

Anacostia River Watershed Restoration Plan

Paint Branch Subwatershed Provisional Restoration Project Inventory



November 2009

Table of Contents

I.	Background.....	2
II.	Restoration Inventory.....	3
	A. Impervious Features Summary	4
	B. Existing Stormwater Management Facilities Summary.....	7
	C. Candidate Restoration Project Summary	10
	D. Upper Paint Branch Candidate Restoration Projects	13
	E. Middle Paint Branch Candidate Restoration Projects	129
	F. Lower Paint Branch Candidate Restoration Projects.....	340

I. Background

The Paint Branch subwatershed is approximately 20.5 square miles (13,121 acres) in size and approximately 17-percent impervious. The subwatershed is generally bound by Spencerville Road (MD Route 198) to the north, U.S. Route 29 and Cherry Hill Road to the east, U.S. Route 1 and College Park Airport to the southeast, and New Hampshire Avenue (MD Route 650) to the west. Major Paint Branch tributaries include: Good Hope tributary, Gum Springs tributary, Left Fork tributary, Right Fork tributary, Fairland Farms tributary, Hollywood Branch tributary, Snowdens Mill tributary, Tanley Road tributary, Stewart April Lane tributary, Westfarm tributary, Hillandale tributary, College Park Woods tributary and Campus Creek. Elevations range from 560 feet at the Paint Branch/Patuxent River watershed divide to 35 feet at the confluence with the Northeast Branch. With an average mainstem gradient of 0.6-percent over 11.4 miles of the main stem, Paint Branch flows from the Piedmont physiographic province, through the Fall Line, and into the Coastal Plain. Approximately 75-percent of the subwatershed is in Montgomery County, with the remaining 25-percent in Prince George's County. Dominant land uses in the Paint Branch subwatershed include 1) forest cover, open space/parkland and institutional, 2) medium density, single family residential, and 3) low density, single family residential.

Recognizing both the severity and extent of environmental and ecological problems affecting the Anacostia River watershed and the need to better coordinate restoration efforts and resources, the three jurisdictions and the Metropolitan Washington Council of Governments entered into a Federal cost-sharing agreement with the U.S. Army Corps of Engineers to prepare a 10-year watershed restoration plan. The Anacostia River Watershed Restoration Plan will identify opportunities and approaches for restoring and protecting the 14 major subwatersheds and the tidal river reach within the Anacostia River basin.

