses and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9217 Stream Restoration

The stream section south of Corral Drive conveys runoff from upstream houses, open space and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9218 Stream Restoration

The stream section near Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9219 Stream Restoration

The stream section near Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area where two streams converge and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion on the eastern branch to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9220 Stream Restoration

The stream section east of Wolf Den Road in Fairfax Station conveys runoff from upstream houses, open spaces and wooded area and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9221 Stream Restoration

The stream section west of Lilting Lane in Fairfax Station conveys runoff from upstream houses, roadways and wooded area where two streams converge and has indicators of poor channel morphology. This project proposes repairing bank and bed erosion on the western stream to restore channel morphology. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander.

WR9222 Stream Restoration

South of Ryanlynn Drive there are two streams which convey runoff from upstream houses and a wooded area. The streams have indicators of poor channel morphology. This project proposes restoring the channel morphology of the eastern branch by reducing the bank and bed erosion. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. This project should be coordinated with project WR9223 (the western branch) to share mobilization costs.

WR9223 Stream Restoration

South of Ryanlynn Drive there are two streams which convey runoff from upstream houses and a wooded area. The streams have indicators of poor channel morphology. This project proposes restoring the channel morphology of the western branch by reducing the bank and bed erosion. Stabilization will reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. This project should be coordinated with project WR9222 (the eastern branch) to share mobilization costs.

