

Wetlands and Waters Delineation Report

Prepared for the

**Environmental Assessment/Section 106 Compliance for
Restoration of Parkland Adjacent to the Intelligence Community
Campus-Bethesda George Washington Memorial Parkway**

Montgomery County, Maryland

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Table of Contents

1.0	SITE DESCRIPTION	2
1.1	Introduction	2
1.2	Topography and Geology	2
1.3	Soils	2
1.4	Floodplains	2
1.5	Wetlands	3
2.0	FIELD INVESTIGATION – METHODOLOGY	3
3.0	FIELD INVESTIGATION – RESULTS	3
3.1	Uplands	3
3.2	Wetland Delineation Results	4
3.3	Water Feature Delineation Results	4
4.0	REFERENCES	7

APPENDICES

Appendix A — Figures

Figure 1: Project Vicinity Map

Figure 2: Project Location Map

Figure 3: NRCS Soil Survey Map

Figure 4: FEMA 100 Year Floodplain Map

Figure 5: NWI Map

Appendix B — USACE Wetland Determination Data Forms

Appendix C — Photographs

Appendix D — Wetland Delineation Plan

Figure 6: Wetland Delineation Plan Index Sheet

Figure 7: Wetland Delineation Plan

Figure 8: Wetland Delineation Plan

Figure 9: Wetland Delineation Plan

1.0 SITE DESCRIPTION

1.1 Introduction

AECOM environmental scientists conducted a field investigation on January 22-23, 2018 to determine the extent of wetlands and waters within a 27.6-acre study area on National Park Service (NPS) land. The study area is located in Montgomery County, Maryland and is shown in **Figures 1 and 2 (Appendix A)**. This report is prepared in support of an Environmental Assessment and Assessment of Effect for the restoration of channels, and stormwater conveyances on NPS land. Four riverine wetlands and two palustrine wetlands were delineated within the study area.

1.2 Topography and Geology

The U.S. Geological Survey (USGS) topographic quadrangle maps (quads) depict the study area with steep to moderate slopes that flatten around the Chesapeake and Ohio (C&O) Canal, as shown in **Figure 1** (USGS, 2017). Elevations within the study area range from 50 ft above mean sea level (amsl) in the south-southwest extent, to 216 ft amsl in the east extent. The study area is located in the Piedmont Plateau Province that is composed of hard, crystalline igneous and metamorphic rocks (MDDNR, 2008).

1.3 Soils

The U.S. Department of Agriculture's Natural Resources Conservation Service (USDA NRCS) Web Soil Survey indicates the study area is underlain by soils that are predominately non-hydric, including Brinklow-Blocktown channery silt loams, Blocktown channery silt loams, Gaila silt loams, and Linside silt loam. The Soil Survey maps a small amount of the predominately hydric Melvin silt loam along the western edge of the study area (USDA NRCS, 2018). Soil units are shown in **Figure 3** and summarized in **Table 1**.

Table 1: USDA NRCS Web Soil Survey Map Units

SOIL SYMBOL	DESCRIPTION	HYDRIC PERCENT	PERCENT OF AOI
1C	Gaila silt loam, 8 to 15 percent slopes	5	24.4
16D	Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	5	33.2
47A	Linside silt loam, 0 to 3 percent slopes, occasionally flooded	10	5.7
48A	Melvin silt loam, 0 to 2 percent slopes, occasionally flooded	85	4.1
116E	Blocktown channery silt loam, 25 to 45 percent slopes, very rocky	5	26.6
W	Water	NA	6.0

1.4 Floodplains

The Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) data was reviewed for floodplains within the study area. The FEMA 100-year floodplain is located along the western edge of the study area, as shown in **Figure 4** (FEMA, 2017).

1.5 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping was used to assess the possibility of wetlands occurring on-site (USFWS, 2017). NWI mapping identifies one wetland, the C&O Canal, in the study area. The C&O Canal is mapped by NWI as a lacustrine limnetic unconsolidated bottom permanently flooded and excavated wetland (L1UBHx) and is located along the western edge of the study area (**Figure 5**).