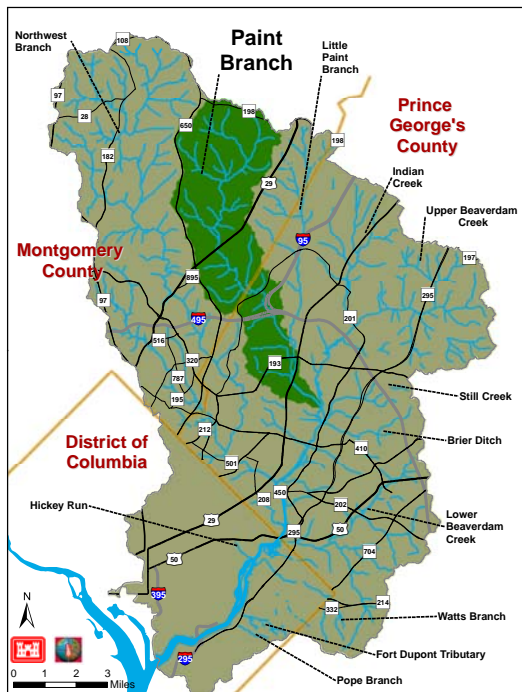


Figure 1. Paint Branch Watershed

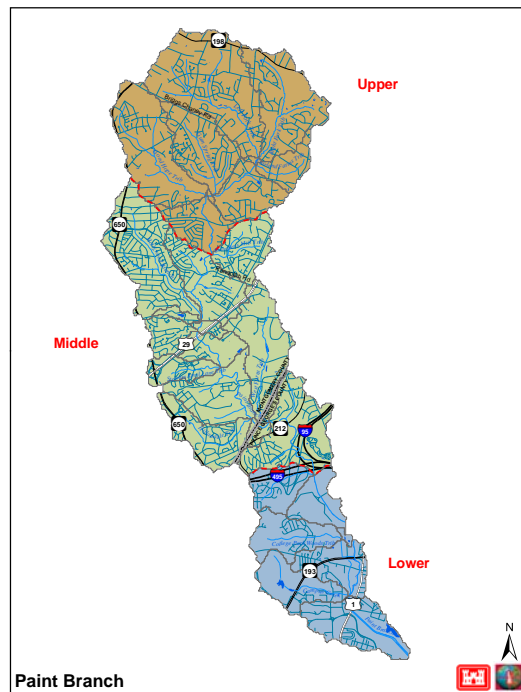


Figure 2. Paint Branch Subwatershed Unit

II. Restoration Inventory

The following sections include stormwater retrofit, stream restoration, wetland restoration, fish blockage removal, riparian restoration, invasive plant management, and wildlife habitat improvement projects, land acquisition and other-related projects and actions for further evaluation by others. As previously noted, the restoration projects presented herein are conceptual or planning level only. It is recognized that more detailed drainage and site analyses are required, and that facility size and costs shown represent approximations.

To facilitate reader understanding of the Paint Branch Subwatershed: Provisional Restoration Project Inventory, information has been organized into the following six sections:

- Section A - Impervious Features Summary
- Section B - Existing Stormwater Management Facilities Summary
- Section C - Candidate Restoration Project Summary
- Section D - Upper Paint Branch Candidate Restoration Projects
- Section E - Middle Paint Branch Candidate Restoration Projects
- Section F - Lower Paint Branch Candidate Restoration Projects

