Date: May 3, 2022
To: File (13159_SHAPMD/Task6_495-ALB)
From: Maddy Sigrist (MDOT SHA/RK&K)
CC:
Re: Maryland Department of Transportation State Highway Administration (MDOT SHA)
I-495 & I-270 Managed Lanes Study
Wetland Delineation Memorandum, Preferred Alternative: Alternative 9 – Phase I South

INTRODUCTION

The I-495 & I-270 Managed Lanes Study (MLS) Natural Resources Team conducted a delineation of wetlands and waterways within the corridor study boundary from March 2018 through October 2021 on behalf of the Maryland Department of Transportation State Highway Administration (MDOT SHA), and this report describes the delineation completed within the Phase I South portion of the corridor study boundary (see **Appendix A**, **Overview and Key Maps**).

The corridor study boundary is a 48-mile long, and approximately 600-foot wide, roadway corridor spanning two states and three counties: Montgomery and Prince George's Counties in Maryland and Fairfax County in Virginia. In Virginia, the corridor study boundary falls within Virginia's Potomac River watershed. In Maryland, the corridor study boundary falls within the Potomac River Montgomery County, Cabin John Creek, Rock Creek, Anacostia River, Western Branch, and Potomac River Upper Tidal MDE 8-digit watersheds. All data collection and agency coordination for the delineation were conducted for the entire corridor study boundary. Only the features within the Phase I South portion of the corridor study boundary are presented in this wetland delineation memorandum.

The 48-mile Study limits remain unchanged: I-495 from south of the GWMP in Fairfax County, Virginia, to west of MD 5 and along I-270 from I-495 to north of I-370, including the east and west I-270 spurs in Montgomery and Prince George's Counties, Maryland. The Preferred Alternative (shown in **dark blue** in **Figure 1**), includes build improvements within the limits of Phase 1 South only totaling approximately 15 miles of proposed improvements. There is no action, or no improvements included at this time on I-495 east of the I-270 east spur to MD 5 (shown in **light blue** in **Figure 1**).

The MLS Preferred Alternative, also referred to as Alternative 9 – Phase 1 South, includes building a new American Legion Bridge and delivering two high-occupancy toll (HOT) managed lanes in each direction on I-495 from the George Washington Memorial Parkway in Virginia to east of MD 187 on I-495, and on I-270 from I-495 to north of I-370 and on the I-270 eastern spur from east of MD 187 to I-270. Refer to **Figure 1**. This Preferred Alternative was identified after extensive coordination with agencies, the public and stakeholders to respond directly to feedback received on the DEIS to avoid displacements and impacts to significant environmental resources, and to align the NEPA approval with the planned project phased delivery and permitting approach.

Figure 1: I-495 & I-270 Managed Lanes Study Corridors – Preferred Alternative

A total of 66 nontidal wetlands and 238 stream segments were delineated within the Phase I South portion of the corridor study boundary. Only one Traditionally Navigable Waters (TNW), the Potomac River, was identified within the Phase I South portion of the corridor study boundary. All other perennial waters are classified as tributaries of the Potomac River. Long stream channels were segmented due to changes in classification, splitting by culverted sections, or other refinement needs during data processing. Therefore, the number of individual channel segments is greater than the features presented in field documents such as photos and datasheets. **Table 1** presents the total number of delineated features by classification within the corridor study boundary. These features are depicted on the Delineated Features Maps in **Appendix B.**

Table 1. Total Delineated Features

Features	Totals
Wetlands	**66**
Palustrine Emergent (PEM)	27
Palustrine Forested (PFO)	38
Palustrine Scrub-Shrub (PSS)	1
Waterways	**239**
Ephemeral	19
Intermittent	102
Perennial	118

Supplemental information supporting the wetland and waterways delineation is included in **Appendices A** through **G**, as follows:

Appendix A: Overview and Key Maps
Appendix B: Delineated Features Maps
Appendix C: Natural Resources Inventory Maps
Appendix D: Soils Table
Appendix E: Wetlands Functions and Values Table
Appendix F: Field Datasheets
Appendix G: Photo Documentation

BACKGROUND INFORMATION

The I-495 & I-270 MLS Natural Resources Team environmental scientists conducted a desktop investigation of mapped site topography; 100-year FEMA floodplain; vegetative cover; non-tidal and tidal wetlands and waterways; soil map unit boundaries; and hydric and highly erodible soils. Sources of these data included:

- The United States Geologic Survey (USGS) Geographic Information System (GIS) Quadrangle Mapping;
- The United States Department of Agriculture (USDA), NRCS *Web Soil Survey (WSS) for Montgomery and Prince George's Counties, Maryland and Fairfax County, Virginia*;
- US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) GIS data;
- Maryland Department of Natural Resources (MDNR) Wetlands and Waters GIS data; and FEMA GIS floodplain mapping.

Desktop investigation results are summarized below.

GEOLOGY AND TOPOGRAPHY

The Phase I South portion of the corridor study boundary is entirely within the Piedmont Plateau Physiographic Province and elevation within this area ranges from 51 to 495 feet above mean sea level (**Appendix C**). The lowest elevations occur along the Potomac River near the American Legion Bridge on the western side of the project limits. The highest elevations occur near the convergence of I-270 and I-370 along Shady Grove Road in Montgomery County.

The Piedmont Plateau Physiographic Province has broadly undulating, rolling topography underlain by metamorphic rock, with low knobs, ridges, and valleys. The Phase I South portion of the corridor study boundary includes two Physiographic Districts within the Piedmont Plateau Physiographic Province: the Hampstead Upland District and Middle Potomac Gorge District (Reger & Cleaves, 2008). The Hampstead Upland District consists of rolling to hilly uplands interrupted by steep-walled gorges. This district has distinctive ridges, hills, barrens, and valleys, and its streams include short segments of narrow, steep-sided valleys. The Middle Potomac Gorge District is where the Potomac River flows through a steep sided gorge. Bedrock islands are common in this district, while rapids and falls occur downstream, including the Great Falls of the Potomac River (USDA NRCS, 2018).

SOILS

The USDA-NRCS WSS identified 44 soil map units within the Phase I South portion of the corridor study boundary (**Appendix C**). Two soil map units are classified as hydric, one soil map unit is classified as

predominantly hydric, zero soil map units are classified as partially hydric, 13 soil map units are classified as predominantly non-hydric, and 26 soil map units are classified as non-hydric. Thirty-five of these soil map units are classified as highly erodible soils. A summary table of the soil map units within the study corridor can be found in **Appendix D**.

WATERS OF THE UNITED STATES, INCLUDING WETLANDS

NWI and MDNR GIS mapping identified various wetland and riverine systems within or adjacent to the Phase I South portion of the corridor study boundary, which are shown on the Natural Resources Inventory Maps in **Appendix C**.

FEMA 100-YEAR FLOODPLAIN

The Phase I South portion of the corridor study boundary crosses the FEMA 100-year floodplains of several large streams, including: Muddy Branch, Watts Branch, Cabin John Creek, Booze Creek, Thomas Branch, the Potomac River, Rock Run, and Rock Creek. The Fairfax County portion of the corridor study boundary crosses the FEMA 100-year floodplains of: the Potomac River and Dead Run. The location and extent of the 100-year floodplains of these waterways are shown on the Natural Resources Inventory Maps and the Delineated Features Maps in **Appendix C** and **Appendix B**, respectively.

CHESAPEAKE BAY CRITICAL AREA (MARYLAND)

The Phase I South portion of the corridor study boundary is not located within the 1,000-foot Chesapeake Bay Critical Area boundary or the Critical Area buffer, according to Critical Area Commission for the Chesapeake & Atlantic Coastal Bays (CAC) GIS data for the state of Maryland.

CHESAPEAKE BAY PRESERVATION AREAS (VIRGINIA)

The Virginia Chesapeake Bay Preservation Act requires that Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) be designated around all water bodies with perennial flow that are within jurisdictions encompassed by the Chesapeake Bay watershed in Virginia. Since the I-495 & I-270 Managed Lanes Study involves the expansion of a public road and implemented avoidance and minimization of effects on natural resources and water quality, the project is exempt from these requirements.

FIELD INVESTIGATIONS – WETLAND DELINEATION

METHODS

The I-495 & I-270 MLS corridor study boundary was split into 29 field sub-segments (see **Appendix A**) for the purposes of the wetlands and waterways field investigation, and field sub-segment numbers were incorporated into the naming convention of features within each sub-segment. Field sub-segment breaks were established at major road crossings to provide clear physical boundaries and to limit the number of features that may occupy more than one segment. The Phase I South portion of the corridor study boundary includes sub-segments 20 through 29 and one area of sub-segment 19.

A two-tier approach was applied to fieldwork within the corridor study boundary since properties adjacent to the ROW were not fully accessible when delineation efforts began. Before delineation efforts began, MDOT SHA notified property owners of non-invasive fieldwork (i.e., involving no soil disturbance). When

field teams identified potential wetland areas based on the non-invasive field visit, letters were then sent to the respective properties to request invasive access. Tier one fieldwork consisted of full delineation of wetlands and waterways features within the MDOT SHA ROW, and non-invasive access to properties adjacent to the ROW. Non-invasive access allows access for stream delineation, flagging, photography, characterization of vegetation, and surface hydrology, but not digging soil pits for soil characterization or groundwater hydrology. In areas outside of the MDOT SHA ROW, field crews delineated waterway features and conducted planning level investigation of wetlands, including conservative estimations of potential wetland boundaries based on surface hydrology and vegetation. Tier two fieldwork consisted of soils investigations to finalize delineations of the potential wetland areas identified during tier one fieldwork on public and private properties where the property owners granted MDOT SHA access to perform invasive investigations.

Environmental scientists delineated wetlands and waterways within the corridor study boundary on behalf of MDOT SHA and VDOT from March 2018 through October 2021, with delineation areas revised as the LOD was refined. Much of the MDOT SHA right-of-way within the corridor study boundary was previously delineated as part of the Prince George's and Montgomery County Integrated Roadside Vegetation Management (IRVM) and I-270 Innovative Congestion Management (ICM) projects. All previously delineated features were field reviewed, and delineations were revised as needed for the purposes of the I-495 & I-270 MLS. No previous delineations were referenced for the Virginia portion of the corridor study boundary. Environmental scientists completed new data sheets for features delineated in areas that were not previously delineated by the IRVM or ICM projects; previously delineated features that did not have data sheets; and previously delineated features that changed classification since the previous delineation (e.g., palustrine emergent [PEM] wetland to palustrine forested [PFO] wetland or intermittent to perennial stream). Each feature was photographed and assigned a unique identifier containing the number of its associated field sub-segment and a letter designator generated alphabetically. The alphabet was repeated in the feature identifiers within a sub-segment when necessary, doubling the letter designation e.g. the first 26 features in sub-segment 1 are named 1A through 1Z, the next 26 features are named 1AA through 1ZZ, etc. All previously delineated features were re-named to match the I-495 & I-270 MLS naming convention. Boundary points were identified for each feature, marked with pink MDOT SHA flagging in the field, and numbered consecutively (e.g. 1A-A/1A-B for stream banks, 1A-1, 1A-2, 1A-3 for wetlands). Data obtained from the field reconnaissance was collected with an iPad and boundary points were located using global positioning systems (GPS).

New wetland features were delineated in accordance with the following:

- U. S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0.* Ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center;
- U. S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0.* Ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center; and,

- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Technical Report Y-87-1.

These manuals employ a three-parameter approach to wetland identification using (1) hydrology, (2) hydrophytic vegetation, and (3) hydric soils. All three parameters must be present for an area to be considered a jurisdictional wetland under Section 404 of the Clean Water Act (CWA). Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the corridor study boundary. Wetlands including dying ash trees were characterized as PFO wetlands, as requested by Maryland Department of the Environment (MDE) and US Army Corps of Engineers (USACE). Wetlands and waterways located on National Park Service (NPS) park land were identified by Cowardin classification including the system, subsystem, class, subclass, and any applicable modifiers (Cowardin, 1979).

Wetland scientists completed a functions and values assessment for all delineated wetlands using the USACE New England Method as presented in The Highway Methodology Workbook Supplement – Wetland Functions and Values; A Descriptive Approach (USACE, 1999). Along with the best professional judgment of an experienced wetland scientist, this method uses the presence of certain physical characteristics broadly understood to indicate the presence of related functions. The functions and values assessed include:

- Groundwater recharge/discharge,
- Floodflow alteration,
- Fish and shellfish habitat,
- Sediment/toxicant/pathogen retention,
- Nutrient removal/retention/transformation,
- Production export,
- Sediment/shoreline stabilization,
- Wildlife habitat,
- Recreation,
- Educational/scientific value,
- Uniqueness/heritage,
- Visual quality/aesthetics, and
- Endangered species habitat.

A summary table of the functions and values for all wetlands is included in **Appendix E**, Datasheets are included in **Appendix F**, and photo documentation is included in **Appendix G**.

Waterway function and value was assessed based on the Maryland Stream Mitigation Framework (MSMF) using the USACE Stream Mitigation Calculator (Stream Calculator) (USACE, 2020). The MSMF requires that the habitat of existing stream reaches be assessed and scored based on the length of the existing reach that will be impacted. If 300 linear feet (LF) or less of a stream reach will be impacted, then a habitat based bioassessment was completed as detailed in the Rapid Bioassessment Protocols (RBP) for Use in Streams and Wadeable Rivers (Barbour et al., 1999). If greater than 300 LF of a stream reach will be impacted, then a function-based assessment is required as outlined in the Rapid Function-Based Stream Assessment Methodology (FBSAM) (Starr et al., 2015). The stream calculator and mitigation determination process is discussed further in the *Final Compensatory Mitigation Plan* within the Joint Permit Application (JPA).

Waterways features were delineated using the limits defined in 33 Code of Federal Regulations (CFR) § 328. The boundaries of nontidal waterways features were set at the ordinary high water (OHW) mark and

include but are not limited to: in-line stormwater management (SWM) ponds, palustrine open water (POW or ponds), stream systems (waterways), and some disturbed areas. The OHW mark was determined in the field using physical characteristics established by the fluctuations of water (e.g., change in plant community, changes in the soil character, shelving) in accordance with USACE Regulatory Guidance Letter No. 05-05. Prior to August 16, 2018, CWA jurisdiction of delineated features was determined in accordance with the June 5, 2007, joint guidance issued by EPA and USACE following the US Supreme Court's decision in the Rapanos case; and the January 19, 2001, joint guidance issued by EPA and USACE following US Supreme Court's decision in SWANCC. After August 16, 2018, jurisdiction of new delineated features was determined in accordance with the CWR, and previously delineated feature data was supplemented to determine likely jurisdiction under the new jurisdictional definitions of Waters of the US outlined by the rule. Between July 2018 and December 2019, representatives from the USACE, MDE, and USEPA conducted field reviews of the wetlands and waterways features delineated within the corridor study boundary. The goal of the meetings was to review representative delineated wetlands and waterways to gain general concurrence on the delineation in support of a preliminary jurisdictional determination (JD), as well as an Approved JD for roadside ditches and drainage features that may not be considered jurisdictional by USACE but may be considered jurisdictional by MDE. The Approved JD will be valid through December 12, 2024.

After August 30, 2021, jurisdiction of new delineated features was determined in accordance with pre-2015 regulatory definitions, and previously delineated feature data was re-assessed to determine likely jurisdiction under the pre-2015 definitions.

The MDE regulation of nontidal wetlands, nontidal wetland buffers, and waterways is based on the COMAR Title 26 Subtitle 17, Water Management; COMAR Title 26 Subtitle 23, Nontidal Wetlands; and field review of delineated features. Unlike USACE, MDE does not regulate ephemeral channels, however it does regulate isolated wetlands and certain intermittent features that may not be considered jurisdictional by USACE. USACE and MDE jurisdictional results for each delineated feature are represented in **Table 2.** Virginia Department of Environmental Quality (VDEQ) determines jurisdiction based on the Code of Virginia, Virginia Administrative Code (VAC) 62.1-44.15 and VMRC based on the Code of Virginia VAC 28.2-1204. In addition, wetlands and waterways located on NPS park land were identified by Cowardin classification including the system, subsystem, class, subclass, and any applicable modifiers (Cowardin, 1979).

RESULTS

The I-495 & I-270 MLS Natural Resources Team conducted a wetlands and waterways delineation within the Phase I South portion of the corridor study boundary from March 2018 through October 2021, with areas revised as the LOD was refined. Detailed delineation results are summarized in **Table 2**, organized by sub-segment and listed alphanumerically. Locations of all delineated features can be found on the Delineated Features Maps in **Appendix B**. Field datasheets and photographs for the new and previously delineated features can be found in **Appendices G and H,** respectively**.** A Summary of the Wetland Functions and Values by Wetland Feature is included in **Appendix F.**

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
Subsegment 19									
19J_1	W157M	Perennial	Waterway 19J is a perennial channel located east of the I-495/MD 187 interchange that flows northeast into a culvert under I-495 and out of the study area.	-	Silt, sand, gravel, muck Width: 3-15 ft Depth: 2-12 in	Right: forest, shrubs Left: forest, dense bamboo	Yes	Yes	No
19J_2							Yes	Yes	No
19J_C							Yes	Yes	No
19J_C1							Yes	Yes	No
Subsegment 20									
20B	-	Intermittent	Waterway 20B is an intermittent channel located south of the I-495 inner loop that originates at a 2-foot culvert under I-495 and flows southwest out of the study area through another 2-foot pipe.	-	Silt, cobble, gravel, riprap Width: 5 ft Depth: 3 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
20C	-	Perennial	Waterway 20C begins as an intermittent culvert and transitions to a perennial channel located south of the I-495 inner loop and east of Greentree Road that flows south through a 4-foot culvert and converges with Waterway 20D.	-	Silt, cobble, sand, gravel Width: 1-3 ft Depth: 6 in	Right: Scrub-shrub Left: Scrub-shrub	Yes	Yes	No
20C_C	-	Intermittent					Yes	Yes	No
20D	-	Perennial	Waterway 20D is a perennial channel located south of I-495 and east of Greentree Road that flows north from outside of the study area and converges with Waterway 20C at a 4-foot culvert.	-	Silt, sand, gravel, concrete Width: 5 ft Depth: 6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
20D_C							Yes	Yes	No
20E	-	Intermittent	Waterway 20E is an intermittent channel located south of the I-495 inner loop and north of Newbold Drive that flows south from a culvert under I-495 into a 2-foot pipe.	-	Silt, sand, gravel, riprap Width: 3 ft Depth: 2 ft	Right: bamboo hedgerow Left: bamboo hedgerow	Yes	Yes	No
20F_C	-	Perennial	Waterway 20F_C is a perennial culvert located underneath the southern spur of the I-270/I-495 interchange, west of Old Georgetown Rd (MD-187). Waterways upstream and downstream of 20F_C are underground and non-jurisdictional.	-	Concrete Width: 6.5 ft Depth: 3 in	Right: pipe/concrete Left: pipe/concrete	Yes	Yes	No
Subsegment 21									
21B	W148M	Perennial	Waterway 21B is a perennial channel located east of the I-495 inner loop and west of Longwood Drive that flows west under I-495 into Waterway 21J. Waterway 21B flows through subsegments 20 and 21.	-	Mud Width: 6 ft Depth: Unknown	Right: forest Left: forest	Yes	Yes	No
21B_C							Yes	Yes	No
21C	W103M	Perennial	Waterway 21C is a perennial channel known as Thomas Branch that flows south parallel to the I-270 spur and the I-495 outer loop and into Cabin John Creek.	-	Silt, sand, cobble Width: 15-30 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
21C_1	W142M						Yes	Yes	No
21C_2	W109M						Yes	Yes	No
21C_C	W142M						Yes	Yes	No
21C_C1	W142M						Yes	Yes	No
21C_C2	W109M						Yes	Yes	No
21D	-	Intermittent	Waterway 21D is an intermittent channel that originates in the northeast cloverleaf of the MD 195/I-495 interchange and flows through a 3-foot pipe under I-495 in the northwest cloverleaf of the same interchange, under a ramp, and into Waterway 21C.	-	Concrete, silt, sand Width: 1-3 ft Depth: 6 in	Right: scrub-shrub and meadow grasses Left: hedgerow and scrub-shrub	Yes	Yes	No
21D_1	W110M (downstream)						Yes	Yes	No
21D_C	-						Yes	Yes	No
21D_C1	W110M (downstream)						Yes	Yes	No
21F	-	Intermittent	Waterway 21F is an intermittent channel that originates east of I-495 south of the terminus of Cindy Lane and flows southeast under I-495 into Waterway 21C.	-	Silt, sand, cobble, gravel, riprap Width: 5-8 ft Depth: 8 in	Right: forest Left: forest	Yes	Yes	No
21F_C							Yes	Yes	No
21G	-	Intermittent	Waterway 21G is an intermittent channel located east of the I-495 inner loop, north of the MD 195/I-495 interchange that flows west into Waterway 21C.	-	Silt, concrete, riprap Width: 2-5 ft Depth: 3 in	Right: forest Left: forest	Yes	Yes	No
21H	-	Ephemeral	Waterway 21H is an ephemeral channel located east of the I-495 inner loop and southwest of the terminus of Arrowood Road that flows west into Waterway 21C.	-	Silt, cobble, gravel, concrete Width: 4 ft Depth: 1 ft	Right: scrub-shrub Left: scrub-shrub	Yes	No	No
21I	-	Perennial	Waterway 21I is a perennial channel located northwest of the I-495/I-270 split that flows west into Waterway 21C. Channel substrate consists of silt, sand, and gravel.	-	Silt, sand, gravel Width: 5-7 ft Depth: 3 in	Right: hedgerow Left: hedgerow	Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
21J	-	Perennial	Waterway 21J is a perennial channel located west of the I-495 outer loop and north of MD 191 that flows west into Waterway 21C.	-	Silt, sand, gravel, riprap Width: 10-20 ft Depth: 2-6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
21K	-	Intermittent	Waterway 21K is an intermittent channel located west of the I-495 outer loop and north of MD 191 that flows west into Waterway 21C.	-	Silt, sand, cobble, gravel, placed stone Width: 1-12 ft Depth: 0.5-1.5 ft	Right: hedgerow Left: hedgerow	Yes	Yes	No
21L_C	-	Perennial	Waterway 21L_D is a perennial ditch that originates east of the I-495 inner loop southwest of Kittery Lane and flows west under I -495 and into Waterway 21C.	-	Silt, sand, cobble, gravel, riprap Width: 4-6 ft Depth: 1-8 in	Right: herbaceous vegetation Left: herbaceous vegetation	Yes	Yes	No
21L_D							Yes	Yes	No
21L_D1							Yes	Yes	No
21M	-	Intermittent	Waterway 21M is an intermittent channel located west of the I-495 outer loop and east of Groton Road that flows east into Waterway 21C.	-	Concrete Width: 1-4 ft Depth: 0.5 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
21P	-	PFO	Wetland 21P a PFO located east of the I-495 inner loop and west of the terminus of Arrowood Court in the floodplain of Waterway 21C.	Red maple (*Acer rubrum*) Northern spicebush (*Lindera benzoin*) Sweet wood-reed (*Cinna arundinacea*) Green ash (*Fraxinus pennsylvanica*) River-bank grape (*Vitis riparia*)	-	-	Yes	Yes	No
21Q	-	PFO	Wetland 21Q is a PFO located east of the I-495 inner loop and southwest of the terminus of Arrowood Court in the floodplain of Waterway 21C.	American elm (*Ulmus americana*) Red maple Northern spicebush Lizard's-tail (*Saururus cernuus*)	-	-	Yes	Yes	No
21R	-	Ephemeral	Waterway 21R is an ephemeral channel located east of the I-495 inner loop and southwest of the terminus of Arrowood Road that drains uplands and flows west into Waterway 21H.	-	Silt, cobble, gravel Width: 3-8 ft Depth: 4-8 in	Right: forest Left: forest	Yes	No	No
21T	-	PFO	Wetland 21T is a PFO located east of the I-495 inner loop and northwest of the terminus of Arrowood Court on a terrace in the floodplain of Waterway 21C.	American sycamore (*Platanus occidentalis*) Red maple Bristly lady's-thumb (*Persicaria longiseta*) Winter creeper (*Euonymus fortunei*) Curly dock (*Rumex crispus*) Japanese stilt grass (*Microstegium vimineum*)	-	-	Yes	Yes	No
21U	-	Perennial	Waterway 21U is a perennial channel located east of the I-495 inner loop and west of Armat Drive that flows west from a culvert into Waterway 21B.	-	Silt, sand, cobble, gravel, riprap Width: 5-15 ft Depth: 3-6 in	Right: forest Left: forest	Yes	Yes	No
21V	-	Intermittent	Waterway 21V is an intermittent channel located west of the I-495 outer loop and north of Bradley Boulevard that flows east from outside of the study area into Waterway 21C.	-	Silt, sand, cobble, gravel Width: 4-6 ft Depth: 3-6 in	Right: forest Left: forest	Yes	Yes	No
Subsegment 22									
22A	-	Intermittent	Waterway 22A is an intermittent channel located within the southwest cloverleaf of the MD 195/I-495 interchange that flows south through a 3-foot concrete pipe into Waterway 22C.	-	Concrete Width: 3 ft Depth: 6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
22A_C							Yes	Yes	No
22AA	W111M	Perennial	Waterway 22AA is a perennial channel known as Cabin John Creek that flows south under I-495 west of Cabin John Parkway and east of Seven Locks Road.	-	Silt, sand, cobble, bedrock Width: 30 ft Depth: 10 in	Right: forest Left: forest	Yes	Yes	No
22AA_1							Yes	Yes	No
22AA_2							Yes	Yes	No
22AA_3							Yes	Yes	No
22AA_B							Yes	Yes	No
22AA_B1							Yes	Yes	No
22AAA	WOUS SK	Perennial	Waterway 22AAA is a perennial channel located within the Capital Beltway/George Washington Memorial Parkway interchange.	-	Silt, sand, gravel, cobble, boulder Width: N/A Depth: N/A	Right: forest Left: forest	Yes	No	Yes
22AAA_C							Yes	No	Yes

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
22B	-	Intermittent	Waterway 22B is an intermittent channel located west of the I-495 outer loop south of the MD 195/I-495 interchange that flows west into Waterway 22C.	-	Riprap Width: 3 ft Depth: 6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
22BB	-	Ephemeral	Waterway 22BB is an ephemeral channel located north of the I-495 outer loop and south of Thornley Court that flows east into Waterway 22CC.	-	Silt, cobble, sand, gravel Width: 1-4 ft Depth 0-4 in	Right: forest Left: forest	Yes	No	No
22BBB	SP	PFO	Wetland 22BBB is a PFO located east of the I-495 inner loop that abuts Waterway 22ZZ.	Red maple Green ash Northern spicebush Japanese stilt grass	-	-	Yes	No	Yes
22C	-	Intermittent	Waterway 22C is an intermittent channel located west of the I-495 outer loop south of the MD 195/I-495 interchange that flows west into a 3-foot concrete pipe and into Waterway 22D.	-	Riprap Width: 3 ft Depth: 6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
22C_C							Yes	Yes	No
22CC	-	Ephemeral	Waterway 22CC is an ephemeral channel located north of the I-495 outer loop and south of Thornley Court that flows northeast under Seven Locks Road into Waterway 22DD.	-	Silt, cobble, sand, gravel, concrete Width: 2- 6 ft Depth: 1-6 in	Right: forest Left: forest	Yes	No	No
22CC_1							Yes	No	No
22CC_C							Yes	No	No
22CCC	-	PFO	Wetland is a PFO located southwest of the I-495/Clara Barton Parkway interchange adjacent to Wetland 22W.	Red maple Green ash Northern spicebush Rambler rose (*Rosa multiflora*) Common pawpaw (*Asimina triloba*) Japanese stiltgrass Sweet wood-reed Horsebrier (*Smilax rotundifolia*) Japanese honeysuckle (*Lonicera japonica*)	-	-	Yes	Yes	No
22D	-	Intermittent	Waterway 22D is an intermittent channel located west of the I-495 outer loop south of the MD 195/I-495 interchange that flows west under a concrete liner into Waterway 22E.	-	Concrete Width: 2 ft Depth: 1 in	Right: hedgerow Left: forest	Yes	Yes	No
22DD	-	Intermittent	Waterway 22DD is an intermittent channel located north of the I-495 outer loop and east of Thornley Court that flows east under Seven Locks Road and then north into Waterway 22AA.	-	Silt, cobble, sand, gravel, concrete Width: 2-8 ft Depth: 1-12 in	Right: forest Left: forest	Yes	Yes	No
22DD_C							Yes	Yes	No
22DDD	-	Perennial	Waterway 22DDD is a perennial channel located east of the I-495 inner loop and flows south to north under George Washington Memorial Parkway and into the Potomac River outside of the corridor study boundary.	-	Silt, cobble, sand, gravel Width: 20-50 ft Depth: 2+ ft	Right: forest Left: forest	Yes	No	Yes
22E	01-B	PEM	Wetland 22E is a PEM located northwest of the I-495 outer loop and southwest of the intersection of Eggert Road and Persimmon Tree Road.	Wand panic grass (*Panicum virgatum*) Rough barnyard grass (*Echinochloa muricata*)	-	-	No	Yes	No
22EE	-	Ephemeral	Waterway 22EE is an ephemeral channel located north of the I-495 outer loop and south of Thornley Court that flows north into Waterway 22CC.	-	Silt, sand, concrete Width: 4-10 ft Depth: 0-4 in	Right: forest Left: forest	Yes	No	No
22F	01-L	PEM	Wetland 22F is a PEM located in the median of Cabin John Parkway, south of I-495, that abuts Waterway 22H.	Marsh primrose-willow (*Ludwigia palustris*) Small carp grass (*Arthraxon hispidus*)	-	-	Yes	Yes	No
22FF	-	Ephemeral	Waterway 22FF is an ephemeral channel located south of the I-495 inner loop and northwest of the terminus of Cypress Grove Lane that flows south out of the study area.	-	Silt, sand, gravel Width: 3-5 ft Depth: 0-6 in	Right: forest Left: forest	Yes	No	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
22G	01-K	PFO	Wetland 22G is a PFO located in the median of Cabin John Parkway, south of I-495, that abuts Waterway 22H.	Black willow (*Salix nigra*) Green ash Rambler rose Red maple Lamp rush Crow garlic (*Allium vineale*) Japanese honeysuckle	-	-	Yes	Yes	No
22GG	01-O	PEM	Wetland 22GG is a PEM located east of Cabin John Parkway and south of the I-495 inner loop.	Red maple Pin oak (*Quercus palustris*) Lamp rush Wand panic grass	-	-	Yes	Yes	No
22H	01-M	Intermittent	Waterway 22H is an intermittent channel located within the median of Cabin John Parkway, south of I-495, that flows west through a culvert under Cabin John Parkway into Waterway 22AA.	-	Concrete Width: 2-4 ft Depth: 1-8 in	Right: forest Left: emergent vegetation, mowed lawn	Yes	Yes	No
22H_1							Yes	Yes	No
22H_C							Yes	Yes	No
22HH	01-C	Intermittent	Waterway 22HH is an intermittent channel located west of the I-495 outer loop and north of MacArthur Boulevard that flows south into Waterway 22N.	-	Sand, gravel, concrete Width: 5 ft Depth: 3-5 in	Right: forest Left: forest	Yes	Yes	No
22HH_1							Yes	Yes	No
22HH_2							Yes	Yes	No
22HH_C							Yes	Yes	No
22I	01-G	PFO	Wetland 22I is a PFO located north of Clara Barton Parkway and west of I-495 that abuts Waterway 22J.	Swamp white oak (*Quercus bicolor*) Red maple Chinese privet (*Ligustrum sinense*) Smooth blackhaw (*Viburnum prunifolium*) Sweet wood-reed Japanese honeysuckle Horsebrier	-	-	Yes	Yes	No
22II	-	PFO	Wetland 22II is a PFO located west of the I-495 outer loop and southeast of Lilly Stone Drive.	River birch (*Betula nigra*) Green ash White grass (*Leersia virginica*)	-	-	Yes	Yes	No
22J	01-F	Intermittent	Waterway 22J is an intermittent channel located north of Clara Barton Parkway and west of I-495 that flows south through a culvert into Waterway 22I.	-	Silt, sand, cobble, gravel Width: 1-4 ft Depth: 1-6 in	Right: forest, mowed lawn Left: forest, paved road	Yes	Yes	No
22J_C							Yes	Yes	No
22JJ	-	PFO	Wetland 22JJ is a PFO located southwest of the MD 195/I-495 interchange in the floodplain of Waterway 22AA.	Red maple Black tupelo (*Nyssa sylvatica*) Japanese stilt grass	-	-	Yes	Yes	No
22K	W125M	PEM	Wetland 22K is a PEM located north of Clara Barton Parkway and west of I-495 that abuts Waterway 22J.	Dotted smartweed (*Persicaria punctata*) Spotted lady's thumb (*Persicaria maculosa*)	-	-	Yes	Yes	No
22KK	-	Perennial	Waterway 22KK is a perennial channel located south of the I-495/Cabin John Parkway interchange that flows east into Waterway 22AA.	-	Silt, sand, cobble, gravel Width: 8-15 ft Depth: 3-15 in	Right: forest Left: forest	Yes	Yes	No
22L	01-J	PEM	Wetland 22L is a PEM located north of Clara Barton Parkway and west of I-495. A portion of this wetland is considered a vernal pool.	Dotted smartweed Sweet wood-reed	-	-	Yes	Yes	No
22L_VP							Yes	Yes	No
22LL_VP	-	PFO	Wetland 22LL is a PFO located southeast of the I-495/Clara Barton Parkway interchange. The entire wetland is considered a vernal pool.	Ash-leaf maple (*Acer negundo*) American elm Northern spicebush Dotted smartweed Creeping-Jenny (*Lysimachia nummularia*)	-	-	Yes	Yes	No
22M	01-D	Perennial	Waterway 22M is a perennial channel known as Rock Run located northwest of the Clara Barton Parkway on-ramp from the I-495 outer loop that flows south from outside the study area to a box-culvert under Clara Barton Parkway.	-	Silt, sand, cobble, gravel Width: 30 ft Depth: 6 in - 1 ft	Right: forest Left: forest	Yes	Yes	No
22M_1							Yes	Yes	No
22M_C							Yes	Yes	No
22M_C1							Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
22MM	-	Perennial	Waterway 22MM is a perennial TNW known as the Potomac River located south of the I-495/Clara Barton Parkway interchange that flows east under I-495.	-	Silt, sand, muck, cobble, gravel, bedrock Width: > 400 ft Depth: > 10 ft	Right: forest Left: forest	Yes	Yes	No
22MM_B							Yes	Yes	No
22N	01-C	Perennial	Waterway 22N is a perennial channel located northwest of the Clara Barton Parkway on-ramp from the I-495 outer loop that flows southwest to Waterway 22M.	-	Silt, cobble, gravel, concrete Width: 5 ft Depth: 3 in	Right: forest Left: forest	Yes	Yes	No
22NN	-	Intermittent	Waterway 22NN is an intermittent channel located southwest of the I-495/Clara Barton Parkway interchange that flows south from Wetland 22OO to Waterway 22MM.	-	Silt, sand, gravel, muck Width: 8-10 ft Depth: 0 – 6 in	Right: forest Left: bare area under I-495	Yes	Yes	No
22NN_B							Yes	Yes	No
22O	01-E	PFO	Wetland 22O is a PFO located northwest of the Clara Barton Parkway on-ramp from the I-495 outer loop that abuts Waterway 22N.	American sycamore Ash-leaf maple Sweet wood-reed Deer-tongue rosette grass (*Dichanthelium clandestinum*) Water horsetail (*Equisetum fluviatile*)	-	-	Yes	Yes	No
22OO	-	PFO	Wetland 22OO is a PFO located southwest of the I-495/Clara Barton Parkway interchange that abuts Waterway 22NN.	American sycamore Ash-leaf maple Reed canary grass (*Phalaris arundinacea*)	-	-	Yes	Yes	No
22P	-	Intermittent	Waterway 22P is an intermittent channel located northwest of the Clara Barton Parkway on-ramp from the I-495 outer loop that flows northwest into Waterway 22N.	-	Silt, sand Width: 3 ft Depth: 3 in	Right: forest Left: forest	Yes	Yes	No
22PP	01-P	PFO	Wetland 22PP is a PFO located southwest of the I-495/Clara Barton Parkway Interchange, just south of the C&O canal.	American elm Amur honeysuckle (*Lonicera maackii*) Swamp smartweed (*Persicaria hydropiperoides*)	-	-	Yes	Yes	No
22Q	-	Perennial	Waterway 22Q is a perennial channel located east of the I-495 inner loop and south of Clara Barton Parkway that flows east from a culvert under the Clara Barton Parkway on-ramp to the I-495 inner loop into another culvert under Clara Barton Parkway.	-	Silt, sand Width: 4 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
22Q_1	01-I						Yes	Yes	No
22Q_C	-						Yes	Yes	No
22QQ	-	Intermittent	Waterway 22QQ is an intermittent channel located southeast of the I-495/Clara Barton Parkway interchange that flows south into a side channel of Waterway 22MM.	-	Sand, muck Width: 2-6 ft Depth: 0-1.5 in	Right: forest Left: forest	Yes	Yes	No
22R	01-H	PFO	Wetland 22R is a PFO located east of the I-495 inner loop and south of Clara Barton Parkway that abuts Waterway 22Q.	Red maple American sycamore Common pawpaw Black tupelo Japanese stilt grass Sweet wood-reed Japanese honeysuckle	-	-	Yes	Yes	No
22RR	-	Perennial	Waterway 22RR is a perennial channel located east of Seven Locks road and north of the I-495 outer loop that flows east into Waterway 22AA.	-	Silt, sand, cobble, gravel Width: 6-15 ft Depth: 2-10 in	Right: forest Left: forest	Yes	Yes	No
22S	-	Intermittent	Waterway 22S is an intermittent channel located north of the Clara Barton Parkway on-ramp from the I-495 outer loop that flows east into Waterway 22M.	-	Silt, sand, cobble, gravel, placed stone slabs Width: 1-7 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
22SS	WOUS CC/CD	Perennial	Waterway 22SS is a perennial channel located northwest of the Capital Beltway/George Washington Memorial Parkway interchange that flows north.	-	Silt, sand, gravel, cobble Width: 25 ft Depth: N/A	Right: forest Left: forest	Yes	No	Yes
22T	W122M	Intermittent	Waterway 22T is an intermittent channel located north of Clara Barton Parkway and south of MacArthur Boulevard that flows west from Wetland 22U, under I-495, and into Waterway 22HH.	-	Silt, cobble, sand, concrete, riprap Width: 3-6 ft Depth: 3 in	Right: forest Left: forest	Yes	Yes	No
22T_1							Yes	Yes	No
22T_2							Yes	Yes	No
22T_B							Yes	Yes	No
22T_B1							Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
22TT	DC	PFO	Wetland 22TT is a PFO located east of the I-495 outer loop that abuts Waterway 22UU and Waterway 22MM.	Red maple Green ash Northern spicebush Japanese stilt grass	-	-	Yes	No	Yes
22U	W121M	PFO	Wetland 22U is a PFO located east of the I-495 inner loop, north of Clara Barton Parkway, and south of MacArthur Boulevard that abuts Waterway 22T.	Red maple Slippery elm (*Ulmus rubra*) Black willow Ash-leaf maple	-	-	Yes	Yes	No
22UU	WOUS DF	Intermittent	Waterway 22UU is an intermittent channel located west of the I-495 outer loop that flows north into Waterway 22MM.	-	Riprap Width: 20 ft Depth: N/A	Right/Left: forest, maintained, impervious surface	Yes	No	Yes
22V	-	Intermittent	Waterway 22V is an intermittent channel located south of Clara Barton Parkway that flows east under I-495 and into a roadside swale, followed by an 18-inch pipe.	-	Silt, sand, cobble, gravel Width: 1-4 ft Depth: 6 in	Right: hedgerow, riprap Left: hedgerow, riprap	Yes	Yes	No
22V_1							Yes	Yes	No
22V_2							Yes	Yes	No
22V_B							Yes	Yes	No
22V_B1							Yes	Yes	No
22VV	WOUS DJ	Ephemeral	Waterway 22VV is an ephemeral channel located east of the I-495 inner loop that flows west.	-	Silt Width: 20 ft Depth: N/A	Right: forest Left: forest	Yes	No	Yes
22W	W132M	PEM	Wetland 22W is a PEM (the C&O Canal Towpath) located southwest of the I-495/Clara Barton Parkway interchange.	Duck-potato (*Sagittaria latifolia*) Straw-color flat sedge (*Cyperus strigosus*) Narrow-leaf cat-tail (*Typha angustifolia*) Ribbon-leaf pondweed (*Potemogeton epihydrus*)	-	-	Yes	Yes	No
22WW	WOUS DK	Intermittent	Waterway 22WW is an intermittent channel located east of the I-495 inner loop that flows northwest.	-	Silt, sand, gravel Width: 25 ft Depth: N/A	Right: forest Left: forest	Yes	No	Yes
22WW_C							Yes	No	Yes
22X	-	PFO	Wetland 22X is a PFO located within the cloverleaf of the I-495 inner loop on-ramp from Clara Barton Parkway.	Red maple Eastern poison ivy (*Toxicodendron radicans*) Sweet wood-reed Asian bittersweet (*Celastrus orbiculatus*)	-	-	Yes	Yes	No
22XX	WOUS DL	Intermittent	Waterway 22XX is an intermittent channel located east of the I-495 inner loop that flows northwest into Waterway 22WW.	-	Silt, sand, gravel Width: 10 ft Depth: N/A	Right: forest Left: forest	Yes	No	No
22Y	01-H	PEM	Wetland 22Y is a PEM located within the cloverleaf of the I-495 inner loop on-ramp from Clara Barton Parkway, that abuts Waterway 22Q.	Green ash River birch Lamp rush (*Juncus effusus*) Sweet wood-reed Deer-tongue rosette grass Japanese stilt grass	-	-	Yes	Yes	No
22Z	01-N	Perennial	Waterway 22Z is a perennial channel known as Booze Creek that flows southwest through a triple box culvert under Cabin John Parkway to Waterway 22AA.	-	Sand, cobble, gravel Width: 40 ft Depth: 6 ft	Right: forest Left: forest	Yes	Yes	No
22Z_1							Yes	Yes	No
22Z_C							Yes	Yes	No
22ZZ	WOUS SH	Perennial	Waterway 22ZZ is a perennial channel located east of the I-495 inner loop that flows east.	-	Silt, sand, gravel, cobble Width: 20 ft Depth: N/A	Right/Left: forest, unmaintained herbaceous, impervious surface	Yes	No	Yes
22ZZ_C							Yes	No	Yes

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
Subsegment 23									
23A	WUS 01	Perennial	Waterway 23A is a perennial channel known as Thomas Branch that flows south parallel to the I-270 spur and the I-495 outer loop and into Cabin John Creek.	-	Silt, sand, cobble Width: 15-30 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
23A_1							Yes	Yes	No
23A_2							Yes	Yes	No
23A_3							Yes	Yes	No
23A_C							Yes	Yes	No
23A_C1							Yes	Yes	No
23A_C2							Yes	Yes	No
23AA	-	Perennial	Waterway 23AA is a perennial channel located southeast of the I-270/Democracy Boulevard interchange that originates at a culvert under the I-270 on-ramp and flows south through another culvert.	-	Silt, sand Width: 2-3 ft Depth: 2-4 in	Right: forest Left: forest	Yes	Yes	No
23AA_1							Yes	Yes	No
23AA_C							Yes	Yes	No
23AA_C1							Yes	Yes	No
23BB	-	PEM	Wetland 23BB is a PEM located southeast of the I-270/Democracy Boulevard interchange that abuts Waterway 23AA.	Sweet-gum (*Liquidambar styraciflua*) Eastern poison ivy Japanese stilt grass	-	-	Yes	Yes	No
23C	-	Intermittent	Waterway 23C is an intermittent channel located southwest of the I-270/Democracy Boulevard interchange that flows east into Waterway 23A.	-	Silt, muck, leaf litter Width: 4 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
23CC	-	PFO	Wetland 23CC is a PFO located west of the I-270 south spur and northeast of Motor City drive that abuts Waterway 23E.	Green ash American elm Northern spicebush Northern bush honeysuckle (*Diervilla lonicera*) Eastern poison ivy Swamp smartweed	-	-	Yes	Yes	No
23D	WUS 02	Intermittent	Waterway 23D is an intermittent channel located southeast of the I-270/Democracy Boulevard interchange that flows from 23-SWM8, under I-270, and into Thomas Branch.	-	Silt, sand, cobble, gravel Width: 7 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
23D_C							Yes	Yes	No
23DD	-	Intermittent	Waterway 23DD is an intermittent channel located west of the I-270 south spur and east of Westlake Drive that flows north into Waterway 23K.	-	Silt, sand, cobble Width: 4 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
23E	-	Intermittent	Waterway 23E is an intermittent channel located west of the I-270 south spur and northeast of Motor City Drive that flows west from Wetland 23CC and out of the study area.	-	Silt, sand, gravel, riprap Width: 6 ft Depth: 3 ft	Right: forest Left: forest	Yes	Yes	No
23EE	-	PFO	Wetland 23EE is a PFO located between the Old Georgetown Road on ramp to I-270 eastbound and Aubinoe Farm Drive.	American elm Red maple Amur honeysuckle Japanese stilt grass Fox grape (*Vitis labrusca*) Unknown grass species (*Poa sp.*)	-	-	No	Yes	No
23F	-	PEM	Wetland 23F is a PEM located west of the I-270 south spur and east of Westlake Drive that abuts Waterway 23K.	Green ash Black tupelo Japanese stilt grass	-	-	Yes	Yes	No
23FF	-	Intermittent	Waterway 23FF is an intermittent channel located south of the I-270 east spur and north of the Rudyard Drive/Rossmore Drive intersection that flows east into Waterway 23QQ.	-	Silt, sand, cobble, and gravel Width: 7 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
23G	WUS 34	Perennial	Waterway 23G is a perennial channel located south of the Grosvenor Place/Englishman Drive intersection that flows adjacent to and under I-270 and out of the study area.	-	Silt, sand, cobble Width: 8-10 ft Depth: 6-12 in	Right: forest Left: forest	Yes	Yes	No
23G_1							Yes	Yes	No
23G_C							Yes	Yes	No
23GG	-	PFO	Wetland 23GG is a PFO located west of I-270 and southeast of the Tuckerman Lane/Westlake Drive intersection.	Red maple Northern spicebush Greater water dock (*Rumex britannica*) New York fern (*Parathelypteris noveboracensis*) Japanese honeysuckle	-	-	Yes	Yes	No

Wetland and Waterway Features Table

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23H	-	Ephemeral	Waterway 23H is an ephemeral channel located southeast of Englishman Drive that flows south into Waterway 23G.	-	Silt, gravel Width: 5 ft Depth: 2 ft	Right: forest Left: forest	Yes	No	No
23HH	-	PFO	Wetland 23HH is a PFO located west of the I-270 south spur that drains into Waterway 23K.	Black tupelo American hornbeam (*Carpinus caroliniana*)			Yes	Yes	No
23J	-	PFO	Wetland 23J is located southwest of the Rockledge Drive overpass over I-270 that drains into Waterway 23N and surrounds Wetland 23KK.	Speckled alder (*Alnus incana*) Black willow American sycamore			Yes	Yes	No
23K	-	Perennial	Waterway 23K is a perennial channel located west of the I-270 south spur and east of Westlake Drive that originates at a stormwater management pond and flows north into Waterway 24A. Waterway 23K flows through subsegments 23 and 24.	-	Silt, sand, cobble, gravel Width: 9 ft Depth: 3 ft	Right: forest Left: forest	Yes	Yes	No
23K_1							Yes	Yes	No
23K_C							Yes	Yes	No
23K_C1							Yes	Yes	No
23K_D							Yes	Yes	No
23KK	-	PEM	Wetland 23KK is a PEM located southwest of the Rockledge Drive overpass I-270 that drains into Waterway 23N.	Narrowleaf cat-tail Arrowleaf tearthumb (*Persicaria sagittata*)			Yes	Yes	No
23L	-	PEM	Wetland 23L is a PEM located inside the Democracy Boulevard on ramp to I-270 northbound.	Broad-leaf cat-tail (*Typha latifolia*) Japanese stilt grass	-	-	Yes	Yes	No
23LL	-	PEM	Wetland 23LL is a PEM located north of the east spur of I-270 and south of Windemere Circle, adjacent to Waterway 23N.	Small-spike false nettle (*Boehmeria cylindrica*) Japanese stilt grass Lamp rush	-	-	Yes	Yes	No
23M	-	Ephemeral	Waterway 23M is an ephemeral channel located southeast of Earlsgate Lane and north of I-270 that flows north into Waterway 23N.	-	Silt Width: 8 ft Depth: 6 in	Right: forest Left: forest	Yes	No	No
23MM	-	PFO	Wetland 23MM is a PFO located west of I-270 and south of Thomas Branch Drive in the floodplain of Waterway 23A (Thomas Branch).	American sycamore Red maple Tuliptree (*Liriodendron tulipifera*)	-	-	Yes	Yes	No
23N	-	Intermittent	Waterway 23N is an intermittent channel located between Windermere Circle and I-270 that flows northwest out of the study area into Old Farm Creek. Waterway 23N becomes perennial (23N_1) downstream of its confluence with waterway 23U.	-	Sand, cobble, gravel, riprap Width: 9 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
23N_1		Perennial					Yes	Yes	No
23N_C		Intermittent					Yes	Yes	No
23N_D		Intermittent					Yes	Yes	No
23NN	-	Perennial	Waterway 23NN is a perennial channel located north of the intersection of Rudyard Drive and Farham Drive that flows from Waterway 23R into Waterway 23Q.	-	Sand, cobble, gravel, bedrock Width: 8 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
23P	-	PFO	Wetland 23P is a PFO located northeast of the intersection of Snow Point Drive and Fleming Avenue.	Green ash Red maple Northern spicebush Northern bush honeysuckle Jack-in-the-pulpit (*Arisaema triphyllum*)	-	-	Yes	Yes	No
23PP	-	Intermittent	Waterway 23PP is an intermittent channel located south of I-270 and north of Rudyard Drive that flows into Waterway 23QQ.	-	Sand, cobble, gravel Width: 6 ft Depth: 1 ft	Right: forest Left: shrub	Yes	Yes	No
23Q	WUS 33	Perennial	Waterway 23Q is a perennial channel located north of the intersection of Rudyard Drive and Farnham Drive that flows outside the study area downstream.	-	Sand, cobble, gravel, bedrock, riprap Width: 15 ft Depth: 6 ft	Right: forest Left: forest	Yes	Yes	No
23Q_2							Yes	Yes	No
23Q_C							Yes	Yes	No
23QQ	-	Ephemeral	Waterway 23QQ is an ephemeral channel located south of I-270 and north of Rossmore Drive that flows into Waterway 23RR.	-	Silt, sand Width: 2 ft Depth: 6 in	Right: forest Left: forest	Yes	No	No