2.0 FIELD INVESTIGATION – METHODOLOGY

The wetland delineation field work was performed in accordance with the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual (USACE, 1987), and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont (Version 2.0, USACE 2012). The wetland delineation field work was also performed in accordance with NPS Director's Order #77-1: Wetland Protection, the NPS Procedural Manual #77-1: Wetland Protection (NPS, 2016), and the Federal Geographic Data Committee (FGDC) *Classification of wetlands and deepwater habitats of the United States* (Wetlands Classification Standard) (FGDC, 2013).

The non-developed, unpaved portions of the study area, with the exception of active stream channels, have both vegetation and soils, and as such were investigated for both USACE and NPS regulated wetlands based on all three wetland parameters of hydrophytic vegetation, hydric soil, and wetland hydrology.

Water features were delineated in accordance with the U.S. Army Corps of Engineers (USACE) Jurisdictional Determination Instructional Guidebook (USACE and EPA, 2007), and the guidelines in the USACE Regulatory Guidance Letter No. 05-05, Ordinary High Water Mark Identification Regulatory Guidance Letter (USACE, 2005).

Delineated features were flagged in the field with consecutively numbered pink flags. Flags were located with a handheld, sub-meter Trimble Global Positioning System unit and were differentially corrected. USACE Wetland Determination Data Forms are provided in **Appendix B**. Site photographs from the field visit are included in **Appendix C**. A Wetland Delineation Map is provided in **Appendix D**.

3.0 FIELD INVESTIGATION – RESULTS

3.1 Uplands

The vast majority of the study area is comprised of uplands consisting predominately of forested uplands, along with roadways, maintained, mowed shoulders, the C&O Canal towpath, and stormwater conveyances. Observed plant species within the upland forest include northern red oak (*Quercus rubra*), box elder (*Acer negundo*), American beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), black locust (*Robinia pseudoacacia*), sweetgum (*Liquidambar styraciflua*), and American sycamore (*Platanus occidentalis*).

There are several roadside drainage swales within the study area that do not meet wetland criteria. These drainage swales are located entirely within, and drain only, uplands. In addition, there is an erosional channel created by discharge of stormwater runoff from the adjacent Intelligence Community Campus-Bethesda (ICC-B) onto the hillside in the southeast portion of the study area. This erosional feature does not intercept groundwater, has no adjacent wetlands, and drains only uplands. The road side drainage swales and erosional feature located within the study area do not meet wetland criteria and therefore, have been identified as uplands.

3.2 Wetland Delineation Results

An overview of the study area and the wetland and water features that were delineated are illustrated on **Figure 6 (Appendix D)**. Two palustrine wetlands were delineated within the study area (herein referred to as Palustrine Wetlands D and F); they are illustrated on **Figures 7 and 8**, respectively. These features are also described in **Table 2**. The wetlands delineated within the study area meet all three wetland parameters of hydrophytic vegetation, hydric soil, and wetland hydrology, as summarized below.

Palustrine Wetland D is a palustrine emergent *Phragmites australis* seasonally flooded (PEM5C) wetland located adjacent to the C&O Canal, which is a perennial waters of the U.S. Palustrine Wetland D is located between the C&O Canal and the NPS Little Falls Pumping Station. Palustrine Wetland D is approximately 0.01 acre.

Palustrine Wetland D meets all three wetland parameters that are documented on USACE Wetland Determination Data Form D (**Appendix B**). This data form location is shown in Photo 1 (**Appendix C**). The primary wetland hydrology indicators include Surface Water (A1), High Water Table (A2), and Saturation (A3). The herbaceous stratum is dominated by phragmites (*Phragmites australis*, FACW). The hydric soil indicator at Data Form D is Depleted Matrix (F3).

Palustrine Wetland F is a palustrine emergent persistent temporarily flooded (PEM1A) wetland located between the C&O Canal and the Potomac River, both of which are perennial waters of the U.S. Maryland Department of the Environment (MDE) regulates activities in a 25-foot buffer around nontidal wetlands. Although Palustrine Wetland F is not located within the study area, the 25-foot buffer around Palustrine Wetland F extends into study area. Restoration activities related to this project could occur within the MDE designated 25-foot buffer around Palustrine Wetland F.