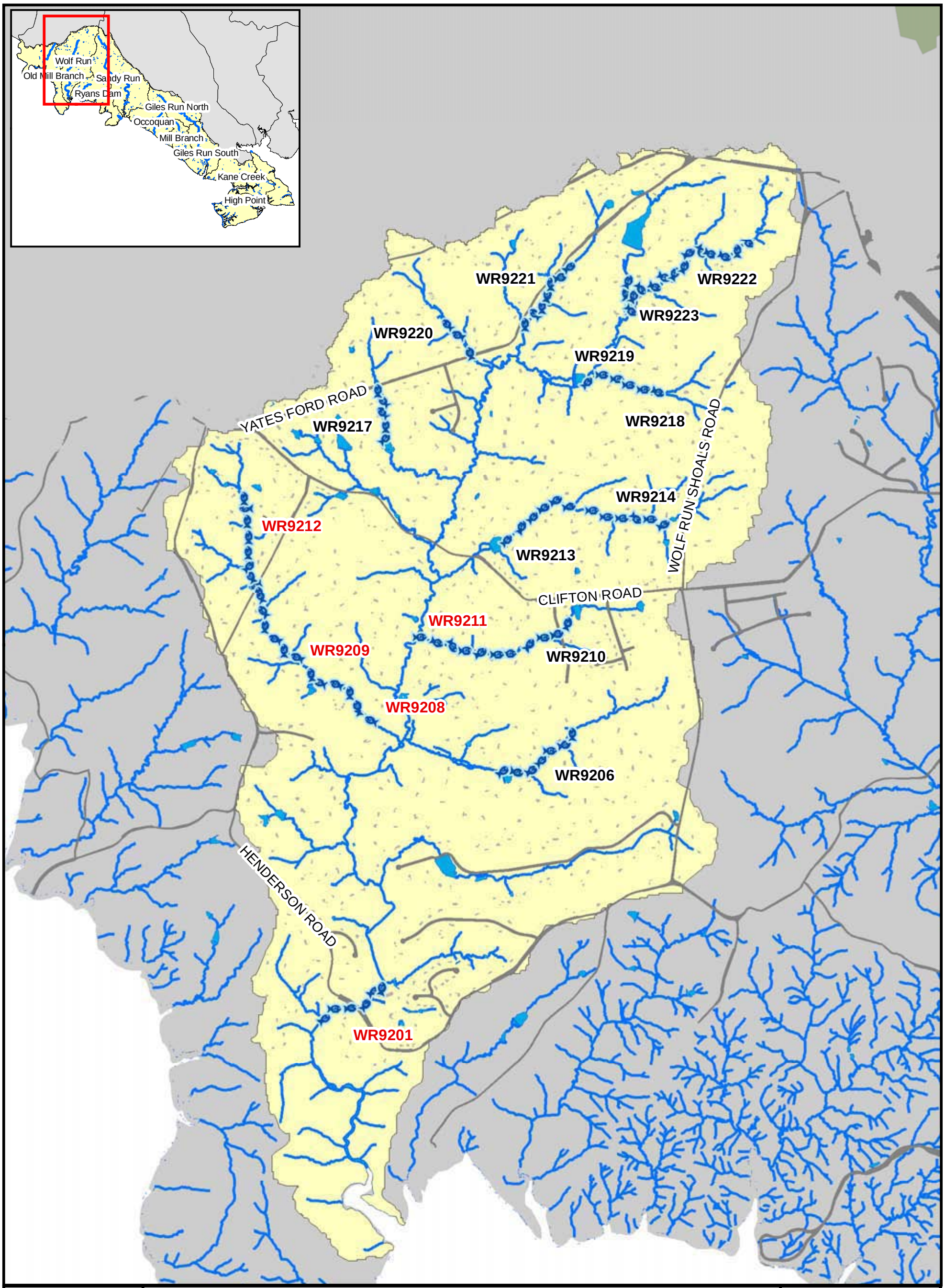
5.10.3 Non-Structural Projects

No projects proposed.

reduce sediment loads to the stream while maintaining capacity and controlling unwanted meander. This project should be coordinated with project WR9222 (the eastern branch) to share mobilization costs.

5.10.3 Non-Structural Projects

No projects proposed.



N

0 0.125 0.25
Miles

Buffer Restoration
Stream Restoration
BMP/LID
Culvert Retrofit
Dumpsite/Obstruction Removal

New Stormwater Pond
Outfall Improvement
Stormwater Pond Retrofit
Other

Area-wide Drainage Improvement
Community Outreach/Public Education
Land Conservation Project
Flood Protection/Mitigation
Inspection/Enforcement Enhancement
Rain Barrel Program
Street Sweeping Program
Studies, Surveys and Assessments

Implementation timeframe denoted by project label color. Red = 0-10 years Black = 11-25 years.

Map 5.10

Wolf Run
WMA
Proposed Projects

Table 5-10: Project List – WMA (Wolf Run)

Structural Projects[1]						
Project #	**Project Type**	**Sub-watershed**	**Location**	**Watershed Benefit**	**Land Owner**	**Phase**
WR9201	Stream Restoration	WR-WR-0002	Behind 12101 Henderson Rd.	Water quality control	Private - Residential	0 – 10
WR9208	Stream Restoration	WR-WR-0008	Near 12025 Seven Hills La.	Water quality control	Private - Residential	0 – 10
WR9209	Stream Restoration	WR-WR-0008	12060 Rose Hall Dr.	Water quality control	Private - Residential	0 – 10
WR9211	Stream Restoration	WR-WR-0011	Behind 11724 Amkin Dr.	Water quality control	Private - Residential	0 – 10
WR9212	Stream Restoration	WR-WR-0009	7610 Maple Branch Rd.	Water quality control	Private - Residential	0 – 10
WR9206	Stream Restoration	WR-WR-0006	Near 7900 Wolf Run Hills	Water quality control	Private - Residential	11 – 25
WR9210	Stream Restoration	WR-WR-0011	7501 Amkin Ct.	Water quality control	Private - Residential	11 – 25
WR9213	Stream Restoration	WR-WR-0013	Behind 7433 Clifton Rd.	Water quality control	Private - Residential	11 – 25
WR9214	Stream Restoration	WR-WR-0013	7121 Swift Run Trails Dr.	Water quality control	Private - Residential	11 – 25
WR9217	Stream Restoration	WR-WR-0017	12013 Corral Dr.	Water quality control	Private - Residential	11 – 25
WR9218	Stream Restoration	WR-WR-0021	11047 Lilting La.	Water quality control	Private - Residential	11 – 25
WR9219	Stream Restoration	WR-WR-0021	11418 Lilting La.	Water quality control	Private - Residential	11 – 25
WR9220	Stream Restoration	WR-WR-0019	11806 Yates Ford Rd.	Water quality control	Private - Residential	11 – 25
WR9221	Stream Restoration	WR-WR-0022	11721 Yates Ford Rd.	Water quality control	Public/State/ Private - VDOT, Residential	11 – 25
WR9222	Stream Restoration	WR-WR-0024	11543 Lilting La.	Water quality control	Private - Residential	11 – 25
WR9223	Stream Restoration	WR-WR-0023	11543 Lilting La.	Water quality control	Private - Residential	11 – 25

Non-Structural Projects[1]					
Project #	**Project Type**	**Subwatershed**	**Location**	**Watershed Benefit**	**Land Owner**
No non-structural projects are proposed for this WMA.				N/A	N/A

[1] **Only 10-yr structural projects will have associated project fact sheets at the end of section 5.**

[THIS PAGE INTENTIONALLY LEFT BLANK]