Wetland and Waterway Features Table

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23R	-	Intermittent	Waterway 23R is an intermittent channel located east of the I-270/Old Georgetown Road interchange that enters the study area from a culvert and flows east under I-270 and out of the study area.	-	Silt, cobble, gravel, bedrock Width: 15 ft Depth: 8 ft	Right: forest Left: forest	Yes	Yes	No
23R_1							Yes	Yes	No
23R_2							Yes	Yes	No
23R_C							Yes	Yes	No
23RR	-	Intermittent	Waterway 23RR is an intermittent channel located south of I-270 and north of Rossmore Drive that flows into Waterway 23Q.	-	Silt, sand, cobble, gravel Width: 2 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
23S	-	Intermittent	Waterway 23S is an intermittent channel located northeast of the Snow Point Drive/Fleming Avenue intersection that flows east into Waterway 23G.	-	Cobble, gravel, riprap Width: 8 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
23SS	-	Ephemeral	Waterway 23SS is an ephemeral channel located south of I-270 and north of Rossmore Drive that flows from Wetland 23WW into Waterway 23Q.	-	Silt, sand Width: 3 ft Depth: 6 in	Right: forest Left: forest	Yes	No	No
23T	-	Ephemeral	Waterway 23T is an ephemeral channel located between Thornbush Lane and I-270 that flows into Waterway 23G.	-	Silt, cobble, gravel Width: 2 ft Depth: 1 ft	Right: forest Left: forest	Yes	No	No
23U	-	Perennial	Waterway 23U is a perennial channel located between Windermere Circle and I-270 that flows north into Waterway 23N.	-	Sand, cobble, gravel, riprap Width: 6 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
23U_1							Yes	Yes	No
23U_C							Yes	Yes	No
23UU	-	Intermittent	Waterway 23UU is an intermittent channel located south of I-270 and north of Rossmore Drive that flows into Waterway 23Q.	-	Sand, cobble, gravel, riprap Width: 4 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
23V	SB12/NB01-D	Intermittent	Waterway 23V is an intermittent channel located northeast of the I-270 Spur/Westlake Terrace intersection that originates from a culvert and flows west under I-270.	-	Silt Width: 2 – 8 ft Depth: 1 in	Right: forest Left: forest	Yes	Yes	No
23V_C							Yes	Yes	No
23W	PEM 10	PEM	Wetland 23W is a PEM located northeast of the I-270/Democracy Boulevard interchange that flows to Waterway 23A.	Green ash Pin oak Common persimmon (*Diospyros virginiana*) Reed canary grass Uptight sedge (*Carex stricta*)	-	-	Yes	Yes	No
23WW	-	PFO	Wetland 23WW is a PFO wetland located south of I-270 and north of Rossmore Drive that drains into Waterway 23SS.	American elm Linden viburnum (*Viburnum dilatatum*) Green ash Japanese stilt grass Frost grape (*Vitis vulpina*) Japense honeysuckle	-	-	Yes	Yes	No
23X	PEM 02	PEM	Wetland 23X is a PEM located southwest of the I-270/Tuckerman Lane intersection that abuts Waterway 23J.	Red maple American sycamore Green ash Northern spicebush Skunk-cabbage (*Symplocarpus foetidus*) Virginia-creeper (*Parthenocissus quinquefolia*) Fox grape	-	-	Yes	Yes	No
23Z	-	Intermittent	Waterway 23Z is an intermittent channel located west of the I-270 south spur and northeast of Motor City Drive that flows north from a parking lot into Waterway 23E.	-	Silt, sand Width: 8 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
Subsegment 24									
24A	-	Perennial	Waterway 24A is a perennial channel located north of the I-270/Tuckerman Lane intersection that flows west out of the study area into Cabin John Creek.	-	Cobble, gravel, sand, silt Width: 20 ft Depth: 6 in	Right: forest, scrub-shrub, maintained Left: forest, scrub-shrub	Yes	Yes	No
24A_1							Yes	Yes	No
24A_C							Yes	Yes	No
24C	-	Intermittent	Waterway 24C is an intermittent channel located in Cabin John Regional Park that flows west out of the study area into Cabin John Creek.	-	Cobble, gravel, sand, silt Width: 3.5 ft Depth: 5 in	Right: forest, scrub-shrub Left: forest, scrub-shrub	Yes	Yes	No
24D	-	Perennial	Waterway 24D is a perennial channel located north of Waterway 24C in Cabin John Regional Park that flows west out of the study area into Cabin John Creek.	-	Cobble, gravel, sand, silt, riprap Width: 3 ft Depth: 4 in	Right: herbaceous Left: forest, scrub-shrub	Yes	Yes	No
24F	-	Perennial	Waterway 24F is a perennial channel located southeast of the I-270/Montrose Road interchange that flows south into a culvert under I-270 and west out of the study area. Waterway 24F flows through subsegments 24 and 25.	-	Cobble, gravel, sand, silt Width: 15 ft Depth: 6 in	Right: forest, scrub-shrub Left: forest, scrub-shrub	Yes	Yes	No
24F_1	WUS 14						Yes	Yes	No
24F_2	WUS 14						Yes	Yes	No
24F_3	WUS 14						Yes	Yes	No
24F_C	-						Yes	Yes	No
24F_C1	WUS 14						Yes	Yes	No
24F_C2	WUS 14						Yes	Yes	No
24H	WUS 15	Perennial	Waterway 24H is a perennial channel located west of the I-270/Montrose Road interchange that flows south out of the study area into Waterway 24J.	-	Cobble, gravel, sand, silt Width: 5 ft Depth: 1 in	Right/Left: forest, scrub-shrub, wetland	Yes	Yes	No
24J	-	Perennial	Waterway 24J is a perennial channel located west of the I-270/Montrose Road interchange that flows southeast out of the study area into Cabin John Creek.	-	Cobble, sand, silt Width: 14 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
24K	-	Intermittent	Waterway 24K is an intermittent channel located southeast of the I-270/Montrose Road interchange that flows southwest into Waterway 24F.	-	Silt, sand Width: 3 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
24L	-	Intermittent	Waterway 24L is an intermittent channel located southeast of the I-270/Montrose Road interchange that flows southwest into Waterway 24F and abuts Wetland 24R.	-	Gravel, silt, sand Width: 1-2 ft Depth: 1-2 in	Right: forest Left: forest	Yes	Yes	No
24M	-	PEM	Wetland 24M is a PEM located northeast of the I-270/Tuckerman Lane intersection.	Red maple American sycamore River birch Broad-leaf cat-tail Reed canary grass	-	-	Yes	Yes	No
24N	-	PFO	Wetland 24N is a PFO located in Cabin John Regional Park, half a mile south of the I-270/Montrose Road interchange.	Red maple American elm Northern spicebush Japanese stilt grass Eastern poison ivy	-	-	Yes	Yes	No
24P	-	Ephemeral	Waterway 24P is an ephemeral channel located southwest of the I-270/Montrose Road interchange that flows west into Cabin John Creek.	-	Sand Width: 4 ft Depth: 6 in	Right: forest Left: forest	Yes	No	No
24Q	-	PFO	Wetland 24Q is a PFO located in Cabin John Regional Park half a mile south of the I-270/Montrose Road interchange that abuts Waterway 24D.	Red maple American sycamore Northern spicebush Japanese stilt grass	-	-	Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
24R	-	PFO	Wetland 24R is a PFO located southeast of the I-270/Montrose Road interchange, adjacent to Waterway 24F and 24L.	Red maple Pin oak Northern spicebush Rambler rose Japanese stilt grass Rice cut grass (*Leersia oryzoides*) Eastern poison ivy	-	-	Yes	Yes	No
24T	-	Intermittent	Waterway 24T is an intermittent channel located west of I-270 and east of Gainsborough Road that flows south into Waterway 24U.	-	Silt, sand, gravel, cobble Width: 6 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
24U	-	Perennial	Waterway 24U is a perennial channel located west of I-270 and east of Gainsborough Road that flows south out of the study area.	-	Silt, sand, gravel, cobble Width: 20 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
24V	-	Intermittent	Waterway 24V is an intermittent channel located east of I-270 and west of Dinwiddie Drive that flows through a culvert under I-270 into Waterway 24D.	-	Concrete Width: 3 ft Depth: 3 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
24V_C							Yes	Yes	No
24W	-	PEM	Wetland 24W is a PEM located east of I-270, north of Tuckerman Ln, and in the floodplain of Waterway 24A.	Small-spike false nettle Japanese stilt grass	-	-	Yes	Yes	No
24X	-	PEM	Wetland 24X is a PEM located west of I-270, north of Tuckerman Ln, and in the floodplain of Waterway 24A.	American elm American sycamore Northern spicebush Sweet wood-reed Japanese stilt grass Unknown grass species	-	-	Yes	Yes	No
Subsegment 25									
25A	-	Perennial	Waterway 25A is a perennial channel located east of the I-270/Montrose Road interchange that originates at a culvert and flows west into Waterway 24F.	-	Silt sand, riprap Width: 8 ft Depth: 4 ft	Right: forest Left: forest, scrub-shrub	Yes	Yes	No
25A_1	WUS 13						Yes	Yes	No
25A_C	-						Yes	Yes	No
25B	PFO 05	PFO	Wetland 25B is a PFO located east of the I-270/Montrose Road interchange that abuts Waterway 24F.	Silver maple (*Acer saccharinum*) Red maple Pin oak Northern spicebush Japanese barberry (*Berberis thunbergii*) Sensitive fern (*Onoclea sensibilis*) Japanese stilt grass	-	-	Yes	Yes	No
25C	WUS 14A	Intermittent	Waterway 25C is an intermittent channel located east of the I-270/Montrose Road interchange that originates at a culvert and flows east into Waterway 24F.	-	Silt, cobble, riprap Width: 8 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
25D	PFO 06	PFO	Wetland 25D is a PFO located east of the I-270/Montrose Road interchange that abuts Waterway 24F.	River birch Red maple American sycamore Southern arrow-wood (*Viburnum dentatum*) Lamp rush Deer-tongue rosette grass	-	-	Yes	Yes	No
25E	-	Perennial	Waterway 25E is a perennial channel pond located south of the I-270/Falls Road interchange within 25-SWM1 that flows into Waterway 25H and then east under I-270.	-	Silt, sand, muck Width: 150 ft Depth: Unknown	Right: wetland Left: wetland	Yes	Yes	No
25F	-	Ephemeral	Waterway 25F is an ephemeral channel located east of I-270 and southwest of the intersection of Wootton Parkway and Tower Oaks Boulevard that flows east under Tower Oaks Boulevard and out of the study area.	-	Sand, silt, cobble, clay Width: 10 ft Depth: 5 ft	Right: forest Left: forest	Yes	No	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
25G	-	Intermittent	Waterway 25G is an intermittent channel located southeast of the Preserve Parkway/Tower Oaks Boulevard intersection that flows northeast from a culvert and out of the study area.	-	Sand, cobble, gravel Width: 8-12 ft Depth: 6 ft	Right: forest Left: forest	Yes	Yes	No
25H	WUS 16	Perennial	Waterway 25H is a perennial channel located south of the I-270/Falls Road interchange within 25-SWM1.	-	Silt, sand, gravel Width: 3-4 ft Depth: 3-6 ft	Right/Left: wetlands, stormwater management areas	Yes	Yes	No
25H_1	-						Yes	Yes	No
25H_C	WUS 16						Yes	Yes	No
25K	-	PEM	Wetland 25K is a PEM located south of the I-270/Falls Road interchange within 25-SWM1 and abutting Waterway 25H.	American sycamore Groundseltree (*Baccharis halimifolia*) Crimson-eyed rose-mallow (*Hibiscus moscheutos*) Narrow-leaf cat-tail Lamp rush Shallow sedge (*Carex lurida*)	-	-	Yes	Yes	No
25L	-	Intermittent	Waterway 25L is an intermittent channel located east of I-270 and Tower Oaks Boulevard and south of Preserve Parkway that flows northeast from 25-SWM8 into Waterway 25G.	-	Silt, sand, gravel Width: 4 ft Depth: 1.5 ft	Right: forest Left: forest	Yes	Yes	No
25M	-	PEM	Wetland 25M is a PEM located west of I-270 and south of Wootton Parkway.	Chufa (*Cyperus esculentus*) Japanese honeysuckle	-	-	No	Yes	No
25N	-	Intermittent	Waterway 25N is an intermittent channel located east of I-270, west of Grand Oak Way, and flows into 25H.	-	Silt, gravel Width: 4-5 ft Depth: 3-6 in	Right: wetland Left: berm and wetland	Yes	Yes	No
25P	-	PFO	Wetland 25P is a PFO located east of I-270, west of Grand Oak Way, and adjacent to Waterway 25H.	River birch Common persimmon Sweet-gum American sycamore	-	-	Yes	Yes	No
Subsegment 26									
26A	PEM 08	PFO	Wetland 26A is a PFO located southeast of the I-270/West Montgomery Avenue interchange that abuts Waterway 26B.	Green ash Red maple Black tupelo Southern arrow-wood Eurasian-buttercup (*Ficaria verna*) White grass	-	-	Yes	Yes	No
26B	WUS 18	Intermittent	Waterway 26B is an intermittent channel located south of the I-270/West Montgomery Avenue interchange that flows southwest under I-270.	-	Silt, sand, cobble, riprap Width: 8 ft Depth: 4 ft	Right: forest Left: forest	Yes	Yes	No
26B_1							Yes	Yes	No
26B_C							Yes	Yes	No
26B_C1							Yes	Yes	No
26C	-	Intermittent	Waterway 26C is an intermittent channel flow located south of Winding Rose Drive that flows northwest and then west under I-270.	-	Sand, cobble, gravel, riprap Width: 9 ft Depth: 1 ft	Right: forest Left: scrub-shrub	Yes	Yes	No
26C_1	WUS 17						Yes	Yes	No
26C_C	WUS 17						Yes	Yes	No
26C_C1	WUS 17						Yes	Yes	No
26D	-	PEM	Wetland 26D is a PEM located east of Watts Branch Parkway that abuts Waterway 26C.	Silver maple Green ash Common persimmon Twinsisters (*Lonicera tatarica*) Rambler rose White grass Japanese stilt grass	-	-	Yes	Yes	No
26E	PFO 09	PEM	Wetland 26E is a PEM located east of Watts Branch Parkway that abuts Waterway 26C.	Fowl blue grass (*Poa palustris*)	-	-	Yes	Yes	No
26F	PEM 06	PEM	Wetland 26F is a PEM located south of Winding Rose Drive and abutting Waterway 26C.	Red maple Black willow Pinkweed (*Persicaria pensylvanica*) Rice cut grass Virginia-creeper	-	-	Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
26G	WUS 17A	Ephemeral	Waterway 26G is a channel with ephemeral and intermittent flow located northwest of the I-270/Great Falls Road interchange that flows north from Wetland 26H.	-	Silt, cobble, sand, and gravel Width: 6 ft Depth: 3 ft	Right: forest Left: forest	Yes	No	No
26G_1	WUS 17A	Intermittent					Yes	Yes	No
26H	PEM 11	PEM	Wetland 26H is a PEM located northeast of the I-270/Great Falls Road interchange.	Green ash Common persimmon Black walnut (*Juglans nigra*) Northern bush honeysuckle Sensitive fern Spotted touch-me-not (*Impatiens capensis*) Eastern poison ivy	-	-	Yes	Yes	No
26J	-	Intermittent	Waterway 26J is an intermittent channel located south of Winding Rose Drive and abutting Wetland 26F.	-	Riprap Width: 8 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
26K	-	Intermittent	Waterway 26K is an intermittent channel located east of I-270, west of Blaze Climber Way, and flows through Wetland 26F.	-	Silt Width: 4 ft Depth: 0 - 1 ft	Right: wetland, park, trails Left: wetland	Yes	Yes	No
26L	-	Intermittent	Waterway 26L is an intermittent channel located east of I-270, west of Blaze Climber Way, and flows from a SWM facility into the southern edge of Wetland 26F.	-	Riprap Width: 6 ft Depth: 6 in	Right: wetland Left: wetland	Yes	Yes	No
Subsegment 27									
27A	WUS 19	Perennial	Waterway 27A is Watts Branch, a perennial channel located north of the I-270/West Montgomery Avenue interchange that flows southwest out of the study area.	-	Bedrock, cobble, gravel, concrete, sand, silt Width: 17 ft Depth: 7 in	Right: forest, scrub-shrub, wetland Left: forest, scrub-shrub, wetland	Yes	Yes	No
27A_1							Yes	Yes	No
27A_2							Yes	Yes	No
27A_3							Yes	Yes	No
27A_C							Yes	Yes	No
27A_C1							Yes	Yes	No
27A_C2							Yes	Yes	No
27B	WUS 19F	Intermittent	Waterway 27B is an intermittent channel located northeast of the I-270/West Montgomery Avenue interchange that flows northwest from a culvert into Waterway 27A.	-	Silt, sand, cobble, riprap Width: 5 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
27C	WUS 19C	Ephemeral	Waterway 27C is an ephemeral channel located within Wetland 27F that enters the study area through a culvert under Nelson Street and flows southwest into Waterway 27D.	-	Silt, sand Width: 3 ft Depth: 6 in	Right: forest Left: forest	Yes	No	No
27D	WUS 19D	Intermittent	Waterway 27D is an intermittent channel located between I-270 and Nelson Street that flows south from Wetland 27F into Waterway 27A.	-	Riprap Width: 4 ft Depth: 1 ft	Right: forest Left: forest	Yes	Yes	No
27E	PFO 13	PFO	Wetland 27E is a PFO located between I-270 and Nelson Street that abuts Waterway 27B.	Green ash Red maple Common buttonbush (*Cephalanthus occidentalis*) Skunk-cabbage	-	-	Yes	Yes	No
27F	WP001	PFO	Wetland 27F is a PFO located north of the I-270/West Montgomery Avenue interchange between I-270 and Nelson Street that abuts Waterway 27C and Waterway 27D.	Green ash Pin oak Twinsisters Eastern poison ivy Skunk-cabbage	-	-	Yes	Yes	No
27G	PSS 01	PSS	Wetland 27G is a PSS located northwest of the I-270/ West Montgomery Avenue interchange that abuts Waterway 27H.	Black walnut Black cherry (*Prunus serotina*) Green ash Smooth blackhaw Skunk-cabbage Eastern poison ivy	-	-	Yes	Yes	No

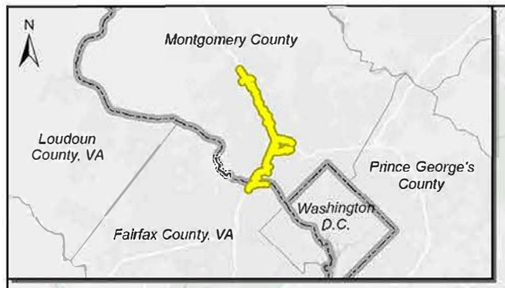
Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
27H	WUS 19A	Intermittent	Waterway 27H is an intermittent channel located northeast of the I-270/West Montgomery Avenue interchange that flows southwest from Wetland 27G into Waterway 27A.	-	Silt, muck, gravel Width: 3 ft Depth: 6 in	Right: herbaceous Left: herbaceous	Yes	Yes	No
27K	SB7NB2-B	Ephemeral	Waterway 27K is an ephemeral channel located between Watts Branch Avenue and West Montgomery Avenue that flows northwest into Waterway 27A.	-	Silt, sand, cobble, gravel Width: 3 ft Depth: 1 ft	Right: hedgerow Left: hedgerow	Yes	No	No
27L	NB3-A	Intermittent	Waterway 27L is an intermittent channel located south of the I-270/Shady Grove Road interchange that flows southeast from Wetland 27M and under I-270.	-	Silt, sand, cobble, riprap Width: 2-4 ft Depth: 6 in	Right: hedgerow Left: hedgerow	Yes	Yes	No
27L_C							Yes	Yes	No
27M	-	PFO	Wetland 27M is a PFO located between I-270 and the ramp to Redland Boulevard.	Red maple Sensitive fern	-	-	Yes	Yes	No
27N	WUS 19B	Intermittent	Waterway 27N is an intermittent channel located north of the I-270/West Montgomery Avenue interchange that flows west into waters 27A.	-	Silt Width: 2.5 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
27P	-	Perennial	Waterway 27P is a perennial channel located west of the I-270/W Montgomery Ave interchange near Watts Branch Parkway. Waterway 27P flows into Waterway 27A.	-	Silt, sand, gravel Width: 12 ft Depth: 4 ft	Right: forest Left: wetland/scrub and roadway	Yes	Yes	No
27Q	-	PEM	Wetland 27Q is a PEM located west of the I-270/W Montgomery Ave interchange near Watts Branch Parkway. Wetland 27Q abuts Waterway 27P and Waterway 27A.	Sweet wood-reed	-	-	Yes	Yes	No
27R	-	Intermittent	Waterway 27R is an intermittent channel located west of the intersection of Watts Branch Parkway and Viers Drive and flows from a non-jurisdictional waterway into Wetland 27S.	-	Riprap Width: 5 ft Depth: 2 ft	Right: woodland/scrub Left: woodland/scrub	Yes	Yes	No
27S	-	PEM	Wetland 27S is a PEM located west of the intersection of Watts Branch Parkway and Viers Drive and abuts Waterway 27R.	Fowl blue grass	-	-	No	Yes	No
Subsegment 28									
28A	-	Perennial	Waterway 28A is a ponded perennial channel located southwest of the I-270/I-370 interchange that flows northwest into Waterway 29A.	-	Riprap Width: 140-385 ft Depth: 2-10 ft	Right: maintained park Left: commercial development	Yes	Yes	No
28B	WUS 21	Intermittent	Waterway 28B is an intermittent channel located southwest of the I-270/I-370 interchange that flows northwest into Waterway 29A.	-	Concrete Width: 6 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
Subsegment 29									
29A	WUS 20	Perennial	Waterway 29A is a perennial channel located northwest of the I-270/I-370 interchange that flows north from a stormwater pond into Muddy Branch. Waterway 29A flows through subsegments 28 and 29.	-	Silt, sand, cobble, gravel, riprap Width: 20 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
29A_1	WUS 20						Yes	Yes	No
29A_2	-						Yes	Yes	No
29A_C	WUS 20						Yes	Yes	No
29A_C1	WUS 20						Yes	Yes	No
29A_C2	WUS 20						Yes	Yes	No
29B	WUS 23	Perennial	Waterway 29B is a perennial channel that flows under I-270 through a culvert located southwest of Bralan Court.	-	Bedrock, sand, cobble, gravel Width: 20 ft Depth: 2 ft	Right: forest Left: forest	Yes	Yes	No
29B_1							Yes	Yes	No
29B_C							Yes	Yes	No
29C	WUS 35	Intermittent	Waterway 29C is an intermittent channel located east of I-270 and south of Muddy Branch Road that flows southwest under I-270 and continues outside the study area into Muddy Branch.	-	Cobble, gravel, riprap Width: 6 ft Depth: 1.5 ft	Right: forest Left: mowed	Yes	Yes	No
29D	WUS 23A	Intermittent	Waterway 29D is an intermittent channel located northeast of the I-270/I-370 interchange south of Gaither Road that flows northwest from a stormwater pond, under I-370, and continues outside the study area into Muddy Branch.	-	Silt, sand, cobble, riprap Width: 4 ft Depth: 3 ft	Right: forest Left: forest	Yes	Yes	No
29D_D							Yes	Yes	No

Wetland and Waterway Features Table

FEATURE ID	PREVIOUS FEATURE #	CLASSIFICATION	DESCRIPTION	DOMINANT VEGETATION	CHANNEL (Approximate widths/depths)	COVER TYPE (Left & Right Banks)	USACE JURISDICTION	MDE JURISDICTION	VDEQ JURISDICTION
29E	WUS 35B	Perennial	Waterway 29E is a perennial channel located east of I-270 and south of Muddy Branch Road that flows southeast from a stormwater pond into Waterway 29C.	-	Silt, cobble, gravel Width: 5 ft Depth: 1 ft	Right: scrub-shrub Left: scrub-shrub	Yes	Yes	No
29E_1	WUS 35						Yes	Yes	No
29E_C	WUS 35						Yes	Yes	No
29F	WUS 35C	Perennial	Waterway 29F is a perennial channel located east of I-270 and south of Muddy Branch Road that flows southwest from a stormwater pond into Waterway 29C.	-	Silt, cobble, sand, riprap Width: 4 ft Depth: 1 ft	Right: forest, wetland Left: forest	Yes	Yes	No
29G	PEM 09	PEM	Wetland 29G is a PEM located east of Muddy Branch Road and I-270, adjacent to Waterway 29E.	Black willow Spotted touch-me-not Rice cut grass	-	-	Yes	Yes	No
29H	WUS 35A	Intermittent	Waterway 29H is an intermittent ditch located southwest of the I-270/Muddy Branch Road intersection that flows west from a stormwater inlet into Waterway 29C.	-	Silt, gravel, and riprap Width: 6 ft Depth: 2 ft	Right: mowed Left: mowed	Yes	Yes	No
29J	PEM 12	PEM	Wetland 29J is a PEM located east of Muddy Branch Road and I-270, adjacent to Waterway 29C and 29F.	American sycamore Willow oak Spotted touch-me-not Small-spike false nettle Common marsh bedstraw (*Galium palustre*)	-	-	Yes	Yes	No
29K	-	Intermittent	Waterway 29K is an intermittent channel located west of Industrial Drive and north of I-370 that flows north through 29-SWM3 and out of the study area.	-	Silt Width: 3 ft Depth: 6 in	Right: forest Left: forest	Yes	Yes	No
29L	-	PFO	Wetland 29L is a PFO located east of I-270, west of Gaither Road, and adjacent to Waterway 29B.	Green ash Ash-leaf maple Unknown honeysuckle species (*Lonicera* sp.) Horsebrier Unknown sedge species (*Carex* sp.) Unknown grass specices Sweet wood-reed Japanese honeysuckle	-	-	Yes	Yes	No
29M	-	PFO	Wetland 29M is a PFO located east of I-270, west of Gaither Road, and abuts Waterway 29P.	Pin oak American hornbeam Green ash Nanny-berry (*Virbunum lentago*) Ash-leaf maple Unknown honeysuckle species (*Lonicera sp.*) Unknown sedge species (*Carex sp.*) Eastern poison ivy	-	-	Yes	Yes	No
29N	-	PFO	Wetland 29N is a PFO located west of I-270, south of Summit Hall Road, and abuts Waterway 29B.	Red maple Northern spicebush Sweet wood-reed Eastern woodland sedge (*Carex blanda*)	-	-	Yes	Yes	No
29P	-	Intermittent	Waterway 29P is an intermittent channel located east of I-270, west of Gaither Road, and flows into Waterway 29B.	-	Silt, cobble, bedrock Width: 6 ft Depth: 6 in	Right: forest/maintained lawn Left: forest	Yes	Yes	No

APPENDIX A: OVERVIEW AND KEY MAPS



Montgomery County, MD

Prince George's County, MD

Fairfax County, VA

Washington, D.C.

LEGEND

- Phase 1 South Portion of the Corridor Study Boundary
- Map Sheet
- State Boundary
- County Boundary

0 0.5 1 2 Miles

April 2022

Overview Map

270 495 MANAGED LANES STUDY

SUBSEGMENT 29
SUBSEGMENT 28
SUBSEGMENT 27
SUBSEGMENT 26
SUBSEGMENT 25
SUBSEGMENT 24
SUBSEGMENT 23
SUBSEGMENT 23
SUBSEGMENT 21
SUBSEGMENT 22
SUBSEGMENT 19
SUBSEGMENT 20

370
270
270
495
495
495
29

Montgomery County, MD
Fairfax County, VA
Prince George's County, MD
Washington, D.C.
Potomac

LEGEND

- Phase 1 South Portion of the Corridor Study Boundary
- Field Subsegment Break
- State Boundary
- County Boundary

0 0.5 1 2 Miles

April 2022

Delineation Subsegment Overview Map

270 495 MANAGED LANES STUDY

Washington Metropolitan (021402)

Montgomery County, MD

Prince George's County, MD

Fairfax County, VA

Washington, D.C.

LEGEND

- Phase 1 South Portion of the Corridor Study Boundary
- State Boundary
- County Boundary
- MD 6-Digit Watershed Boundary

0 0.5 1 2 Miles

April 2022

MD 6-Digit Watersheds

270 495 MANAGED LANES STUDY

Potomac River Montgomery County (02140202)

Rock Creek (02140206)

Cabin John Creek (02140207)

Montgomery County, MD

Prince George's County, MD

Fairfax County, VA

Washington, D.C.

LEGEND

- Phase 1 South Portion of the Corridor Study Boundary
- State Boundary
- County Boundary
- MD 8-Digit Watershed Boundary

0 0.5 1 2 Miles

April 2022

MD 8-Digit Watersheds

270 495 MANAGED LANES STUDY

Muddy Branch (021402020848)

Watts Branch (021402020846)

Cabin John Creek (021402070841)

Potomac River/Rock Run (021402020845)

Rock Creek (021402060836)

Montgomery County, MD

Prince George's County, MD

Fairfax County, VA

Washington, D.C.

MARYLAND
VIRGINIA

270 370 270 270 495 495 495 95 29

LEGEND

- Phase 1 South Portion of the Corridor Study Boundary
- State Boundary
- County Boundary
- MD 12-Digit Watershed Boundary

0 0.5 1 2 Miles

N W E S

April 2022

MD 12-Digit Watersheds

270 495 MANAGED LANES STUDY

APPENDIX B: DELINEATED FEATURES MAPS

Potomac Heritage Trail

Capital Beltway

Capital Beltway

Live Oak Dr

22ZZ_C
Perennial

Map 2 Match Line

Balls Hill Rd

Benjamin St

Balls Hill Rd

Arbor Ln

Capital Beltway

22ZZ
Perennial

22BBB-WET

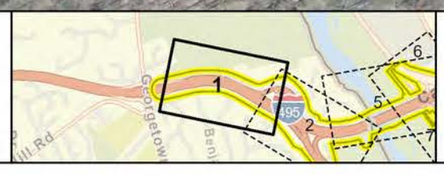
22BBB
PFO

Holyrood Dr

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

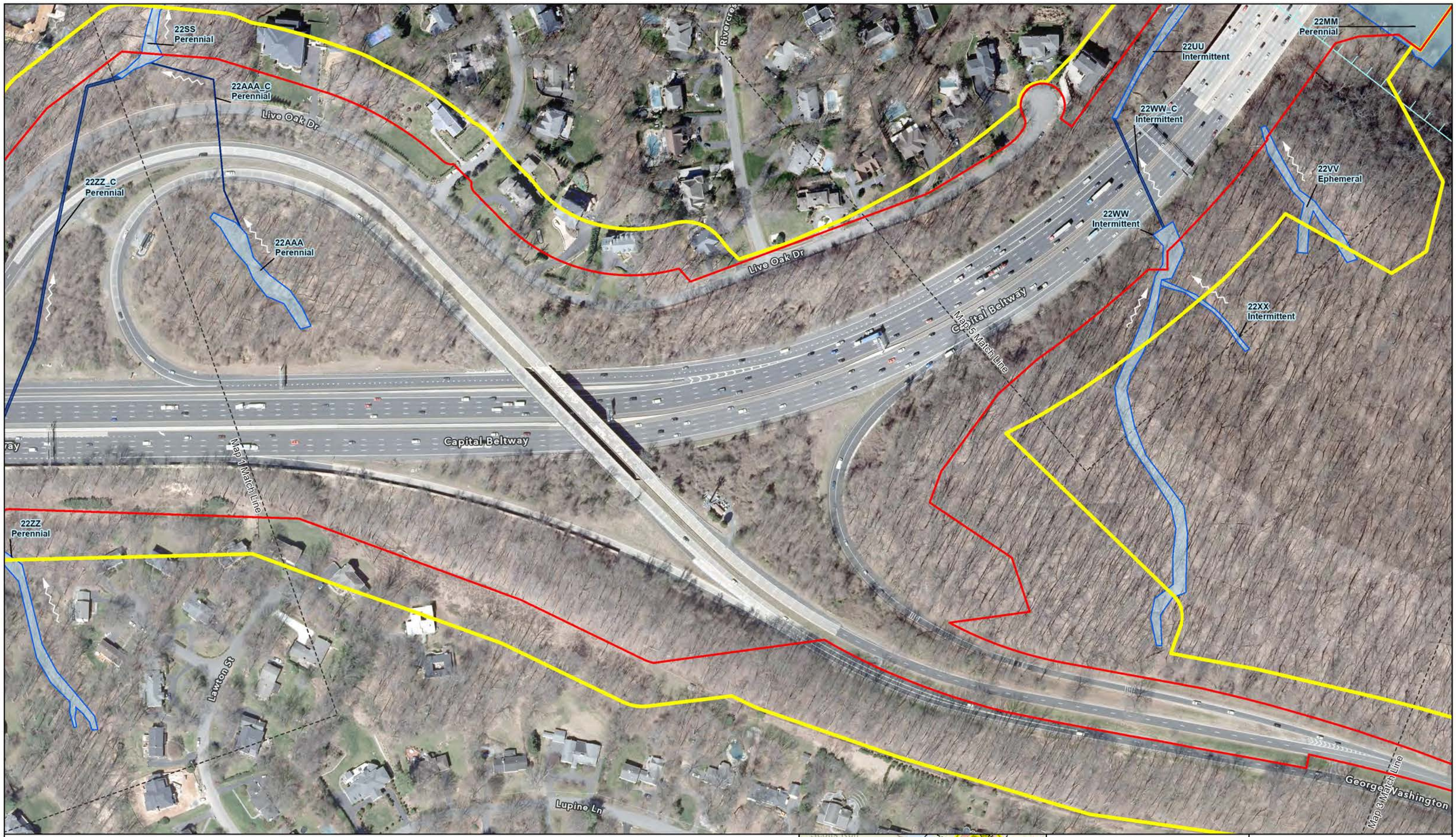


Delineated Features

1 in = 200 ft
Map 1 of 41

N W E S

270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
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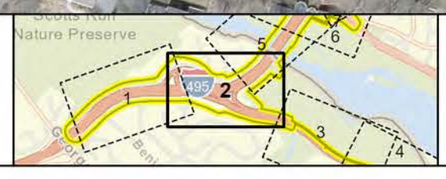
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 2 of 41

495 270 MANAGED LANES STUDY

Map 4 Match Line

Potomac Heritage

Dead Run

LOD and CSB are limited to existing pavement.

22DDD Perennial

Map 2 Match Line

George Washington Memorial Pkwy

Map 4 Match Line

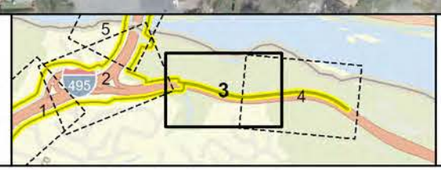
George Washington Memor

Dead Run

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 3 of 41

N W E S

495 270 MANAGED LANES STUDY

Potomac Heritage

George Washington Memorial Pkwy

George Washington Memorial Pkwy

Map 3 Match Line

Dead Run

Dead Run

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
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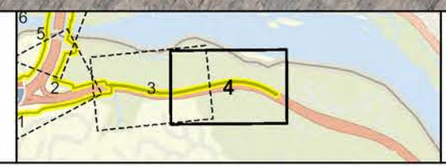
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



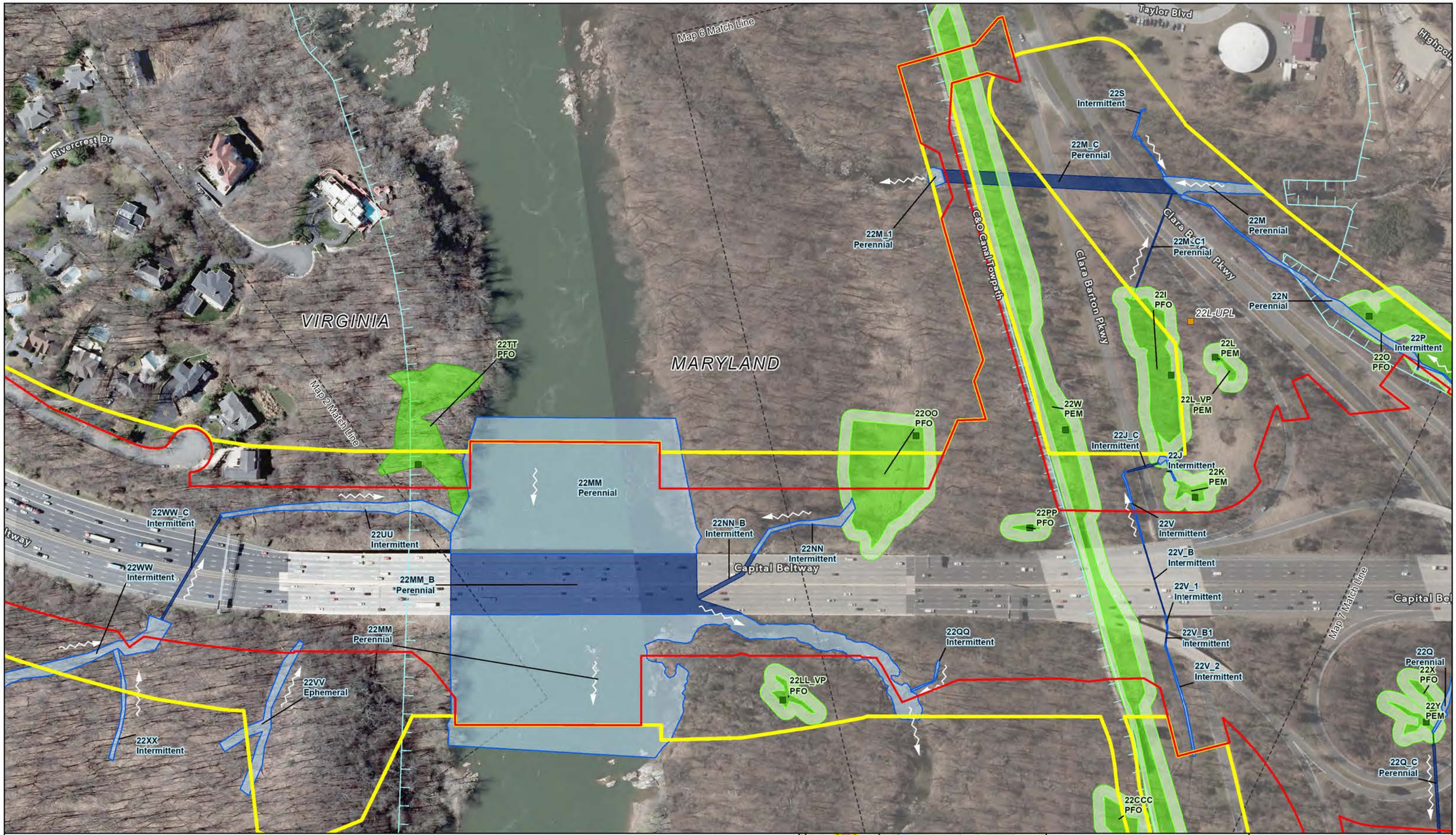
Delineated Features

1 in = 200 ft

Map 4 of 41

N W E S

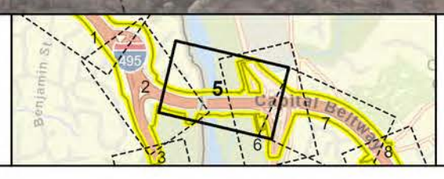
495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

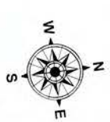
May 2022



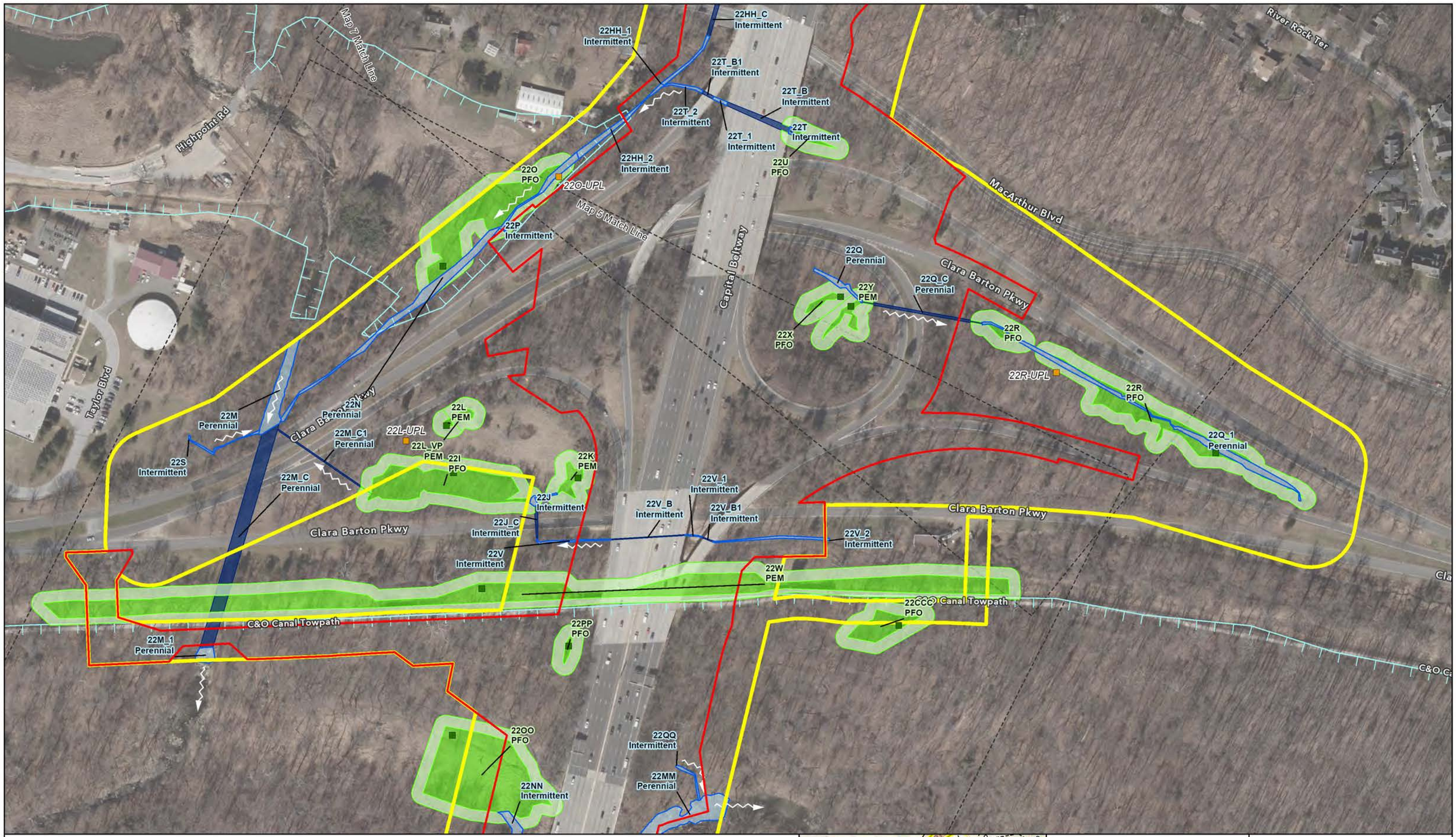
Delineated Features

1 in = 200 ft

Map 5 of 41



270 / 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
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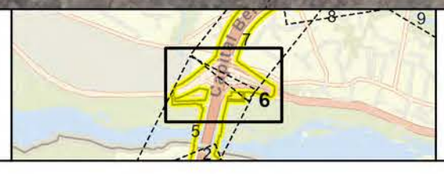
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 6 of 41

N W E S

270 495 MANAGED LANES STUDY

Tammy Ct
Eggert Dr
Capital Beltway
Eggert Dr
22O PFO
22N Perennial
22HH Intermittent
22HH_1 Intermittent
22HH_C Intermittent
22HH_2 Intermittent
22T_B1 Intermittent
22T_2 Intermittent
22T_B Intermittent
22T_1 Intermittent
22T Intermittent
22U PFO
22E-UPL
22E PEM
22-SWM1
22SWM-2
Capital Beltway
Map 5 Match Line
Map 6 Match Line
Carlynn Dr
22Q Perennial
22X PFO
22Y PEM
22Q_C Perennial
Clara Barton Pkwy
MacArthur Blvd
22R PFO
22Q_1 Perennial
22R-UPL
Carlynn Ct
Map 8 Match Line
River Rock Ter
Carlynn Dr
Tomlinson Ave
Clara Barton Pkwy
22W PEM
22R PFO

Legend

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- Corridor Study Boundary
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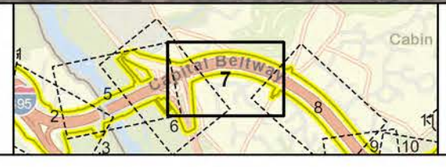
- Wetland Data Point
- Existing SWM Point
- Flow Direction

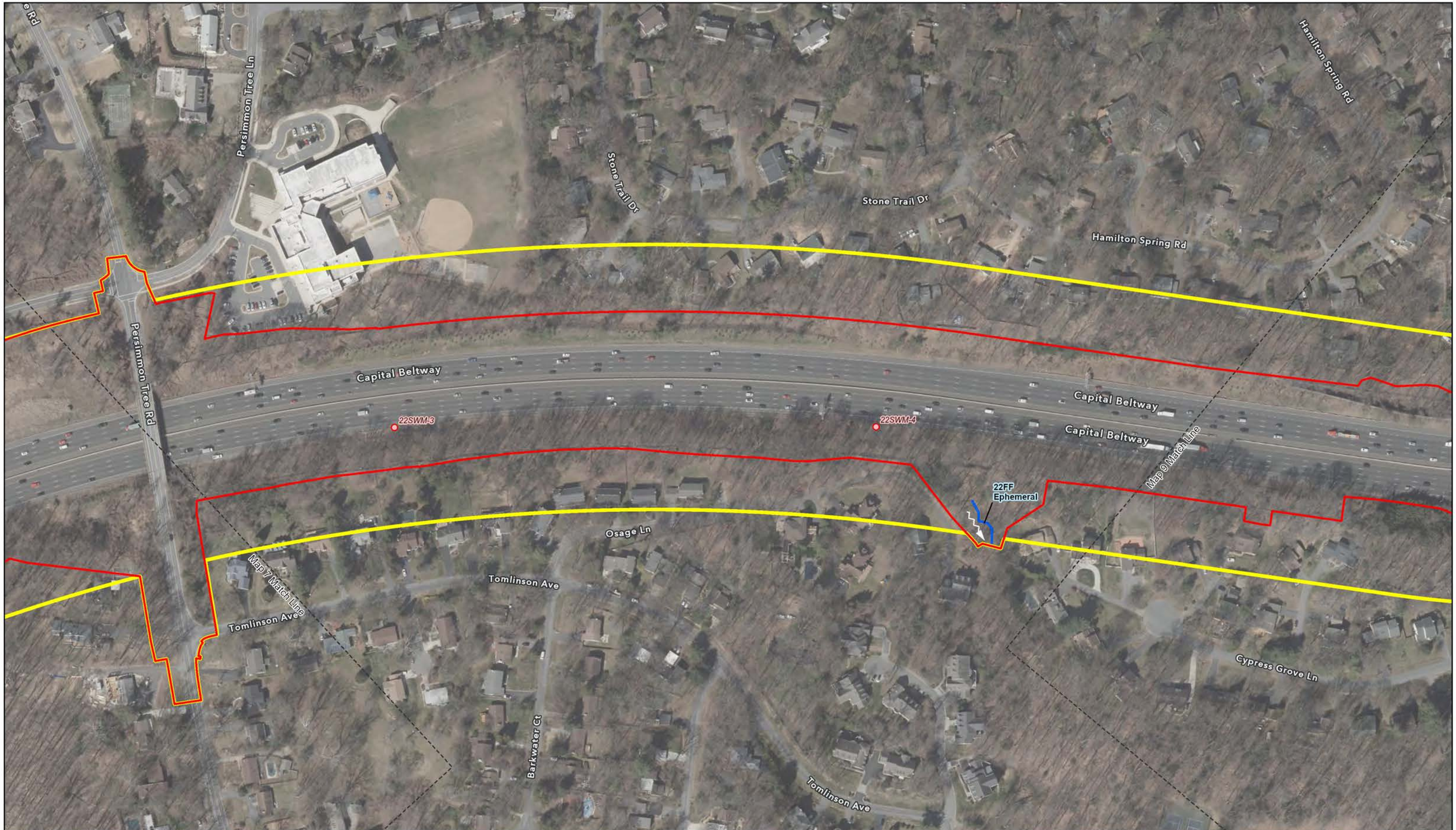
May 2022



Delineated Features

1 in = 200 ft
Map 7 of 41

270 495 MANAGED LANES STUDY



Legend

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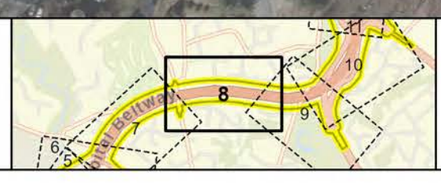
- Flow Direction