A. Impervious Features Summary

Figure 3 - Summary: Paint Branch Impervious Features

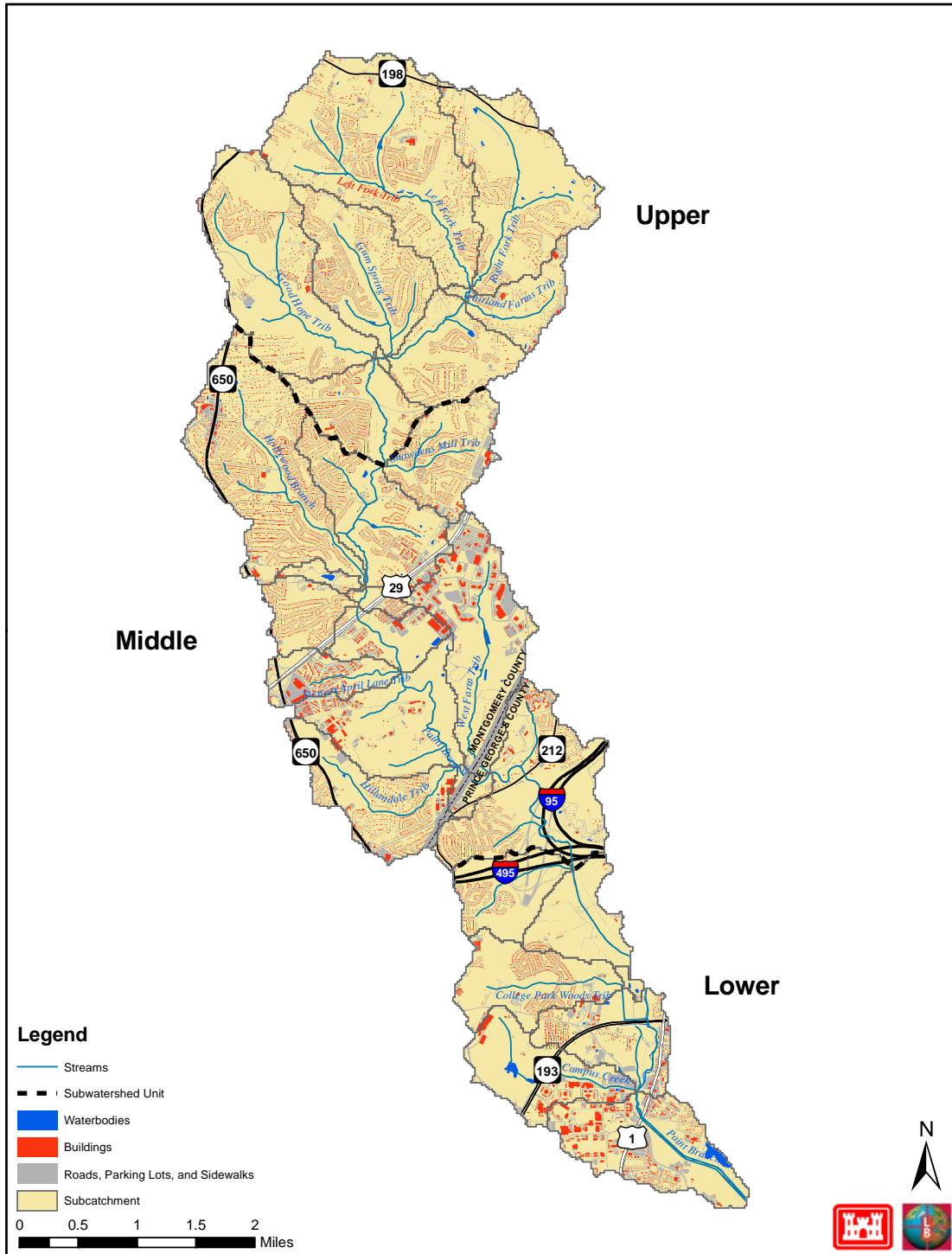


Table 1. Paint Branch: Summary - Impervious Surfaces

Category	Acres	Miles
1. Roads	663.9	194.0
a. State/Fed	165.0	20.1
b. Local	498.9	173.9
2. Parking Lots	587.8	
a. Public/Institutional	183.0	
b. Private	404.7	
3. Roofs	755.3	
a. Public/Institutional	137.6	
b. Private	185.1	
c. Single Family	432.6	
3. Other		
a. Sidewalks *	84.3	
b. Single Family Driveways ^	145.3	
Total	2,239.9	
Avg. % Imperviousness	17%	
# of Single Family Homes	10,380	
Total Drainage area	13,121	
^ Driveways assumptions	Average Driveway=0.014 Acres	
* Sidewalks assumptions	Width equal to 4 feet with a sidewalk running the length of one side of the road.	
Note: Drainage area and tributary area calculated using the USGS 30-meter digital elevation model (DEM)		

**B. Existing Stormwater Management Facilities
Summary**

Table 2. Paint Branch: Summary – Paint Branch Existing Stormwater Management BMPs

Type	No. of Facilities	Percent of Total BMP's	D.A. Controlled (ac.)
1. Dry Pond	46	16	803.3
2. ED Dry Pond	6	2	148.4
3. Wet Pond	8	3	266.2
4. ED Wet Pond	9	3	725.1
5. Wetland (non-ED and ED)	3	1	34.8
6. Infiltration (Trench or Basin)	76	27	167.4
7. Oil/Grit Separator	56	20	89.6
8. Water Quality Inlet (e.g. Stormceptor, Bay Saver, etc)	28	10	58.4
9. Bioretention /Rain Garden	9	3	17.9
10. 'Green Street'*			
11. Bioswale			
12. Grass Swale w/ Check Dams			
13. Porous Pavement			
14. Sand Filter	13	5	173.1
15. Underground Pipe Storage	12	4	15.5
16. Cistern			
17. Green Roof			
18. Other	17	6	52.7
Total	283	100	2,552.3

*May include a mix of LID techniques including, but not limited to: bioretention, rain garden, bioswale, soil amendment, etc.