Palustrine Wetland F meets all three wetland parameters that are documented on USACE Wetland Determination Data Form F (**Appendix B**). This data form location is shown in Photo 2 (**Appendix C**). The primary wetland hydrology indicator is Water-Stained Leaves (B9). The herbaceous stratum is dominated by false nettle (*Boehmeria cylindrica*, FACW), and Japanese stiltgrass (*Microstegium vimineum*, FAC). The hydric soil indicator at this location is Depleted Matrix (F3).

3.3 Water Feature Delineation Results

Four water features were delineated within the study area and these features are illustrated on the Wetland Delineation Map (**Figure 6**). All four water features delineated within the study area qualify as Riverine Wetlands according to the FGDC Wetlands Classification Standard, and they are therefore subject to NPS Director's Order #77-1: Wetland Protection.

The largest water feature delineated within the study area is the C&O Canal, identified for the purposes of this delineation as Riverine Wetland CA/CB. The C&O Canal is a perennial waters of the U.S.

Two unnamed perennial streams were delineated within the study area and are identified as Riverine Wetland AA/AB and BA/BB. These riverine wetlands are relatively permanent non-navigable tributaries of the C&O Canal.

The fourth perennial stream delineated within the study area is identified as Riverine Wetland FA/FB. This riverine wetland is a relatively permanent non-navigable tributary of the Potomac River, which is a traditional navigable waters of the U.S.

A summary of the water features delineated within the study area is provided below. These water features are also described in **Table 2**.

Riverine Wetland AA/AB

Riverine Wetland AA/AB originates off-site, northeast of Wapakoneta Road, and flows southwest where it enters a 6 ft diameter culvert and continues to flow under MacArthur Blvd. Riverine Wetland AA/AB continues to the southwest of MacArthur Blvd for approximately 125 ft and flows through a 7 ft wide box culvert beneath the Clara Barton Parkway. Riverine Wetland AA/AB continues to flow southwest for approximately 55 ft to a drop inlet culvert that drains underneath the C&O Canal. The drop inlet is filled with sediment and appeared to accept only a small portion of Riverine Wetland AA/AB's stream flow. The remainder of Riverine Wetland AA/AB's stream flow drains another 55 ft west to its confluence with the C&O Canal. The portion of Riverine Wetland AA/AB's stream flow that enters the drop inlet culvert drains underneath the C&O canal and emerges as surface flow on the western side of the C&O canal. The surface flow that emerges from the western side of the C&O canal is identified as Riverine Wetland FA/FB and is further described below.

The width of Riverine Wetland AA/AB varies from about 5 to 20 ft wide. Ordinary high water mark indicators include a clear, natural line impressed on the bank, leaf litter disturbed, water staining, and presence of flood litter/debris. Riverine Wetland AA/AB is designated as riverine upper perennial rock bottom rubble (R3RB2) stream and is illustrated on **Figure 7**.

Riverine Wetland BA/BB

Riverine Wetland BA/BB originates just off-site at stormwater outfalls on ICC-B property and flows southwest where it enters a 4 ft diameter culvert and continues to flow under MacArthur Blvd. Riverine Wetland BA/BB continues to the southwest of MacArthur Blvd for approximately 200 ft and flows through a 3.5 ft wide box culvert beneath the Clara Barton Parkway. Riverine Wetland BA/BB continues to flow southwest for approximately 85 ft and confluences with the C&O Canal. The width of Riverine Wetland BA/BB varies from about 3 to 17 ft wide. Ordinary high water mark indicators include a clear, natural line impressed on the bank, leaf litter disturbed, water staining, and presence of flood litter/debris. Riverine Wetland BA/BB is designated as riverine upper perennial rock bottom rubble (R3RB2) stream and is illustrated on **Figure 8**.