May 2022



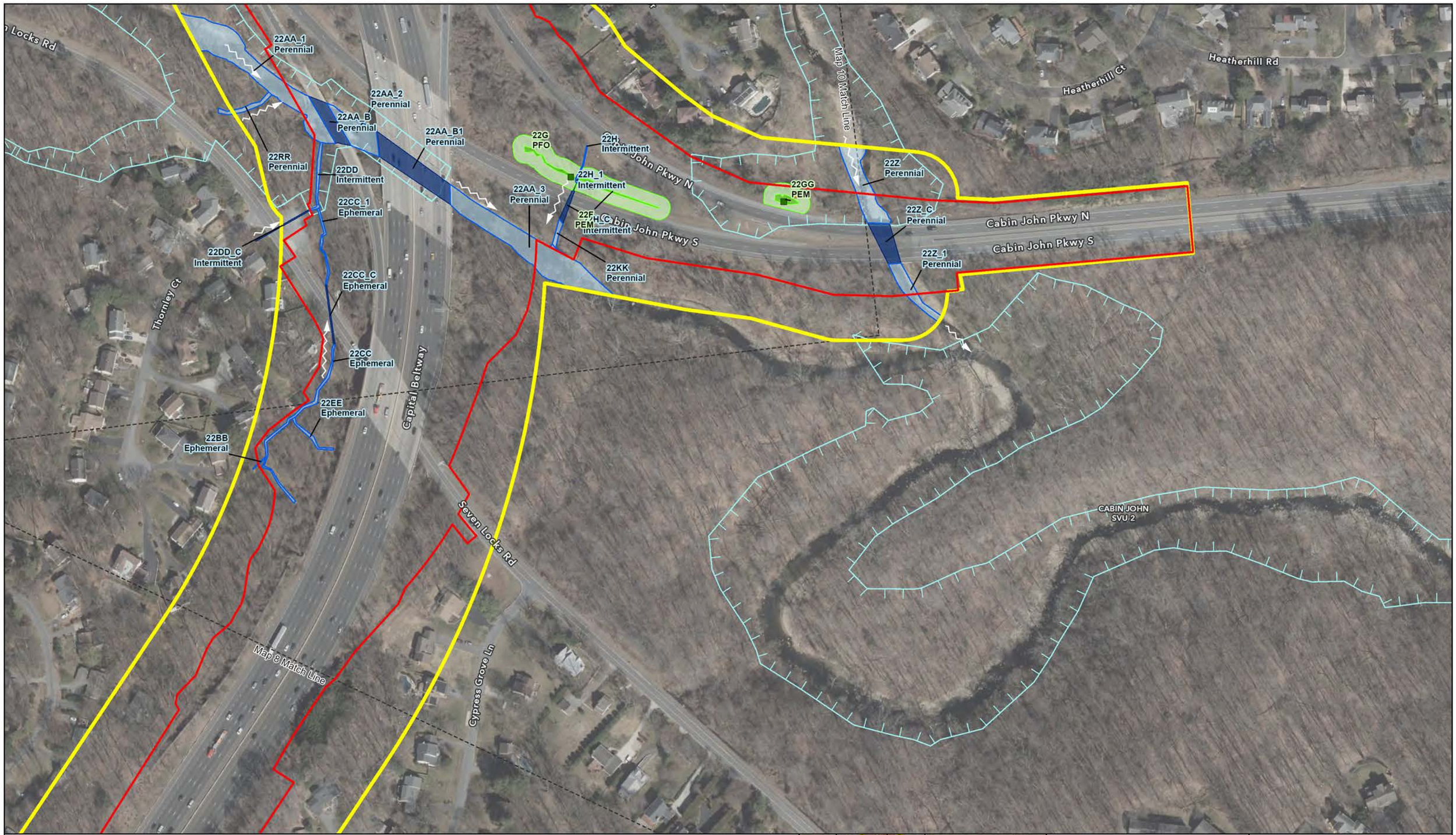
Delineated Features

1 in = 200 ft

Map 8 of 41

N W E S

270 495 MANAGED LANES STUDY



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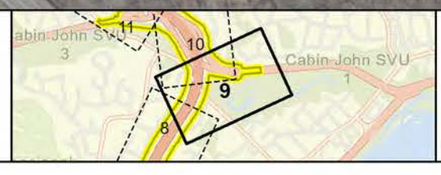
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 9 of 41

270 / 495 MANAGED LANES STUDY

Seven Locks
Thornley Ct
22II
PFO
22DD_C
Intermittent
22CC
Ephemeral
22CC_C
Ephemeral
22AA_1
Perennial
22RR
Perennial
22EE
Ephemeral
22CC_1
Ephemeral
22DD
Intermittent
22AA_B
Perennial
22AA_B1
Perennial
22AA_2
Perennial
Capital Beltway
Capital Beltway
Capital Beltway
Capital Beltway
Map 11 Match Line
River Rd
River Rd
22AA_3
Perennial
Map 9 Match Line
22KK
Perennial
22G
PFO
22H_1
Intermittent
22H_C
Intermittent
22H
Intermittent
Cabin John Pkwy
Cabin John Pkwy N
22F
PEM
Pepperell Dr
Burdette Rd
Burdette Rd
Royal Dominion Dr
Royal Dominion Dr
22GG
PEM
Royal Dominion Ct
22Z_1
Perennial
22Z_C
Perennial
22Z
Perennial

Legend

- LOD - Preferred Alternative
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- Delineated Wetland
- Wetland Buffer 25 ft
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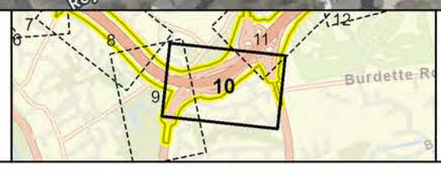
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



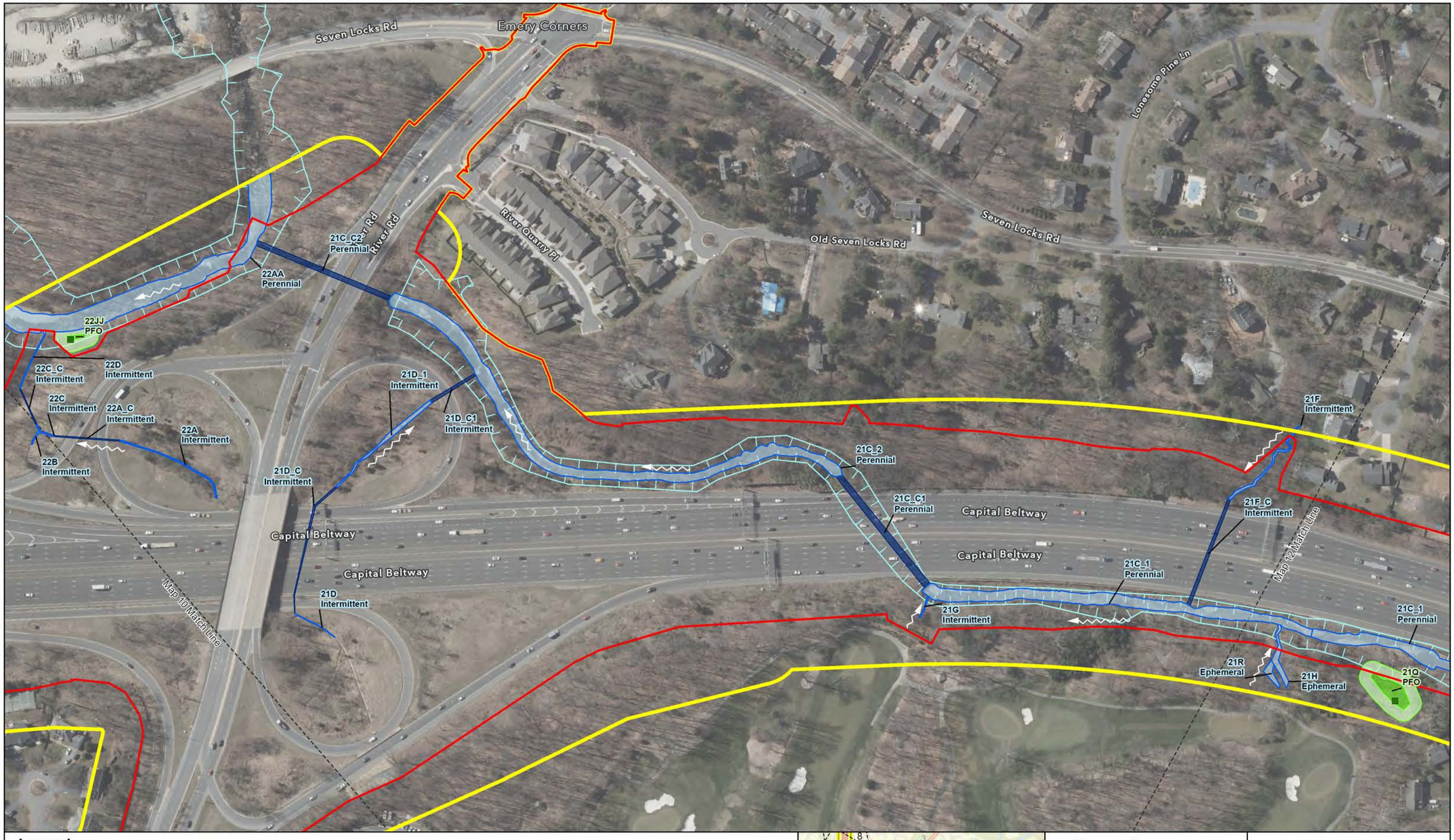
Delineated Features

1 in = 200 ft

Map 10 of 41

N
E
S

270
495
MANAGED LANES STUDY



Legend

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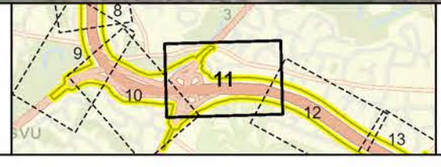
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

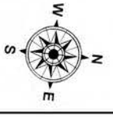
May 2022



Delineated Features

1 in = 200 ft

Map 11 of 41



270 495 MANAGED LANES STUDY

Cindy Ln
Seven Locks Rd
Carteret Rd
Capital Beltway
21M
Intermittent
21C_C
Perennial
21C_1
Perennial
21C
Perennial
21L_D1
Perennial
21L_C
Perennial
21L_D
Perennial
21P
PFO
21T
PFO
21Q
PFO
21H
Ephemeral
21R
Ephemeral
Map 11 Match Line
Arrowood Ct
Arrowood Rd
Map 13 Match Line

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
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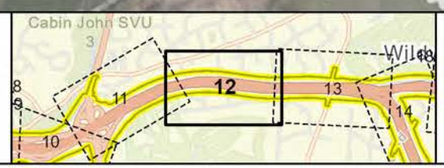
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft
Map 12 of 41

270 495 MANAGED LANES STUDY

Quintana Dr
Burning Tree Estates
Bradley Blvd
Map 14 Match Line
21-SWM1
21V Intermittent
21C Perennial
21K Intermittent
21J Perennial
Capital Beltway
21B_C Perennial
I-270-SPUR S
Map 12 Match Line
21C Perennial
21L_C Perennial
21L_D Perennial
21U Perennial
21B Perennial
Kittery Ln
Longwood Dr

Legend

- LOD - Preferred Alternative
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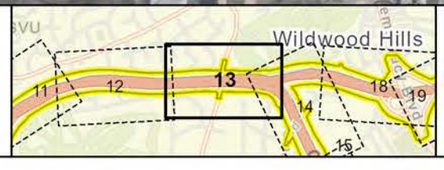
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

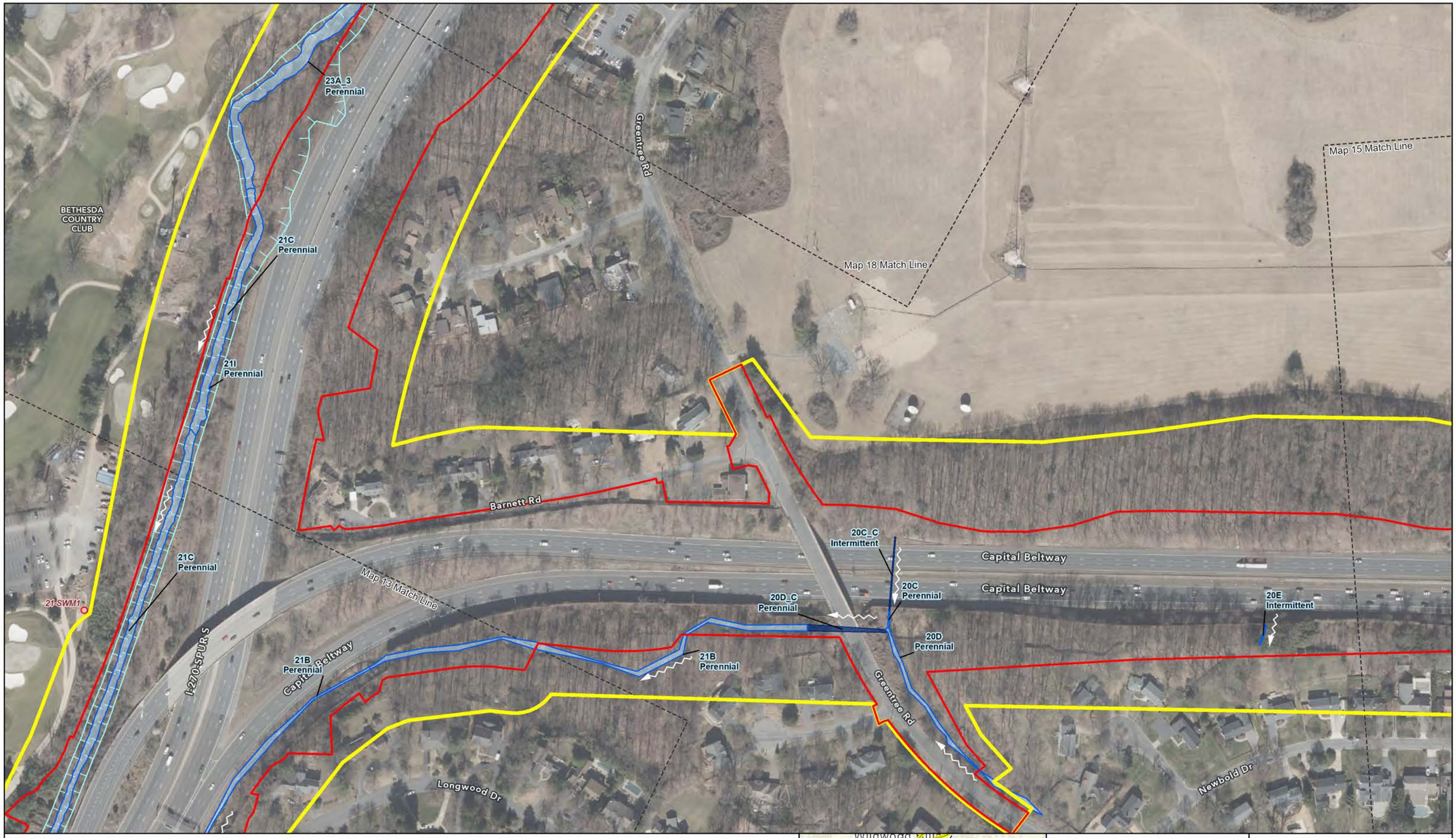


Delineated Features

1 in = 200 ft

Map 13 of 41

270 495 MANAGED LANES STUDY



Legend

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- Delineated Wetland
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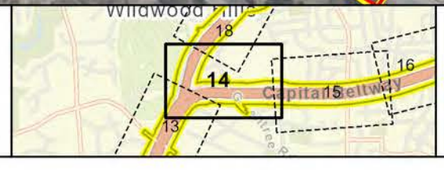
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 14 of 41

N W E S

270 495 MANAGED LANES STUDY

Brixton Ln
Rutley Rd
Tusculum Rd
Corkran Ln
Renita Ln
Rockhurst Rd
Capital Beltway
20B Intermittent
Fernwood Rd
Map 16 Match Line
Newbold Dr
Earlham Dr
Map 14 Match Line
Starmont Rd
Hollins Dr
Michaels Dr

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
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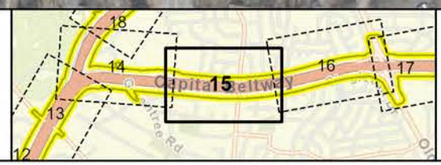
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 15 of 41

N W E S

270 495 MANAGED LANES STUDY

Map 15 Match Line
De Paul Dr
Carnegie Dr
Stoneham Rd
Rockhurst Rd
Rockhurst Rd
Capital Beltway
Capital Beltway
Singleton Dr
Singleton Dr
Ashburton
Kingsford Rd
Marquette Dr
Julliard Dr
Belhaven Rd
Old Georgetown Rd
Old Georgetown Rd
Old Georgetown Rd
Map 17 Match Line
20F_C
Perennial

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
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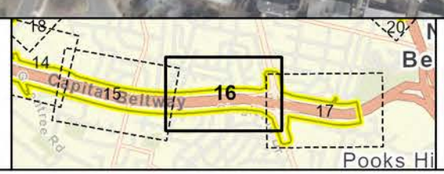
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft
Map 16 of 41

N W E S

270 495 MANAGED LANES STUDY

Jarvis Ln
Jarvis Ln
Old Georgetown Rd
Old Georgetown Rd
Broad St
Dickens Ave
Edward Ave
Fleming Ave
FLEMING LOCAL PARK
Ipswich Rd
19J_2
Perennial
19J_C1
Perennial
Capital Beltway
Capital Beltway
Capital Beltway
19J_1
Perennial
Maplewood Park Dr
19J_C
Perennial
19J
Perennial
Map 16 Match Line
Ryland Dr
Pooks Hill

Legend

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- Delineated Stream
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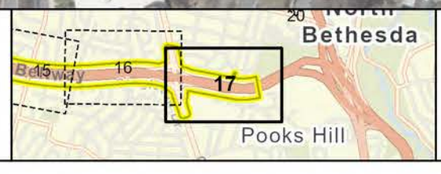
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



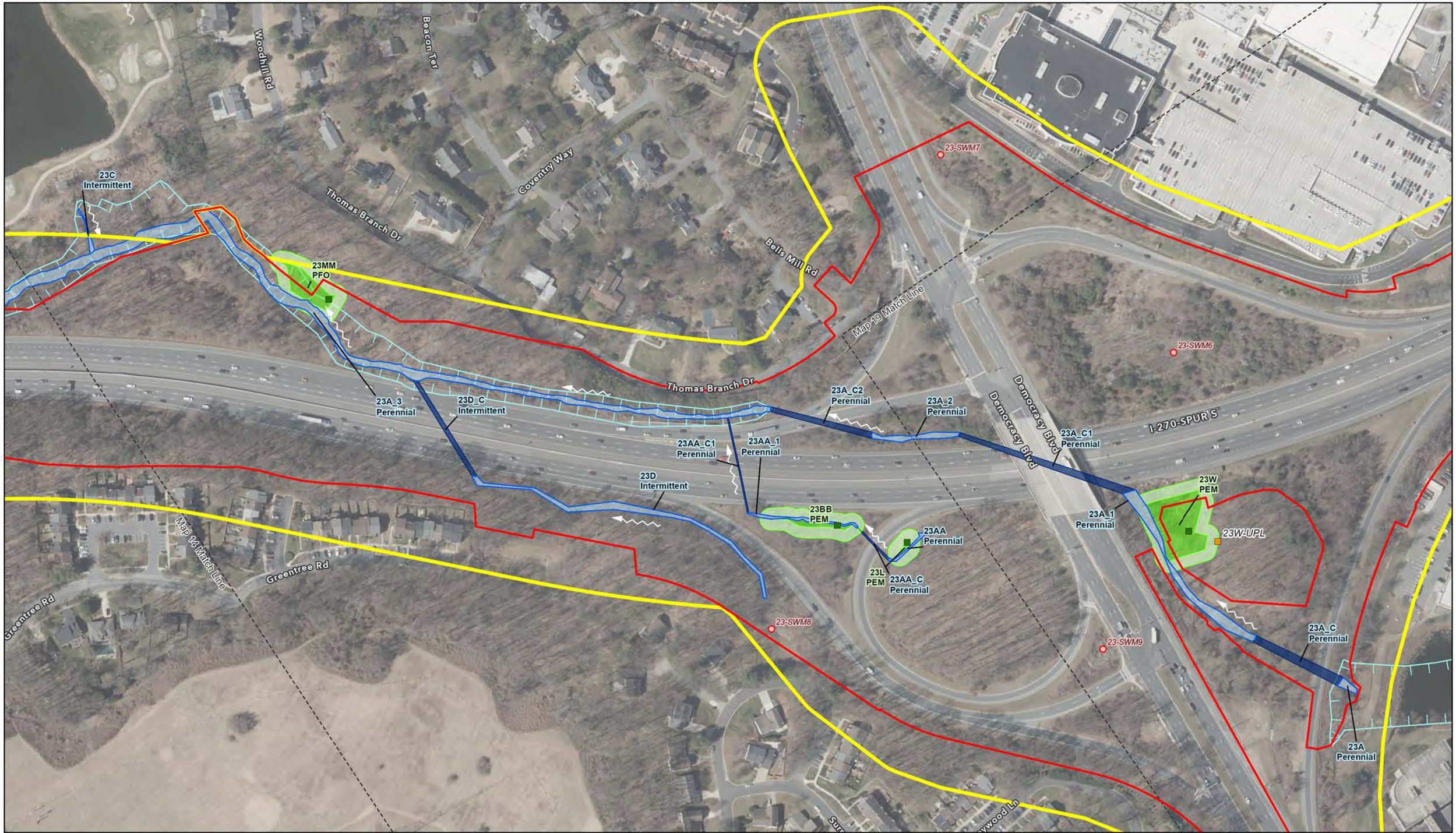
Delineated Features

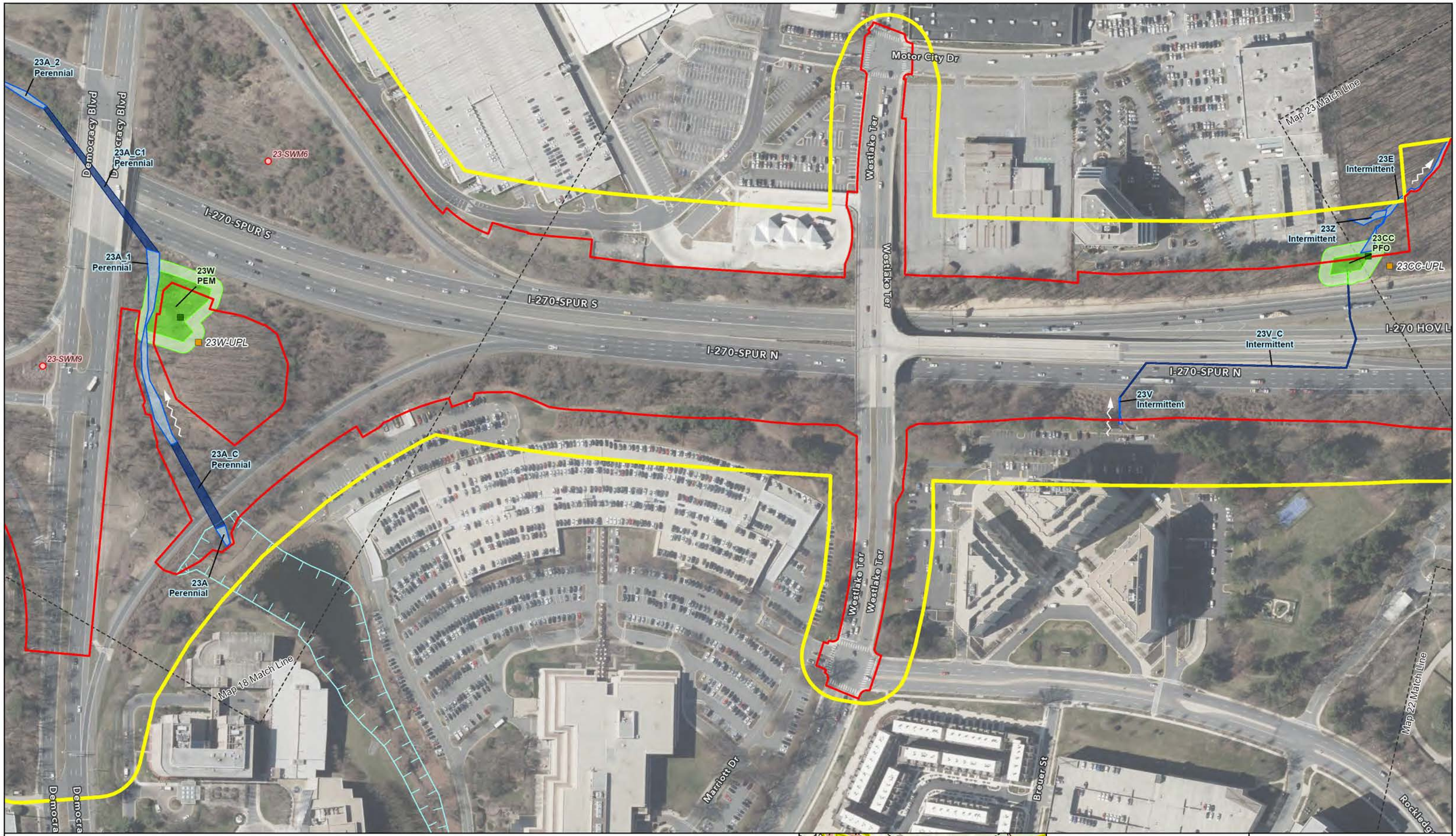
1 in = 200 ft

Map 17 of 41

N W E S

270 495 MANAGED LANES STUDY


Woodhill Rd
Beacon Ter
Coventry Way
Thomas Branch Dr
Bells Mill Rd
23C
Intermittent
23MM
PFO
23-SWM7
Map 19 Match Line
23-SWM6
Thomas Branch Dr
23A_3
Perennial
23D_C
Intermittent
23A_C2
Perennial
23A_2
Perennial
Democracy Blvd
Democracy Blvd
23A_C1
Perennial
I-270-SPUR S
23AA_C1
Perennial
23AA_1
Perennial
23D
Intermittent
23W
PEM
23W-UPL
23A_1
Perennial
23BB
PEM
23AA
Perennial
23L
PEM
23AA_C
Perennial
Map 14 Match Line
Greentree Rd
Greentree Rd
23-SWM8
23-SWM9
23A_C
Perennial
23A
Perennial
Legend
LOD - Preferred Alternative
Corridor Study Boundary
Delineated Stream
Delineated Stream (Culvert or Bridge Section)
FEMA 100-Year Floodplain
Delineated Wetland
Wetland Buffer 25 ft
Upland Data Point
Wetland Data Point
Existing SWM Point
Flow Direction
May 2022
Wildwood Hills
18
Delineated Features
1 in = 200 ft
Map 18 of 41
270
495
MANAGED LANES STUDY



Legend

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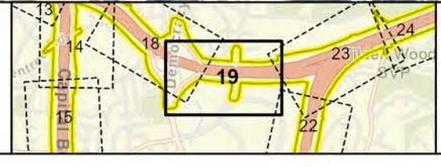
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

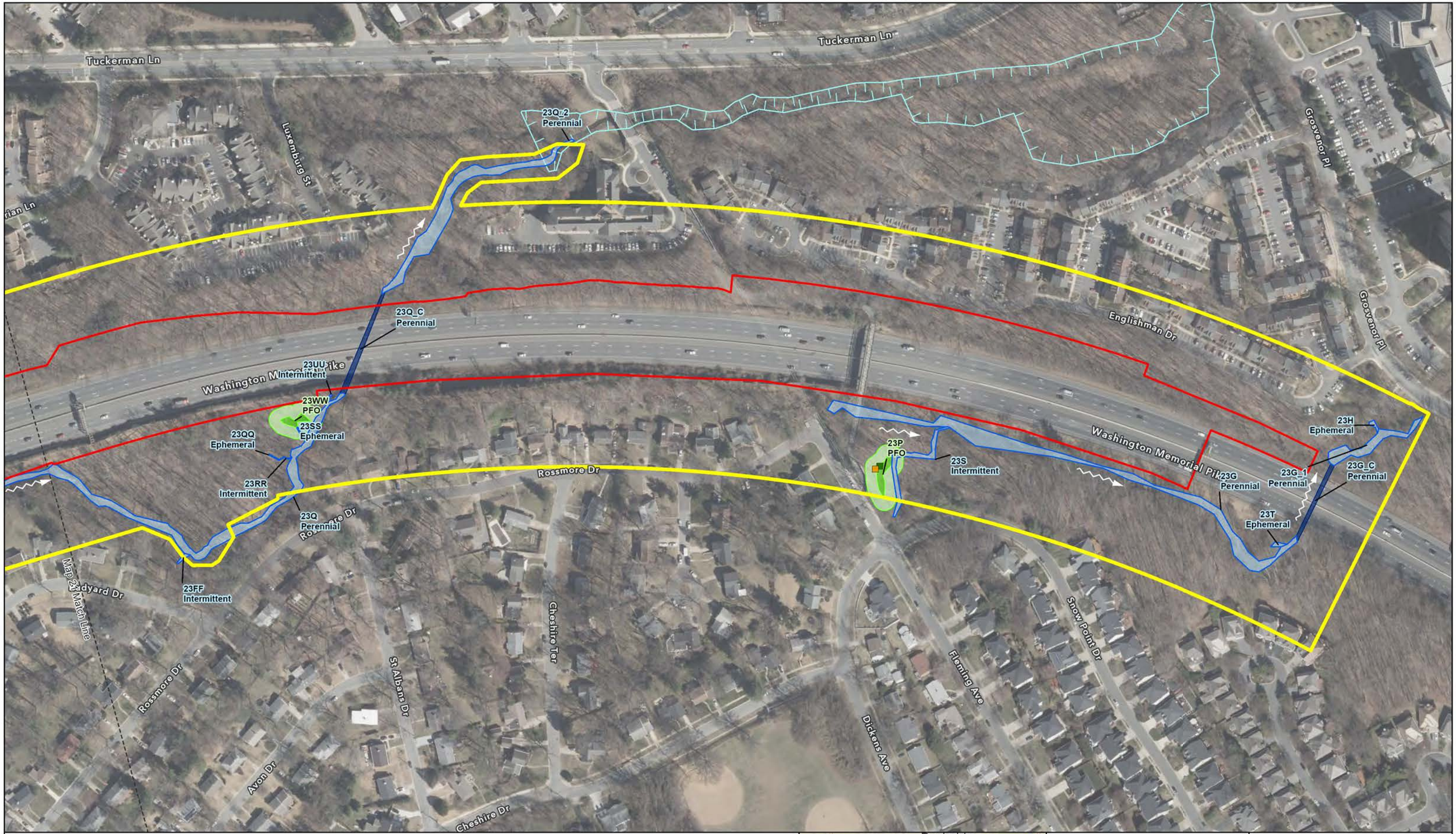


Delineated Features

1 in = 200 ft

Map 19 of 41

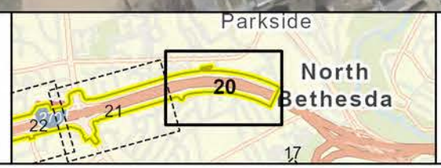
270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 20 of 41

270 / 495 MANAGED LANES STUDY

Rosemont Cir
Valerian Ln
Lady Slipper Ter
Gloxinia Dr
Valerian Ln
23R_2
Intermittent
23R_1
Intermittent
23R_C
Intermittent
23PP
Intermittent
23NN
Perennial
23R
Intermittent
23Q
Perennial
Washington Memorial Pike
Washington Memorial Pike
Old Georgetown Rd
Old Georgetown Rd
23EE
PFO
Farnham Dr
Aubinoe Farm Dr
Aubinoe Farm Dr
Rock Forest Dr
Berkshire Dr
Rudyard Dr
Map 20 Match Line
Map 22 Match Line
Yorkshire Ter
Farnham Dr

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
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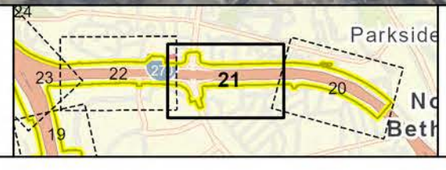
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 21 of 41

270 495 MANAGED LANES STUDY

Mazwood Rd
Mazwood Pl
Cameo Ct
Charnwood Dr
23-SWM4
23LL
PEM
23N_1
Perennial
23U
Perennial
23U_C
Perennial
23N
Intermittent
23N_C
Intermittent
Dwight D Eisenhower Hwy
Map 23 Match Line
23U_1
Perennial
Map 21 Match Line
23N_D
Intermittent
23KK
PEM
23J/23KK-UP
23J
PFO
Rockledge Blvd
Rock Forest Dr
Map 19 Match Line

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

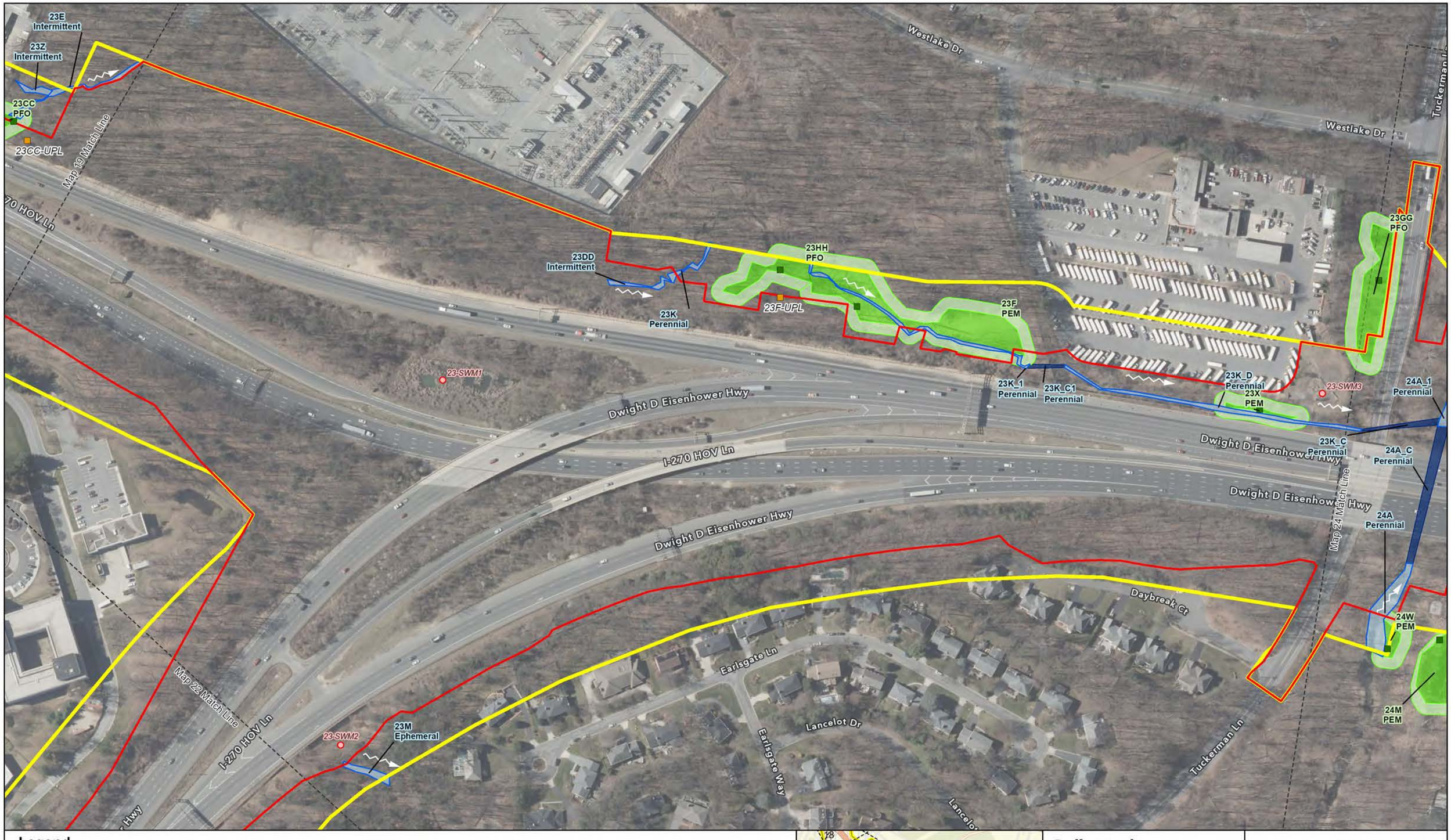
Delineated Features

1 in = 200 ft

Map 22 of 41

N
W
E
S

270
495
MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Existing SWM Point
- Upland Data Point
- Wetland Data Point
- Flow Direction

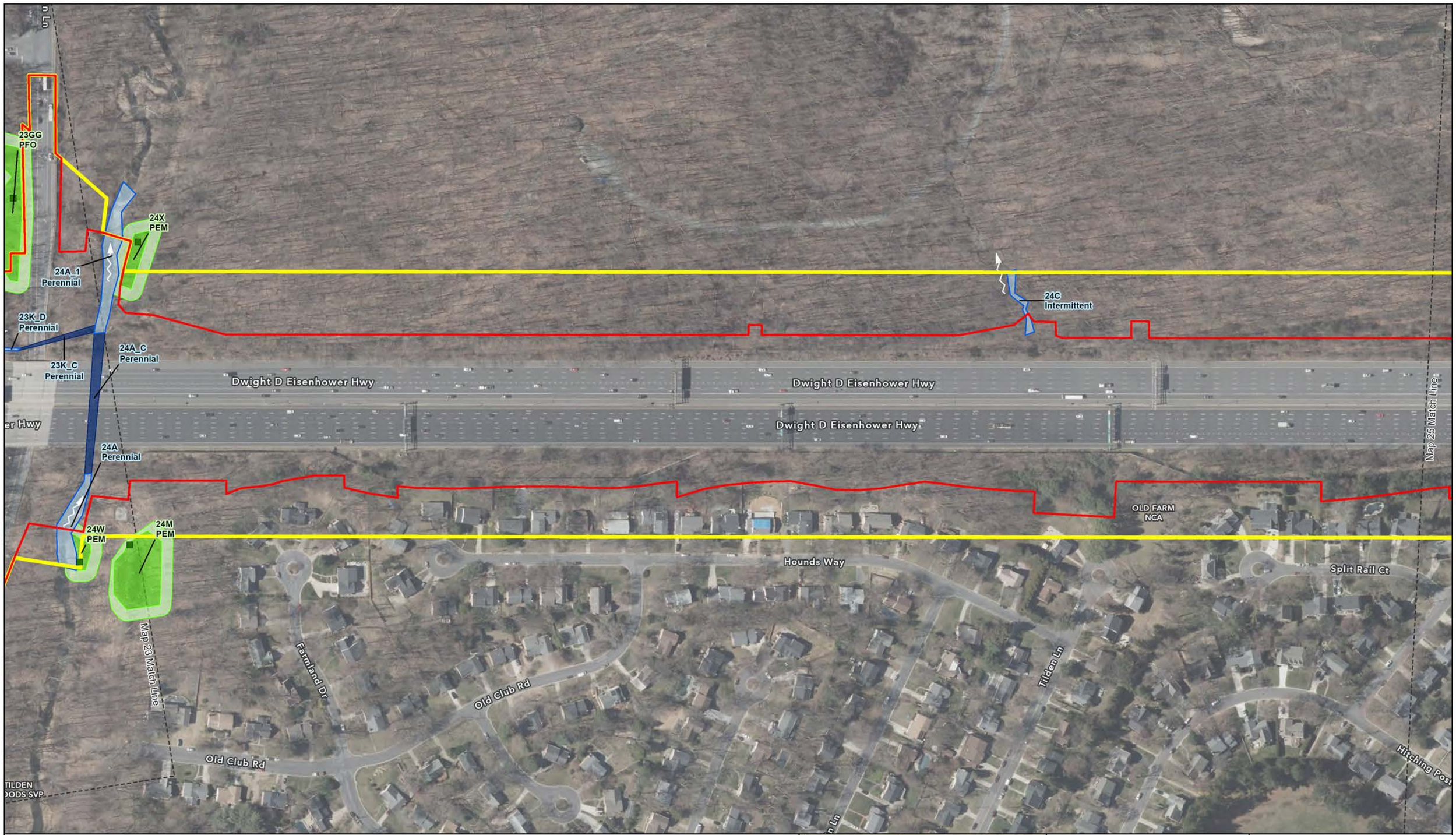
May 2022

Delineated Features

1 in = 200 ft

Map 23 of 41

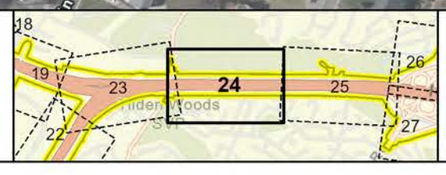
270 / 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

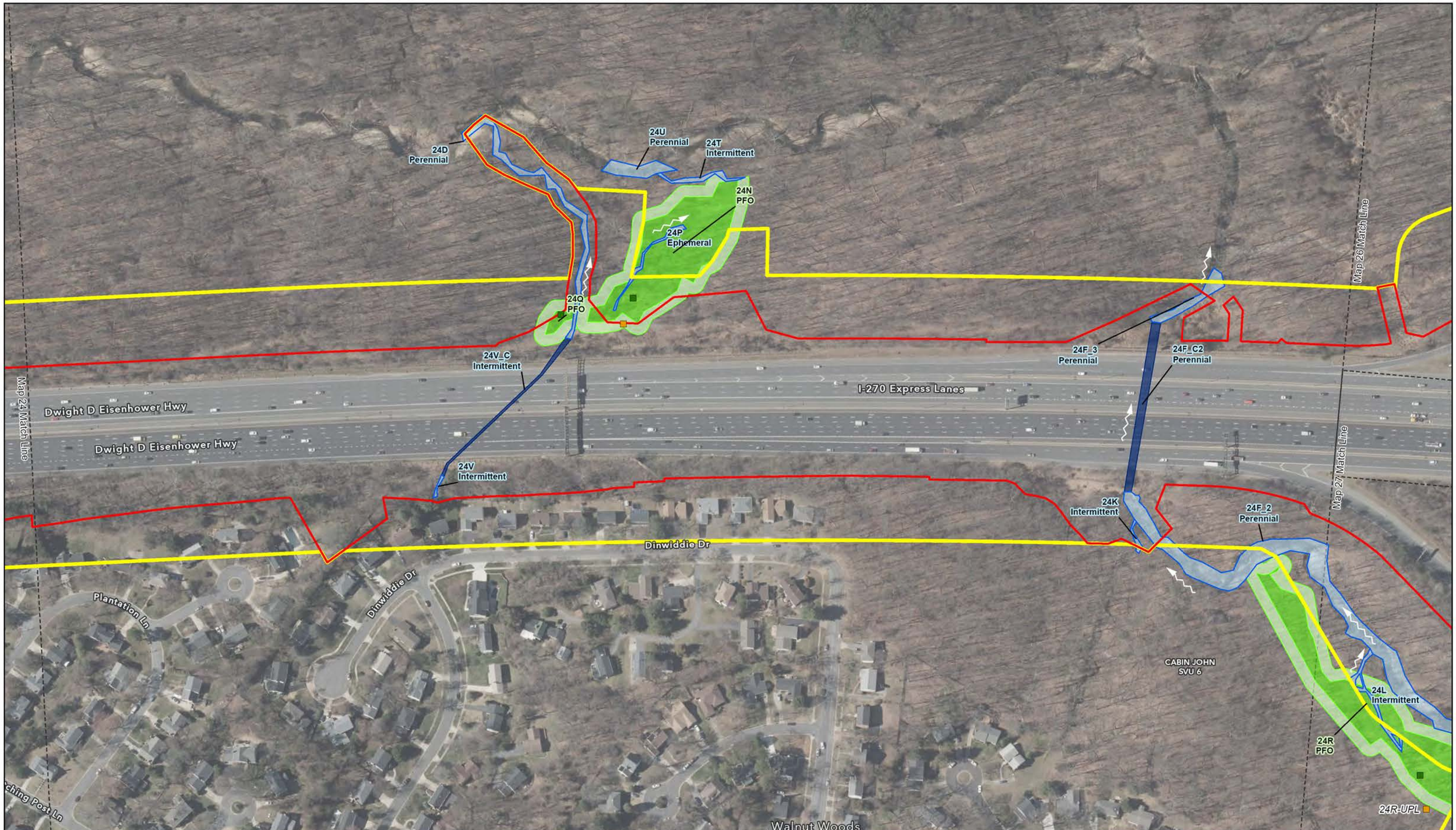


Delineated Features

1 in = 200 ft

Map 24 of 41

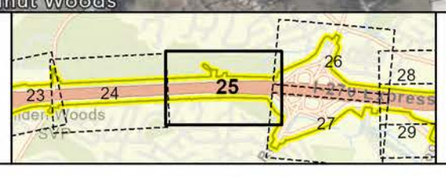
270 / 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

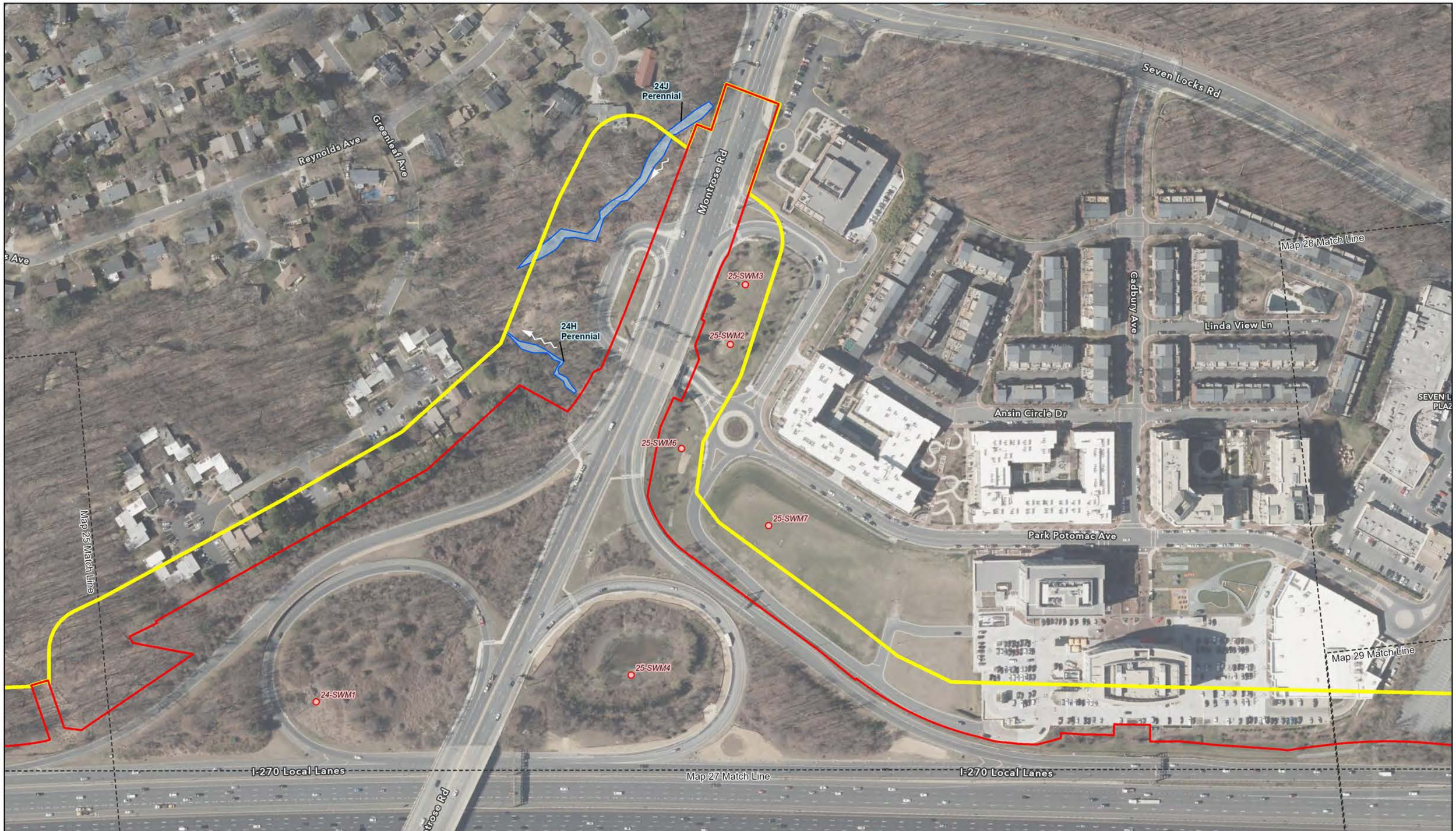


Delineated Features

1 in = 200 ft

Map 25 of 41

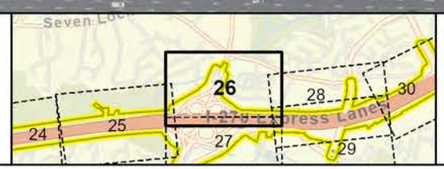
270 / 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 26 of 41

I-270 & I-495 MANAGED LANES STUDY

I-270 Local Lanes

Map 26 Match Line

I-270 Local Lanes

Map 25 Match Line

24-SWM2

25-SWM5

24SWM-3

25-SWM8

Tower Oaks Blvd

Tower Oaks Blvd

25G
Intermittent

25L
Intermittent

24F_2
Perennial

24L
Intermittent

24F_C1
Perennial

25C
Intermittent

24R
PFO

24F_1
Perennial

25B
PFO

25B
PFO

24F_C
Perennial

24F
Perennial

24R-UPL

25A_1
Perennial

25A_C
Perennial

25A
Perennial

Preserve Pkwy

Preserve Pkwy

Map 28 Match Line

Map 29 Match Line

Tower Oaks Blvd

Montrose Rd

Montrose Rd

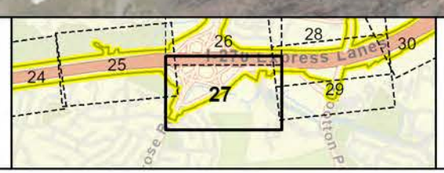
N Farm Ln

Green Pasture Dr

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 27 of 41

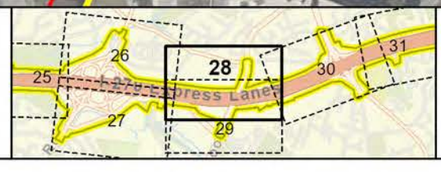
I-270 / I-495 MANAGED LANES STUDY

Seven Locks Rd
Halesworth Dr
Map 30 Match Line
SEVEN LOCKS PLAZA
Fortune Ter
Seven Locks Rd
Seven Locks
Map 29 Match Line
Wootton Pkwy
Wootton Pkwy
25H_1
Perennial
25K
PEM
25E
Perennial
25M
PEM
25H_C
Perennial
Map 27 Match Line
I-270 Local Lanes
Map 26 Match Line
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
25D
PFO
25H
Perennial
25D-UPL
25P
PFO
25N
Intermittent
25F
Ephemeral
Tower Oaks Blvd

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 28 of 41

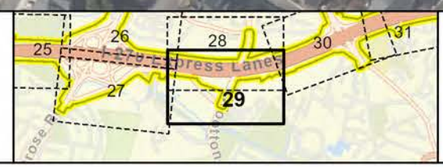
270 495 MANAGED LANES STUDY

Map 27 Match Line
Map 26 Match Line
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
25M
PEM
25K
PEM
25H_1
Perennial
25E
Perennial
25H_C
Perennial
25D
PFO
25H
Perennial
25D-UPL
25P
PFO
25N
Intermittent
25F
Ephemeral
Tower Oaks Blvd
Map 28 Match Line
Wootton Pkwy
Wootton Pkwy
The Villages At
Tower Oaks