C. Candidate Restoration Project Summary

Table 3. Summary: Restoration Candidate Projects

	Candidate Project Type	Number of Projects	Estimated Cost (\$)	Impervious Acreage Controlled (ac)	Length (mi)	Acreage (ac)
1	Stormwater Retrofit	239	122,006,000	1,208		
2	Stream Restoration	58	15,169,700		9.2	
3	Wetland Creation/Restoration	17	360,500			7.5
4	Fish Blockage Removal/Modification	14	5,120,000		5.9	
5	Riparian Reforestation, Meadow Creation, Street Tree and Invasive Management	20	286,500			49.6
6	Trash Reduction	8	43,700		0.5	
7	Toxic Remediation					
8	Parkland Acquisition	13	5,350,000			53.5
	Total	369	148,336,400	1,208	15.6	110.6

**Table 4. Paint Branch Subwatershed: Provisional Restoration Project Inventory
'Unit Costs'***

N	Practice	Approx. Unit Cost (\$)
Stormwater Retrofit		
1	Existing Stormwater Management Pond/Wetland Retrofitting	~ \$1,000-3,000/acre of drainage
2	New Stormwater Management Pond/Wetland Construction	~\$3,000-5,000/acre of drainage
3	LID-Bioretention (w/Underdrain System)	~ \$100,000/ impervious acre
4	LID-Curbside/Street Planter	~ \$100,000/ impervious acre
5	LID-Tree Box Filter	~ \$54,450 - \$65,340/impervious acre
6	LID-Green Roof	~ \$42/square foot
7	LID-Single Family Home Rain Garden	~ \$5,000 per individual garden
8	LID-Single Family Home Rain Barrel	~ \$200/barrel (Typically, two per house)
9	Sand Filter	~ \$20,000 to \$25,000 per impervious acre**
10	Underground Pipe Storage	~ \$15,000 per impervious acre***
11	Permeable Pavement	~ \$4.00 per square foot
12	LID Bioswale	~ \$100,000/impervious acre
13	Storm Filter	~ \$80,000/acre
Stream Restoration/Fish Passage/Wetland Creation		
14	Stream Restoration	~ \$300/LF
15	Concrete Stream Channel Removal	~ \$1,000/LF
16	Stream 'Day Lighting'	~ \$2,000/LF
17	Regenerative Stormwater Conveyance System	~ \$370/ft
18	Fish Passage/Riffle Grade Control Structure	~ \$150,000 per one foot barrier height
19	Wetland Creation	~50,000/Acre
Riparian Reforestation/Meadow Creation/ Invasive Plant Management		
20	Riparian Reforestation	~ \$9,000/acre
21	Wildflower Meadow Creation	~ \$5,000/acre
22	Invasive Plant Management	~ \$5,000/acre
Trash Reduction/Water Quality		
23	Manual Trash Pickup	~ \$300/100 LF
24	Trash Netting System	~ \$1,000/acre of drainage
25	Signage	~ \$1600
26	End-of-Pipe Trash Catching System	~ \$4,000/ acre of drainage
27	Street Sweeping****	~ \$50/curb mile/year
28	Storm Drain Trash Grate	~ \$500/inlet
Parkland Acquisition		
29	Parkland Acquisition	~ \$100,000/acre

Includes (where appropriate) design and construction/installation costs.

** escalated to 2009 dollars from "Schueler, T.R. 1994. *Developments in Sand Filter Technology to Improve Stormwater Runoff Quality, Watershed Protection Techniques 1(2):47-54*"

*** USEPA 20001 Storm Water Technology Fact Sheet On-Site Underground Retention/Detention EPA 832-F-01-005

**** EPA-certified as water quality BMP