Riverine Wetland CA/CB

Riverine Wetland CA/CB is the C&O Canal. Riverine Wetland CA/CB drains southeast along the western edge of the study area. Riverine Wetland CA/CB ranges from 45-55 ft wide within the study area. Ordinary high water mark indicators include a clear, natural line impressed on the bank, matted vegetation, leaf litter disturbed, sediment deposition, water staining, and presence of flood litter/debris. Riverine Wetland CA/CB is designated as riverine lower perennial unconsolidated permanently flooded excavated (R2UBHx) wetland and is illustrated on **Figures 7-9**.

Riverine Wetland FA/FB

The portion of Riverine Wetland AA/AB's flow that drains underneath the C&O canal through a culvert emerges on the western edge of the C&O Canal to form a channel. This channel has been identified as Riverine Wetland FA/FB and it flows southwest for approximately 100 ft to its confluence with the Potomac River. The width of Riverine Wetland FA/FB varies from about 4 to 7 ft wide. Ordinary high water mark indicators include a clear, natural line impressed on the bank, leaf litter disturbed, and water staining. This small, perennial seep channel is designated as riverine lower perennial stream bed sand (R2SB4) stream and is illustrated on **Figure 7**.

Table 2: Delineated Wetlands and Waters

Feature ID	Cowardin Classification	Area (SF)	Linear Feet
Palustrine Wetland D	PEM5C	421	NA
Palustrine Wetland F	PEM1A	1,400	NA
Riverine Wetland AA/AB	R3RB2	9,465	914
Riverine Wetland BA/BB	R3RB2	11,359	1,124
Riverine Wetland CA/CB	R2UBHx	481	83
Riverine Wetland FA/FB	R2SB4	78,382	1,552
Sum	All Features	101,508	3,673