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft
Map 29 of 41

495 270 MANAGED LANES STUDY

Cliffe Hill Way
Seven Locks Rd
Cliffe Hill Way
Seven Locks Rd
Map 28 Match Line
Map 29 Match Line
25K
PEM
25H_1
Perennial
25E
Perennial
25H_C
Perennial
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
I-270 Local Lanes
Great Falls Rd
Great Falls Rd
Watts Branch Pkwy
Saddlebrook
Woodsend Pl
I-270 Local Lanes
I-270 Local Lanes
26H
PEM
26G
Ephemeral
26G_1
Intermittent
Map 31 Match Line
JULIUS WEST
MIDDLE
SCHOOL
25D
PFO
25D-UPL
Marcus Ct
Great Falls Rd
MILLENIUM
GARDEN PARK
Markwood

Legend

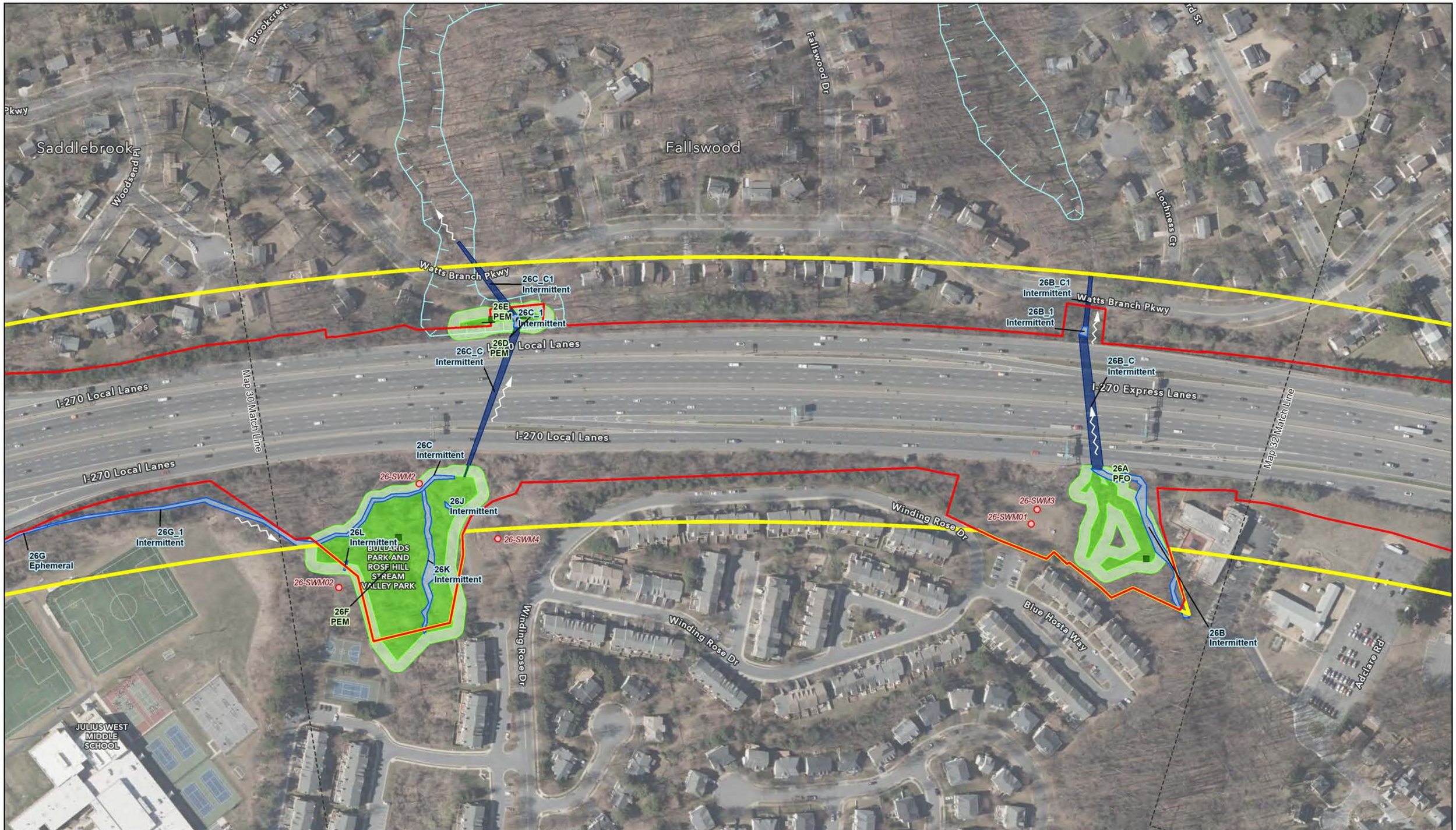
- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

Delineated Features

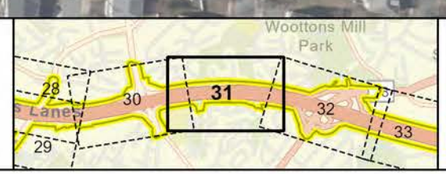
1 in = 200 ft
Map 30 of 41

270
495
MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction



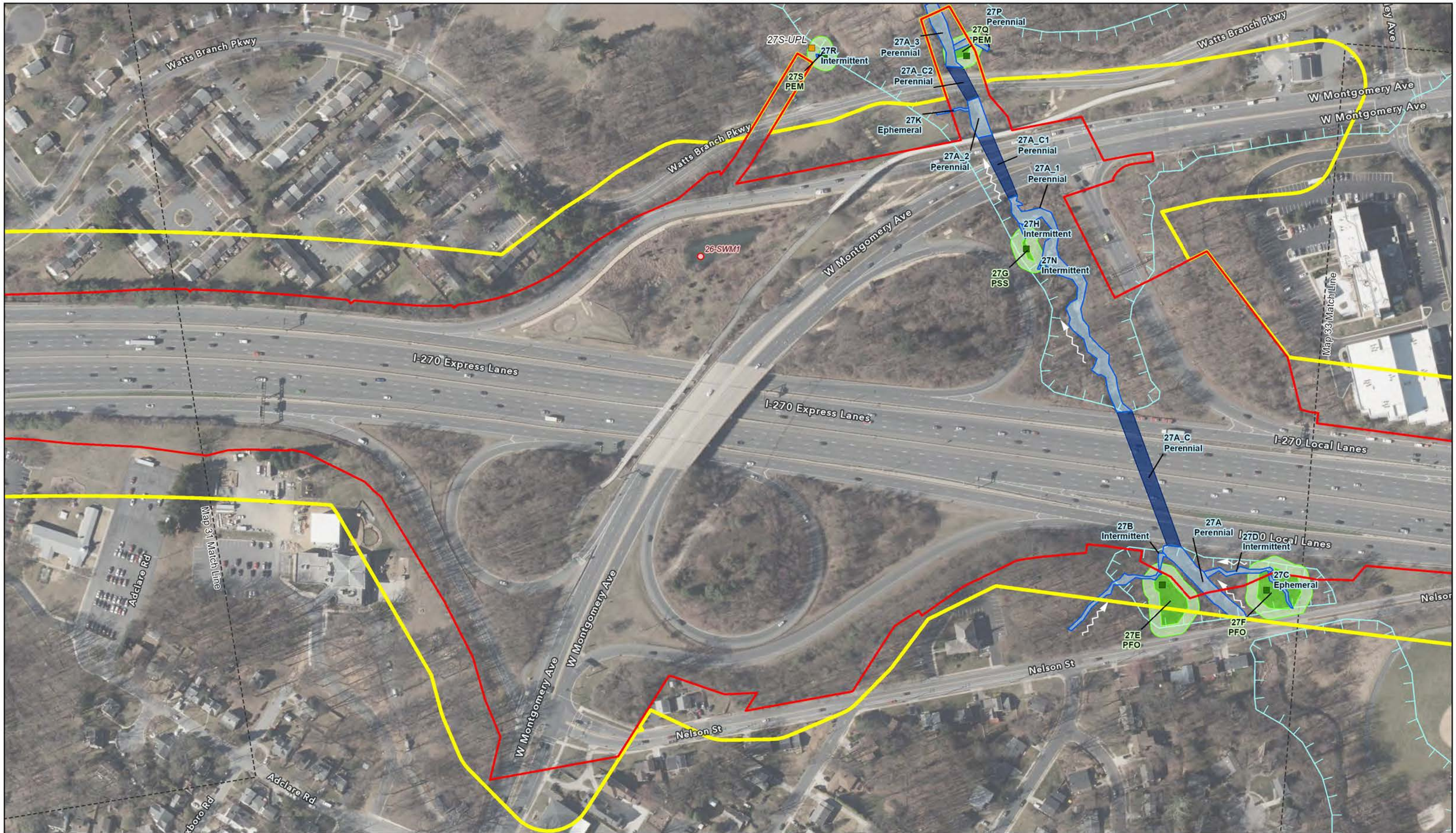
May 2022

Delineated Features

1 in = 200 ft

Map 31 of 41

I-495 & I-270 MANAGED LANES STUDY



Legend

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- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
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- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

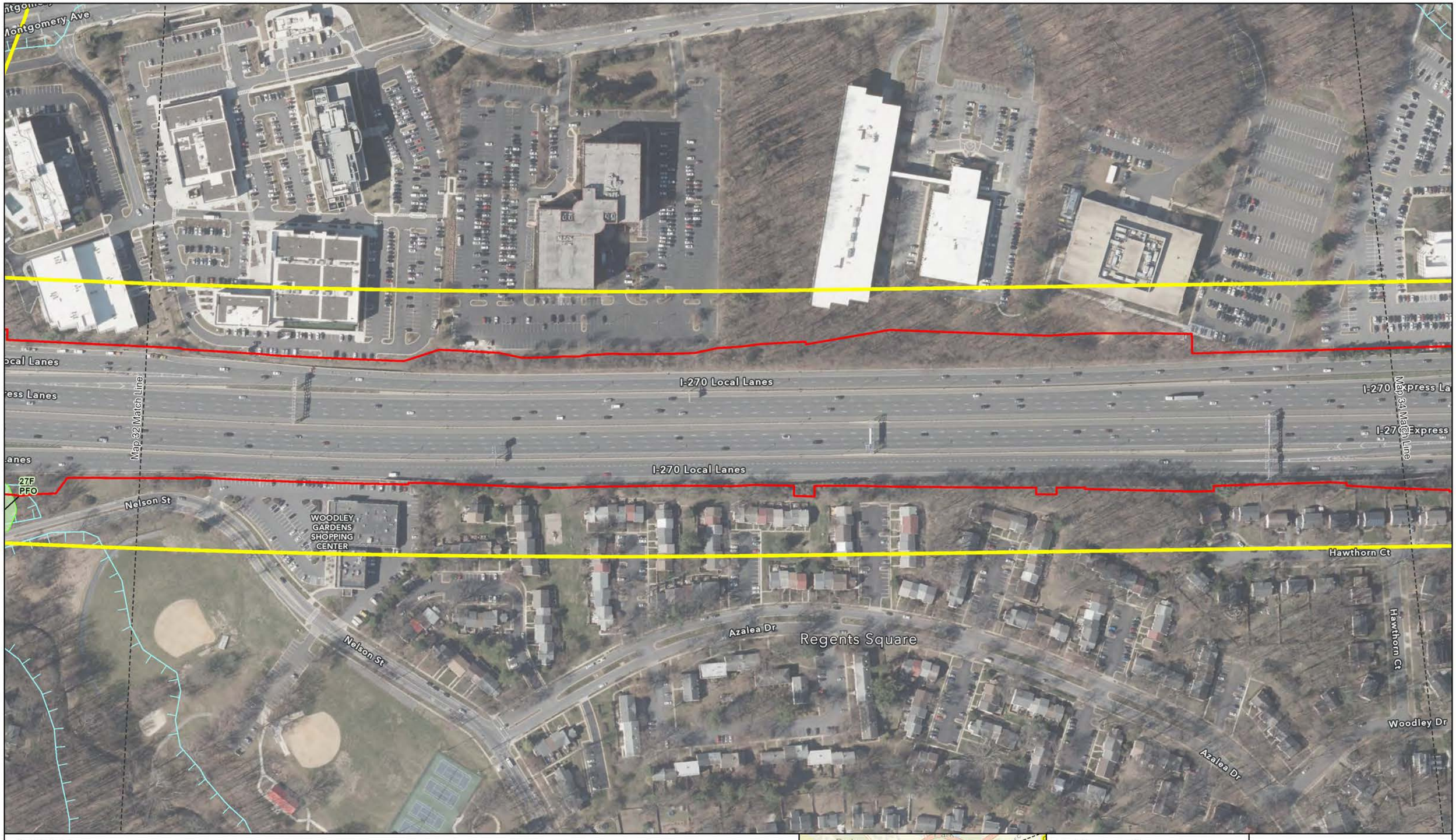
May 2022

Delineated Features

1 in = 200 ft

Map 32 of 41

I-270 / 495 MANAGED LANES STUDY



Legend

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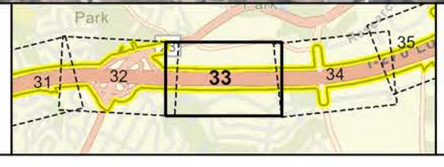
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 33 of 41

270 / 495 MANAGED LANES STUDY

Research Blvd

Research Blvd

W Gude Dr

27-SWM6

I-270 Local Lanes

Express Lanes

Map 33 Match Line

Map 35 Match Line

I-270 Loc

27-SWM9

ROCKVILLE SENIOR CENTER PARK

27-SWM10

Piccard Dr

Piccard

Curie Ct

Dr

Legend

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- Corridor Study Boundary
- Delineated Stream
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- FEMA 100-Year Floodplain
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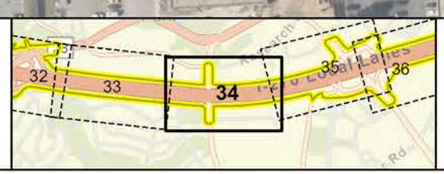
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

Map 34 of 41

I-270 / I-495 MANAGED LANES STUDY

Research Pl

Map 34 Match Line

Research Ct

Shady Grove Rd

Shady Grove Rd

Map 36 Match Line

27-SWM8

27-SWM3

27-SWM2

27-SWM1

I-270 Local Lanes

I-270 Local Lanes

I-270 Local Lanes

27L_C
Intermittent

27L
Intermittent

I-270 Local Lanes

I-270 Local Lanes

27-SWM5

27-SWM7

27-SWM4

27M
PFO

27M-UPL

Legend

- LOD - Preferred Alternative
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- Wetland Data Point
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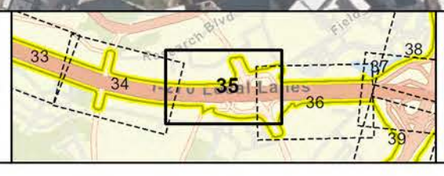
May 2022

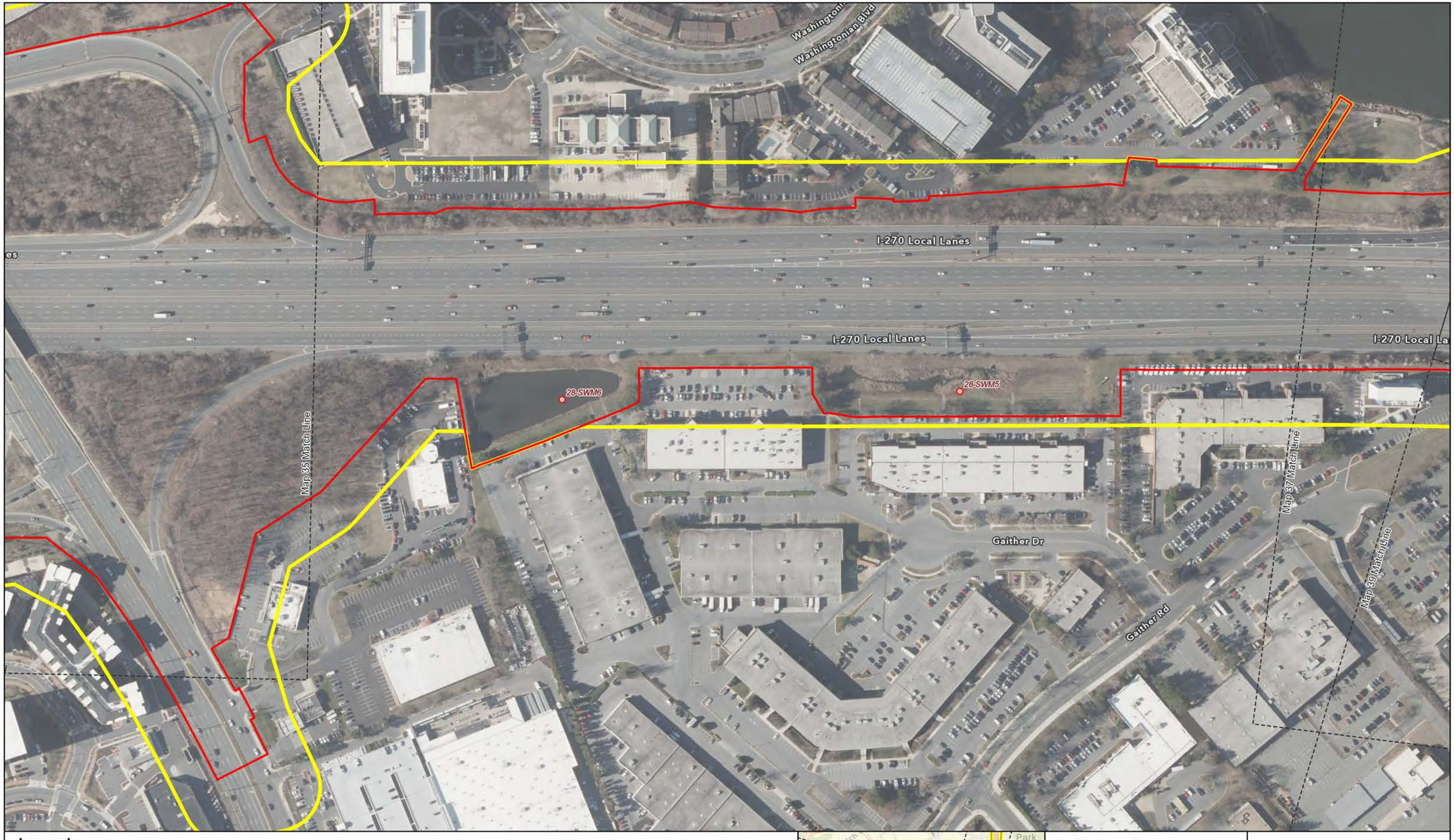


Delineated Features

1 in = 200 ft

Map 35 of 41

I-270 / 495 MANAGED LANES STUDY



Legend

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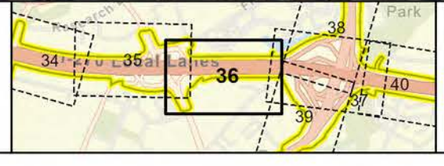
May 2022

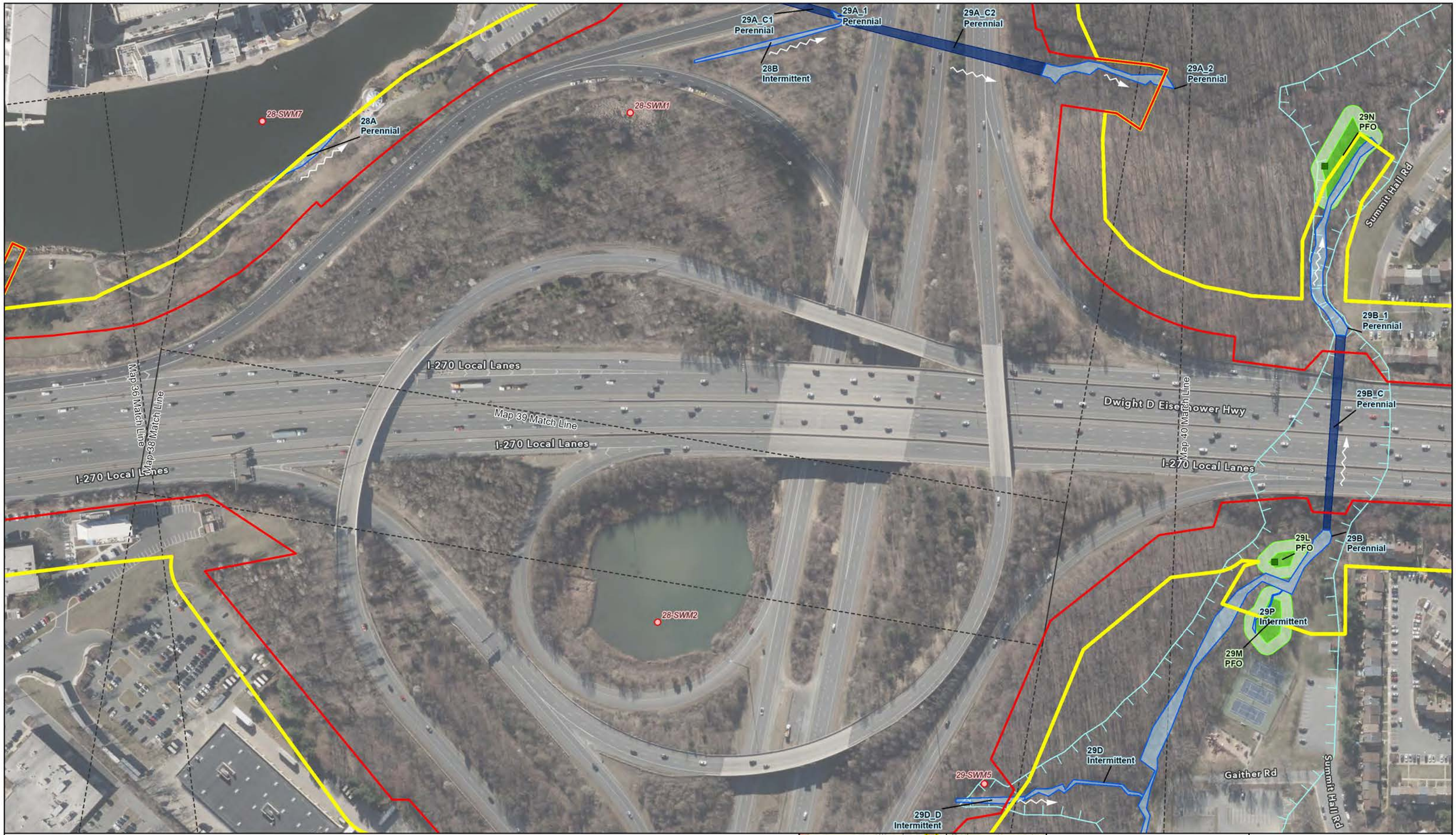


Delineated Features

1 in = 200 ft

Map 36 of 41

270 / 495 MANAGED LANES STUDY



Legend

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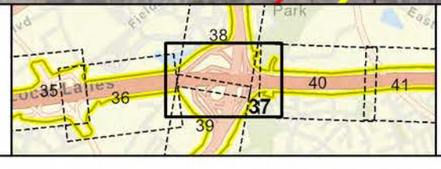
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

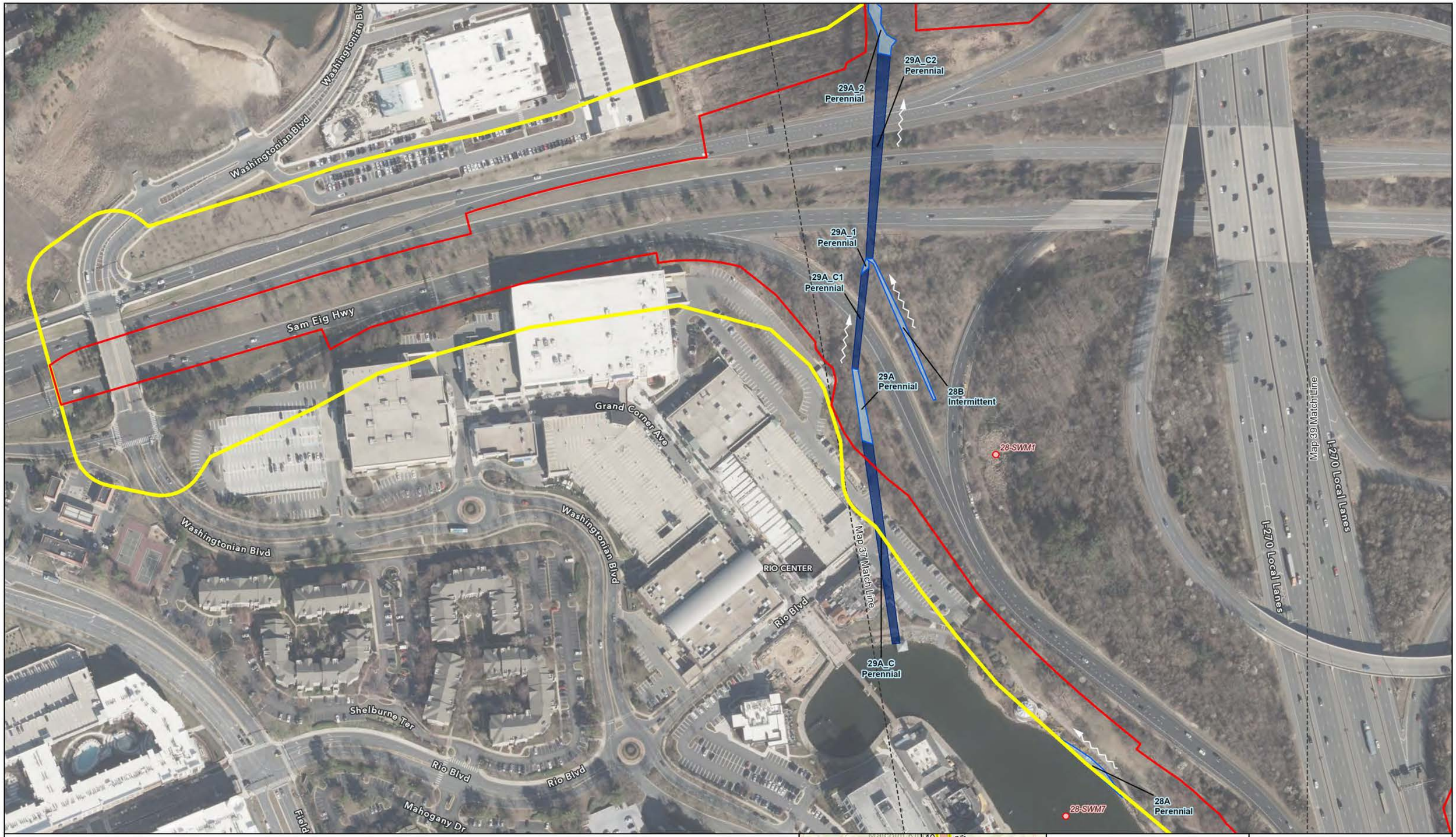


Delineated Features

1 in = 200 ft

Map 37 of 41

270 495 MANAGED LANES STUDY



Legend

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- Existing SWM Point
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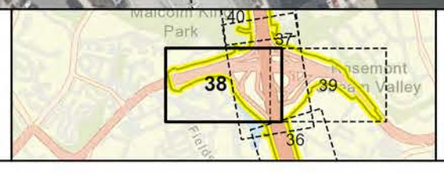
May 2022

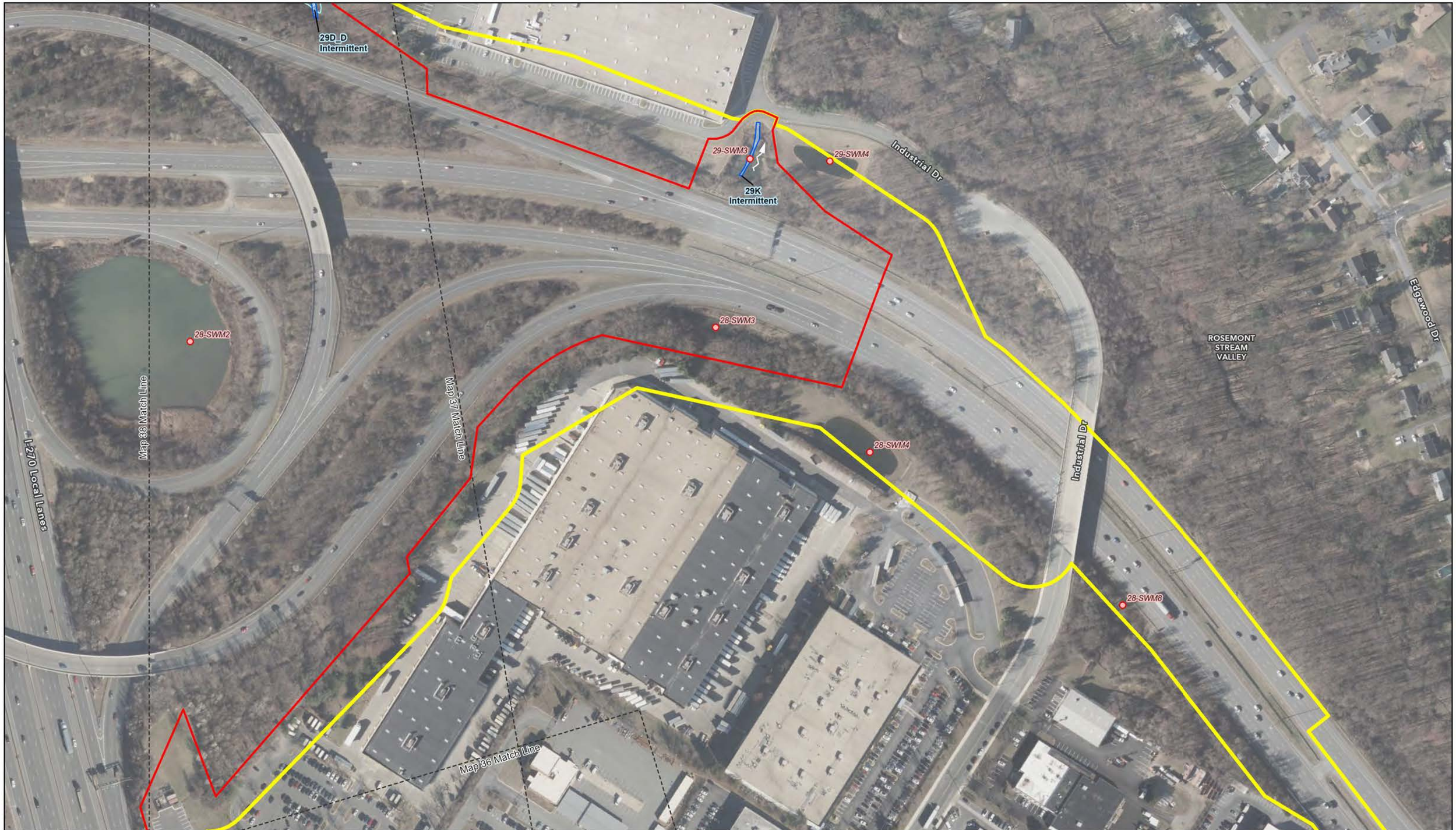


Delineated Features

1 in = 200 ft

Map 38 of 41

270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
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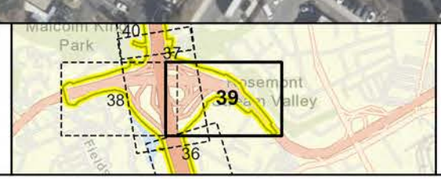
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022

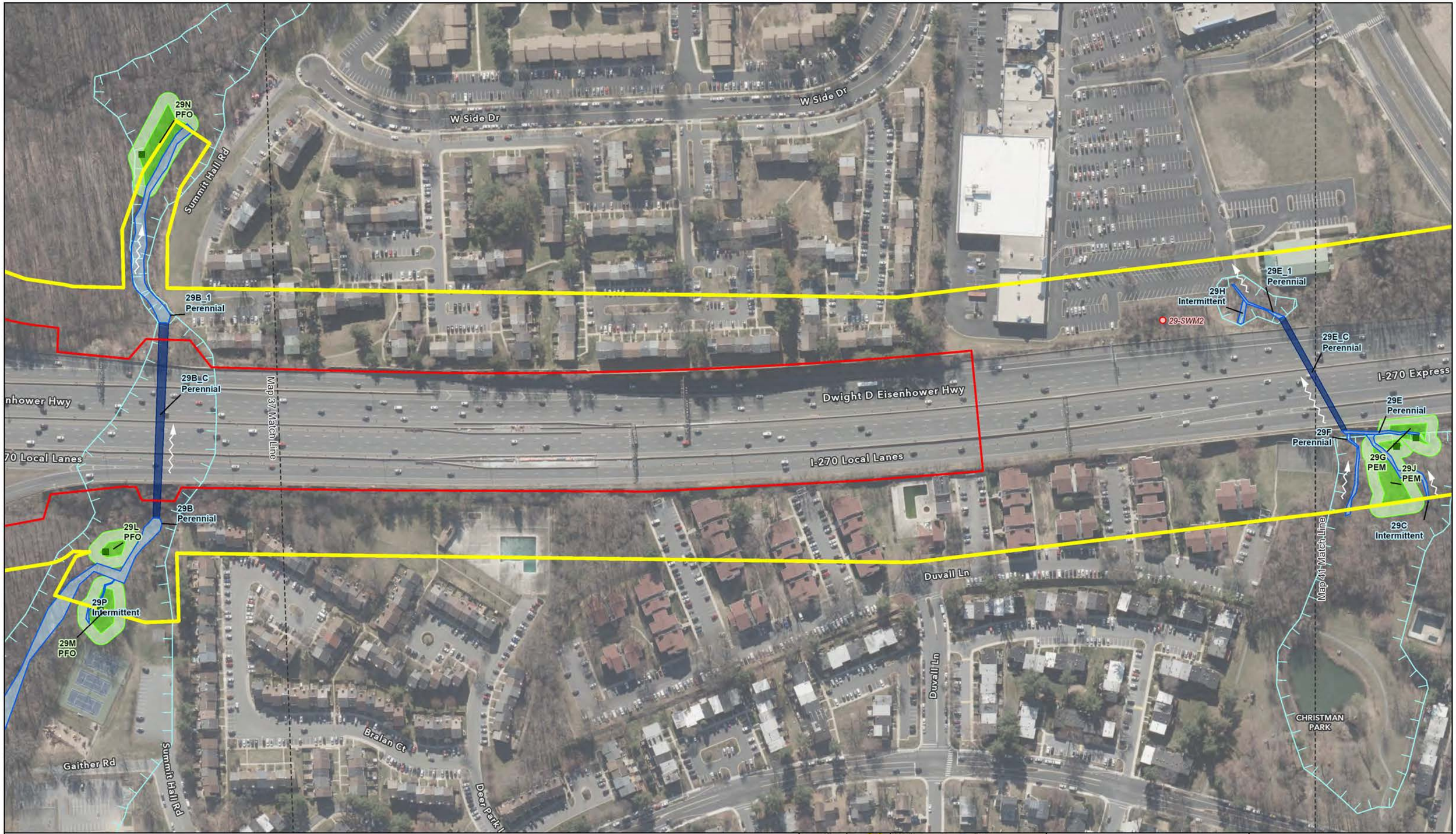


Delineated Features

1 in = 200 ft

Map 39 of 41

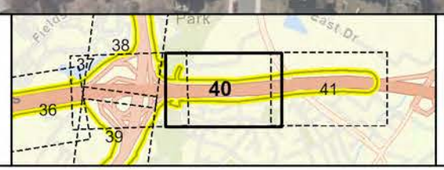
I-270 / I-495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

1 in = 200 ft

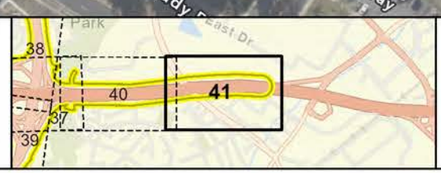
Map 40 of 41

270 495 MANAGED LANES STUDY

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Delineated Stream
- Delineated Stream (Culvert or Bridge Section)
- FEMA 100-Year Floodplain
- Delineated Wetland
- Wetland Buffer 25 ft
- Upland Data Point
- Wetland Data Point
- Existing SWM Point
- Flow Direction

May 2022



Delineated Features

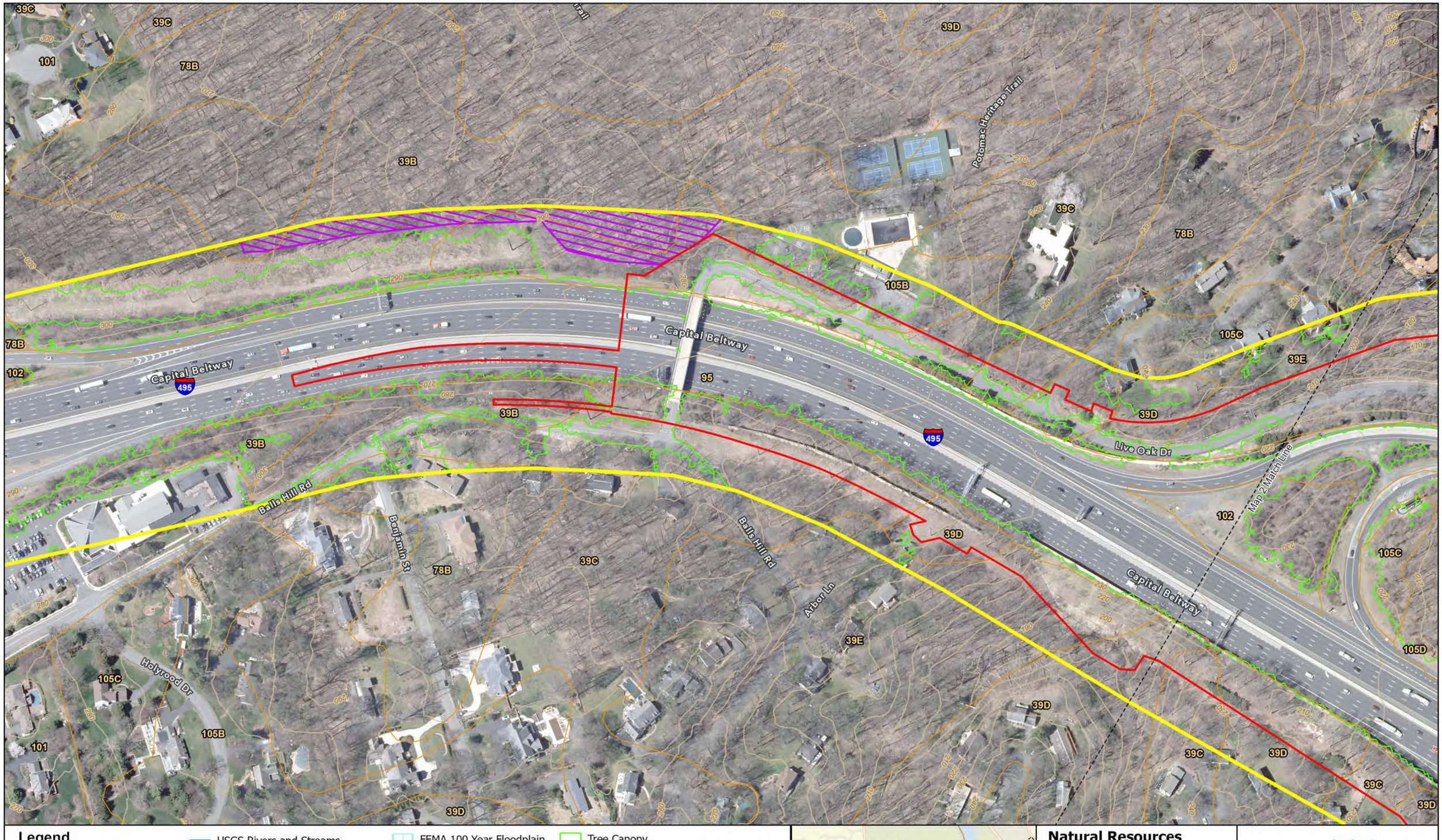
1 in = 200 ft

Map 41 of 41

N W E S

270 495 MANAGED LANES STUDY

APPENDIX C: NATURAL RESOURCES INVENTORY MAPS



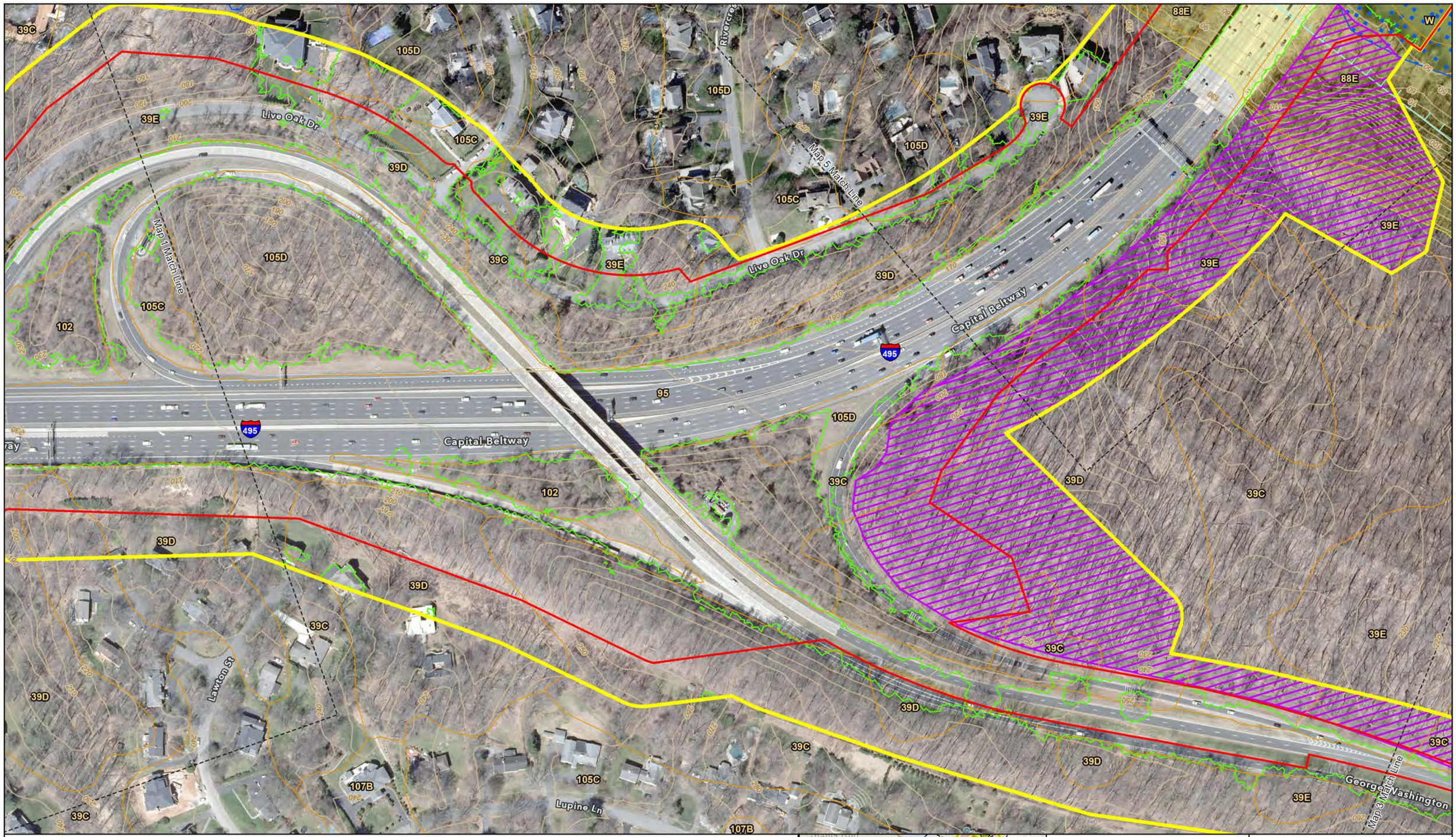
Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

1 in = 200 ft
Map 1 of 41
May 2022

495 270 MANAGED LANES STUDY



Legend

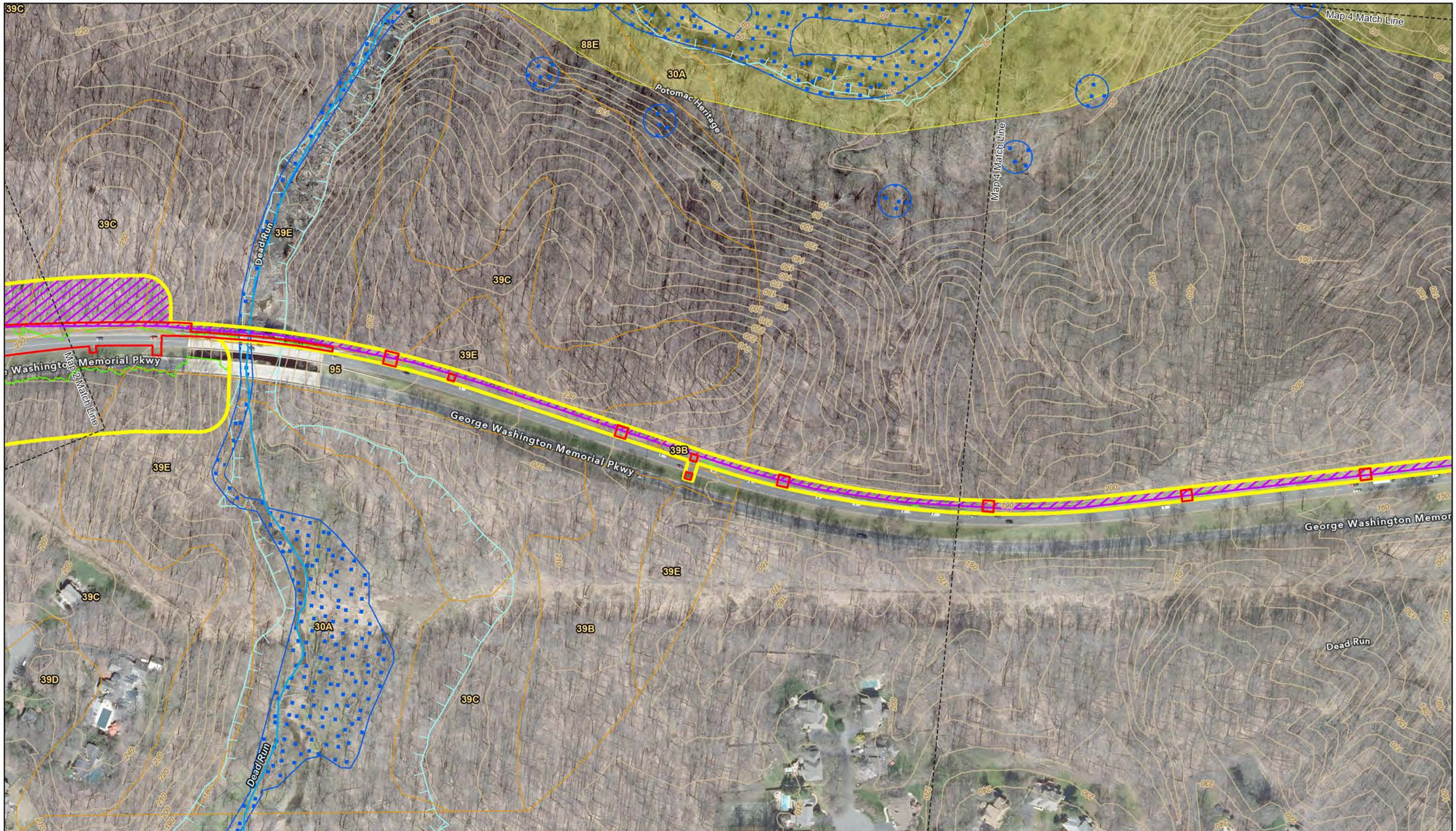
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

1 in = 200 ft
Map 2 of 41
May 2022

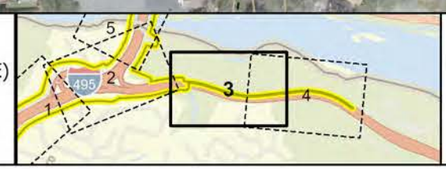
N W E S

495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 3 of 41
May 2022

N W E S

270 495 MANAGED LANES STUDY

Potomac Heritage

Turkey Run

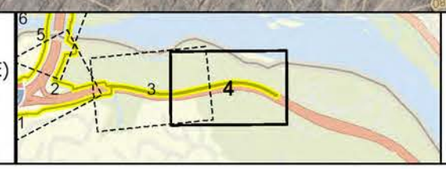
Map 3 Match Line

George Washington Memorial Pkwy

Dead Run

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

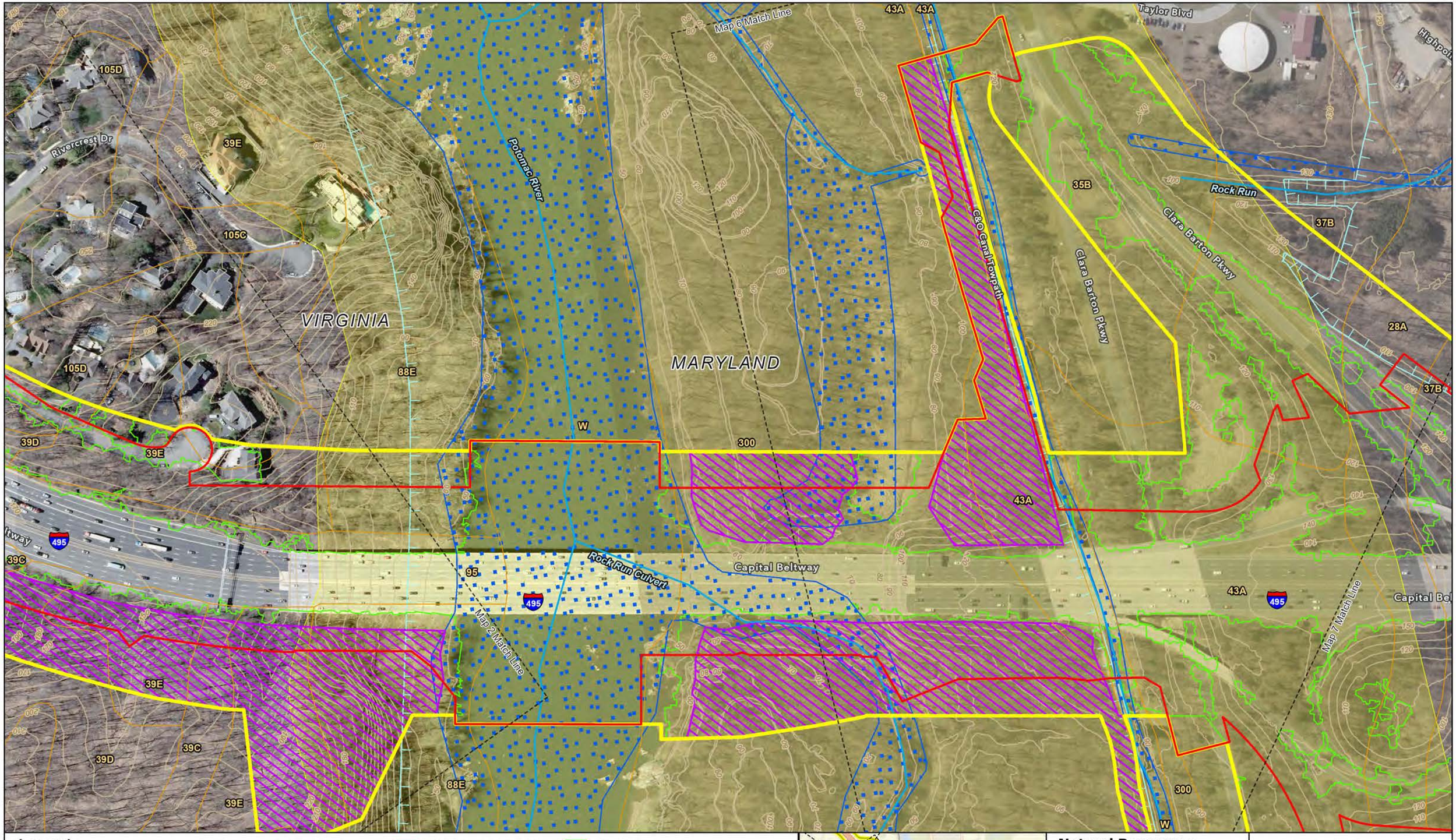
1 in = 200 ft

Map 4 of 41

May 2022

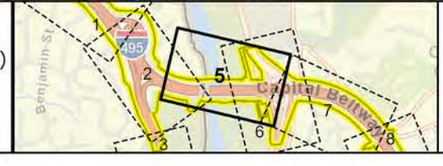
N W E S

270 495 MANAGED LANES STUDY



Legend

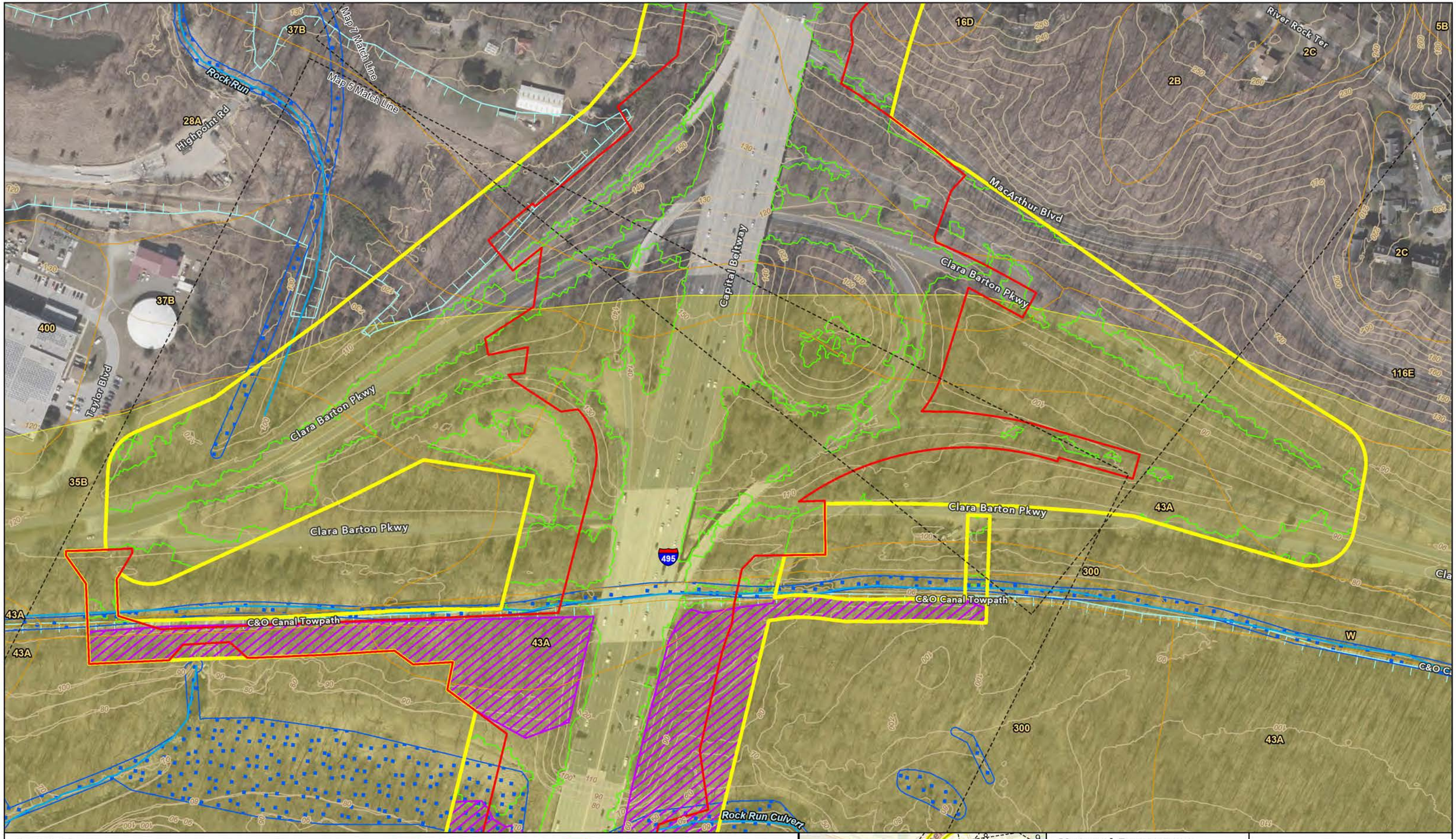
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 5 of 41
May 2022

495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
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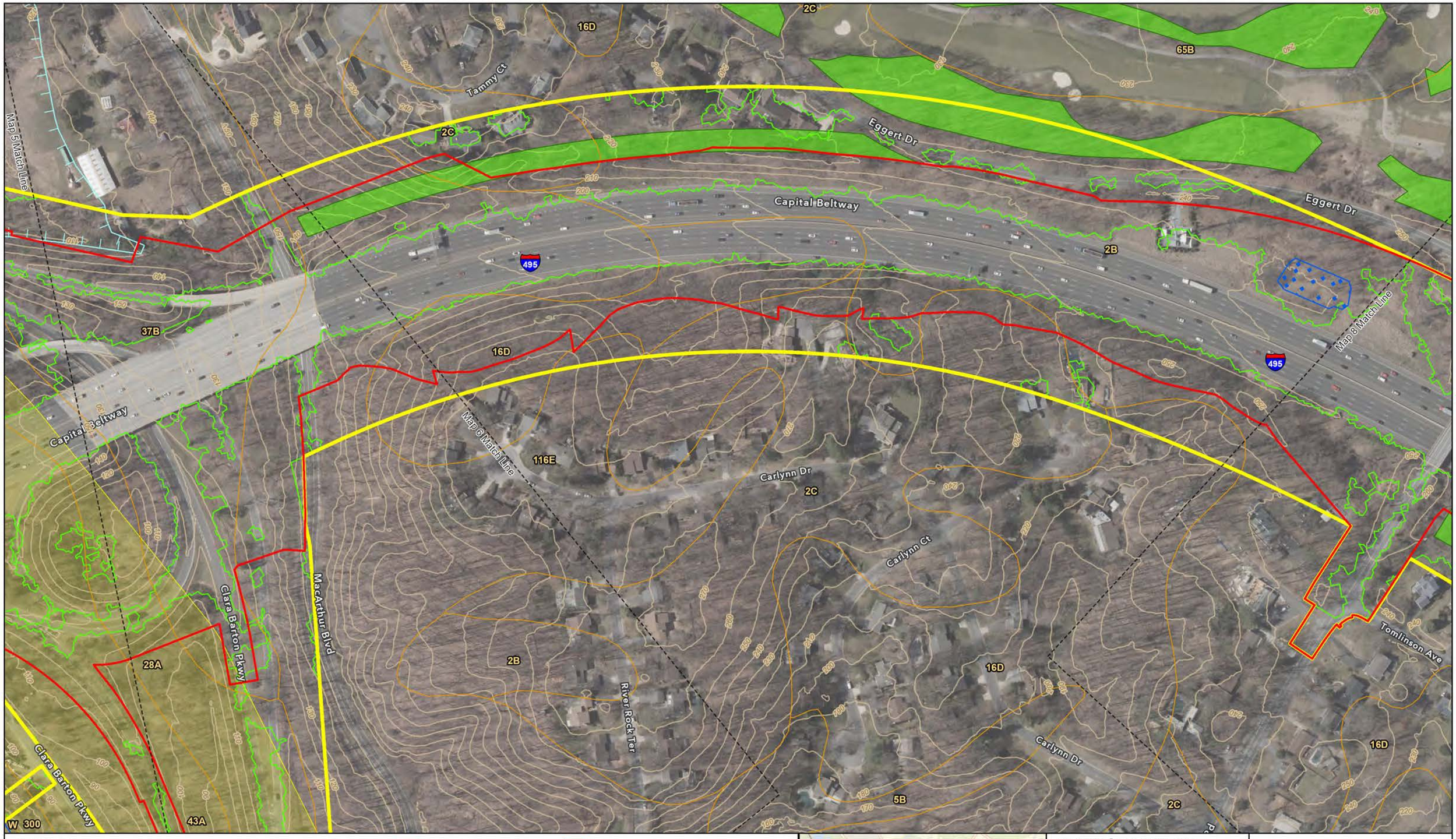
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

1 in = 200 ft
Map 6 of 41
May 2022

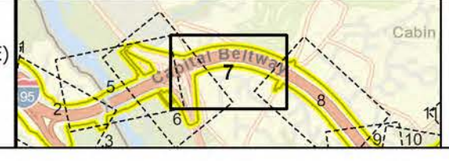
N W E S

495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

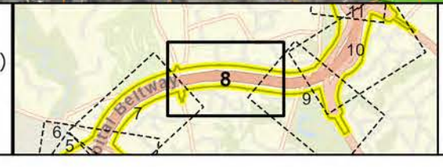
1 in = 200 ft
Map 7 of 41
May 2022

270 / 495 MANAGED LANES STUDY

Persimmon Tree Ln
Stone Trail Dr
Hamilton Spring Rd
Map 9 Match Line
Capital Beltway
Persimmon Tree Rd
Osage Ln
Tomlinson Ave
Map 7 Match Line
Barkwater Ct
Cypress Grove Ln
2B
2C
16D
6A
495

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

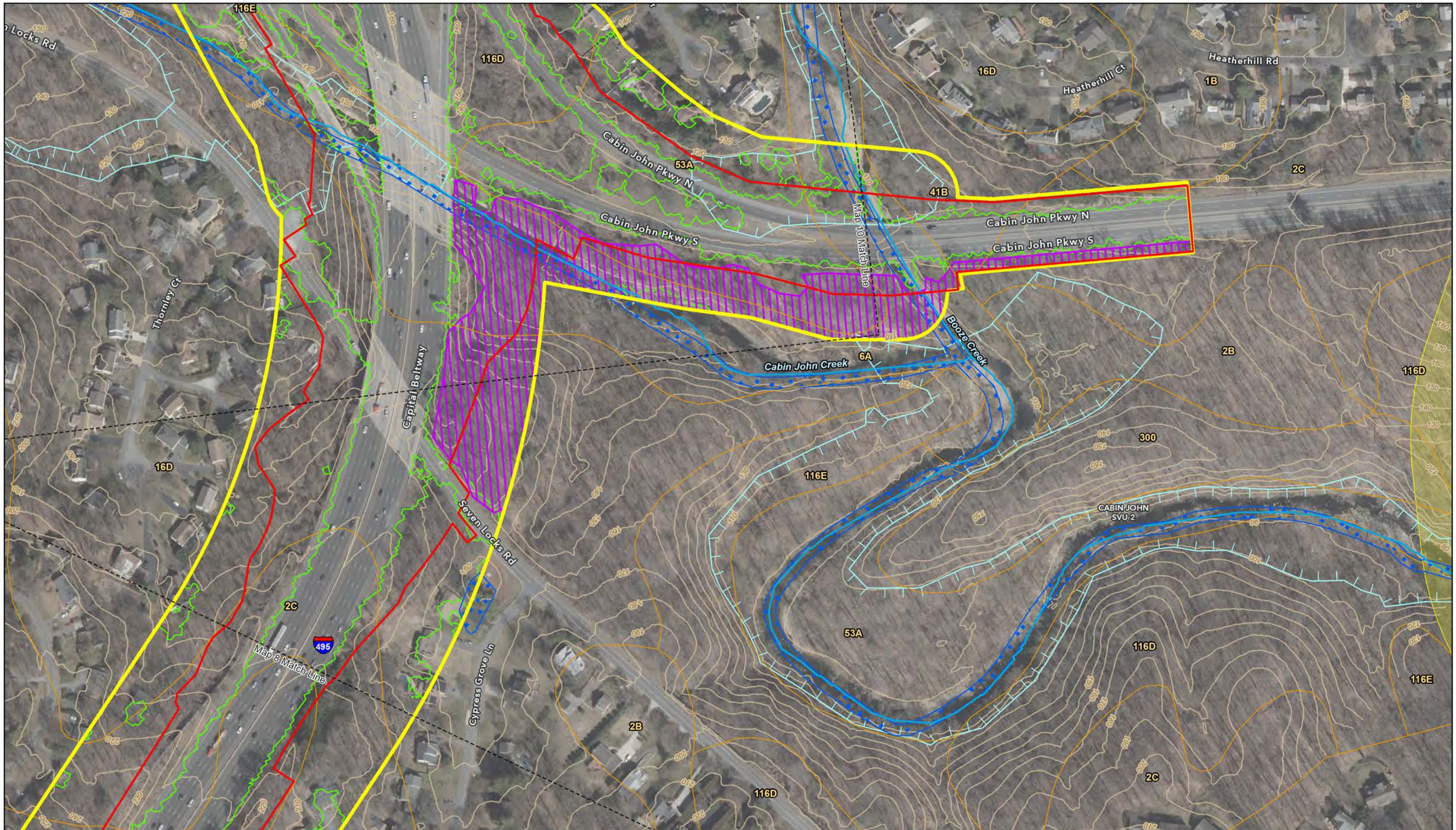


Natural Resources Inventory

1 in = 200 ft
Map 8 of 41
May 2022

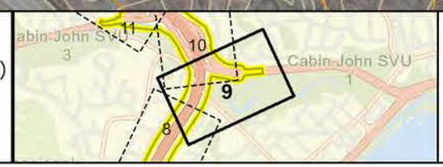
N W E S

I-495 & I-270 MANAGED LANES STUDY



Legend

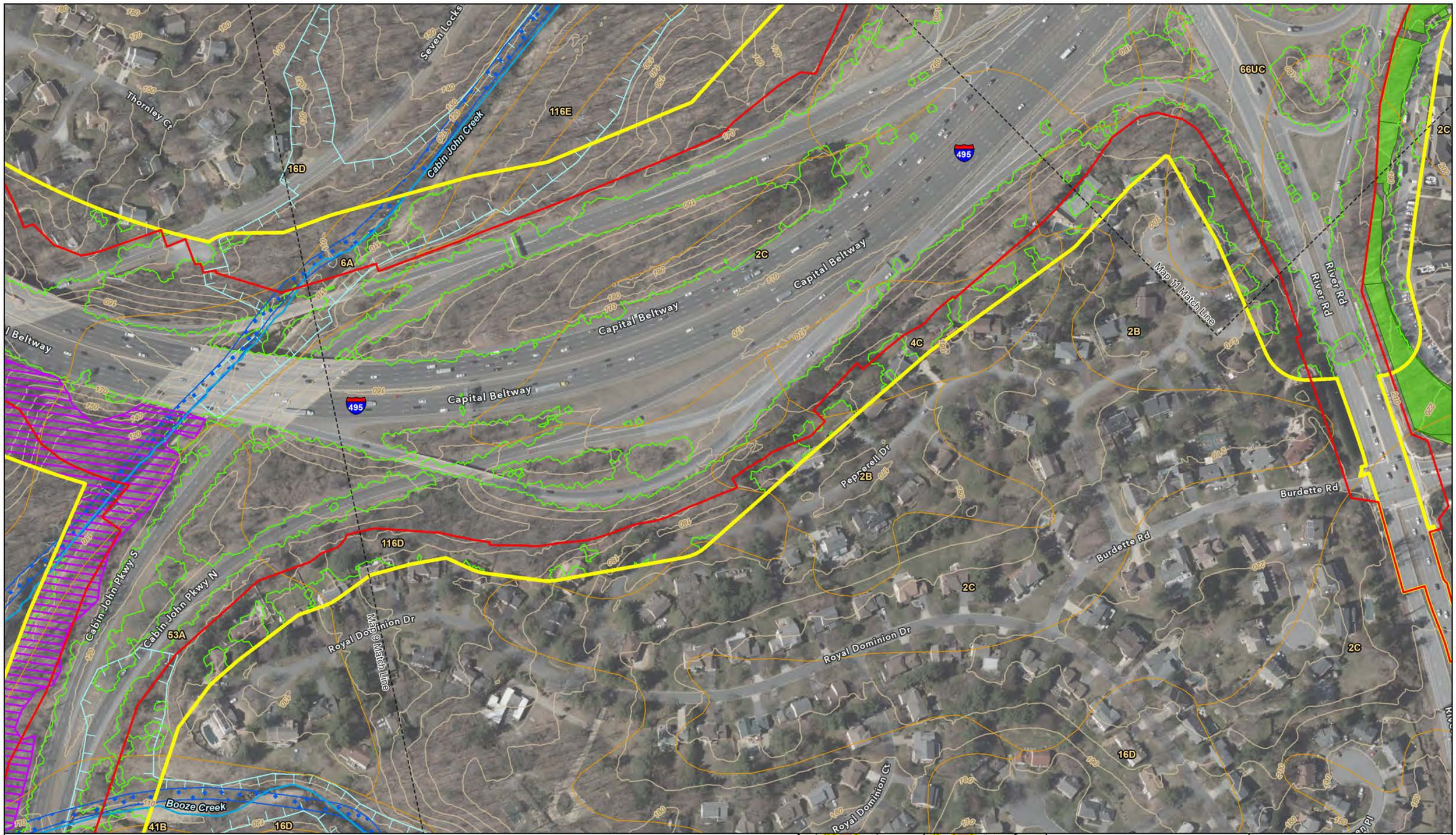
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 9 of 41
May 2022

270 / 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

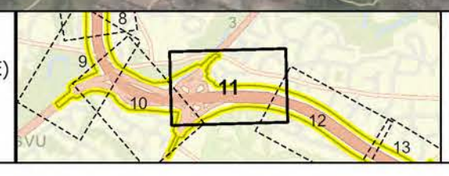
1 in = 200 ft
Map 10 of 41
May 2022

495 270 MANAGED LANES STUDY

Seven Locks Rd
Emery Corners
Lonesome Pine Ln
River Rd
River Quarry Pl
Old Seven Locks Rd
Cabin John Creek
Capital Beltway
Thomas Branch
Map 10 Match Line
Map 12 Match Line
1C
2B
53A
16D
2C
6A
116E
116D
66UC
65B

Legend

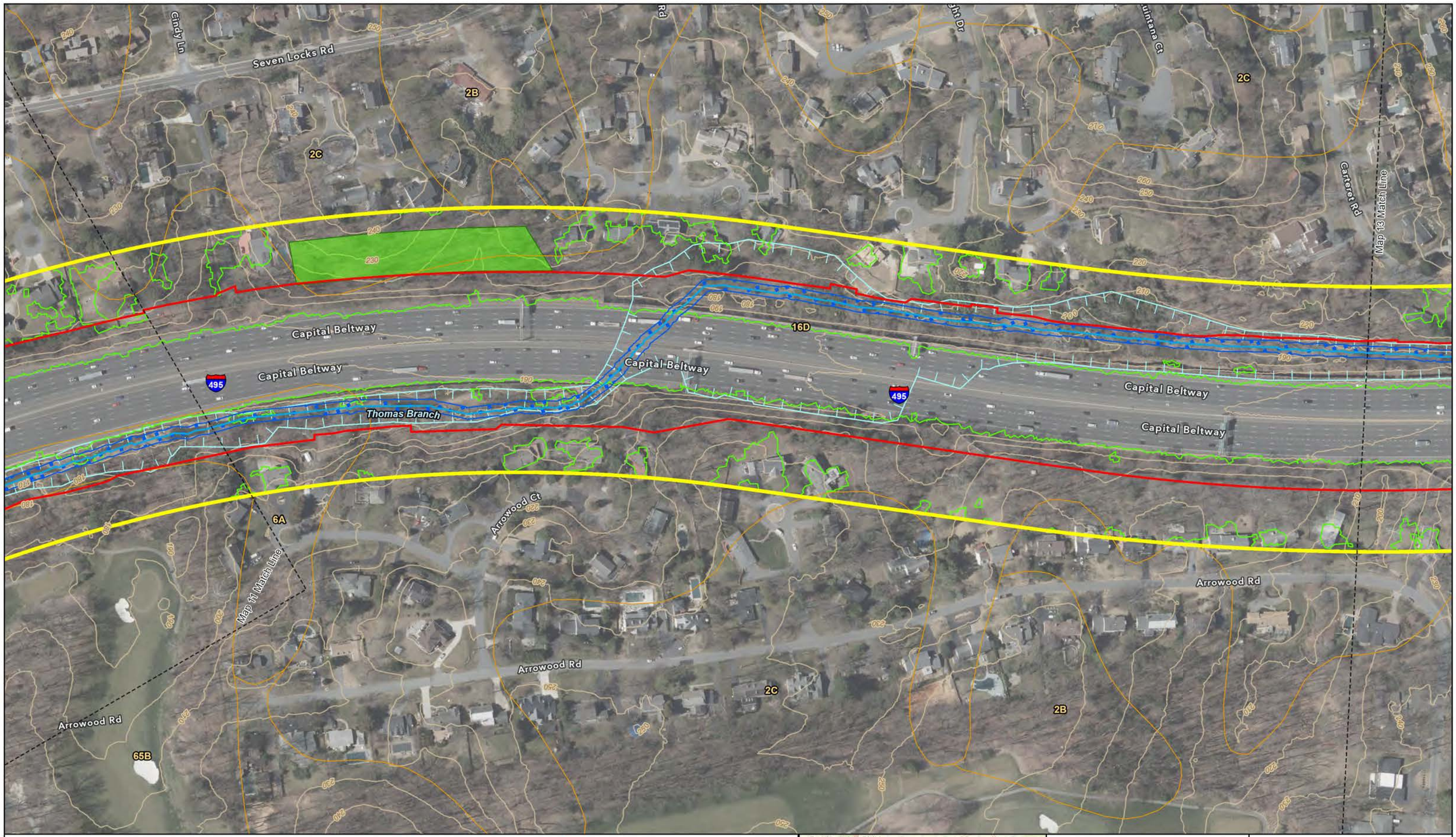
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

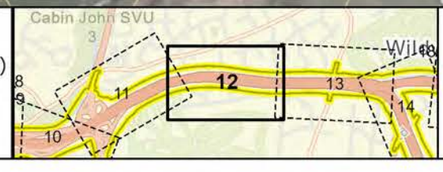
1 in = 200 ft
Map 11 of 41
May 2022

495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

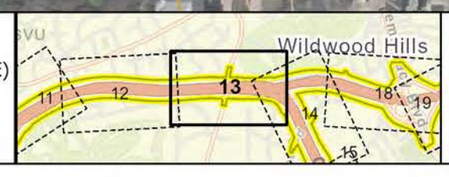
1 in = 200 ft
Map 12 of 41
May 2022

495 270 MANAGED LANES STUDY

Quintana Dr
Burning Tree Estates
2B
2C
1C
Map 14 Match Line
Bradley Blvd
Thomas Branch
Capital Beltway
16D
I-270-SPUR S
495
270
Kittery Ln
6A
Longwood Dr
Map 12 Match Line

Legend

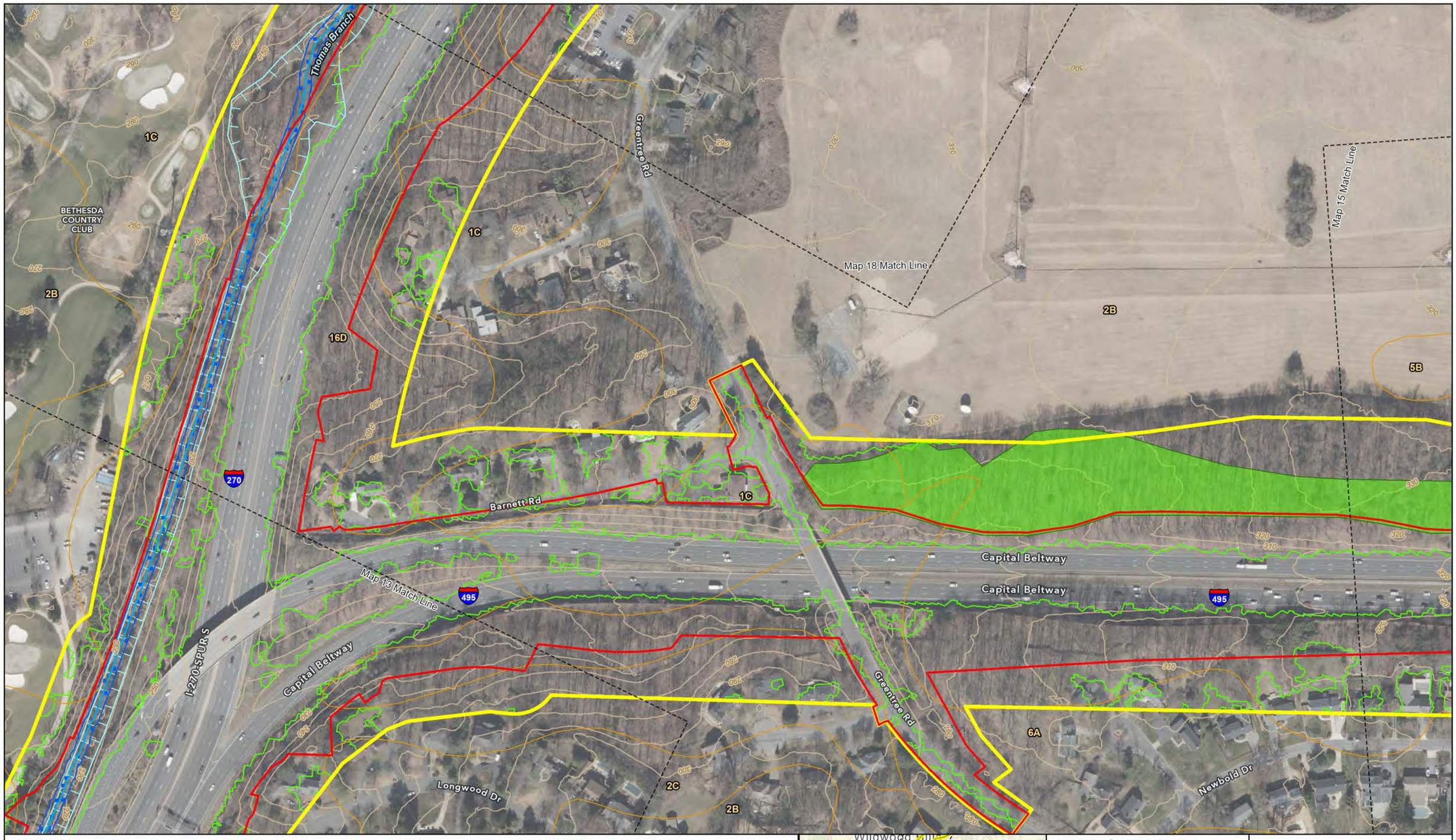
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 13 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
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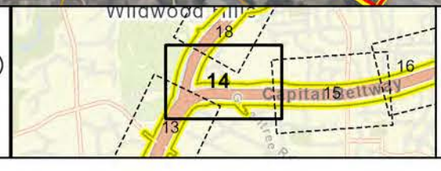
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

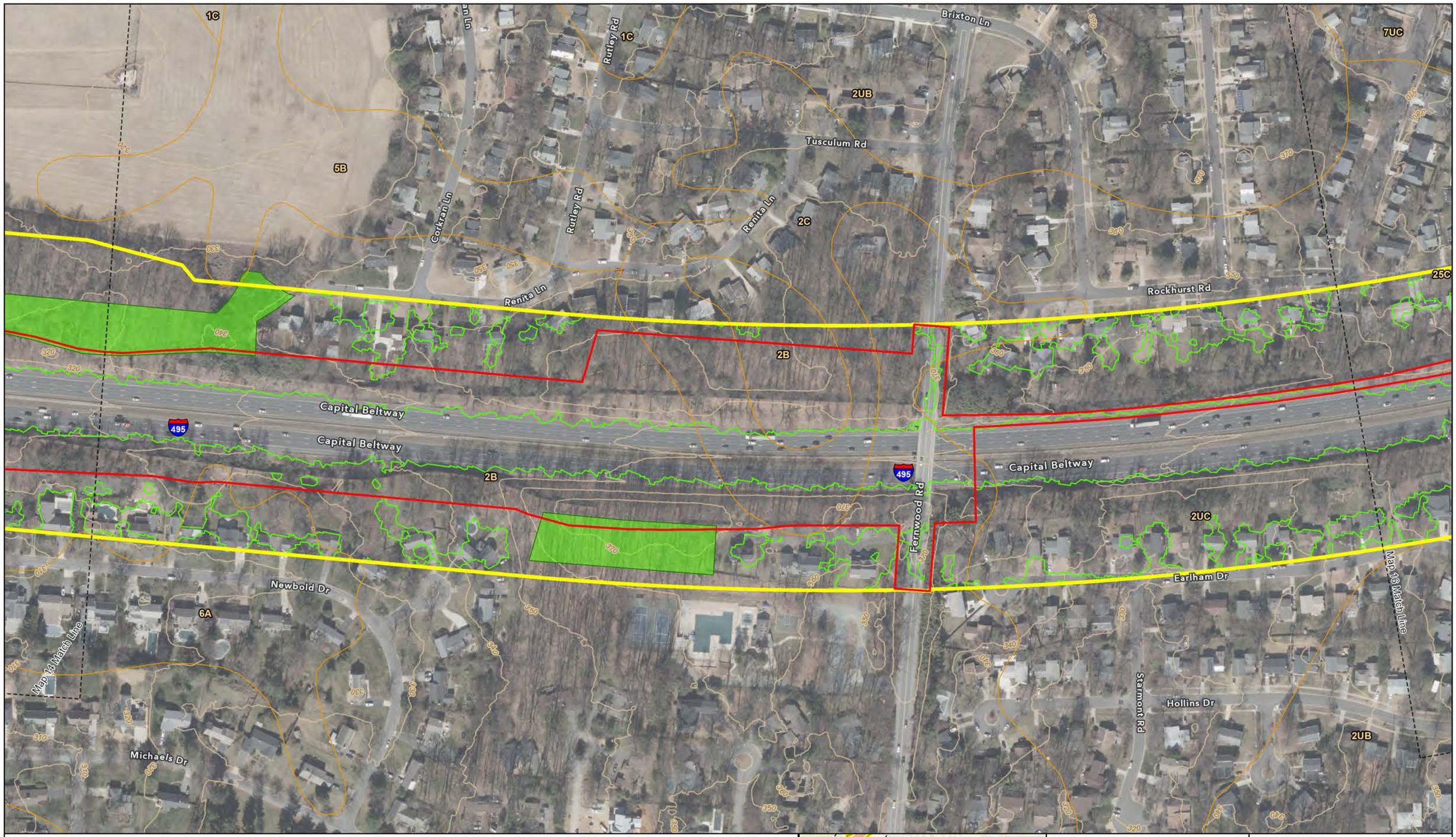


Natural Resources Inventory

1 in = 200 ft
Map 14 of 41
May 2022

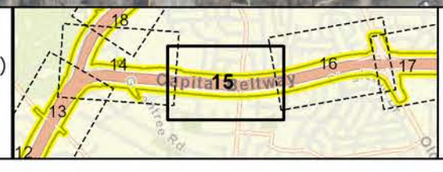
N W E S

495 270 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

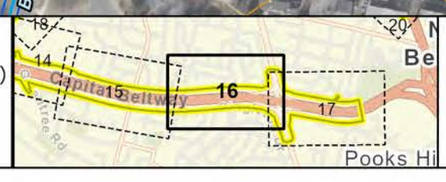
1 in = 200 ft
Map 15 of 41
May 2022

N
W
E
S

495 270 MANAGED LANES STUDY

Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

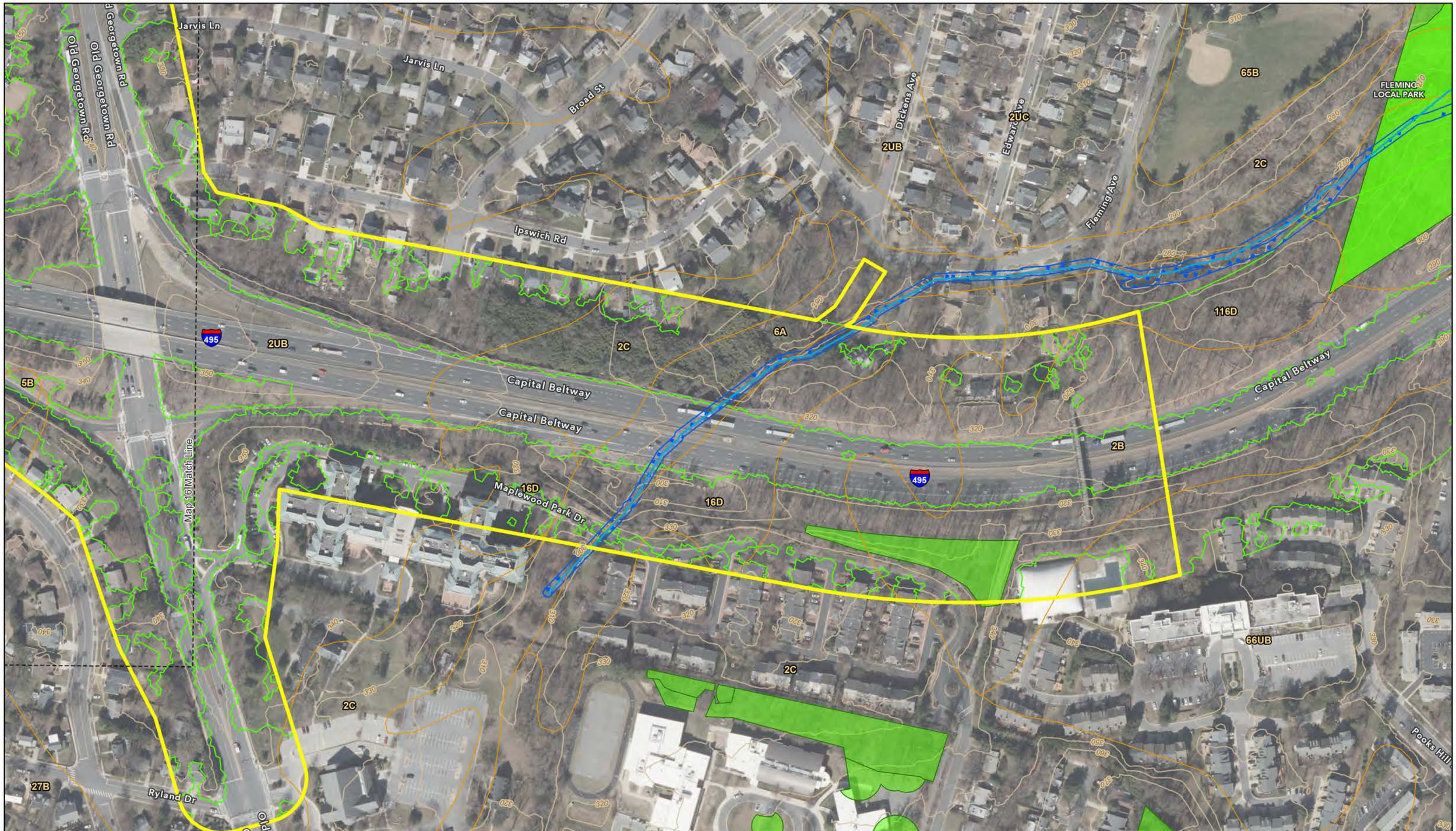


Natural Resources Inventory

1 in = 200 ft
Map 16 of 41
May 2022

N W E S

270 495 MANAGED LANES STUDY



Legend

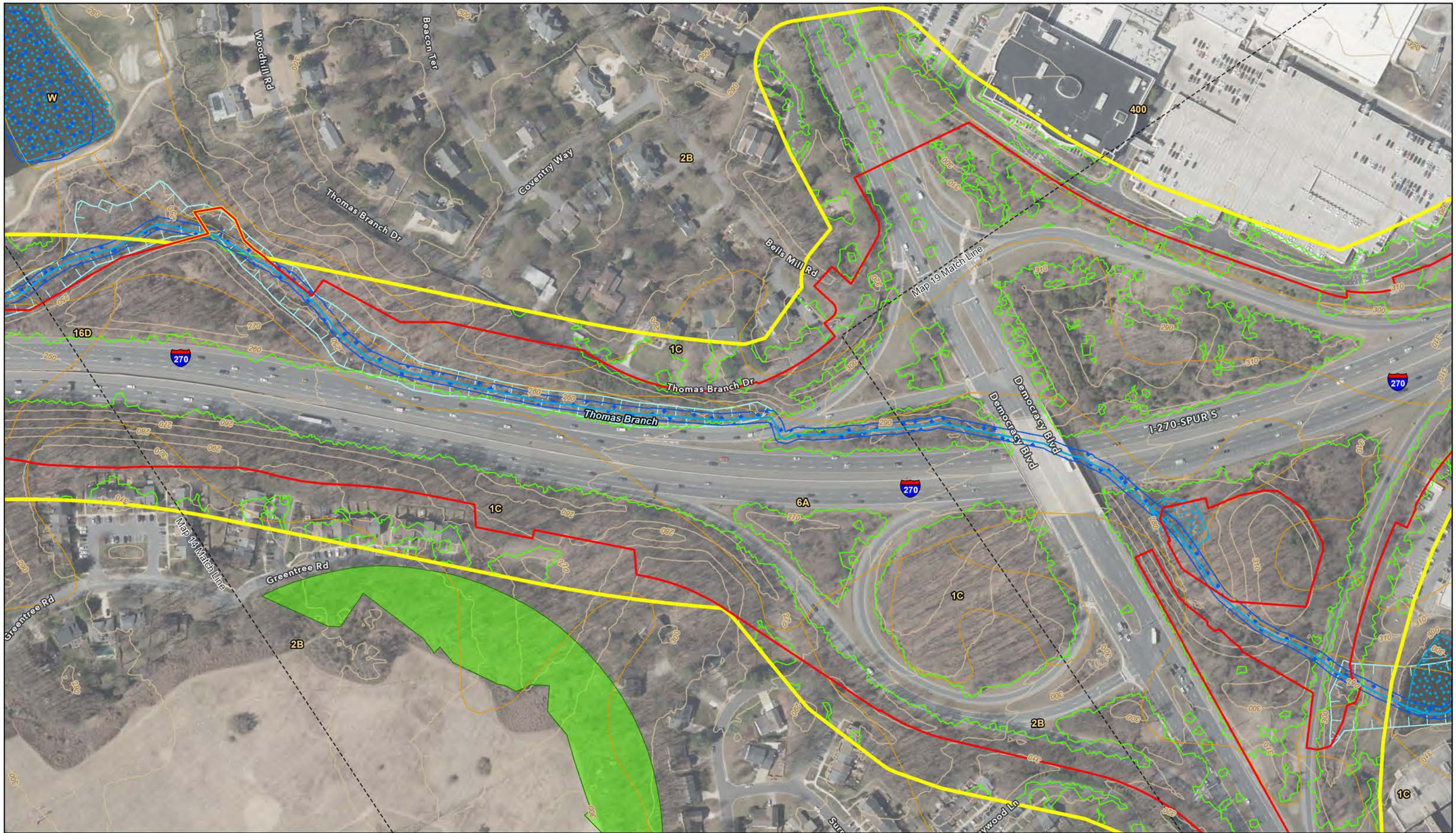
- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

1 in = 200 ft
Map 17 of 41
May 2022

N W E S

495 270 MANAGED LANES STUDY



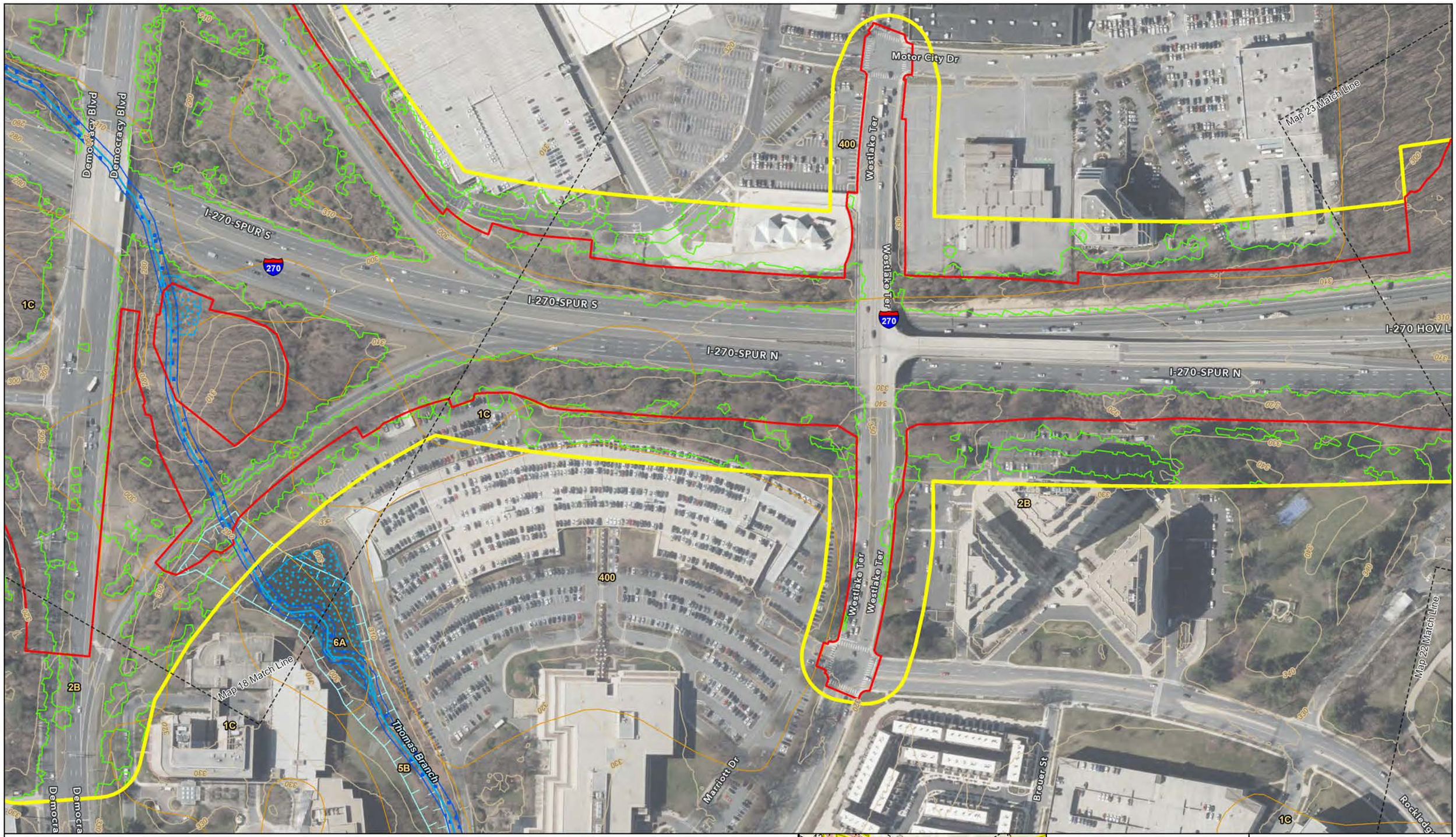
Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

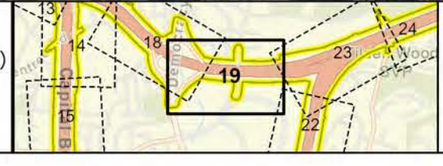
1 in = 200 ft
Map 18 of 41
May 2022

270 495 MANAGED LANES STUDY



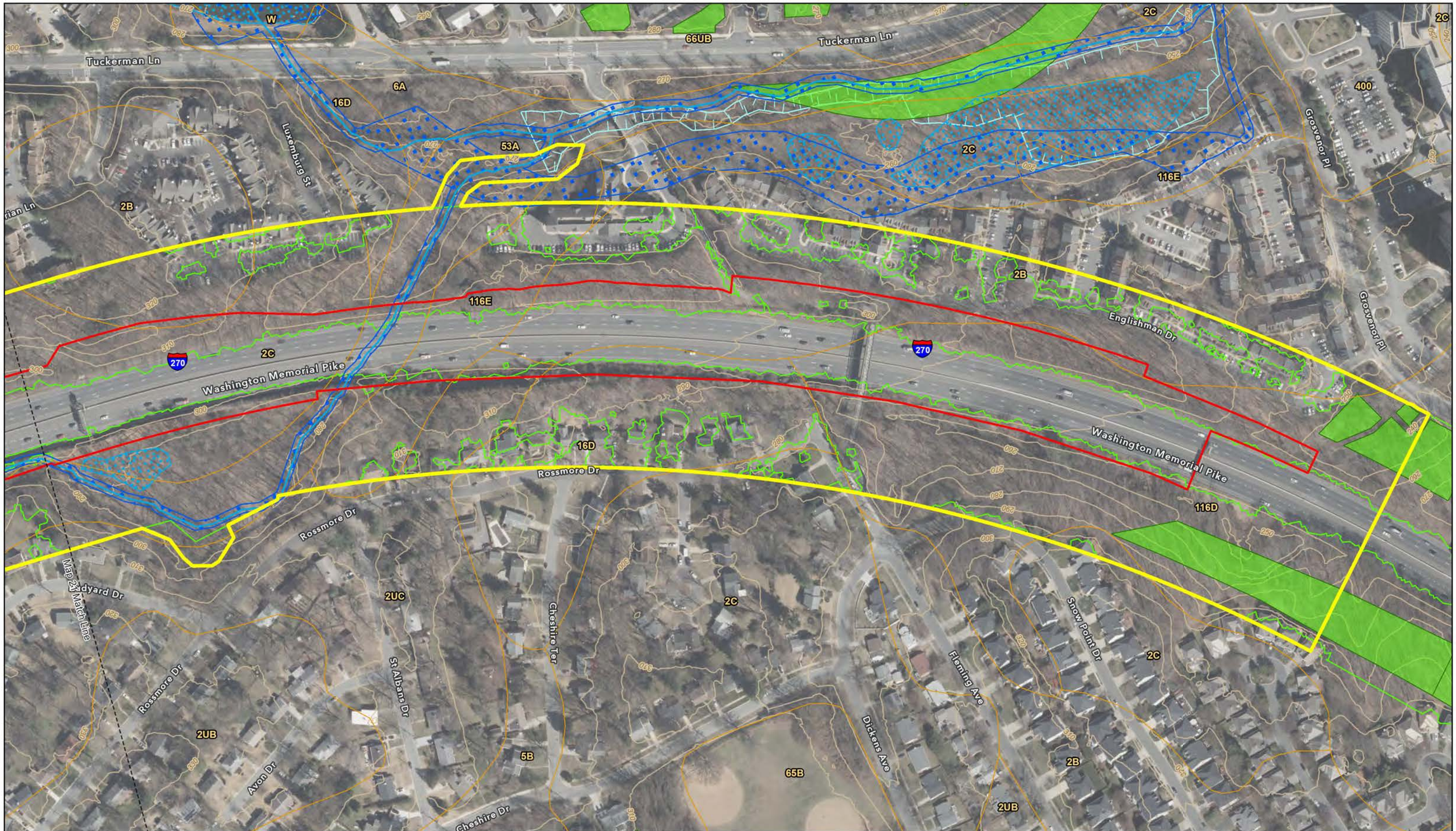
Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 19 of 41
May 2022