4.0 REFERENCES

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APPENDICES

APPENDIX A: Figures

APPENDIX B: USACE Wetland Determination Data Forms

APPENDIX C: Photographs

APPENDIX D: Wetland Delineation Map

APPENDIX A

FIGURES



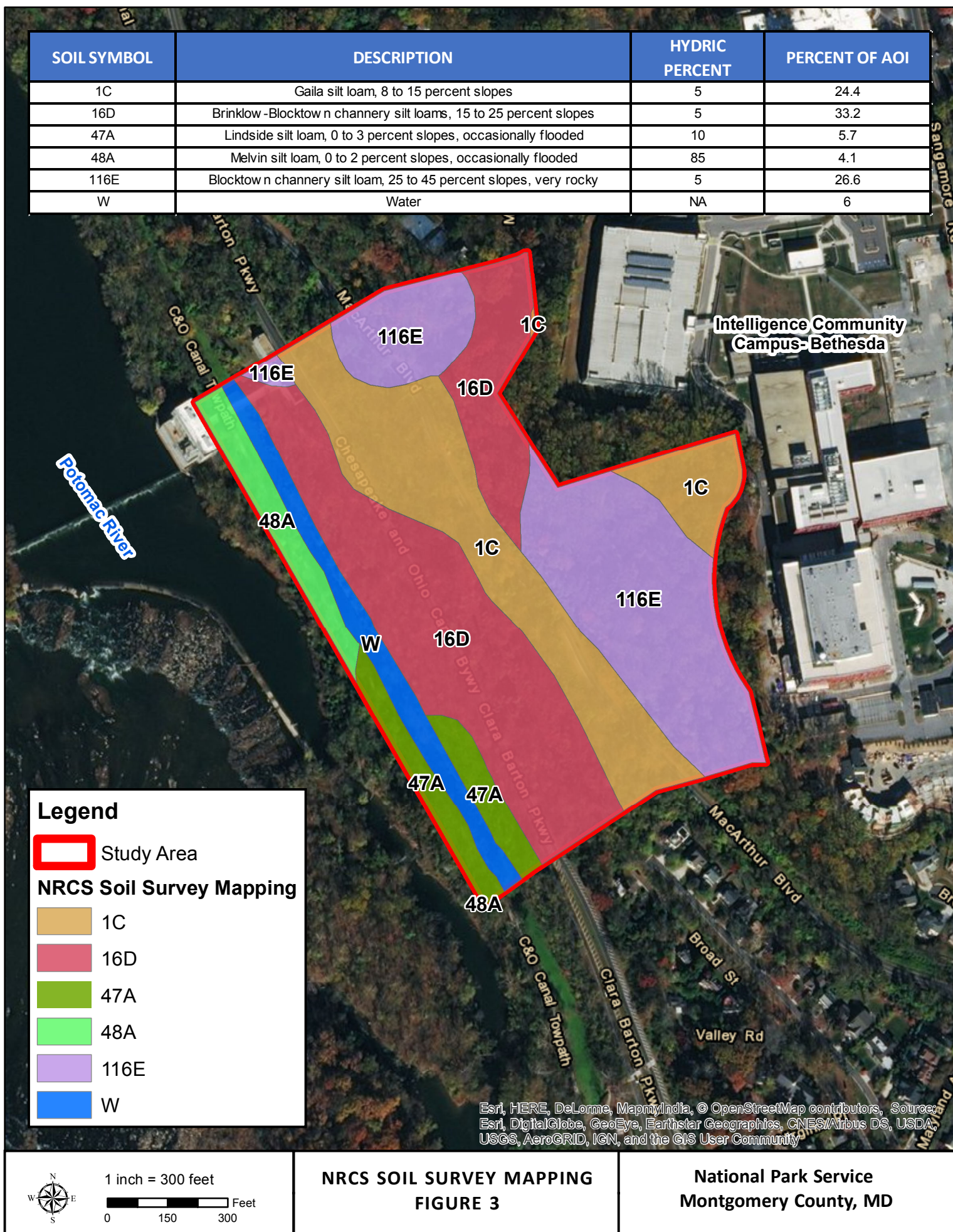
1 inch = 300 feet

0 150 300 Feet

LOCATION MAP
FIGURE 2

National Park Service
Montgomery County, MD

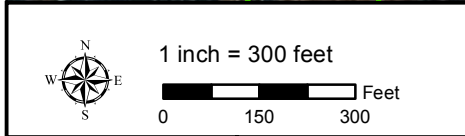
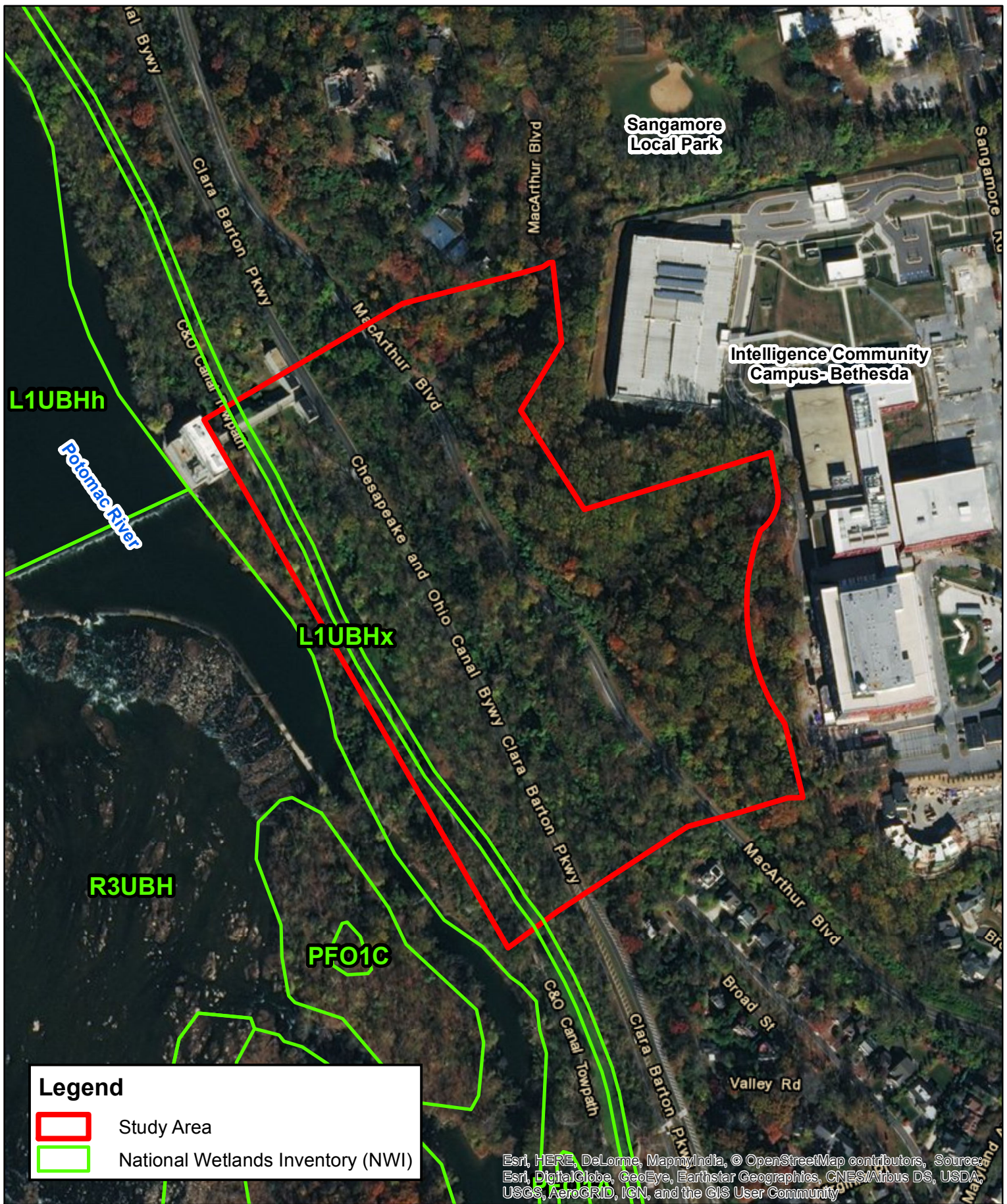
SOIL SYMBOL	DESCRIPTION	HYDRIC PERCENT	PERCENT OF AOI
1C	Gaila silt loam, 8 to 15 percent slopes	5	24.4
16D	Brinklow -Blocktown channery silt loams, 15 to 25 percent slopes	5	33.2
47A	Lindside silt loam, 0 to 3 percent slopes, occasionally flooded	10	5.7
48A	Melvin silt loam, 0 to 2 percent slopes, occasionally flooded	85	4.1
116E	Blocktown channery silt loam, 25 to 45 percent slopes, very rocky	5	26.6
W	Water	NA	6





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1 inch = 300 feet 0 150 300 Feet	FEMA MAP FEMA 100 Year Floodplain (2006) FIGURE 4	National Park Service Montgomery County, MD
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**NWI MAPPING
FIGURE 5**

**National Park Service
Montgomery County, MD**

APPENDIX B

USACE WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: _____ City/County: _____ Sampling Date: _____
Applicant/Owner: _____ State: _____ Sampling Point: _____
Investigator(s): _____ Section, Township, Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present? Yes _____ No _____	
Wetland Hydrology Present? Yes _____ No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
☐ Surface Water (A1)	☐ True Aquatic Plants (B14)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Hydrogen Sulfide Odor (C1)	☐ Sparsely Vegetated Concave Surface (B8)
☐ Saturation (A3)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Drainage Patterns (B10)
☐ Water Marks (B1)	☐ Presence of Reduced Iron (C4)	☐ Moss Trim Lines (B16)
☐ Sediment Deposits (B2)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Dry-Season Water Table (C2)
☐ Drift Deposits (B3)	☐ Thin Muck Surface (C7)	☐ Crayfish Burrows (C8)
☐ Algal Mat or Crust (B4)	☐ Other (Explain in Remarks)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Iron Deposits (B5)		☐ Stunted or Stressed Plants (D1)
☐ Inundation Visible on Aerial Imagery (B7)		☐ Geomorphic Position (D2)
☐ Water-Stained Leaves (B9)		☐ Shallow Aquitard (D3)
☐ Aquatic Fauna (B13)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
50% of total cover: _____ 20% of total cover: _____				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is $\leq 3.0^1$ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.
50% of total cover: _____ 20% of total cover: _____				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No _____