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
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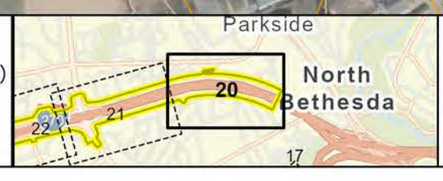
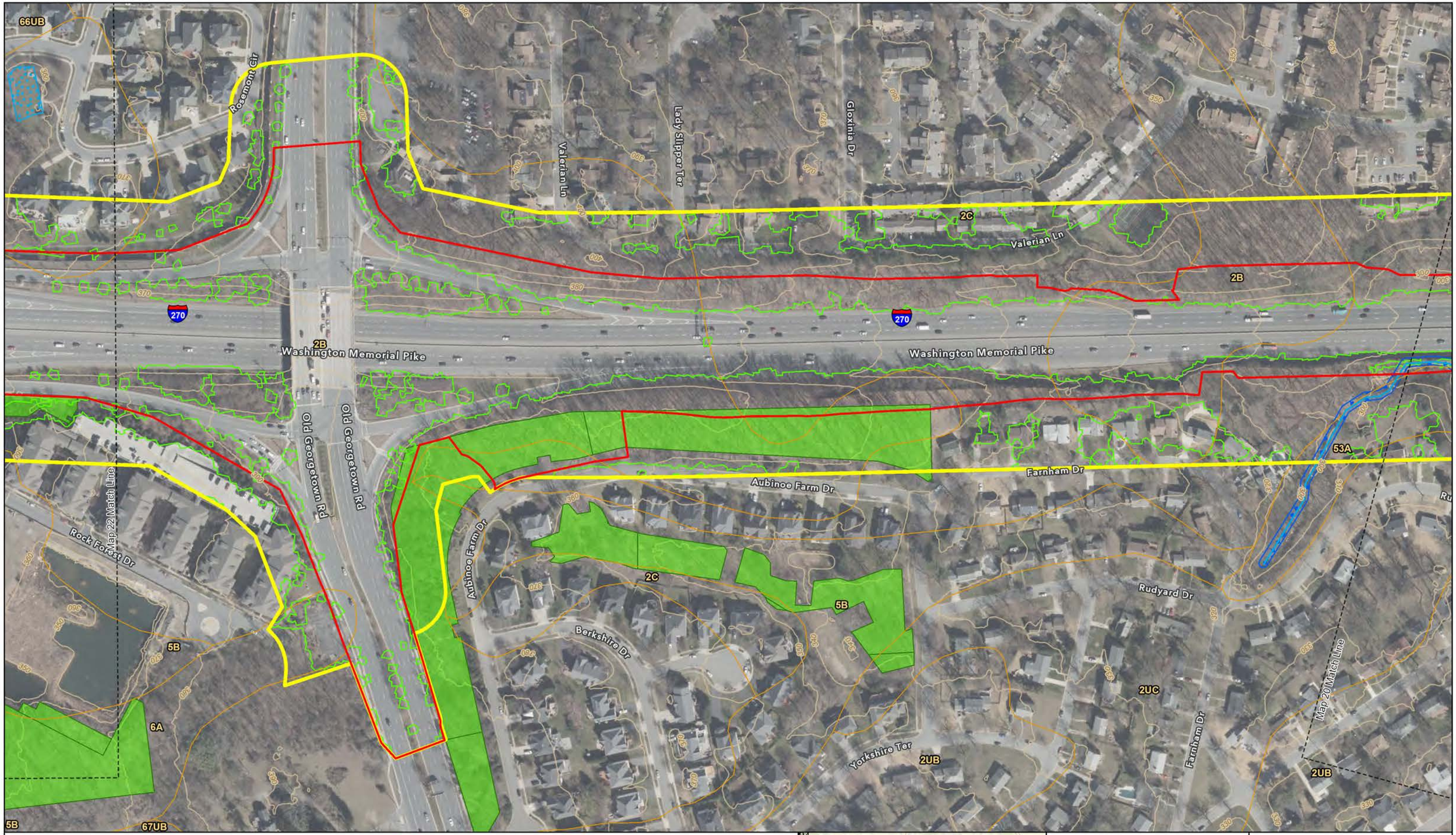
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

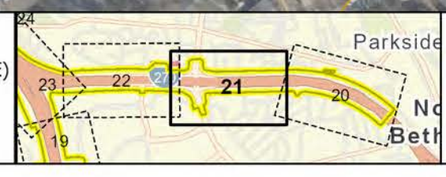
1 in = 200 ft
Map 20 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 21 of 41
May 2022

N
E
S
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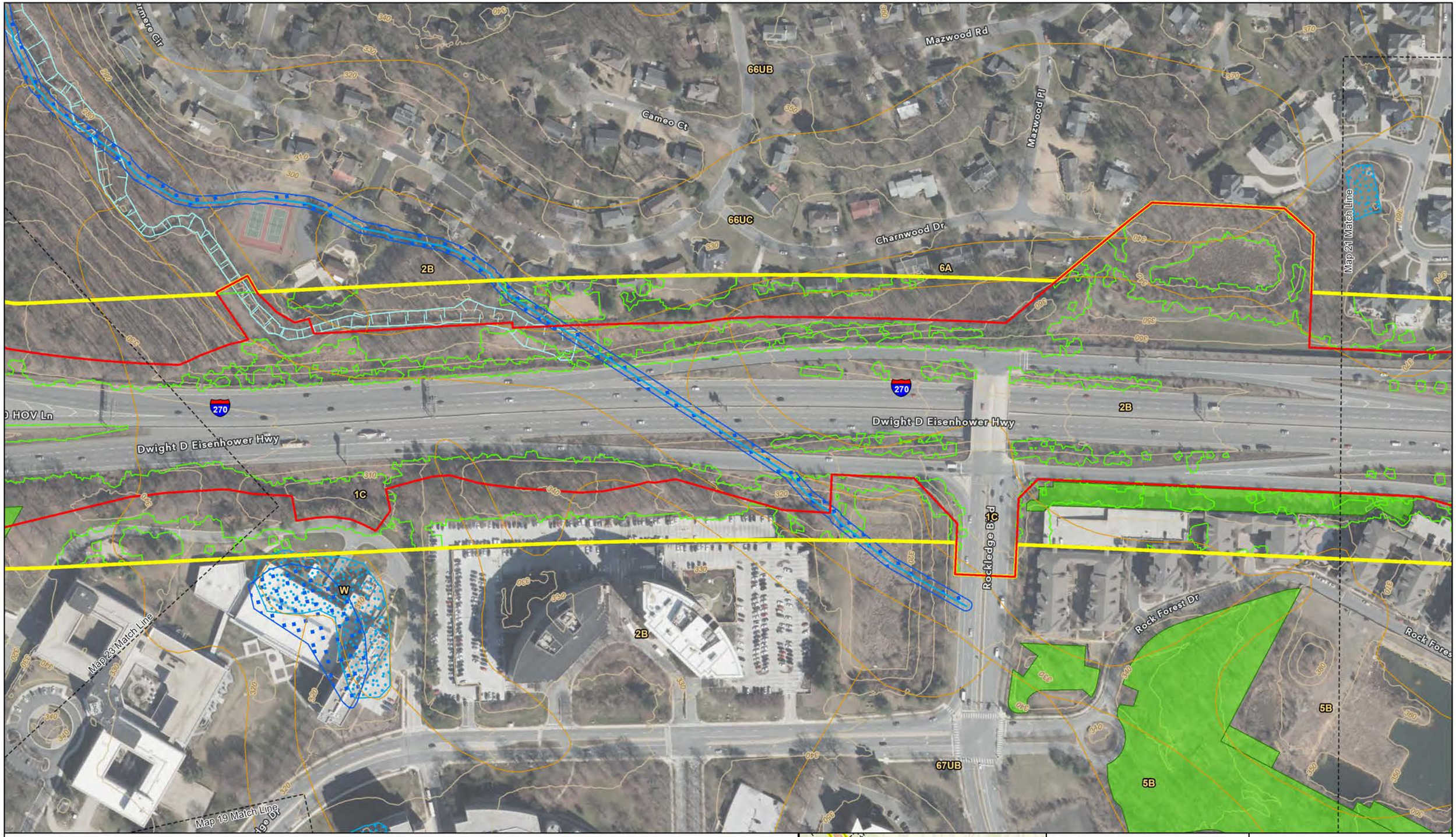
270
495
MANAGED LANES STUDY



Legend

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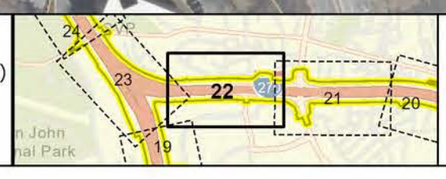
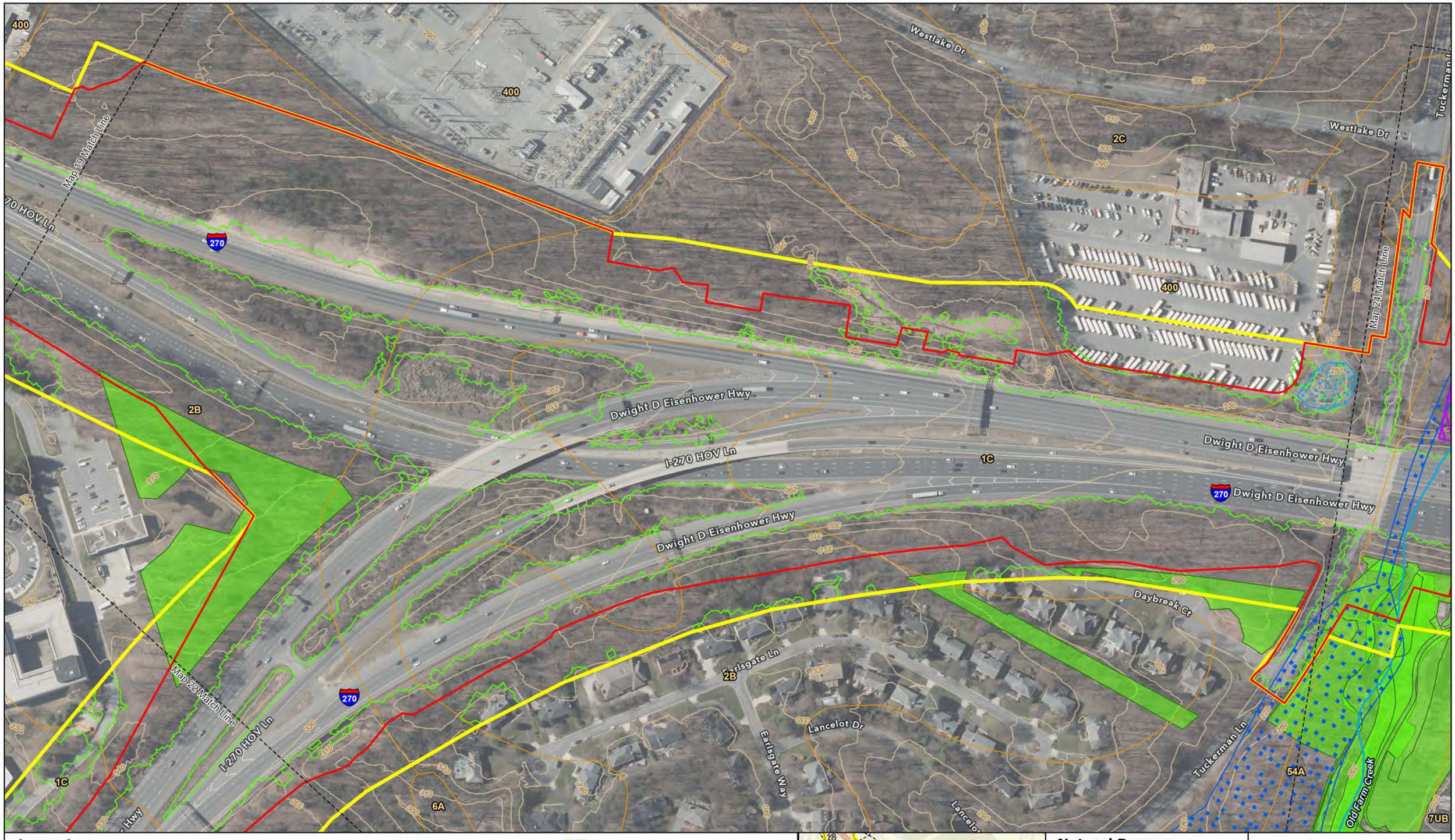


Natural Resources Inventory

1 in = 200 ft
Map 22 of 41
May 2022

N W E S

270 495 MANAGED LANES STUDY



Legend

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- SSPRA
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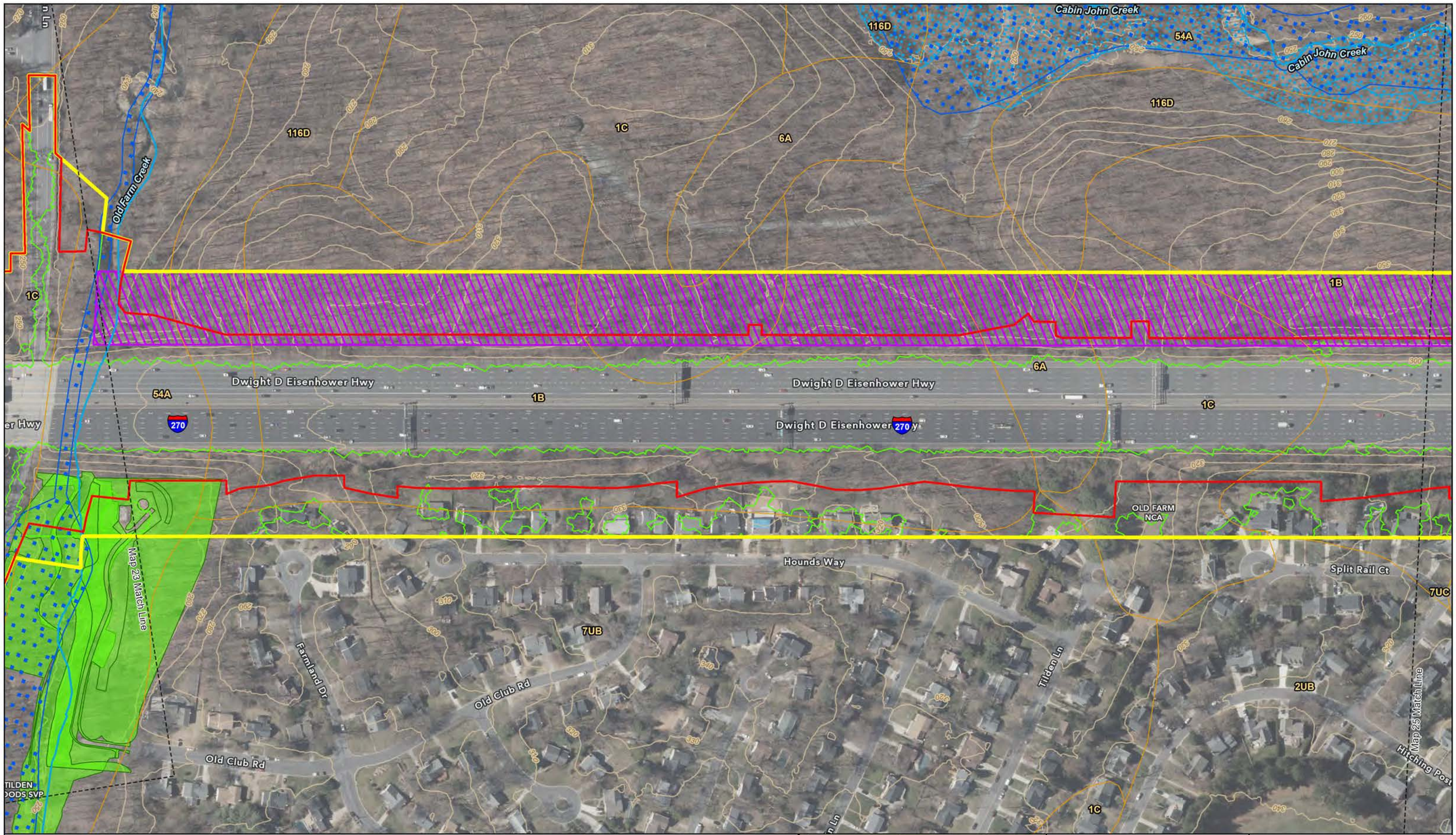
- FCE Individual Trees
- Contours (10 ft)

Natural Resources Inventory

1 in = 200 ft
Map 23 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

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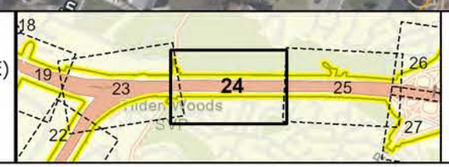
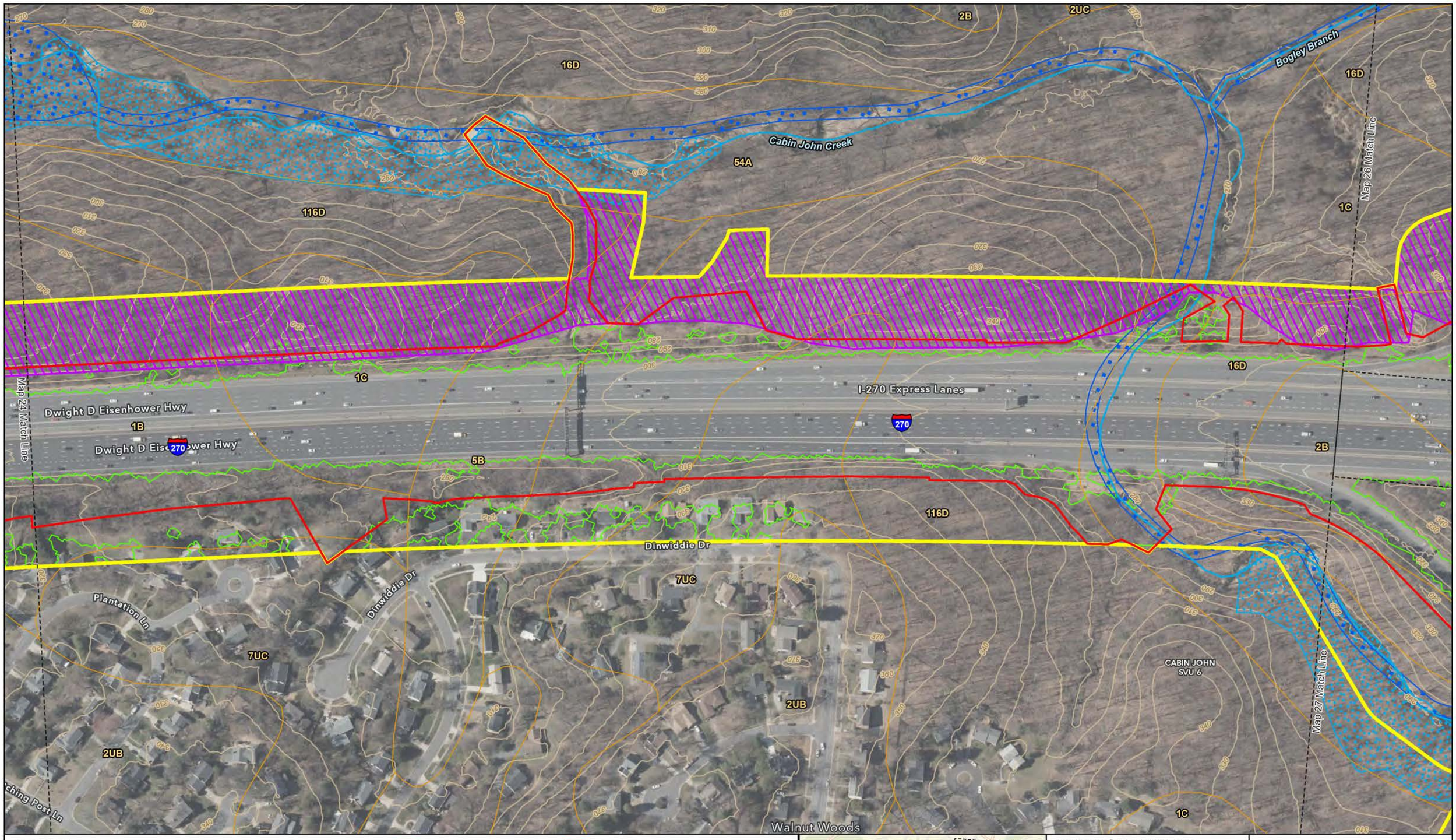


Natural Resources Inventory

1 in = 200 ft
Map 24 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

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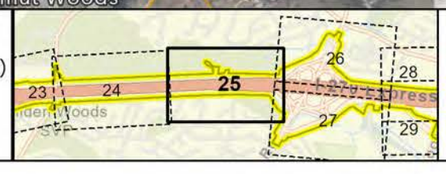
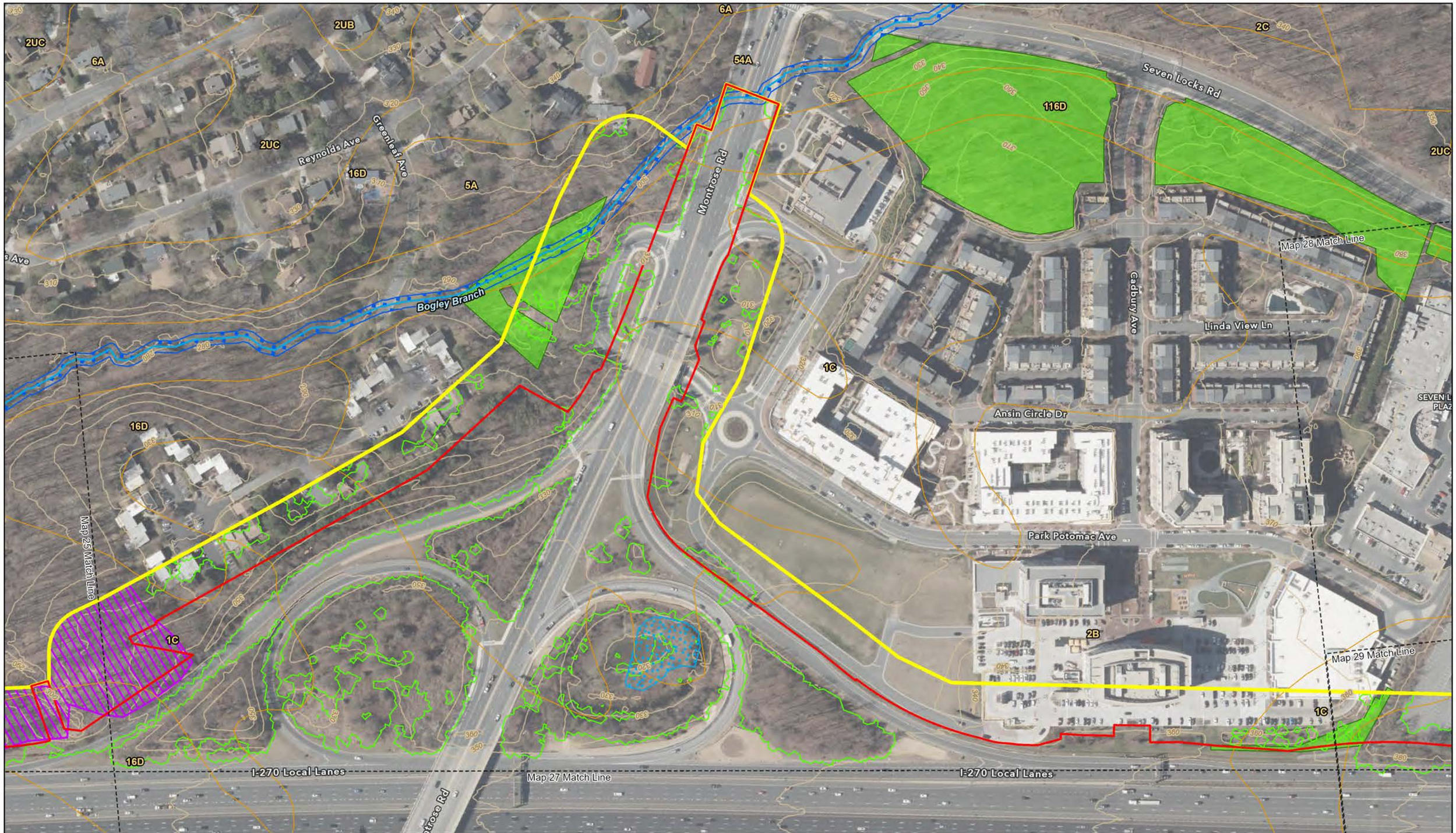


Natural Resources Inventory

1 in = 200 ft
Map 25 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

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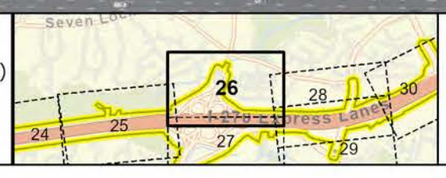

Natural Resources Inventory

1 in = 200 ft
Map 26 of 41
May 2022

270 / 495 MANAGED LANES STUDY

I-270 Local Lanes

I-270 Local Lanes

Map 26 Match Line

Tower Oaks Blvd

Tower Oaks Blvd

Preserve Pkwy

Preserve Pkwy

Map 28 Match Line

Map 29 Match Line

Map 25 Match Line

Cabin John Creek

Tower Oaks Blvd

Montrose Rd

Montrose Rd

N Farm Ln

Green Pasture Dr

1C

2B

2C

16D

116D

6A

54A

66UC

66UB

116E

Legend

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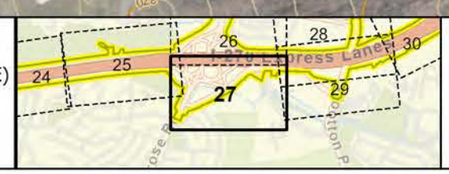


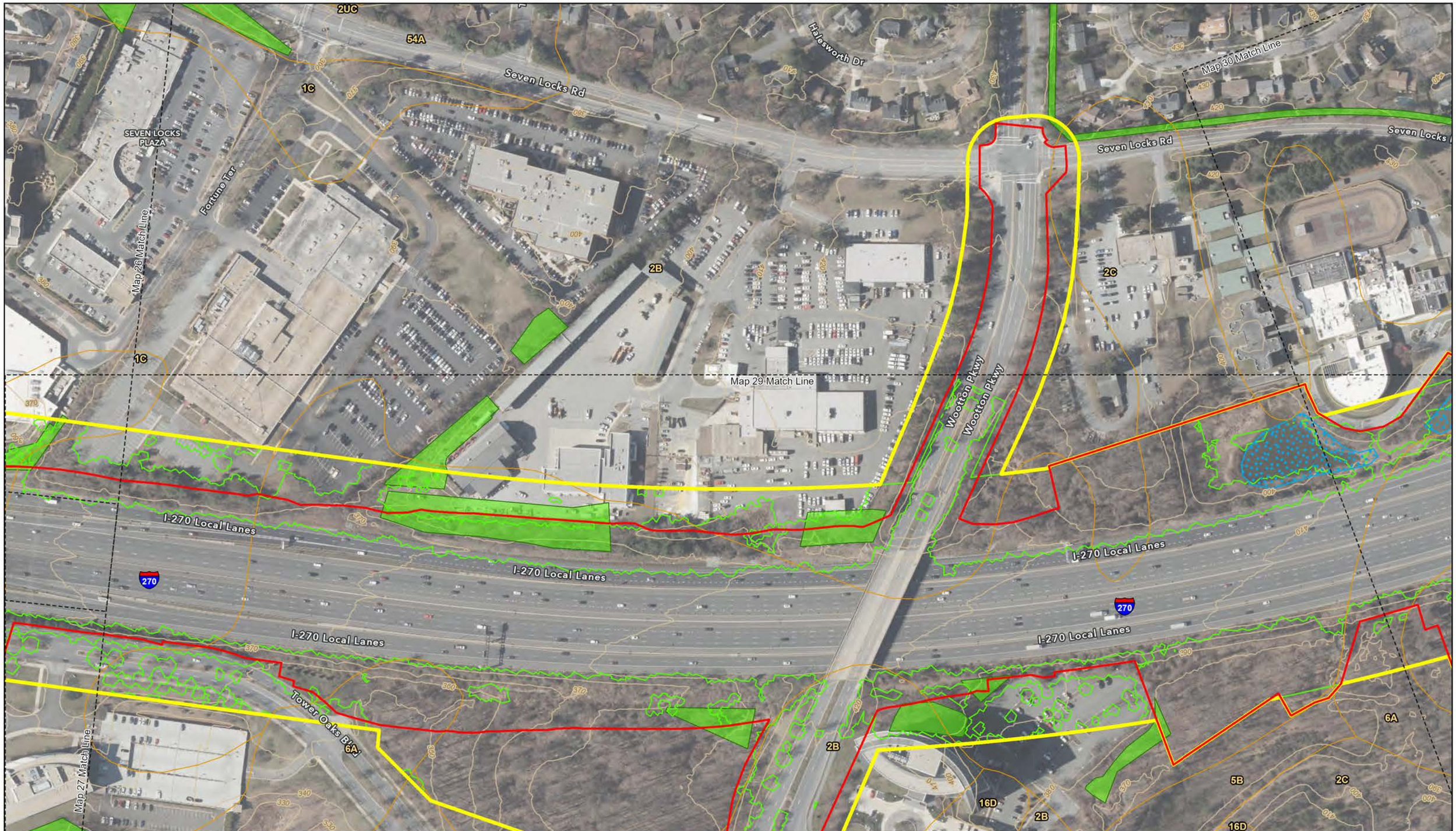
Natural Resources Inventory

1 in = 200 ft

Map 27 of 41

May 2022

270 495 MANAGED LANES STUDY



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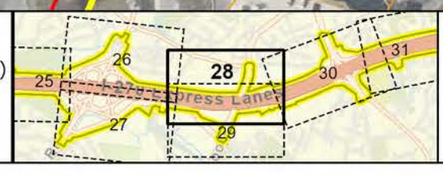
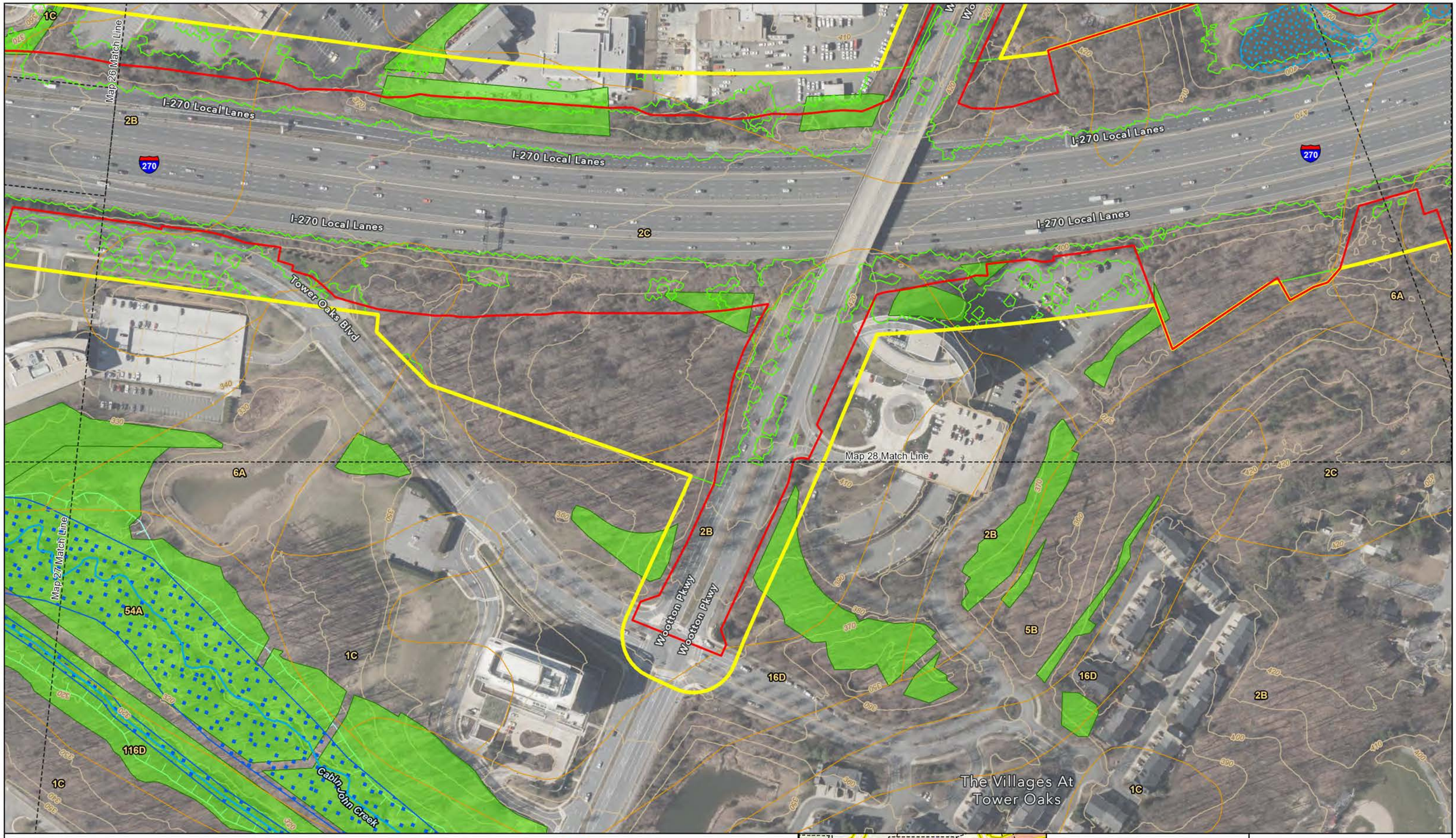


Natural Resources Inventory

1 in = 200 ft
Map 28 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

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Natural Resources Inventory

1 in = 200 ft
Map 29 of 41
May 2022

270 495 MANAGED LANES STUDY

Cliffe Hill Way
Seven Locks Rd
Map 28 Match Line
Map 29 Match Line
2C
6A
I-270 Local Lanes
2B
Great Falls Rd
Watts Branch Pkwy
Saddlebrook
66UB
Woodsend Pl
25C
65B
Map 31 Match Line
JULIUS WEST MIDDLE SCHOOL
MILLENIUM GARDEN PARK
Marcus Ct
Markwood

Legend

- LOD - Preferred Alternative
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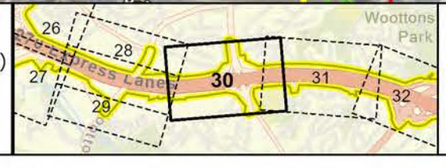
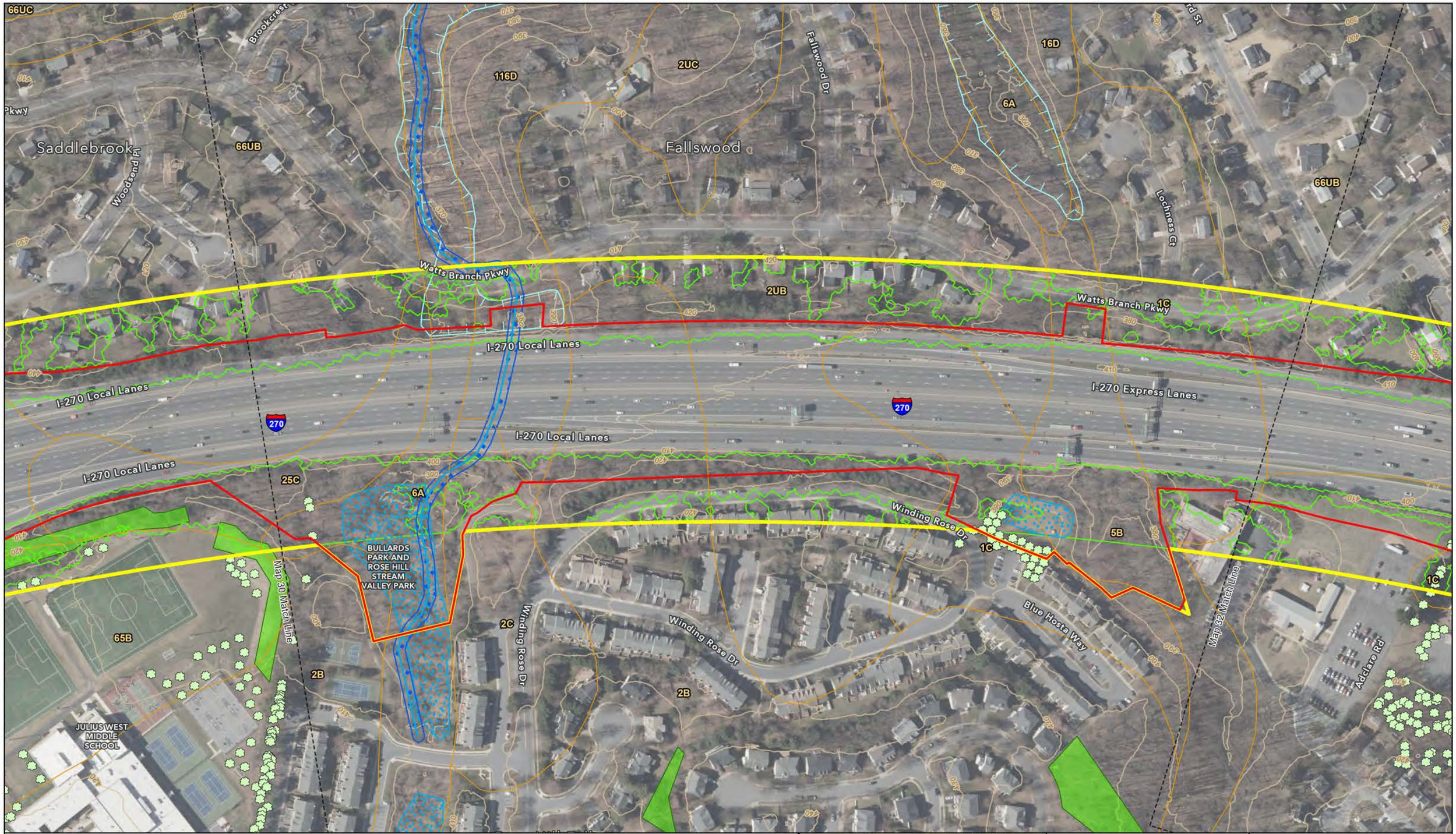


Natural Resources Inventory

1 in = 200 ft
Map 30 of 41
May 2022

270 495 MANAGED LANES STUDY



Legend

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- FCE Individual Trees
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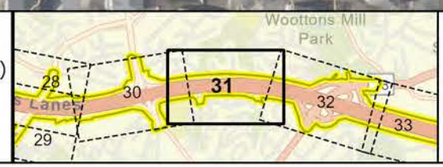
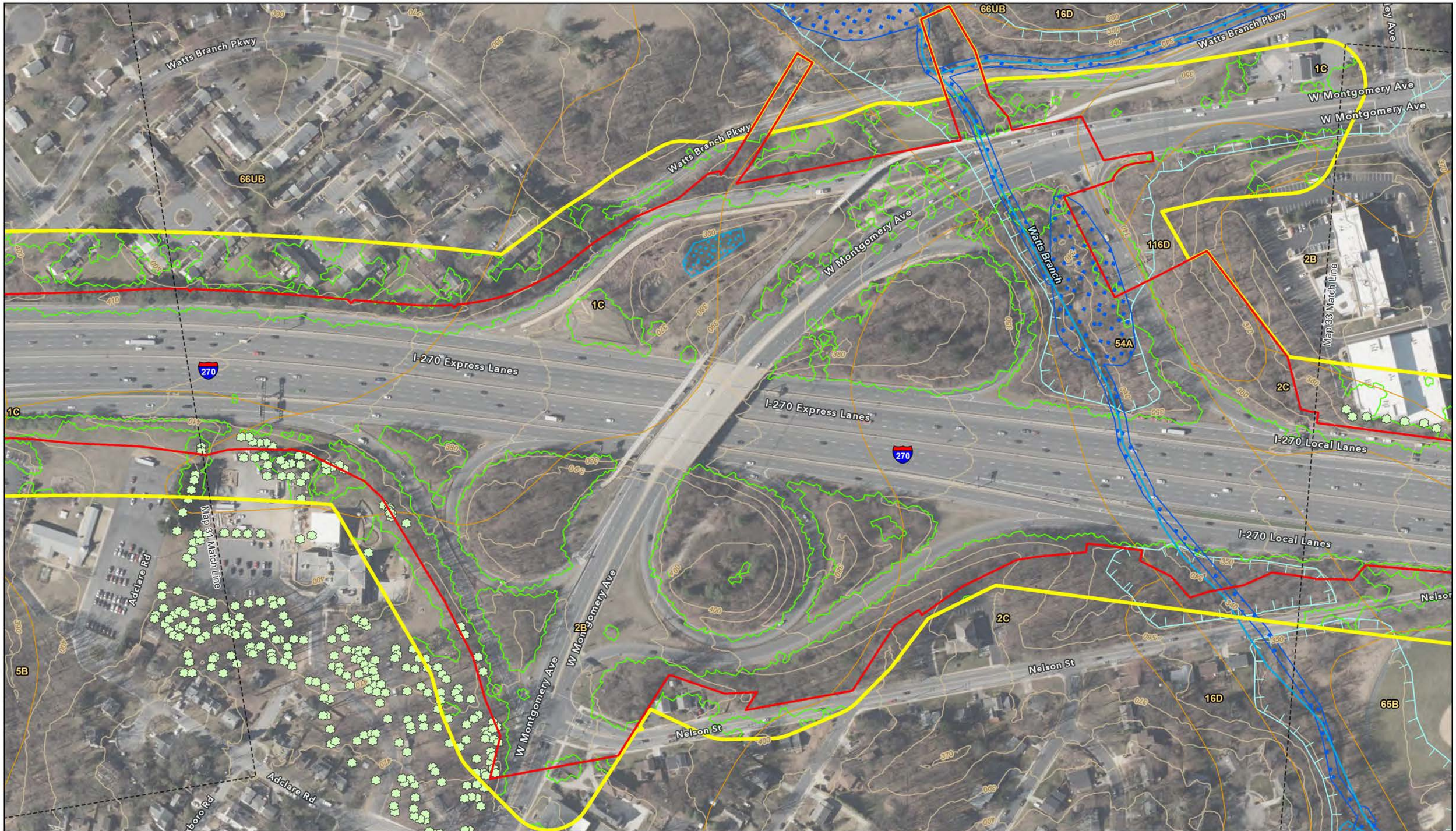


Natural Resources Inventory

1 in = 200 ft
Map 31 of 41
May 2022

I-270 & I-495 MANAGED LANES STUDY



Legend

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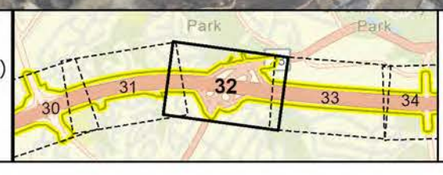

Natural Resources Inventory

1 in = 200 ft
Map 32 of 41
May 2022

270 495 MANAGED LANES STUDY

Montgomery Ave

Map 32 Match Line

Map 34 Match Line

6A

1C

2C

I-270 Local Lanes

I-270 Express La

I-270 Express

270

I-270 Local Lanes

Nelson St

WOODLEY GARDENS SHOPPING CENTER

2B

Hawthorn Ct

1C

Nelson St

Azalea Dr

Regents Square

Hawthorn Ct

Woodley Dr

65B

16D

54A

Watts Branch

Azalea Dr

1C

Legend

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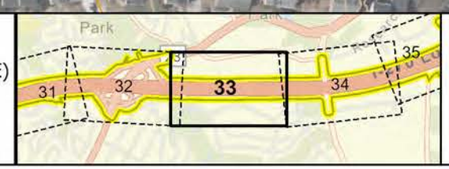
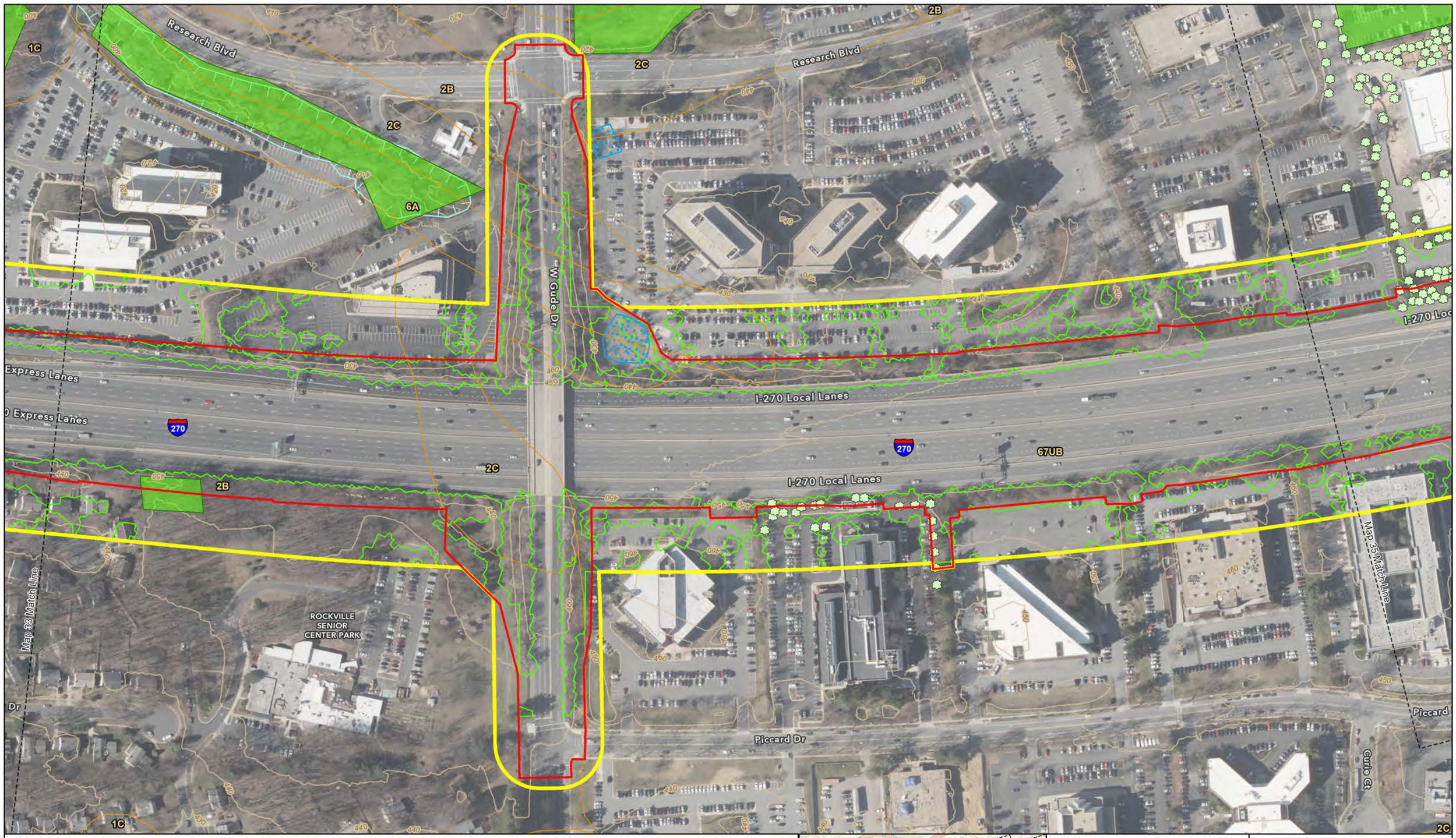


Natural Resources Inventory

1 in = 200 ft
Map 33 of 41
May 2022

270 495 MANAGED LANES STUDY



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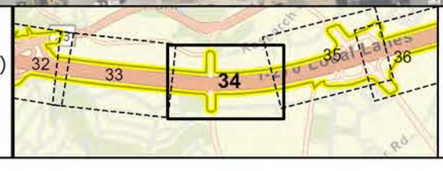
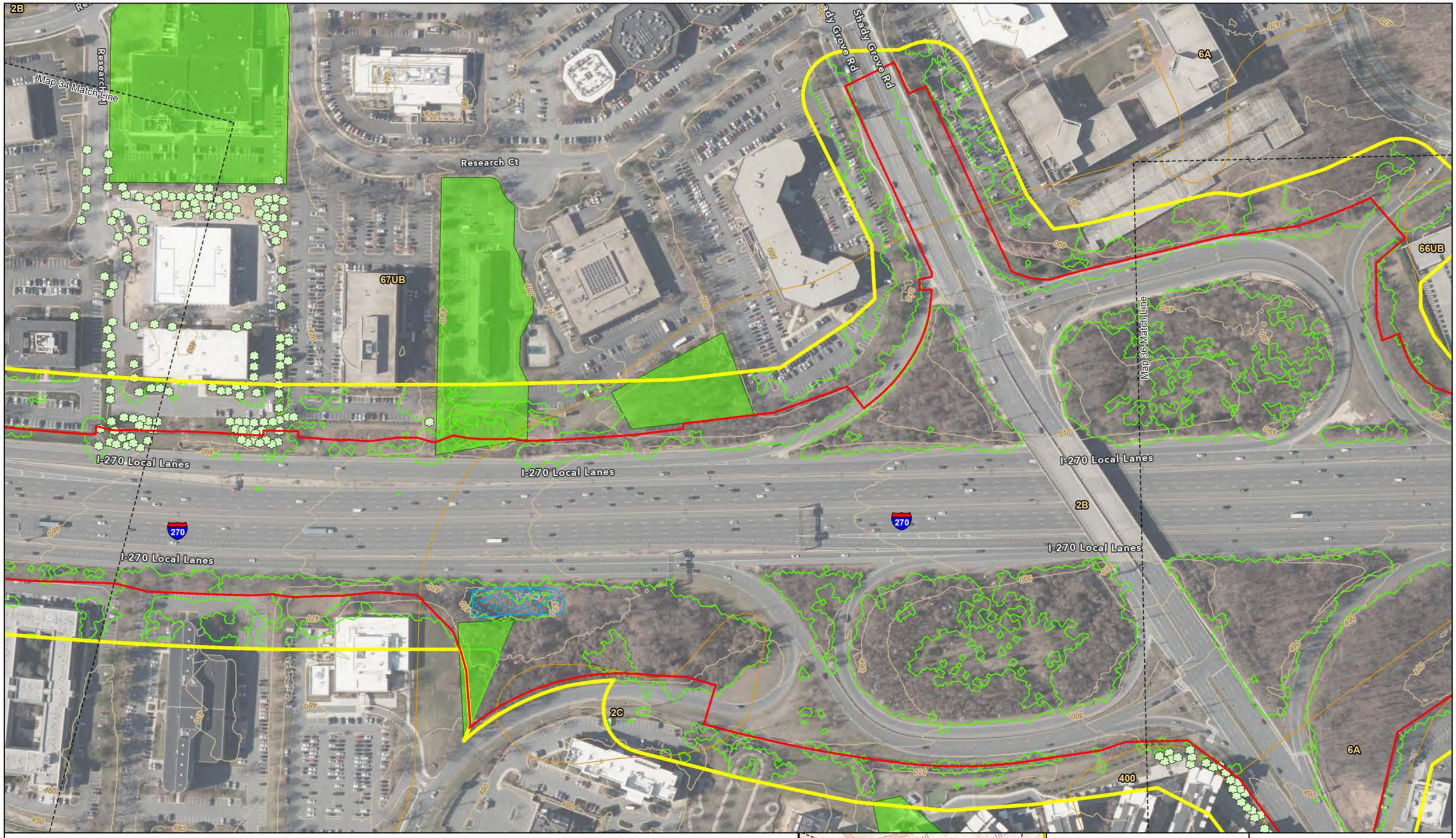


Natural Resources Inventory

1 in = 200 ft
Map 34 of 41
May 2022



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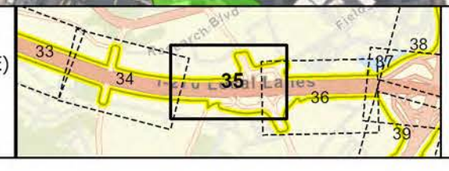
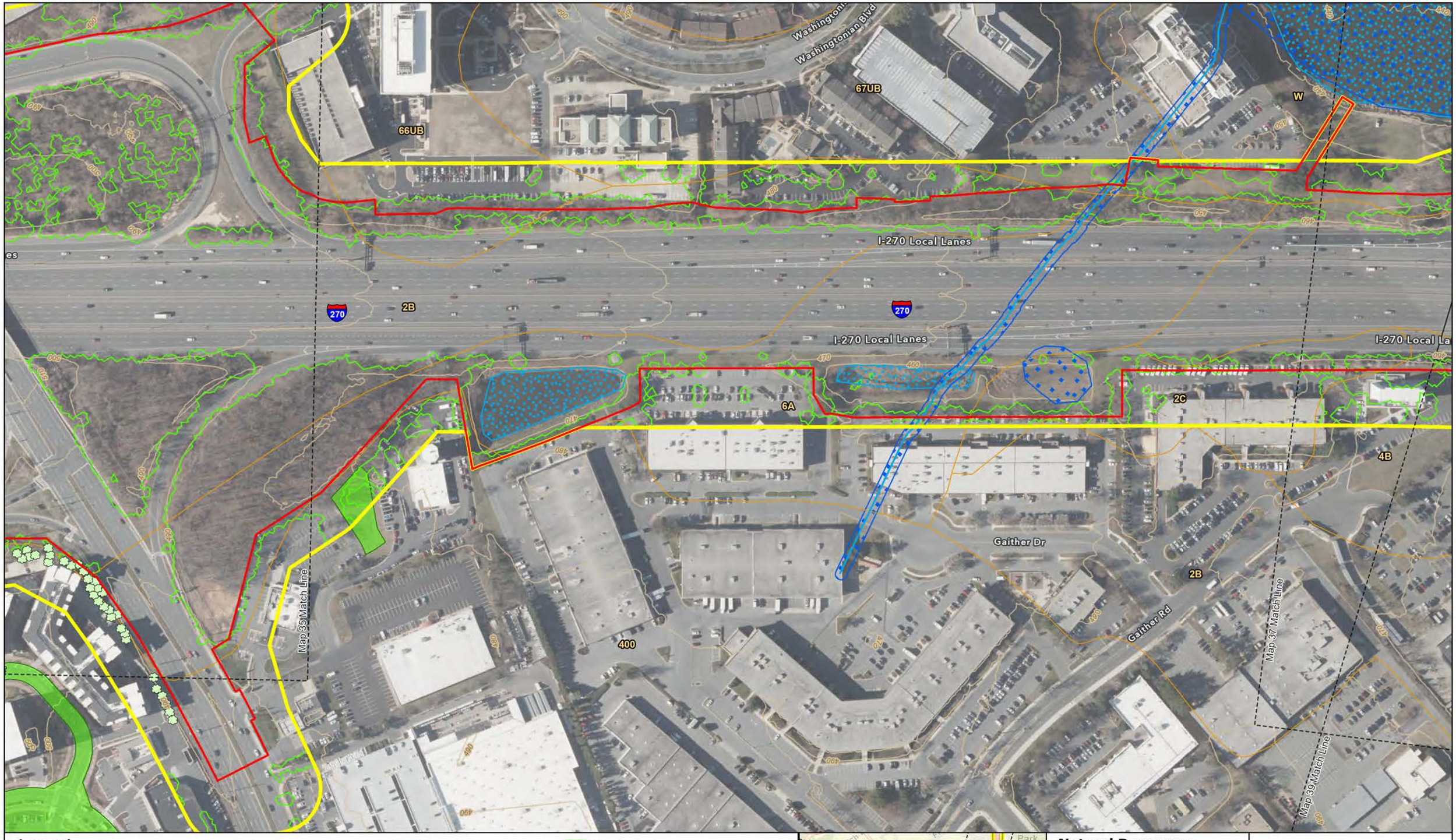


Natural Resources Inventory

1 in = 200 ft
Map 35 of 41
May 2022

I-495 & I-270 MANAGED LANES STUDY



Legend

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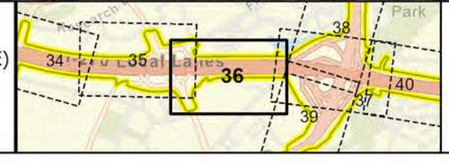
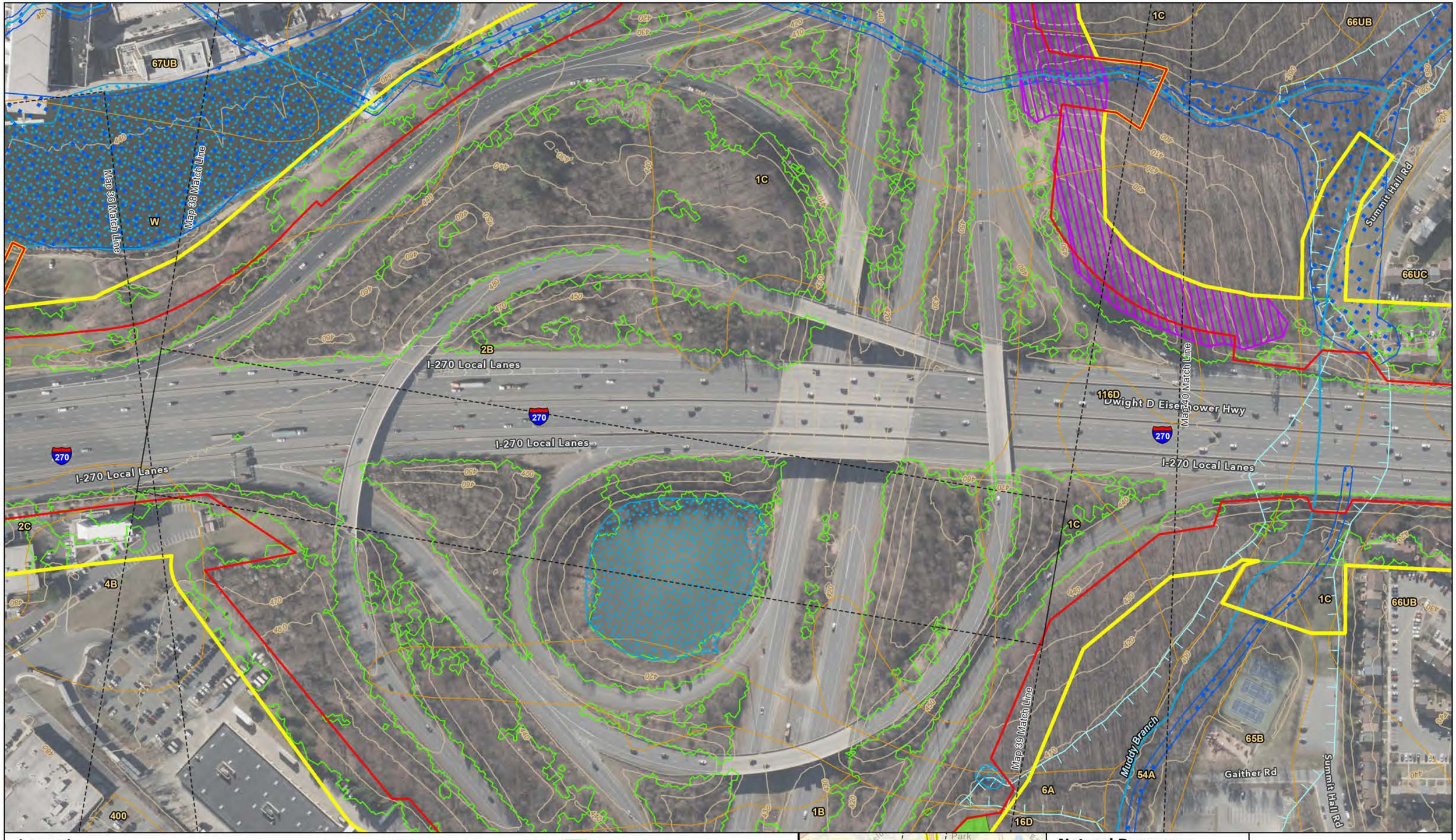


Natural Resources Inventory

1 in = 200 ft
Map 36 of 41
May 2022

270 495 MANAGED LANES STUDY



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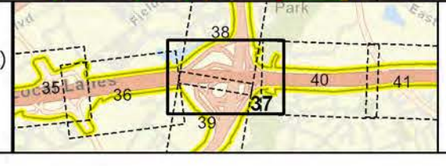
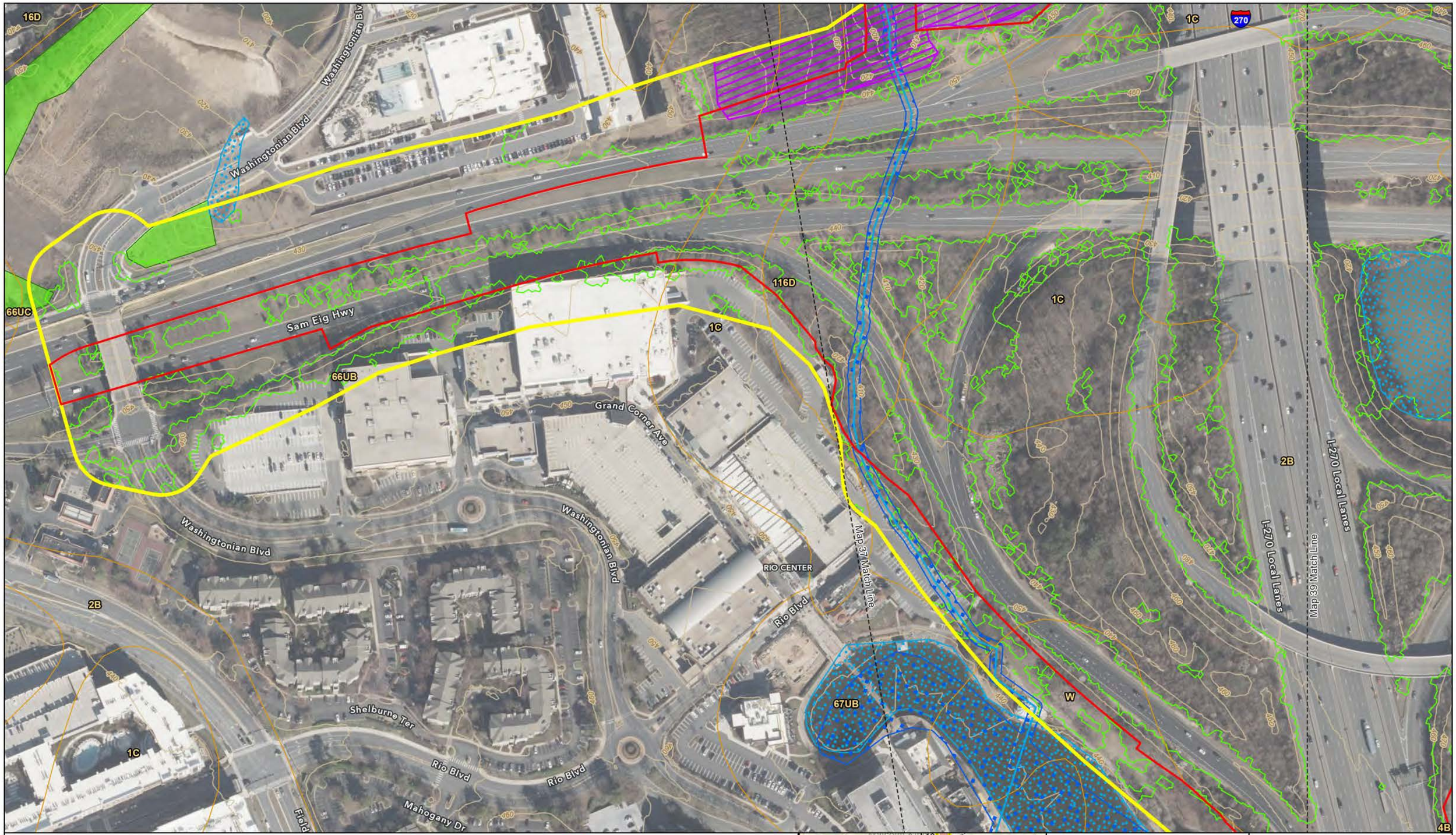


Natural Resources Inventory

1 in = 200 ft
Map 37 of 41
May 2022

270 495 MANAGED LANES STUDY



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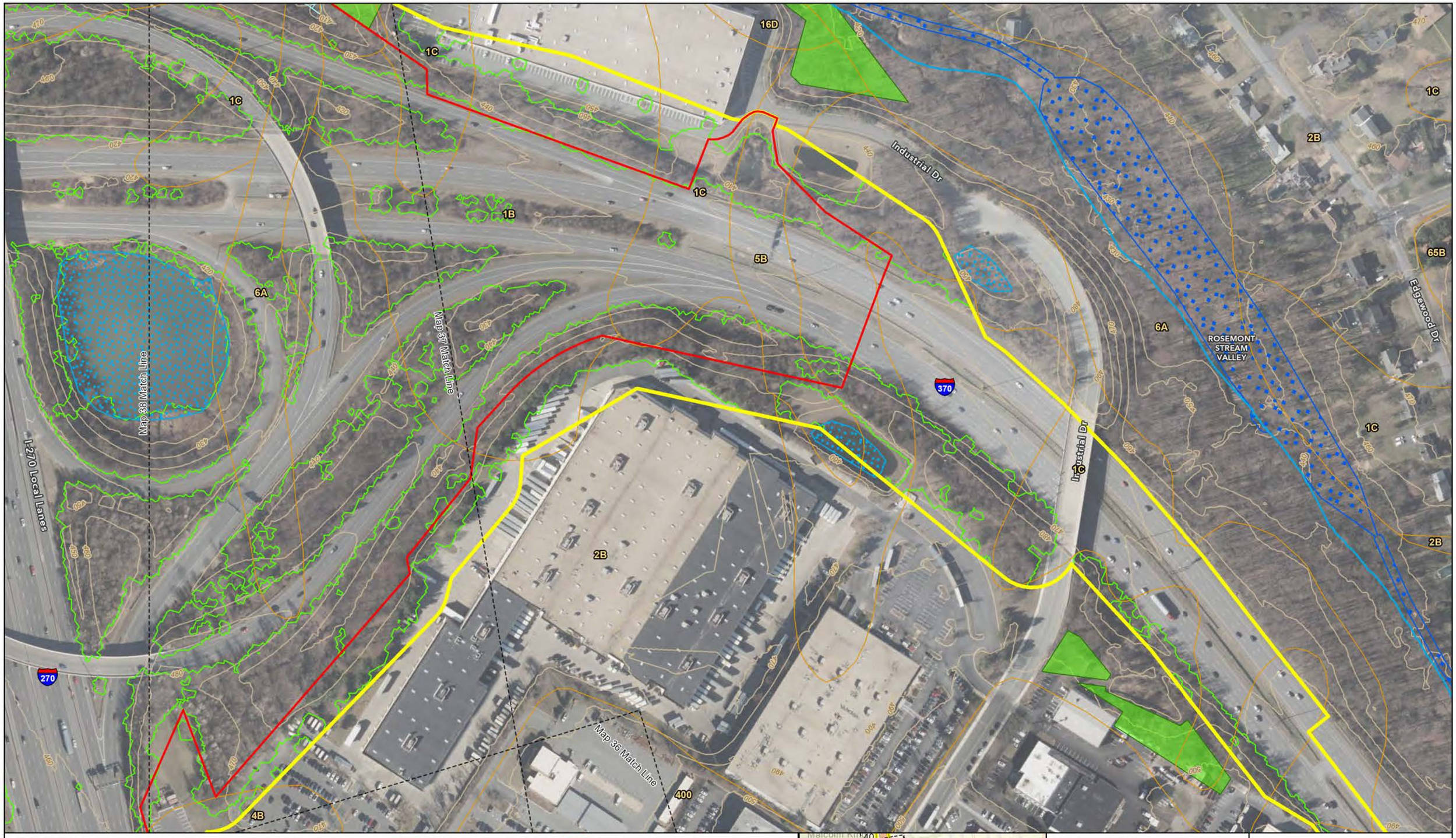
Natural Resources Inventory

1 in = 200 ft
Map 38 of 41
May 2022

N W E S

270 495 MANAGED LANES STUDY



Legend

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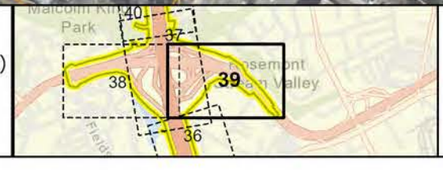
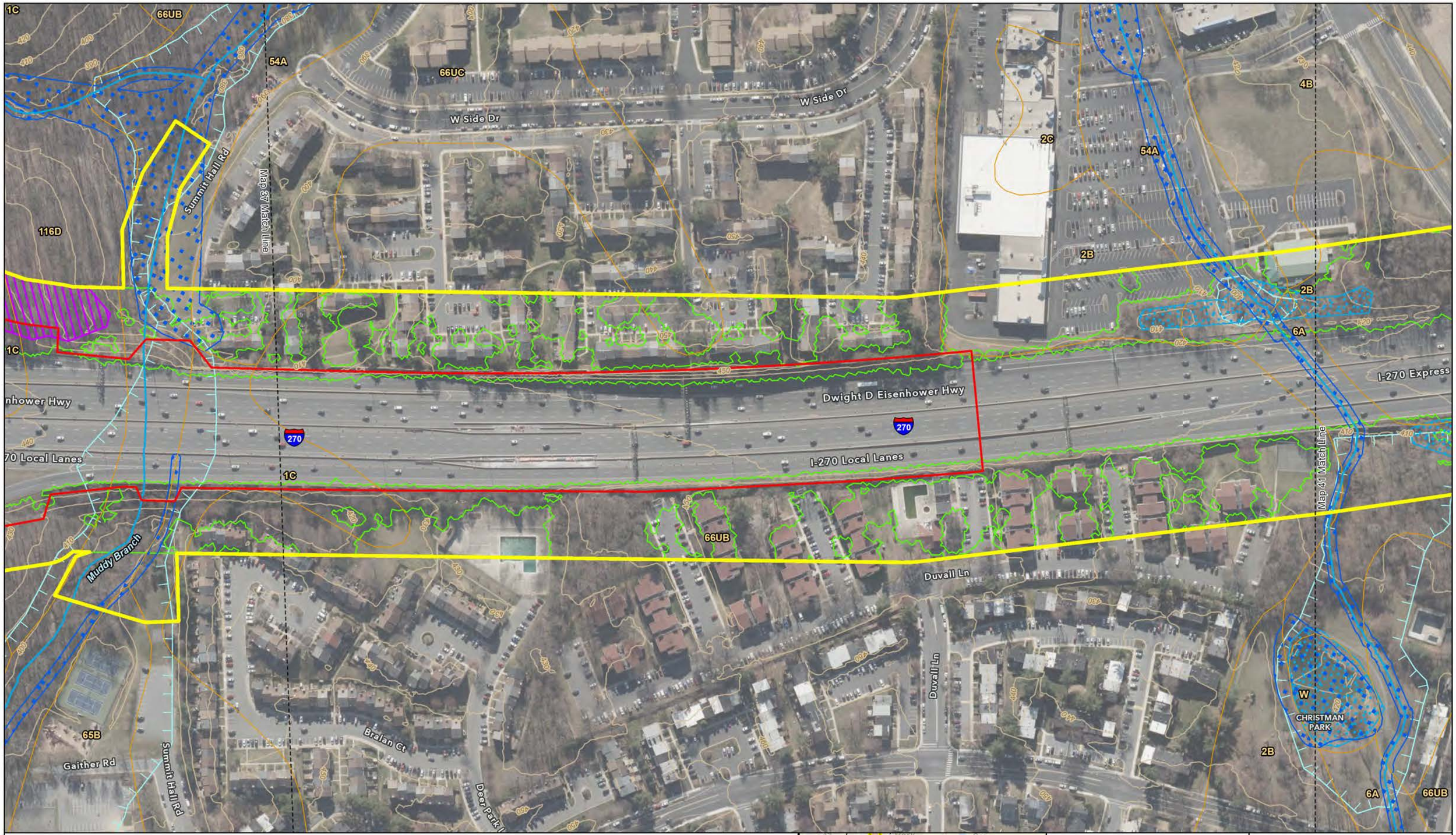


Natural Resources Inventory

1 in = 200 ft
Map 39 of 41
May 2022

N W E S

270 495 MANAGED LANES STUDY



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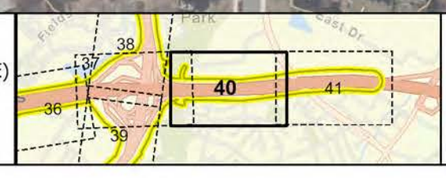

Natural Resources Inventory

1 in = 200 ft
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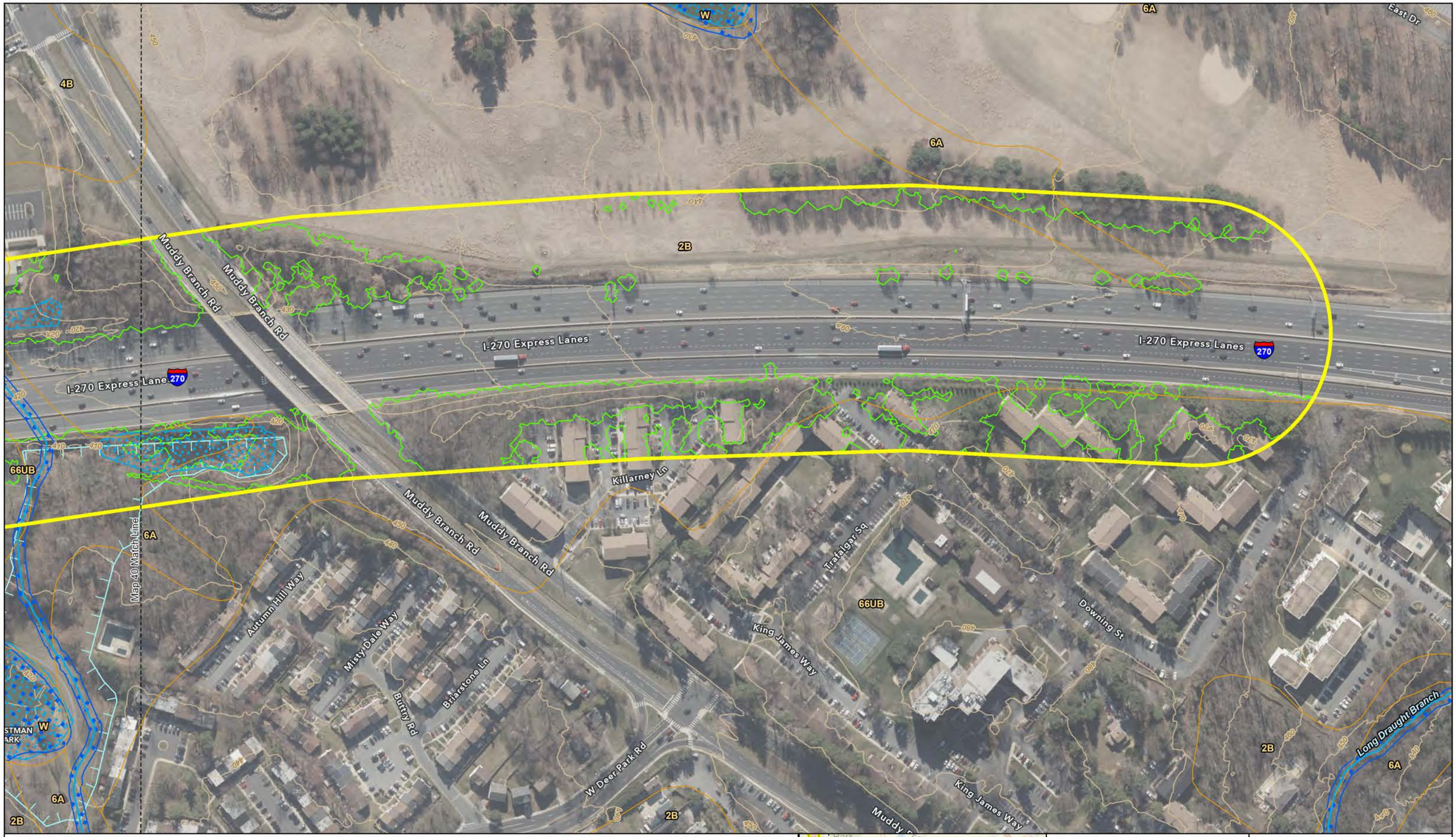
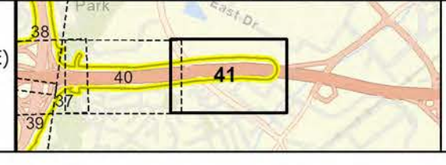
May 2022

270 495 MANAGED LANES STUDY



Legend

- LOD - Preferred Alternative
- Corridor Study Boundary
- Map Match Line
- USGS Rivers and Streams
- DNR Wetlands and Waterbodies
- NWI Wetlands and Waterbodies
- Wetlands of Special State Concern
- FEMA 100 Year Floodplain
- 39B Soils
- Potential FIDS Habitat
- SSPRA
- Tree Canopy
- Forest Conservation Act Easements (FCE)
- FCE Individual Trees
- Contours (10 ft)



Natural Resources Inventory

1 in = 200 ft
Map 41 of 41
May 2022

N E S W

270 495 MANAGED LANES STUDY

APPENDIX D: SOILS TABLE

Soils Within the I-495 & I-270 MLS Phase I South Limits

County	Soil Symbol	Description	K-Factor	Hydric Rating	Hydrologic Soil Group	Drainage Class	Prime Farmland?
Fairfax	95	Urban land	--	0	--	--	Not prime farmland
Fairfax	102	Wheaton loam, 2 to 25 percent slopes	0.37	0	C	Well drained	Not prime farmland
Fairfax	105B	Wheaton-Glenelg complex, 2 to 7 percent slopes	0.37	0	C	Well drained	Not prime farmland
Fairfax	105C	Wheaton-Glenelg complex, 7 to 15 percent slopes	0.37	0	C	Well drained	Not prime farmland
Fairfax	105D	Wheaton-Glenelg complex, 15 to 25 percent slopes	0.37	0	C	Well drained	Not prime farmland
Fairfax	39B	Glenelg silt loam, 2 to 7 percent slopes	0.37	0	B	Well drained	All areas are prime farmland
Fairfax	39C	Glenelg silt loam, 7 to 15 percent slopes	0.37	0	B	Well drained	Farmland of statewide importance
Fairfax	39D	Glenelg silt loam, 15 to 25 percent slopes	0.37	0	B	Well drained	Farmland of statewide importance
Fairfax	39E	Glenelg silt loam, 25 to 45 percent slopes	0.37	0	B	Well drained	Not prime farmland
Fairfax	78B	Meadowville loam, 2 to 7 percent slopes	0.2	0	A	Well drained	All areas are prime farmland
Fairfax	88E	Rhodhiss-Rock outcrop complex, 25 to 45 percent slopes	0.24	0	A	Well drained	Not prime farmland
Montgomery	300	Rock outcrop-Blocktown complex	--	0	--	--	Not prime farmland
Montgomery	400	Urban land	--	0	D	--	Not prime farmland

County	Soil Symbol	Description	K-Factor	Hydric Rating	Hydrologic Soil Group	Drainage Class	Prime Farmland?
Montgomery	116D	Blocktown channery silt loam, 15 to 25 percent slopes, very rocky	0.28	5	D	Well drained	Not prime farmland
Montgomery	116E	Blocktown channery silt loam, 25 to 45 percent slopes, very rocky	0.28	5	D	Well drained	Not prime farmland
Montgomery	16D	Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	0.24	5	C	Well drained	Not prime farmland
Montgomery	1B	Gaila silt loam, 3 to 8 percent slopes	0.43	5	B	Well drained	All areas are prime farmland
Montgomery	1C	Gaila silt loam, 8 to 15 percent slopes	0.43	5	B	Well drained	Farmland of statewide importance
Montgomery	25C	Legore silt loam, 8 to 15 percent slopes	--	0	C	Well drained	Farmland of statewide importance
Montgomery	27B	Neshaminy silt loam, 3 to 8 percent slopes	0.37	0	B	Well drained	All areas are prime farmland
Montgomery	28A	Watchung silty clay loam, 0 to 3 percent slopes	0.43	100	C/D	Poorly drained	Not prime farmland
Montgomery	2B	Glenelg silt loam, 3 to 8 percent slopes	0.37	0	B	Well drained	All areas are prime farmland
Montgomery	2C	Glenelg silt loam, 8 to 15 percent slopes	0.37	0	B	Well drained	Farmland of statewide importance
Montgomery	2UB	Glenelg-Urban land complex, 0 to 8 percent slopes	0.28	0	B	Well drained	Not prime farmland
Montgomery	2UC	Glenelg-Urban land complex, 8 to 15 percent slopes	0.28	0	B	Well drained	Not prime farmland

County	Soil Symbol	Description	K-Factor	Hydric Rating	Hydrologic Soil Group	Drainage Class	Prime Farmland?
Montgomery	35B	Chrome and Conowingo soils, 3 to 8 percent slopes	0.37	0	C	Well drained	Not prime farmland
Montgomery	37B	Travilah silt loam, 3 to 8 percent slopes	0.37	5	C/D	Somewhat poorly drained	Not prime farmland
Montgomery	41B	Elsinboro silt loam, 3 to 8 percent slopes	0.49	0	B	Well drained	All areas are prime farmland
Montgomery	43A	Elk silt loam, 0 to 3 percent slopes, occasionally flooded	0.49	0	B	Well drained	All areas are prime farmland
Montgomery	4B	Elioak silt loam, 3 to 8 percent slopes	0.37	0	C	Well drained	All areas are prime farmland
Montgomery	4C	Elioak silt loam, 8 to 15 percent slopes	0.37	0	C	Well drained	Farmland of statewide importance
Montgomery	53A	Codorus silt loam, 0 to 3 percent slopes, occasionally flooded	0.32	15	C	Moderately well drained	Not prime farmland
Montgomery	54A	Hatboro silt loam, 0 to 3 percent slopes, frequently flooded	--	100	B/D	Poorly drained	Not prime farmland
Montgomery	5B	Glenville silt loam, 3 to 8 percent slopes	0.37	10	C/D	Moderately well drained	All areas are prime farmland
Montgomery	65B	Wheaton silt loam, 0 to 8 percent slopes	0.43	0	B	Well drained	Farmland of statewide importance
Montgomery	66UB	Wheaton-Urban land complex, 0 to 8 percent slopes	0.43	5	B	Well drained	Not prime farmland
Montgomery	66UC	Wheaton-Urban land complex, 8 to 15 percent slopes	0.43	5	B	Well drained	Not prime farmland

County	Soil Symbol	Description	K-Factor	Hydric Rating	Hydrologic Soil Group	Drainage Class	Prime Farmland?
Montgomery	67UB	Urban land-Wheaton complex, 0 to 8 percent slopes	--	5	D	--	Not prime farmland
Montgomery	6A	Baile silt loam, 0 to 3 percent slopes	0.37	85	C/D	Poorly drained	Not prime farmland
Montgomery	7UB	Gaila-Urban land complex, 0 to 8 percent slopes	0.43	5	D	Well drained	Not prime farmland
Montgomery	7UC	Gaila-Urban land complex, 8 to 15 percent slopes	0.43	5	D	Well drained	Not prime farmland
Montgomery	W	Water	--	0	--	--	Not prime farmland

APPENDIX E: WETLAND FUNCTIONS AND VALUES TABLE

Summary of Wetland Functions and Values

Feature ID	Classification	Area (ac)	Distance to Nearest Roadway/ Development (ft)	Function/Value														
				Groundwater Recharge/Discharge	Floodflow Alteration	Fish and Shellfish Habitat	Sediment/Toxicant Retention	Nutrient Removal	Production Export	Sediment/Shoreline Stabilization	Wildlife Habitat	Recreation	Education/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Endangered Species Habitat	Other
Subsegment 20 – No wetlands identified																		
Subsegment 21																		
21P	PFO	0.02	100	X	X		X	X			X							
21Q	PFO	0.07	90	X	X		X	X	X		X							
21T	PFO	0.05	60	X			X	X			X							
Subsegment 22																		
22BBB	PFO	0.36	~100	No functions and values data – delineated by VDOT														
22CCC	PFO	0.13	~15		X			X	X		X			X				
22E	PEM	0.01	35	X			X	X										
22F	PEM	0.02	35	X			X	X										
22G	PFO	0.02	32	X	X		X	X										
22GG	PEM	0.02	14				X	X			X							
22I	PFO	0.46	40	X	X		X	X	X		X							
22II	PFO	<0.01	120		X		X	X	X		X							
22JJ	PFO	0.01	100	X			X	X	X		X							
22K	PEM	0.05	100	X	X		X	X										
22L	PEM	0.01	100	X	X		X	X										
22L_VP	PEM	0.05	100	X	X		X	X										
22LL_VP	PFO	0.05	140								X							
22O	PFO	0.45	100	X	X		X	X	X		X							
22OO	PFO	>0.84	50					X	X		X							
22PP	PFO	0.01	50	X														
22R	PFO	0.27	50	X			X	X			X							
22TT	PFO	0.82	~90	No functions and values data – delineated by VDOT														
22U	PFO	0.02	50	X	X		X	X	X		X							
22W	PEM	>1.66	0-150	X	X		X	X	X		X	X		X				
22X	PFO	0.03	90	X			X	X			X							
22Y	PEM	0.04	~100				X	X			X							
Subsegment 23																		
23BB	PEM	0.03	31	X	X		X	X		X								
23CC	PFO	0.07	26	X	X	X	X	X	X	X								
23EE	PFO	0.04	30	X	X		X	X										

Feature ID	Classification	Area (ac)	Distance to Nearest Roadway/ Development (ft)	Function/Value													
				Groundwater Recharge/Discharge	Floodflow Alteration	Fish and Shellfish Habitat	Sediment/Toxicant Retention	Nutrient Removal	Production Export	Sediment/Shoreline Stabilization	Wildlife Habitat	Recreation	Education/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Endangered Species Habitat	Other
23F	PEM	0.63	75	X	X	X	X	X	X	X	X						
23GG	PFO	0.32	20	X	X		X	X									
23HH	PFO	>0.14	105	X	X		X										
23J	PFO	0.20	106		X		X	X									
23KK	PEM	0.53	105		X		X	X									
23L	PEM	0.01	~40	X	X		X	X									
23LL	PEM	0.04	82	X	X		X	X			X						
23MM	PFO	0.12	115	X	X		X	X			X				X		
23P	PFO	0.03	35	X	X		X	X	X	X	X						
23W	PEM	0.32	43	X	X	X	X	X		X	X						
23WW	PFO	0.06	65		X		X				X						
23X	PEM	0.02	35	X	X		X	X		X							
Subsegment 24																	
24M	PFO	0.36	46	X	X		X	X	X	X	X				X		
24N	PFO	1.00	106	X	X		X	X		X							
24Q	PFO	0.04	70	X	X		X	X		X							
24R	PFO	1.27	300	X	X	X	X	X	X	X	X	X	X	X	X		
24W	PEM	0.05	46	X	X		X	X	X	X	X				X		
24X	PEM	0.09	163	X	X		X	X	X	X	X				X		
Subsegment 25																	
25B	PFO	0.84	70	X	X		X	X									
25D	PFO	0.34	80	X	X	X	X	X	X	X	X						
25K	PEM	>1.26	30	X	X	X	X	X	X	X	X			X	X		
25M	PEM	<0.01	25				X	X									
25P	PSS	0.01	53	X	X		X	X			X						
Subsegment 26																	
26A	PEM	0.28	56	X	X		X	X									
26D	PEM	0.02	30	X	X		X	X									
26E	PEM	0.03	48	X	X		X	X									
26F	PEM	1.57	30	X	X	X	X	X	X	X	X	X	X	X	X		
26H	PEM	0.02	30	X	X	X	X	X	X	X	X	X	X		X		
Subsegment 27																	
27E	PFO	0.13	50	X	X	X	X	X	X	X	X						

Feature ID	Classification	Area (ac)	Distance to Nearest Roadway/ Development (ft)	Function/Value													
				Groundwater Recharge/Discharge	Floodflow Alteration	Fish and Shellfish Habitat	Sediment/Toxicant Retention	Nutrient Removal	Production Export	Sediment/Shoreline Stabilization	Wildlife Habitat	Recreation	Education/Scientific Value	Uniqueness/Heritage	Visual Quality/Aesthetics	Endangered Species Habitat	Other
27F	PFO	0.15	20	X	X	X	X	X	X	X	X						
27G	PSS	0.01	20	X	X		X	X									
27M	PFO	0.13	20	X	X		X	X	X	X	X			X			
27Q	PEM	0.02	43	X	X	X	X	X		X	X						
27S	PEM	<0.01	85	X	X	X	X	X		X							
Subsegment 28 – No wetlands identified																	
Subsegment 29																	
29G	PEM	0.05	45	X	X		X	X		X	X						
29J	PEM	0.14	46	X	X		X	X		X							
29L	PFO	0.04	300	X	X		X	X		X	X		X		X		
29M	PFO	0.09	32	X	X		X	X		X	X	X	X		X	X	
29N	PFO	0.16	65	X	X		X	X			X	X	X		X	X	

APPENDIX F: FIELD DATASHEETS

Waters of the U.S. Data Sheet

Project: 495/270 Managed Lane Study		Feature ID: 19J	Stream Order:
Date: 09/18/18 and 10/12/18	State: Maryland	Photos: 0035-0041 on 9/18/18 4325-4329 on 10/12/18	
Crew: MRS/EYG MRS/SJF	County: Montgomery	Last Flag Number: 19J-11	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: large, well-defined channel with abundant flow			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside study area	Downstream: outside study area	Adjacent/Abutting: none

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate				Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 3'-18'	☒ Silts	☒ Sands	☒ Muck		RB: forest, shrubs
☑ Artificial (man-made)	Depth: 2'-12"	☐ Cobbles	☒ Gravel	☐ Other:		
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete			
☐ Other:	stable	Side slope: ☒ ≥1:1	☒ 2:1	☒ 3:1	☐ ≤4:1	LB: forest, dense bamboo

Notes: Feature culverted under Maplewood Park Dr. & 495

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php								Month: August	Year: 2018		
⊗	No rain	○	0-0.5	○	○	○	○	○	○	○	○	○	◉	○	○	○
○	Light rain	⊗	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark					
☒ Yes	☐	Clear, natural line impressed on the bank	☒	Sediment deposition	☒	Sediment sorting
☐ No	☐	Changes in the character of soil	☐	Water staining	☑	Scour
	☐	Shelving	☒	Presence of flood litter/debris	☒	Observed/predicted flow events
	☐	Vegetation matted down, bent, or absent	☐	Destruction of terrestrial veg.	☐	Abrupt change in plant community
	☐	Leaf litter disturbed	☐	Presence of wrack line	☐	Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 208	**Stream Order:** 2
Date: 4-11-2018	**State:** MD	**Photos:** 195-196, 207-208 (outside soundwall)	
Crew: MBS/CCO	**County:** MONTGOMERY	**Last Flag Number:** 7 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	☒ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD INVESTIGATION, HOWEVER WRACK LINE INDICATES HIGH PERIODIC FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 2' PIPE	Downstream: 2' CULVERT	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

UNDER SOUNDWALL & CONTINUES OUTSIDE SOUNDWALL THROUGH 2' PIPE, RIPRAP CHANNEL, INTO ANOTHER 2' PIPE

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 5'	☒ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 3"	☒ Cobbles	☒ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: MODERATE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php	Month: MARCH Year: 2018
● No rain	● 0-0.5	○ -6 ○ -5 ○ -4	Severe Drought
○ Light rain	○ 0.5-1	○ -3 ○ -2	Moderate Drought
○ Heavy Rain	○ >1	● -1.45 ○ 0 ○ 1	Normal
		○ 2 ○ 3	Moderately Wet
		○ 4 ○ 5 ○ 6	Severely Wet

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 20C	**Stream Order:** 3
Date: 4-11-2018	**State:** MD	**Photos:** 200-202	
Crew: MBS/CCO	**County:** MONTGOMERY	**Last Flag Number:** 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING WITH SIGNIFICANT AMOUNT OF WATER IN CHANNEL DURING MODERATE DROUGHT CONDITIONS			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 3' PIPE - 1/2 SILTED-IN	Downstream: 4' CULVERT,	Adjacent/Abutting: None

Feature Description: *(check all that apply)* CONVERGES WITH FEATURE 20D (ANOTHER PERENNIAL CHANNEL)

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1-3'	☒ Silts	☒ Sands	☐ Muck	RB: SCRUB/SHRUB
☐ Artificial (man-made)	Depth: 6"	☒ Cobbles	☒ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability: MODERATE	☐ Bedrock	☐ Concrete		LB: SCRUB/SHRUB
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												
⊗ No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Month: MARCH **Year:** 2018

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☒ Changes in the character of soil	☐ Water staining	☒ Scour	
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 20D	**Stream Order:** 3
Date: 4-11-2018	**State:** MD	**Photos:** 197-199	
Crew: MBS/CCO	**County:** MONTGOMERY	**Last Flag Number:** 3A&3B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING AT HIGH LATE DURING MODERATE DROUGHT			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: CONTINUES OUTSIDE ROW	Downstream: 4' CULVERT, CONVERGES WITH FEATURE 20C (ANOTHER PERENNIAL STREAM)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 5'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 6"	☐ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete		LB: HEDGEROW
☐ Other:	FLOODING	Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: MARCH Year: 2018												
⊗ No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☒ Changes in the character of soil	☐ Water staining	☒ Scour	
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 20E	**Stream Order:** 2
Date: 4-11-2018	**State:** MD	**Photos:** 203-206	
Crew: MBS/CCO	**County:** MONTGOMERY	**Last Flag Number:** 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD INVESTIGATION, BUT CLEAR FLOW LINE ON BANKS INDICATES HIGH PERIODIC FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 2' PIPE	Downstream: 2' PIPE FLOW	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW (BAMBOO)
☐ Artificial (man-made)	Depth: 2' BANK	☐ Cobbles	☒ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☐ Concrete		LB: HEDGEROW (BAMBOO)
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: MARCH Year: 2018												
⊗	No rain	●	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1,45	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☒ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21B	**Stream Order:**
Date: 4-12-2018	**State:** MD	**Photos:** 0212-0213	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Large, well-defined channel with constant flow and OHWM			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 20D	Downstream: 21C	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (NBSS)
☒ Natural Channel Shape	Width: 10-20'	☒ Silts	☒ Sands	☐ Muck	RB: EMERGENT VEGETATION
☐ Artificial (man-made)	Depth: 6-18"	☐ Cobbles	☐ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: MODERATELY STABLE	☐ Bedrock	☒ Concrete		LB: FOREST
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
⊗ No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21C	**Stream Order:**
Date: 6-6-2018	**State:** MD	**Photos:** 0214-17	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Large, well-defined channel with constant flow and OHWM			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 21L, 21B, 21V, 21I, 21M, 21H, 21F, 21G	Downstream: 22AA	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate				Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 10-30'	☒ Silts	☒ Sands	☐ Muck		RB: FOREST
☐ Artificial (man-made)	Depth: 4-12"	☒ Cobbles	☒ Gravel	☐ Other:		
☒ Manipulated (man-altered)	Bank Erosion/stability: RANGE STABLE → UNSTABLE	☐ Bedrock	☒ Concrete			LB: FOREST
☐ Other:		Side slope: ☒ ≥1:1	☒ 2:1	☒ 3:1	☐ ≤4:1	
Notes:						

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MAY Year: 2018												
● No rain	○ 0-0.5	○	○	○	○	○	○	○	●	○	○	○	○	○
○ Light rain	● 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☒ Scour	
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21D	**Stream Order:** 2
Date: 4-12-2018	**State:** MD	**Photos:** 0218-0219	
Crew: MBS/STF	**County:** MONTGOMERY	**Last Flag Number:** 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD INVESTIGATION, BUT WATER LINE + SEDIMENT DEPOSITION INDICATE THAT POOLED AREA			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 2 concrete-lined ephemeral channels	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1'-3'	☒ Silts	☒ Sands	☐ Muck	RB: MEADOW GRASSES, scrub/shrub
☐ Artificial (man-made)	Depth: 6"	☐ Cobbles	☐ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☒ Concrete		LB: SCRUB SHRUB, Hedgerow
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes: IN RIVER RD INTERCHANGE (NE QUADRANT), INNER LOOP I-495 FLOWS through 3" pipe into NW Quadrant; US portion concrete-lined					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
●	No rain	●	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21F	**Stream Order:** 2
Date: 4-13-2018	**State:** MD	**Photos:** 2540-2541	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** 21F-17a/17b	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD VISIT, HOWEVER WATER LINE, SCOUR, & WRACK LINE INDICATE HIGH PERIODIC FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: CONTINUES OUT OF ROW	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 5-8'	☒ Silts	☒ Sands	☐ Muck	RB: FOREST
☐ Artificial (man-made)	Depth: 8"	☒ Cobbles	☒ Gravel	☒ Other: RIPRAP	
☐ Manipulated (man-altered)	Bank Erosion/stability: MODERATE	☐ Bedrock	☐ Concrete		LB: FOREST
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: PIPED UNDER SOUNDWALL/I-495 WEST OF BRADLEY BLVD./EAST OF RIVER RD. — BOTH INLAND & COLDSPRING					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1,45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☒ Changes in the character of soil	☒ Water staining	☒ Scour	
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495 / I-270 MANAGED LANES STUDY		**Feature ID:** 216	**Stream Order:** 2
Date: 4-13-2018	**State:** MD	**Photos:** 2542-2543	
Crew: MBS / STF	**County:** MONTGOMERY	**Last Flag Number:** 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD INVESTIGATION, HOWEVER DAMP SILT DEPOSITED ON BED INDICATES SIGNIFICANT PERIODIC FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 18" DIAM. PIPE	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 2-5'	☒ Silts	☐ Sands	☐ Muck	RB: FOREST
☐ Artificial (man-made)	Depth: 3"	☐ Cobbles	☐ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☒ Concrete		LB: FOREST
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes: EAST OF RIVER RD ON I-495 INNERLOOP					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/mratological-rankings.php) Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark					
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21H	**Stream Order:** 2
Date: 4-13-2018	**State:** MD	**Photos:** 2544-2545	
Crew: MBS/STF	**County:** MONTGOMERY	**Last Flag Number:** 21H-6a/6b	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		⊗ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: NOT FLOWING DURING FIELD INVESTIGATION, HOWEVER WATER LINE + WRACK LINE INDICATE HIGH PONDING FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: CONTINUES OUTSIDE ROW and 21R	Downstream: 21C	Adjacent/Abutting: none

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 4'	☒ Silts	☐ Sands	☐ Muck	RB: SCRUB/SHRUB
☐ Artificial (man-made)	Depth: 12"	☒ Cobbles	☒ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete – PIECES		LB: SCRUB/SHRUB
☐ Other:	ERODING	Side slope: ☒ ≥1:1	☒ 2:1	☐ 3:1 ☐ ≤4:1	

Notes: EAST OF RIVER RD. ON I-495 INNERLOOP

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
◉ No rain	◉ 0-0.5	○	○	○	○	○	◉	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☒ Changes in the character of soil	☐ Water staining	☒ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270		**Feature ID:** 21I	**Stream Order:** 3
Date: 4-17-2018	**State:** MD	**Photos:** 2552-2554	
Crew: MBS/CCO	**County:** MONTGOMERY	**Last Flag Number:** 2A+B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING RAPIDLY DURING FIELD INVESTIGATION			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 3' PIPE	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 5-7'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 3"	☐ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: MODERATE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: SB I-270					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI — Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting
☐ No	☒ Changes in the character of soil	☒ Water staining	☒ Scour
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21J	**Stream Order:** 3
Date: 4-18-2018	**State:** MD	**Photos:** 2559-2560	
Crew: MKS/STF	**County:** MONTGOMERY	**Last Flag Number:** 2A8B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: WIDE CHANNEL FLOWING RAPIDLY AT TIME OF FIELD INVESTIGATION			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 10' PIPE CULVERT (21B)	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 10-20'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 2-6"	☐ Cobbles	☒ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: WEST OF I-270/I-495 INTERCHANGE ON OUTERLOOP I-495					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018											
●	No rain	●	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, ~~natural~~ line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21K	**Stream Order:** 2
Date: 4-18-2018	**State:** MD	**Photos:** 2561-2562	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** 2ABB	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING DURING FIELD VISIT >48 HRS. POST RAINFALL, MODERATE FLOW RATE, LOW VOLUME			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 4' PIPE CULVERT (21A)	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1-12'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 0.5"-1.5'	☒ Cobbles	☒ Gravel	☒ Other: PLACED STONE	
☒ Manipulated (man-altered)	Bank Erosion/stability: MODERATE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes: WEST OF BRADLEY BLVD. ON OUTERLOOP I-495

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/oa/climate/research/prelim.html) Month: MARCH Year: 2018												
●	No rain	●	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☒ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21	**Stream Order:** 3
Date: 4-18-2018	**State:** MD	**Photos:** 2563-2564, 446-448	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** 2A26 / 5 (E side of highway)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	⊗ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: WATER FLOWING RAPIDLY AT TIME OF FIELD INVESTIGATION			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 8' PIPE CULVERT	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 4-6'	☒ Silts	☒ Sands	☐ Muck	RB: HERBACEOUS VEG.
☐ Artificial (man-made)	Depth: 1-8"	☒ Cobbles	☒ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☐ Concrete		LB: HERBACEOUS VEG.
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes: WEST OF BRADLEY BLVD. ON OUTERLOOP I-495					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 21M	**Stream Order:** 2
Date: 4-18-2018	**State:** MD	**Photos:** 2565	
Crew: MBS/SSF	**County:** MONTGOMERY	**Last Flag Number:** 2 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands ○ Non-RPW erosional feature ○ Non-RPW with abutting wetland ○ Non-RPW with adjacent wetland
	○ RPW – Perennial (Flowing year round)		
Describe rational for hydrologic class: FLOWING SWIFTLY AT TIME OF FIELD INVESTIGATION			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 2' PIPE	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: N/A

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1-4'	☐ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 1/2"	☐ Cobbles	☐ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete		LB: HEDGEROW
☐ Other:	STABLE	Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: WEST OF BRADLEY BLVD ON OUTERLOOP I-495					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-rankings.php) Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1,45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour	
	☐ Shelving	☐ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 495/270 Managed Lanes Study City/County: Bethesda / Montgomery Sampling Date: 6/20/18
Applicant/Owner: SHA State: MD Sampling Point: ZIP
Investigator(s): MBS/SLY Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): MLRA 148 Lat: 38.998935 Long: -77.157223 Datum: NAD83
Soil Map Unit Name: Baile Silt loam, 0 to 3 percent slopes NWI classification: PFO
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:
Photos
1881 - 1882 -

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 12"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 2SP

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	90	Y	FAC
2.			
3.			
4.			
5.			
6.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling Stratum (Plot size:)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1. Lindera benzoin	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size:)			
1. Cinna arundinacea	25	Y	FACW
2. Boehmeria cylindrica	10	N	OBL
3. Microstegium vimineum	5	N	FAC
4. Geum canadense	5	N	FACU
5. Carex sp.	5	N	—
6. Fraxinus pensylvanica	15	Y	FACW
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		
50% of total cover: 33	20% of total cover: 13		
Woody Vine Stratum (Plot size:)			
1. Vitis riparia	5	Y	FACW
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 21P

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/1	60	7.5YR 6/4	40	C	M	SILTY CLAY	
6-10	2.5Y 5/1	50	7.5YR 6/4	50	C	M,PL	CLAY LOAM	
10-16	5YR 8/5	100					SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 acre Human made?_____ Is wetland part of a wildlife corridor? ✓ or a "habitat island"?_____

Adjacent land use RESIDENTIAL Distance to nearest roadway or other development 100'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 21P

Latitude 38.998935 Longitude -77.157223

Prepared by: MES/SLY Date 6-20-18

Wetland Impact:
Type PFO Area 0.02 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 Managed Lanes Study City/County: Mo. Sampling Date: 7/11/18
Applicant/Owner: SHA State: MD Sampling Point: 21Q - WET
Investigator(s): KSH, CAS Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 2%
Subregion (LRR or MLRA): 148 Lat: 38.99824700 Long: -77.15714396 Datum: WGS84
Soil Map Unit Name: Baile silt loam, 0 to 3 percent slopes NWI classification: PFO
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:

Photos 3114 - 3115

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 21 Q - WET

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	50	Y	FACW
2. Acer rubrum	20	Y	FAC
3. Fraxinus pennsylvanica	5	N	FACW
4. Taxodium distichum	5	N	OBL
5.			
6.			
	80	= Total Cover	
50% of total cover: 40	20% of total cover: 16		

Sapling Stratum (Plot size: 25')			
1. None			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Shrub Stratum (Plot size: 20')			
1. Lindera benzoin	30	Y	FAC
2. Ulmus americana	10	Y	FACW
3.			
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover: 20	20% of total cover: 8		

Herb Stratum (Plot size: 10')			
1. Saururus cernuus	90	Y	OBL
2. Symplocarpus foetidus	20	N	OBL
3. Toxicodendron radicans	5	N	FAC
4. Alliaria petiolata	2	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	117	= Total Cover	
50% of total cover: 58.5	20% of total cover: 23.4		

Woody Vine Stratum (Plot size: 20')			
1. Parthenocissus quinquefolia	2	N	FACU
2.			
3.			
4.			
5.			
	2	= Total Cover	
50% of total cover: 1	20% of total cover: 0.4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Buttressed trees within wetland

SOIL Sampling Point: 21Q-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 4/2	100					silt	
2-6	7.5YR 4/2	70	7.5YR 4/6	30	C	M	silt	
6-9	7.5YR 4/1	60	7.5YR 4/6	40	C	M	↓	
9-14	10YR 5/2	80	7.5YR 5/6	20	C	M	↓	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Not sampled. non-invasive letters have not been sent

Assumed hydric based on veg & hydrology

*Sampled 11/7/18

Wetland Function-Value Evaluation Form

Total area of wetland 0.07Acres Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forest & Roadway Distance to nearest roadway or other development 90'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? 2nd order stream riparian wetland

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 21Q

Latitude 36.99824 Longitude -77.15714

Prepared by: KSH Date 7/11/18

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	X				
Floodflow Alteration	X				
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X				
Nutrient Removal	X				
Production Export	X				
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X				
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat		X			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495 / I-270 Managed Lanes Study		**Feature ID:** 21R	**Stream Order:**
Date: 7/11/18	**State:** MD	**Photos:** 3116	
Crew: KJH, CAS	**County:** Mo.	**Last Flag Number:** 21R-3A3B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	◉ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		◉ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: No Flow during site visit			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Uplands	Downstream: 21H	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3-8'	☒ Silts	☐ Sands	☐ Muck	RB: Forest
☒ Artificial (man-made)	Depth: 4-8"	☒ Cobbles	☒ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	severe erosion	Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Erosion created from golf course drainage pipes.					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: June Year: 2018												
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 Managed Lanes study City/County: Montgomery CO Sampling Date: 9/21/18
Applicant/Owner: SHA State: MD Sampling Point: 21T-WET
Investigator(s): KJH, SLY Section, Township, Range:
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONVEX Slope (%): 0
Subregion (LRR or MLRA): 148 Lat: 38.99913945 Long: -77.15715071 Datum: WGS84
Soil Map Unit Name: BALTIMORE SILT LOAM, 0 to 3 PERCENT NWI classification: PFO
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:
photos 4238-4240

seep wetland at base of hillslope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓ No _____	Depth (inches): 1
Water Table Present?	Yes ✓ No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓ No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 21T-wet

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. Platanus occidentalis	20	Y	FACW
2. Acer rubrum	30	Y	FAC
3.			
4.			
5.			
6.			
	50	= Total Cover	

50% of total cover: 25 20% of total cover: 10

Sapling Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 10' R)			
1. Persicaria longiseta	5	Y	FAC
2. Euonymus fortunei	15	Y	FACU
3. Pilea pumila	2	N	FACW
4. Rumex Crispus	5	Y	FAC
5. Microstegium vimineum	5	Y	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	32	= Total Cover	

50% of total cover: 16 20% of total cover: 6

Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 21T-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/2	90	5YR 3/4	10	C	PL,M	clay	
6-13	2.5Y 4/1	60	5YR 4/4	40	C	PL,M	clay loam	
13-20	5Y 5/1	60	5YR 5/6	40	C	PL,M	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.05 Acres Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"?