SOIL

Sampling Point: _____

[illegible]

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: National Park Service City/County: Montgomery County Sampling Date: 1/23/2018
 Applicant/Owner: National Park Service State: MD Sampling Point: F
 Investigator(s): Patrick Moreland, Blair Jenet Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Bottomland Local relief (concave, convex, none): Concave Slope (%): 0-3%
 Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 38.947541 Long: -77.125707 Datum: WGS 1984
 Soil Map Unit Name: Lindside silt loam NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ True Aquatic Plants (B14) _____ High Water Table (A2) _____ Hydrogen Sulfide Odor (C1) _____ Saturation (A3) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Water Marks (B1) _____ Presence of Reduced Iron (C4) _____ Sediment Deposits (B2) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Drift Deposits (B3) _____ Thin Muck Surface (C7) _____ Algal Mat or Crust (B4) _____ Other (Explain in Remarks) _____ Iron Deposits (B5) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) _____ Aquatic Fauna (B13)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>>36"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: **F**

Tree Stratum (Plot size: 10'x10')	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: _____	(A) _____ (B) _____																	
Sapling/Shrub Stratum (Plot size: 10'x10') 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____																		
<u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____																		
Herb Stratum (Plot size: 10'x10') 1. <u>Fasle Nettle (Boehmeria cylindrica)</u> <u>40</u> <u>Y</u> <u>FACW</u> 2. <u>Halberd-leaf Rose-mallow (Hibiscus laevis)</u> <u>10</u> <u>N</u> <u>OBL</u> 3. <u>Japanese Stiltgrass (Microstegium vimineum)</u> <u>20</u> <u>Y</u> <u>FAC</u> 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____																		
<u>70</u> = Total Cover 50% of total cover: <u>35</u> 20% of total cover: <u>14</u>				Hydrophytic Vegetation Indicators: ☐ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)														
Woody Vine Stratum (Plot size: 10'x10') 1. _____ 2. _____ 3. _____ 4. _____ 5. _____																		
<u>0</u> = Total Cover 50% of total cover: _____ 20% of total cover: _____																		
Remarks: (include photo numbers here or on a separate sheet.)																		
Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vine – All woody vines greater than 3.28 ft in height.																		
Hydrophytic Vegetation Present? Yes ☒ No _____																		

Sampling Point: F

[illegible]

APPENDIX C

PHOTOGRAPHS



Photo 1: Palustrine Wetland D (PEM5C), facing south towards the C&O Canal. Location of USACE Wetland Determination Data Form D.



Photo 2: Palustrine Wetland F (PEM1A), facing northwest towards the Potomac River. Location of USACE Wetland Determination Data Form F.



Photo 3: Riverine Wetland AA/AB (R3RB2), facing southwest towards MacArthur Boulevard.



Photo 4: Riverine Wetland BA/BB (R3RB2), facing northeast towards the ICC-B.



Photo 5: Riverine Wetland CA/CB (R2UBHx), facing southeast along the C&O Canal.



Photo 6: Riverine Wetland FA/FB (R2SB4), facing southwest towards the Potomac River.

APPENDIX D

WETLAND DELINEATION MAP



Delineated Wetlands and Waters			
Feature ID	Cowardin Classification	Area (SF)	Linear Feet
Palustrine Wetland D	PEM5C	421	NA
Palustrine Wetland F	PEM1A	1,400	NA
Riverine Wetland AA/AB	R3RB2	9,465	914
Riverine Wetland BA/BB	R3RB2	11,359	1,124
Riverine Wetland CA/CB	R2UBHx	481	83
Riverine Wetland FA/FB	R2SB4	78,382	1,552
Sum	All Features	101,508	3,673