Adjacent land use Forest, Roadway Distance to nearest roadway or other development 60'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? 2nd order stream

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list) Riparian zone

Wetland I.D. 21T

Latitude 38.9941 Longitude -77.15715

Prepared by: KSH Date 7/19/18

Wetland Impact:
Type Area

Evaluation based on:
Office Field ✓

Corps manual wetland delineation completed? Y ✓ N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	X				
Floodflow Alteration		X			
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X				
Nutrient Removal	X				
Production Export		X			
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X				
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat					
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 21U	**Stream Order:**
Date: 7/20/18	**State:** MD	**Photos:** 449-552	
Crew: KDH, EG	**County:** Mo.	**Last Flag Number:** 211-4a/4b	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing in July. 0.5" rain 3 days prior			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: culvert	Downstream: 21B	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 5-15'	☒ Silts	☒ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 3-6"	☒ Cobbles	☒ Gravel	☒ Other: riprap	
☒ Manipulated (man-altered)	Bank Erosion/stability: moderate erosion	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:		Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: June Year: 2018													
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○	
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☐ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting	
☐ No	☐ Changes in the character of soil	☑ Water staining	☑ Scour	
	☑ Shelving	☑ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 21V	**Stream Order:**
Date: 7/26/18	**State:** MD	**Photos:** 0457 - 0458	
Crew: KSH, ET	**County:** Mo.	**Last Flag Number:** 7a/7b	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	✕ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands ○ Non-RPW erosional feature ○ Non-RPW with abutting wetland ○ Non-RPW with adjacent wetland ○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
	○ RPW – Perennial (Flowing year round)		

Describe rational for hydrologic class: Completely dry on 7/18. Flowing on 7/27. However, 7" of rain week prior

Hydrologic Connectivity –	Upstream: outside study Area	Downstream: 21C (Thomas Branch)	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate				Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 4-6'	☒ Silts	☒ Sands	☐ Muck		RB: Forest
☐ Artificial (man-made)	Depth: 3-6"	☒ Cobbles	☒ Gravel	☐ Other:		
☒ Manipulated (man-altered)	Bank Erosion/stability: moderate erosion	☐ Bedrock	☐ Concrete			LB: Forest
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☒ ≤4:1				

Notes:

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: June Year: 2018													
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○	
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☐ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☑ Scour	
	☑ Shelving	☑ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22A	**Stream Order:** 3
Date: 4-12-2018	**State:** MD	**Photos:** 0220-0221	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** 6 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING DURING FIELD INVESTIGATION, UNDER MODERATE DROUGHT CONDITIONS			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 3' PIPE & CONCRETE BOTTOM CHANNEL	Downstream: 3' PIPE	Adjacent/Abutting: N/A

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3'	☐ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☒ Artificial (man-made)	Depth: 6"	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete		LB: HEDGEROW
☐ Other:	STABLE	Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018												
⊗ No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, ~~natural~~ line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark Indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-496/270 Managed Lanes Study		**Feature ID:** 22AA	**Stream Order:**
Date: 5/15/2018	**State:** MD	**Photos:** 2753-2754	
Crew: MBS/AGA	**County:** Montgomery	**Last Flag Number:** None (LIDAR data)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing at time of site visit; wide channel; mapped on DNR/NWI GIS; part of Cabin John Creek			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: outside study area	Downstream: outside study area	Adjacent/Abutting: 22HH; 22DD; 22KK

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 30'	☑ Silts	☑ Sands	☐ Muck	RB: forest
☐ Artificial (man-made)	Depth: 10"	☑ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☑ Bedrock	☐ Concrete		LB: forest
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☐ 2:1 ☑ 3:1 ☐ ≤4:1			
Notes: Cabin John Creek					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: April	Year: 2018
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○	
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☑ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events	
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

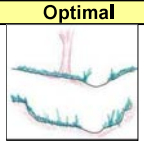
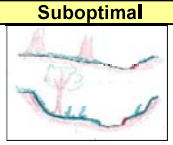
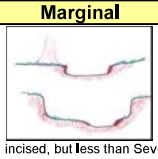
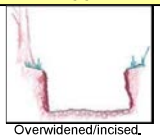
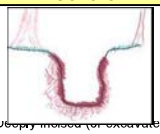
For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
	I-495 NEXT	Fairfax	~~SK~~ R3	02070008	8/20/2018	~~SK~~ 22AAA		

Name(s) of Evaluator(s)	Stream Name and Information
Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer	unnamed tributary to the Potomac River

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which contribute to stability.	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 Deeply incised (or excavated), vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.6
NOTES>>	The majority of the stream banks have significant evidence of erosion.					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor		NOTES>>
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and a non-maintained understory. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	The buffer of this stream has mature trees with significant canopy cover and has an un-maintained understory with very dense vegetation
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%						100%	
	Score >	1.1							
								CI= (Sum % RA * Scores*0.01)/2	
Left Bank	% Riparian Area>	100%						100%	Rt Bank CI > 1.10 CI
	Score >	1.1							Lt Bank CI > 1.10 1.10

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	NOTES>>
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	Habitat elements are marginal for the majority of the stream.
Score	1.5	1.2	0.9	0.5	CI 0.90

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
	VDOT	Fairfax	R3	0207008	8/20/18	SK		

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>> The stream has been straightened

	Conditional Category						
	Negligible	Minor		Moderate		Severe	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.	
SCORE	1.5	1.3	1.1	0.9	0.7	0.5	0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.82
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	0
CR = RCI X LF X IF	

INSERT PHOTOS:

DESCRIBE PROPOSED IMPACT:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22B	**Stream Order:** 1
Date: 4-13-2018	**State:** MD	**Photos:** 2548-2549	
Crew: MBS/SJF	**County:** MONTGOMERY	**Last Flag Number:** 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: 2 EPHEMERAL RIPRAP CHANNELS CONVERGE TO FORM LARGER RIPRAP CHANNEL WITH HIGH LEVEL OF DEBRIS IN CHANNELS

Hydrologic Connectivity –	Upstream: 2 EPHEMERAL RIPRAP	Downstream: 22C WRACK LINE	Adjacent/Abutting: N/A

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3'	☐ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 6"	☐ Cobbles	☐ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes:

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018												
●	No rain	●	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 22-BB	**Stream Order:**
Date: 6/15/18	**State:** MD	**Photos:** 2971 - 2972	
Crew: KJH, SDF	**County:** Mo.	**Last Flag Number:** NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round) ○ RPW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	◉ Non-RPW draining uplands ◉ Non-RPW erosional feature ○ Non-RPW with abutting wetland ○ Non-RPW with adjacent wetland ○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: No water in channel / weak bed & bank at upstream portion

Hydrologic Connectivity –	Upstream: Mowed Lawn	Downstream: 22-CC	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1-4'	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 0-4"	☑ Cobbles	☑ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Minor erosion	Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes: sections of channel filled w/ debris from adjacent land owner

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: May Year: 2018												
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○
○ Light rain	◉ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: (*check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: (*check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495 Northern Express Lanes City/County: Fairfax County Sampling Date: 8/16/2018
Applicant/Owner: Virginia Department of Transportation State: VA Sampling Point: ~~DP-SP~~ 22BBB
Investigator(s): Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer Section, Township, Range:
Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 2
Subregion (LRR or MLRA): LLRS Lat: 38.961246° Long: -77.186870° Datum: NAD83
Soil Map Unit Name: Glenelg silt loam, 25 to 45 percent slopes NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (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:

One of highest years of rainfall on record.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~DP-SP~~ 22BBB

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	45	Y	FAC
2. Linodendron tulipifera	5	N	FACU
3. Fraxinus pennsylvanica	5	N	FACW
4.			
5.			
6.			
	55	= Total Cover	

50% of total cover: 27.5 20% of total cover: 11

Sapling Stratum (Plot size: 30 ft)			
1. Fraxinus pennsylvanica	35	Y	FACW
2. Acer rubrum	5	N	FAC
3.			
4.			
5.			
6.			
	40	= Total Cover	

50% of total cover: 20 20% of total cover: 8

Shrub Stratum (Plot size: 15 ft)			
1. Lindera benzoin	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
	25	= Total Cover	

50% of total cover: 12.5 20% of total cover: 5

Herb Stratum (Plot size: 5 ft)			
1. Microstegium vimineum	60	Y	FAC
2. Ligustrum japonicum	5	N	UPL
3. Lonicera japonica	5	N	FACU
4. Acer rubrum	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75	= Total Cover	

50% of total cover: 37.5 20% of total cover: 15

Woody Vine Stratum (Plot size: 30 ft)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	140	x 3 =	420
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	195 (A)		565 (B)

Prevalence Index = B/A = 2.9

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: ~~DP-SP~~ 22BBB

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR4/2	90%	10YR6/6	10	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22C	**Stream Order:** 1
Date: 4-13-2018	**State:** MD	**Photos:** 2546-2547	
Crew: MBS/SLF	**County:** MONTGOMERY	**Last Flag Number:** 3 (CENTERLINE)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: WATER IN CHANNEL NOT FLOWING AT TIME OF INVESTIGATION, BUT HIGH LEVEL OF FLOW DEBRIS			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 3' PIPE	Downstream: 3' PIPE	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3'	☐ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 6"	☐ Cobbles	☐ Gravel	☒ Other: RIPRAP	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☐ Concrete		LB: HEDGEROW
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 22-CC	**Stream Order:**
Date: 6/15/18	**State:** MD	**Photos:** 2973-2974, 2977	
Crew: KDH, SDF	**County:** Mo.	**Last Flag Number:** NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	◉ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		◉ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: Majority of channel is dry. No hydric soils. 1-4" standing water in portions of channel

Hydrologic Connectivity –	Upstream: Riparian channel	Downstream: 22-DD	Adjacent/Abutting: 22-BB, 22-EE

Feature Description: *(check all that apply)* draining uplands

Shape (with respect to OHW)		Substrate				Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 2'-6'	☒ Silts	☒ Sands	☐ Muck		RB: Forest
☐ Artificial (man-made)	Depth: 1-6"	☒ Cobbles	☒ Gravel	☐ Other:		
☒ Manipulated (man-altered)	Bank Erosion/stability: severe/moderate erosion	☐ Bedrock	☒ Concrete			LB: Forest
☐ Other:		Side slope: ☒ ≥1:1	☐ 2:1	☐ 3:1	☒ ≤4:1	

Notes: Weak bed & bank just US & DS of Seven Locks Rd. (Photos 2975, 2976) Deeply incised at upstream section. 2978

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week	
◉	No rain	○	0-0.5
○	Light rain	◉	0.5-1
○	Heavy Rain	○	>1

Monthly Drought Condition
NCDC Regional PDSI Month: May Year: 2018
http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php

-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	○	○	○	○	○	○	◉	○	○	○	○	○
Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 Managed Lanes Study City/County: Mont. Co Sampling Date: 1/14/21

Applicant/Owner: MDOT SHA State: MD Sampling Point: 22CC-WET

Investigator(s): DRS, MW, LN Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR or MLRA): 148 Lat: 38.971677 Long: -77.174974 Datum: NAD83

Soil Map Unit Name: Rock outcrop - Blocktown complex NWI classification: PFO1A/B

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? N Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? N (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:

Depression along C+O Canal Path

Photo

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 0-1/2"
Water Table Present?	Yes ✓	No ____	Depth (inches): 1"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0"

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: 22CCL-WET

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	40	✓	FAC
2. Ulmus americana	5		FAC
3. Fraxinus pennsylvanica	20	✓	FACW
4.			
5.			
6.			
7.			
	65 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13		

Sapling/Shrub Stratum (Plot size: 30')			
1. Lindera benzoin	8	✓	FAC
2. Acer negundo	1		FAC
3. Fraxinus pennsylvanica	3		FACW
4. Rosa multiflora	6	✓	FACU
5. Amelanchier arborea	5	✓	FAC
6.			
7.			
8.			
9.			
	23 = Total Cover		
50% of total cover: 11.5	20% of total cover: 4.6		

Herb Stratum (Plot size: 30')			
1. Microstegium vimineum	70	✓	FAC
2. Cinna arundinacea	30	✓	FACW
3. Boehmeria cylindrica	3		FACW
4. Carex sp	2		—
5. Lonicera japonica	3		FACU
6.			
7.			
8.			
9.			
10.			
11.			
	108 = Total Cover		
50% of total cover: 54	20% of total cover: 21.6		

Woody Vine Stratum (Plot size: 30')			
1. Smilax rotundifolia	3	✓	FAC
2. Lonicera japonica	2	✓	FACU
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 78 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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 ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22CCC-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 7/2	99	10YR 4/4	1	C	M	sil	
3-7	10YR 4/2	92	7.5YR 4/4	8	C	M, PL	sicl	
7-14	10YR 4/2	85	10YR 4/6	15	C	M	sic	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland ~0.15ac Human made? N Is wetland part of a wildlife corridor? yes or a "habitat island"? _____

Adjacent land use Forest Distance to nearest roadway or other development ~15'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? yes. If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22CCC

Latitude 38.972134 Longitude -77.176950

Prepared by: MN, DKS Date 1/11/21

Wetland Impact:
Type PFO Area —

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓	2, 6, 15		Perched hydrology
Floodflow Alteration	✓		2, 3, 5, 6, 9, 18		Isolated system
Fish and Shellfish Habitat		✓	1		
Sediment/Toxicant Retention			3, 4, 7, 9		
Nutrient Removal			3, 5, 7, 8, 9, 10, 11		not likely to be an abundance of excess nutrients in runoff
Production Export	✓		1, 2, 4, 5, 7, 8, 13	✓	Evidence of deer within wetland
Sediment/Shoreline Stabilization		✓	2, 5		
Wildlife Habitat	✓		1, 3, 4, 5, 7, 8, 9, 13, 15, 17	✓	Evidence of wildlife, feces - tracks
Recreation		✓	1, 4, 5, 12		
Educational/Scientific Value		✓	2, 4, 5, 6, 10, 13		
Uniqueness/Heritage	✓		10, 16, 17, 19, 28	✓	Part of Potomac Gorge, along C&O Canal towpath
Visual Quality/Aesthetics		✓	2, 5, 6, 7, 8, 19		
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22D	**Stream Order:** 1
Date: 4-13-2018	**State:** MD	**Photos:** 2550-2551	
Crew: MBS/SJT	**County:** MONTGOMERY	**Last Flag Number:** 2 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING AT TIME OF FIELD INVESTIGATION IN 6" RIVULET			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 3' PIPE	Downstream: UNDERGROUND/UNDER CONCRETE LINER TO FEATURE 22E	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 2'	☐ Silts	☐ Sands	☐ Muck	RB: HEDGEROW
☐ Artificial (man-made)	Depth: 1'	☐ Cobbles	☐ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☒ Concrete		LB: FOREST
☐ Other:		Side slope: ☐ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temps-and-precip/climatological-rankings/index.php)													Month: APRIL Year: 2018
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○	
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☒ Clear, ~~natural~~ line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 22-DD	**Stream Order:**
Date: 6/15/18	**State:** MD.	**Photos:** 2979 - 2981	
Crew: KDH, SDF	**County:** Mo.	**Last Flag Number:** NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: shallow flowing water originates at culvert outfall			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: culvert outfall	Downstream: 22-AA	Adjacent/Abutting: 22-CC

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 2-8'	☒ Silts	☒ Sands	☐ Muck	RB: Forest
☒ Artificial (man-made)	Depth: 1"-12"	☒ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: moderate erosion	☐ Bedrock	☒ Concrete		LB: Forest
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Upper segment - concrete lined. downstream segment naturalized					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: May Year: 2018												
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○
○ Light rain	◉ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☒ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☒ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

VERIFIED MBS 4/17/18

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 IRVM Montgomery County~~ City/County: Montgomery Co. Sampling Date: 11/10/14 4-17-18

Applicant/Owner: SHA State: MD Sampling Point ~~B1-B-UPL~~ B2E-UPL

Investigator(s): AT, MN MBS/CCO Section, Township, Range:

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: 38.98087 Long: -77.174816 Datum: NAD 83

Soil Map Unit Name: Glenelg silt loam, 3 to 8 % slopes NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches):
Water Table Present?	Yes ____ No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches):

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

22E-UPL

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 01-B-UPL

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 3x radius)			
1. Setaria faberi	15	✓	UPL
2. Schedonorus pratensis	25	✓	FACU
3. Andropogon virginicus	10	✓	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	15	x 5 =	75
Column Totals:	50 (A)		215 (B)

Prevalence Index = B/A = 4.3

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

22E-UPL

SOIL

Sampling Point: ~~GL-B-UPL~~

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 4/4	100					Sol	Rejected @ 5" by rip rap

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No ✓

Remarks:

VERIFIED MBS 4/17/2018

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 I270 - Montgomery County~~ City/County: Montgomery Co Sampling Date: ~~11/10/14~~ 4/17/2018

Applicant/Owner: SHA State: MD Sampling Point: ~~A1-B-WET~~ 22E-WET

Investigator(s): AT, MN - MBS/CCO Section, Township, Range:

Landform (hillslope, terrace, etc.): isolated depression Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR or MLRA): MLRA 148 Lat: 38.98079 Long: -77.17473 Datum: NAD 83

Soil Map Unit Name: Glenelg silt loam, 3 to 8% slopes NWI classification: PEMIJ

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Isolated depression viewed by MDE and USACE

Photo #2557-2558

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ___	Depth (inches): 1-2"
Water Table Present?	Yes ___	No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

22E-WET

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~A1-B WET~~

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: * irregular)			
1. Panicum virgatum	25	✓	FAC
2. Echinochloa muricata	30	✓	FACW
3. Juncus effusus	10		FACW
4. Schedonorus pratensis	15		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

* Plot follows limits of isolated depression

22E-WET

SOIL

Sampling Point: ~~01-B-WET~~

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12+	10YR4/2	70	7.5YR4/6	30	C	M	sicl	w/gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 182 sf Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? Yes

Adjacent land use MOWED LAWN - ROW Distance to nearest roadway or other development 35'

Dominant wetland systems present NO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? ✓ If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? NONE Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22E-WET

Latitude 38.980805 Longitude -77.174737

Prepared by: MBS Date 4/17/18

Wetland Impact:
Type PEM Area 182 sf

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 22EE	**Stream Order:**
Date: 6/13/18	**State:** MD	**Photos:** 2970	
Crew: KJH SJF	**County:** Mo.	**Last Flag Number:** NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		◉ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: No water in channel during site visit. Deeply incised channel			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: culvert	Downstream: 22CC	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 4-10'	☒ Silts	☒ Sands	☐ Muck	RB: Forest
☒ Artificial (man-made)	Depth: 0-4"	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete		LB: Forest
☐ Other:	Severe erosion	Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: May Year: 2018												
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○
○ Light rain	◉ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

VERIFIED 4-18-2018 MBS
(EXTENDED FEATURE)

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 I&VM Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~11/21/18~~ 4-18-2018
Applicant/Owner: SHA State: MD Sampling Point: ~~DL WET~~ 22F-WET
Investigator(s): ~~AT, MN, BM~~ MBS/SJF Section, Township, Range:
Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): 1-2
Subregion (LRR or MLRA): MLRA 148 Lat: 38.98372 Long: -77.15802 Datum: NAD83
Soil Map Unit Name: Calverssilt loam, 0 to 3% slopes, occasionally flooded NWI classification: PEMA/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation N, Soil N, or Hydrology N 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:

Photo #: ~~47-To working Num~~ 2566-2567

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ___	Depth (inches): 1-4"
Water Table Present?	Yes ___	No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

22f - WET

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~0~~ 1, WET

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 30' linear)			
1. Echinochloa muricata	10	✓	FACW
2. Ludwigia sp.	15	✓	OBL
3. Ludwigia alternifolia	4		FACW
4. Glechoma hederacea	5		FACU
5. Anthraxon hispidus	12	✓	FAC
6. Panicum dichotomiflorum	4		FACW
7. Juncus effusus	4		FACW
8.			
9.			
10.			
11.			
	54 = Total Cover		

50% of total cover: 27 20% of total cover: 10.8

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

22f-WET

SOIL

Sampling Point: ~~OLD WET~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5Y4/3	100					SI	organics + rootlets present
1-4	2.5Y4/2	40	7.5YR4/6	20	C	M, PL	fscl	
	2.5Y4/3	40						
4-12	2.5Y4/2	85	5YR 4/6	5	C	M	sicl	
			7.5YR 4/6	10	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 acre Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use ROAD ROW - MOWN GRASS Distance to nearest roadway or other development 35'

Dominant wetland systems present NO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22f-WET

Latitude 38.983585 Longitude -77.157951

Prepared by: MBS Date 4-18-2018

Wetland Impact:
Type PEM Area 0.01 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		**Feature ID:** 22 FF	**Stream Order:**
Date: 6/28/18	**State:** MD	**Photos:** 3107 - 3108	
Crew: KJH, RL	**County:** Mo.	**Last Flag Number:** NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	◉ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		◉ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Dry during site visit			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: sheet flow from culvert	Downstream: outside study Area flows to perennial stream	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3-5'	☒ Silts	☒ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 0-6"	☐ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Moderate erosion	Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: ~~May~~ June Year: 2018												
◉	No rain	○	0-0.5	○	○	○	○	○	○	○	◉	○	○	○	○	○
○	Light rain	◉	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☒ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

VERIFIED MBS 4-18-2018

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 I-270~~ Montgomery County City/County: Montgomery Co. Sampling Date: 11/2/17

Applicant/Owner: SHA State: MD Sampling Point: ~~A-UPL~~ 224/226-UPL

Investigator(s): AT, MN, AM MBS/SJF Section, Township, Range:

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 2-5

Subregion (LRR or MLRA): MLRA 148 Lat: 38.98382 Long: -77.15808 Datum: NAD83

Soil Map Unit Name: Catoctin silt loam, 0 to 3% slopes, occasionally flooded NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Photo 19

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches):
Water Table Present?	Yes ____	No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ____ **No** ✓

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

Remarks:

22FF226-UPL

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~OL~~ ~~FAC~~ UPL

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Juniperus virginiana	40	✓	FACU
2. Quercus rubra	25	✓	FACU
3. Acer rubrum	5		FAC
4.			
5.			
6.			
	70	= Total Cover	
50% of total cover: 35	20% of total cover: 14		
Sapling Stratum (Plot size: 30' radius)			
1. Juniperus virginiana	5	✓	FACU
2. Acer rubrum	15	✓	FAC
3.			
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover: 10	20% of total cover: 4		
Shrub Stratum (Plot size: 30' radius)			
1. Lonicera maackii	30	✓	UPL
2. Rosa multiflora	40	✓	FACU
3.			
4.			
5.			
6.			
	70	= Total Cover	
50% of total cover: 35	20% of total cover: 14		
Herb Stratum (Plot size: 30' radius)			
1. Allium vineale	5	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	= Total Cover	
50% of total cover: 2.5	20% of total cover: 1		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	50	✓	FACU
2.			
3.			
4.			
5.			
	50	= Total Cover	
50% of total cover: 25	20% of total cover: 10		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	165	x 4 =	660
UPL species	30	x 5 =	150
Column Totals:	215 (A)		870 (B)

Prevalence Index = B/A = 4.05

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

22F/22G-UPL

SOIL

Sampling Point: ~~01~~ 02-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	80					SL	
	10YR 5/6	20						
3-12	10YR 5/6	100					SL	w/ gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes _____ No ✓

Remarks:

VERIFIED MBS 4-18-2018

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I495/I270 MANAGED LANES STUDY

Project/Site: ~~I-495 I&M Montgomery County~~ City/County: Montgomery Co Sampling Date: 4-18-2018 ~~11/2/16~~

Applicant/Owner: SHA State: MD Sampling Point: ~~DL-6 WET~~ 226-WET

Investigator(s): AT, MN, AM MBS/SJF Section, Township, Range:

Landform (hillslope, terrace, etc.): Swale/seep Local relief (concave, convex, none): Concave Slope (%): 5-6

Subregion (LRR or MLRA): MLRA 148 Lat: 38.98395 Long: -77.15812 Datum: NAD83

Soil Map Unit Name: Codorus silt loam, 0 to 3% slopes, occasionally flooded NWI classification: PFOIC

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Photos 2568-2569

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ___	Depth (inches): 1-2"
Water Table Present?	Yes ✓	No ___	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes ___	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

226-WET

Sampling Point: ~~A1-E WET~~

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

Tree Stratum (Plot size: 30' linear)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	10	✓	OBL
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Sapling Stratum (Plot size: 30' linear)			
1. Fraxinus pennsylvanica	15	✓	FACW
2. Acer rubrum	5	✓	FAC
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Shrub Stratum (Plot size: 30' linear)			
1. Rosa multiflora	10	✓	FACU
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size: 30' linear)			
1. Juncus effusus	6	✓	FACW
2. Allium vineale	4	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Woody Vine Stratum (Plot size: 30' linear)			
1. Lonicera japonica	5	✓	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

ACRU, QUPA + DIVI in canopy but outside of plot

226-WET

SOIL

Sampling Point: ~~OLK-WET~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y4/2	70	7.5YR4/6	30	C	M,PL	sicl	
3-12	2.5Y4/1	85	5YR 4/6	15	C	M	sicl	w/ coarse fragments

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 acre Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use forest Distance to nearest roadway or other development 32'

Dominant wetland systems present No Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 226-WET

Latitude 38.984088 Longitude -77.158076

Prepared by: MBS Date 4-18-2018

Wetland Impact:
Type PFO Area 0.02 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 Managed Lanes Study

6/28/18

Project/Site: ~~I495 IRVM - Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~4/24/14~~

Applicant/Owner: SHA State: MD Sampling Point: ~~01-O-UPL~~ 226G-UPL

Investigator(s): ~~AT, MW, AM~~ KJH, RL Section, Township, Range:

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: 38.98282 Long: -77.15709 Datum: NAD83

Soil Map Unit Name: Codorus silt loam, 0 to 3% slopes, occasionally flooded NWI classification: Upland

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

Are Vegetation N, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ___ No ✓*

Are Vegetation N, Soil N, or Hydrology N 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 ___ Hydric Soil Present? Yes ___ No ✓ Wetland Hydrology Present? Yes ___ No ✓	Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:
*WSSC access & planting area beyond SHA fence to the east
~~Photo CKEA~~
~~Disturbed (southbound side bottom from IRVM~~

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches):

Water Table Present? Yes ___ No ✓ Depth (inches):

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

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

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

Sampling Point: ~~0I-G-UPL~~ 22GG-UPL

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Sapling Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Shrub Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Herb Stratum (Plot size: 3' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pa[illegible] (planted)	85	✓	FAC
2. rifolium repens	5		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		

Woody Vine Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	0	x 2 = 0
FAC species	85	x 3 = 255
FACU species	5	x 4 = 20
UPL species	0	x 5 = 0
Column Totals:	90 (A)	275 (B)

Prevalence Index = B/A = 3.05

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22GG-UPL ~~01-D-UPL~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 5/4	100					sl	w/gravel, disturbed

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (inches):

Hydric Soil Present? Yes _____ No ✓

Remarks:

soils disturbed

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 Managed Lanes Study 6/28/18

Project/Site: ~~I-495 IRVM Montgomery County~~ City/County: Montgomery Co Sampling Date: ~~11/24/14~~

Applicant/Owner: SHA State: MD Sampling Point: ~~01 & 02~~ 22-GG-WBT

Investigator(s): ~~AT, MN, ANT~~ KSH, RL Section, Township, Range:

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 1-2%

Subregion (LRR or MLRA): MLRA 148 Lat: 38.9828 Long: -77.15719 Datum: NAD83

Soil Map Unit Name: Codorus silt loam, 0 to 3% slopes, occasionally flooded NWI classification: PEMIC

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

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

Are Vegetation N, Soil N or Hydrology N 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:

- flows to short concrete flume to ~~01 N~~ 22 Southern portion of wetland removed - dry swale -
- WSSC has accessed manholes through this wetland Photo 3 11 |

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): <1" *
Water Table Present?	Yes ✓	No ____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

* covering 10% of plot

22-GG-WET

Sampling Point: ~~01 0 WET~~

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

Tree Stratum (Plot size: 5' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10	✓	FAC
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Sapling Stratum (Plot size: 5' x 30')			
1. Quercus palustris	5	✓	FACW
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1

Shrub Stratum (Plot size: 5' x 30')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 5' x 30')			
1. Juncus pilosus	40	✓	FACW
2. Echinochloa crus-galli	5		FAC
3. Bidens frondosa	5		FACW
4. Panicum virgatum (planted)	40	✓	FAC
5. Amphicarpaea bracteata	5		FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		

50% of total cover: 47.5 20% of total cover: 19

Woody Vine Stratum (Plot size: 5' x 30')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

22-GG-WET

SOIL

Sampling Point: ~~DP-GG-WET~~

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR5/6	100					sicl	most likely from construction
3-12	10YR4/1	90	7.5YR4/6	10	C	M	sicl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 Acres Human made? Y Is wetland part of a wildlife corridor? N or a "habitat island"? N

Adjacent land use Roadway, Forest Distance to nearest roadway or other development 14'

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Roadway Swale just north of Booze Creek

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22-GG

Latitude 38.9828 Longitude -77.15719

Prepared by: KJH Date 6/28/18

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		X			
Floodflow Alteration		X			
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X				
Nutrient Removal	X				
Production Export		X			
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X				
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat		X			
Other					

Notes:

* Refer to backup list of numbered considerations.

I495/I270 MANAGED LANES STUDY

Waters of the U.S. Data Sheet

VERIFIED MBS 4-18-18

Project: ~~I-495 IRVM~~ Montgomery County		**Feature ID:** ~~01-M~~ 22H	**Stream Order:** 1st
Date: ~~11/24/14~~ 4-18-2018	**State:** MD	**Photos:** ~~13~~ 2570-2572	
Crew: ~~AT,MN,AM~~ MBS/SJF	**County:** Montgomery	**Last Flag Number:** ~~01-M-02A, 01-M-02B~~ 3 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	● RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: ~~1-4in~~ 1-8" of water present in concrete lined channel at time of field visit 3' PIPE			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: ~~outside of study area~~	Downstream: ~~W111M~~ 3' PIPE	Adjacent/Abutting: ~~01-K and 01-L~~ 22F & 22G

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: ~~8'~~ 2-4'	☐ Silts	☐ Sands	☐ Muck	RB: forest
☑ Artificial (man-made)	Depth: ~~3'~~ 1-8"	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☑ Concrete		LB: emergent vegetation/mowed lawn
☐ Other:	none	Side slope: ☐ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: October	Year: 2014
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○		
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☑ Water staining	☐ Scour	
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events	
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☑ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-495/I-270 MLS		**Feature ID:** 22HH	**Stream Order:** 1
Date: 5/2/2018	**State:** MD	**Photos:** 2689-2692	
Crew: MBS/AGA	**County:** MONTGOMERY	**Last Flag Number:** 9	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING DURING INVESTIGATION SEVERAL DAYS AFTER RAIN – GROUNDWATER INFLUENCE			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: N/A	Downstream: 22N	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 5'	☐ Silts	☒ Sands	☐ Muck	RB: forest
☐ Artificial (man-made)	Depth: 3-5"	☐ Cobbles	☒ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability: STABLE	☐ Bedrock	☒ Concrete		LB: forest
☐ Other:		Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018													
◉	No rain	○	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○	Heavy Rain	●	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☒ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

VERIFIED 4/26/2018 MBS/AGA

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY 4/26/2018

Project/Site: I 495 IRVM Montgomery County City/County: Montgomery Co. Sampling Date: ~~11/24/18~~

Applicant/Owner: SHA State: MD Sampling Point: ~~SP 6~~ WET 22I-WET

Investigator(s): ~~AT, HM, AM~~ MBS/AGA Section, Township, Range:

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97291 Long: -77.18056 Datum: NAD83

Soil Map Unit Name: Chrome and Conowingo soils, 3 to 8% slopes NWI classification: PFO1E

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

~~Photo 15~~ PHOTO #5: 2600-2602

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? *	Yes ✓	No ___	Depth (inches): <1
Water Table Present?	Yes ✓	No ___	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

* <1" of surface water in approx. 10% of plot

22I-WET

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~01-G-WET~~

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Quercus bicolor	30	✓	FACW
2. Acer rubrum	60	✓	FAC
3. Ulmus americana	5		FACW
4.			
5.			
6.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Sapling Stratum (Plot size: 30' radius)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size: 30' radius)			
1. Ligustrum sinense	8	✓	FACU
2. Viburnum prunifolium	20	✓	FACU
3. Rosa multiflora	5		FACU
4.			
5.			
6.			
	33 = Total Cover		
50% of total cover: 16.5	20% of total cover: 6.6		
Herb Stratum (Plot size: 20' radius)			
1. Cuma americana	50	✓	FACW
2. Glycera sp.	10		N/A
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	8	✓	FACU
2. Smilax rotundifolia	5	✓	FAC
3.			
4.			
5.			
	13 = Total Cover		
50% of total cover: 6.5	20% of total cover: 2.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

22I-WET

SOIL

Sampling Point: ~~21-6-WET~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR4/2	40	7.5YR4/4	15	C	M	SiCl	
	10YR3/2	45						
5-12	2.5Y5/2	90	7.5YR5/8	10	C	M	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.47 acre Human made?_____ Is wetland part of a wildlife corridor? YES or a "habitat island"?_____

Adjacent land use ROAD Distance to nearest roadway or other development 40'

Dominant wetland systems present YES - PFO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22I

Latitude 38.97280 Longitude -77.180589

Prepared by: MBS Date 4-26-2018

Wetland Impact:
Type PFO Area 0.47 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export	✓				
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 Managed Lanes Study City/County: Montgomery Co. Sampling Date: 9/6/18
Applicant/Owner: SHA State: MD Sampling Point: 22II-WET
Investigator(s): KJH, SJE Section, Township, Range:
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 3
Subregion (LRR or MLRA): MLRA 148 Lat: 38.986814 Long: -77.158950 Datum: NAD83
Soil Map Unit Name: Blocktown channery silt loam, 25 to 45% slopes, rocky NWI classification: PFO
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:
photos 0609 - 0611 Small floodplain depression wetland.
Near Cabin John Creek

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 22II-WET

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula nigra	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Sapling Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: 10')			
1. Fraxinus pennsylvanica	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1

Herb Stratum (Plot size: 10')			
1. Microstegium vimineum	5	N	FAC
2. Leersia virginica	70	Y	FACW
3. Persicaria maculosa	2	N	FACW
4. Fallopia japonica	5	N	UPL
5. Ampelopsis brevipedunculata	2	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
	84 = Total Cover		

50% of total cover: 42 20% of total cover: 16.8

Woody Vine Stratum (Plot size: 10')			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22II-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	2.5Y3/2	70	5YR4/6	30	C	M	SiLt loam	
15-23	10YR4/4	90	2.5Y4/2	20	D	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ____

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 Acres Human made? N Is wetland part of a wildlife corridor? Y or a "habitat island"? N

Adjacent land use Forest Distance to nearest roadway or other development 120'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Y

Is the wetland a separate hydraulic system? N If not, where does the wetland lie in the drainage basin? Floodplain

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22II

Latitude 38.9868 Longitude -77.158950

Prepared by: KJH Date 9/6/18

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		X			
Floodflow Alteration	X				small floodplain depression wetland
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X				
Nutrient Removal	X				
Production Export	X				
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X				
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat		X			
Other					

Notes:

* Refer to backup list of numbered considerations.

I-495/I-270 MANAGED LANES STUDY **Waters of the U.S. Data Sheet** VERIFIED MBS 4-26-2018

Project: ~~I-495 IRVM – Montgomery County~~		**Feature ID:** ~~01-F~~ 22J	**Stream Order:** 1st
Date: ~~11/20/14~~ 4-26-2018	**State:** MD	**Photos:** ~~44~~ 2603-2604	
Crew: ~~AT,MN,AM~~ MBS/AKA	**County:** Montgomery	**Last Flag Number:** 01-F-03C, 01-F-04D	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round) ○ RPW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands ○ Non-RPW erosional feature ○ Non-RPW with abutting wetland ○ Non-RPW with adjacent wetland ○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: 2-3" of water during field visit

Hydrologic Connectivity –	Upstream: ~~W125M and 01-G~~ 22K	Downstream: ~~W130M~~ 22J +22V	Adjacent/Abutting: none

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate						Vegetation Cover Type (MBSS)
✓ Natural Channel Shape	Width: 4' 1-4'		✓ Silts	✓ Sands	☐ Muck	RB: forest, mowed lawn
☐ Artificial (man-made)	Depth: 3' 1-6"		☒ Cobbles	✓ Gravel	☐ Other:	
✓ Manipulated (man-altered)	Bank Erosion/stability: minor erosion		☐ Bedrock	☐ Concrete		LB: forest, paved road
☐ Other:			Side slope: ☐ ≥1:1 ☐ 2:1 ✓ 3:1 ☐ ≤4:1			

Notes: flows to pipe

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php									Month: October			Year: 2014	
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
✓ Yes	✓ Clear, natural line impressed on the bank	✓ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	✓ Water staining	✓ Scour
	☐ Shelving	✓ Presence of flood litter/debris	☐ Observed/predicted flow events
	✓ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	✓ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 Managed Lanes Study City/County: Montgomery Co. Sampling Date: 9/20/18
Applicant/Owner: SHA State: MD Sampling Point: ZZJJ-WET
Investigator(s): KSH, LB Section, Township, Range:
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3
Subregion (LRR or MLRA): MLRA 148 Lat: 38.989758 Long: -77.158894 Datum: NAD83
Soil Map Unit Name: Baile silt loam, 0-3% slopes NWI classification: PFO
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:
Photos 55 & 56
Small seep wetland at top of trapezoidal channel (culvert below)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 19
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 2221-WET

Tree Stratum (Plot size: 5X10)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	90	Y	FAC
2. Fraxinus pennsylvanica	5	N	FACW
3.			
4.			
5.			
6.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Sapling Stratum (Plot size: 5X10)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Shrub Stratum (Plot size: 5X10)			
1. Nyssa sylvatica	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size: 5X10)			
1. Microstegium vimineum	60	Y	FAC
2. Fraxinus pennsylvanica	5	N	FACW
3. Onoclea sensibilis	2	N	FACW
4. Ampelopsis brevipedunculata	5	N	UPL
5. Lonicera japonica	8	N	FACU
6. Dicanthelium clandestinum	2	N	FAC
7.			
8.			
9.			
10.			
11.			
	82 = Total Cover		
50% of total cover: 41	20% of total cover: 16.4		
Woody Vine Stratum (Plot size: 5X10)			
1. Parthenocissus quinquefolia	2	N	FACU
2.			
3.			
4.			
5.			
	2 = Total Cover		
50% of total cover: 1	20% of total cover: 0.4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 2233-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/1	100					Silt loam	organic material mixed in
1-9	2.5Y 4/2	70	5YR 4/6	30	C	M, PL	silty clay	
9-22	5Y 4/2	90	5YR 5/8	10	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 Acres Human made? N Is wetland part of a wildlife corridor? Y or a "habitat island"? N

Adjacent land use Forest Distance to nearest roadway or other development 100'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Y

Is the wetland a separate hydraulic system? N If not, where does the wetland lie in the drainage basin? Floodplain

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22 JJ

Latitude 38.9897 Longitude -77.158894

Prepared by: KJH Date 9/20/18

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	X				Small seep wetland adjacent to Cabin John Creek.
Floodflow Alteration		X			
Fish and Shellfish Habitat		X			
Sediment/Toxicant Retention	X				
Nutrient Removal	X				
Production Export	X				
Sediment/Shoreline Stabilization		X			
Wildlife Habitat	X				
Recreation		X			
Educational/Scientific Value		X			
Uniqueness/Heritage		X			
Visual Quality/Aesthetics		X			
ES Endangered Species Habitat		X			
Other					

Notes:

* Refer to backup list of numbered considerations.

VERIFIED 4/26/2018 MBS/AGA

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~Capital Beltway~~	**Date:** ~~8/17/2004~~ 4-26-2018
Project No:	**County:** Montgomery
Applicant/Owner: SHA	**State:** MD
Investigators: ~~WMM/MRS/BCR~~ MBS/AGA	**Plot ID:** ~~W125~~ 22K

Do Normal Circumstances exist on the site?	Yes	No	**Community ID:** PEM (ET 3/18/15)
Is the site significantly disturbed (Atypical Situation)?	Yes	No	**Transect ID:**
Is the area a potential Problem Area?	Yes	No	**Field Location:**
(If needed, explain on the reverse side)			

VEGETATION **(USFWS Region No.1)**

Dominant Plant Species (Latin/Common)	Stratum	Indicator	Dominant Plant Species (Latin/Common)	Stratum	Indicator
Polygonum punctatum Dotted smartweed	H	OBL			
Polygonum persicaria Lady's thumb	H	FACW			

Percent Dominant Species that are OBL, FACW, or FAC: (excluding FAC-) 100%	**FAC Neutral:** **Numeric Index:**

Remarks:
PART of WETLAND PLANTED IN TURFGRASS
PHOTOS 2605-2607

HYDROLOGY

___ Recorded Data (Describe in Remarks):	**Wetland Hydrology Indicators**
___ Stream, Lake or Tide Gauge	Primary Indicators
___ Aerial Photographs	___ Inundated
___ Other	___ Saturated in Upper 12 Inches
X No Recorded Data	___ Water marks
	X Drift Lines
Field Observations	X Sediment Deposits
Depth of Surface Water: N/A inches	___ Drainage patterns in Wetlands
	Secondary Indicators (2 or more required)
Depth to Free Water in Pit: >12 inches	___ Oxidized Root Channels in Upper 12 Inches
	___ Water-Stained Leaves
Depth to Saturated Soil: >12 inches	___ Local Soil Survey Data
	___ FAC-Neutral Test
	___ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY 4-26-2018

Project/Site: ~~Capital Beltway~~	**Date:** ~~8/17/2004~~
Project No:	**County:** Montgomery
Applicant/Owner:	**State:** MD
Investigators: ~~WMM/MRS/BCR~~ MBS/AGA	**Plot ID:** ~~W125~~ ZZK

SOILS

Map Unit Name (Series and Phase): Elk silt loam, 0 to 3 percent slopes, occasionally flooded

Map Symbol: 43A **Drainage Class:** Well **Mapped Hydric Inclusion?** No

Taxonomy (Subgroup): Ultic Hapludulfs **Field Observations Confirm Mapped Type?** **Yes** **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Co
0-3	B1	2.5Y2.5/1	N/A	N/A	Sandy loam/
3-6	B2	Gley 2 6/5B6	7.5YR 5/2	Many/ distinct	Silty clay/ SA
6-12	B3	Gley 1 6/56Y	7.5YR 5/6	Many/distinct	Clay/ SAB

Hydric Soil Indicators:

___ **Histosol**
___ **Histic Epipedon**
___ **Sulfidic Odor**
___ **Aquic Moisture Regime**
___ **Reducing Conditions**
X **Gleyed or Low Chroma Colors**
___ **Concretions**
___ **High Organic Content in Surface Layer in Sanc**
___ **Organic Streaking in Sandy Soils**
___ **Listed on Local Hydric Soils List**
___ **Listed on National Hydric Soils List**
___ **Other (Explain in Remarks)**

Remarks: Vegetated wetland resulting from outflow from drainage swale

WETLAND DETERMINATION

Hydrophytic Vegetation present?	Yes	No	Is the Sampling Point within the Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.05 acre Human made? NO Is wetland part of a wildlife corridor? YES or a "habitat island"?_____

Adjacent land use ROAD Distance to nearest roadway or other development 100'

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present_____

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22K

Latitude 38.972957 Longitude -77.179617

Prepared by: MBS Date 4-26-2018

Wetland Impact:
Type PEM Area 0.05 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		Feature ID: 22KK	Stream Order:
Date: 9/20/18	State: MD	Photos: 57-59	
Crew: KSH, LO	County: Mo.	Last Flag Number: NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	● RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: Ponded at culvert flowing during site visit.

Hydrologic Connectivity –	Upstream: 22H	Downstream: Cabin John Creek (22AA)	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 8-15'	☒ Silts	☒ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 3-15"	☒ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Severe erosion	Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes:

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: August Year: 2018													
● No rain	○ 0-0.5	○	○	○	○	○	○	○	○	○	○	○	●	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	● >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet-			

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☐ Clear, natural line impressed on the bank	☒ Sediment deposition	☒ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☒ Scour	
	☒ Shelving	☐ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

VERIFIED MBS 4-26-18

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 IRM Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~11/21/14~~ 4-26-18

Applicant/Owner: SHA State: MD Sampling Point: 01-J/G-UPL 22-VA

Investigator(s): AT, MN, AM MBS/AGA Section, Township, Range:

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 1-2

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97307 Long: -77.18096 Datum: NAD83

Soil Map Unit Name: Trainlah silt loam, 2~~to~~8 % slopes NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches):
Water Table Present?	Yes ____	No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ____ **No** ✓

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

Remarks:

22L-UPL

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~G1-J/G-UPL~~

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer negundo	30	✓	FAC
2. Fraxinus pennsylvanica	50	✓	FACW
3. Ulmus americana	20		FACW
4. Acer nbrum	20		FAC
5.			
6.			
	120 = Total Cover		
50% of total cover: 60	20% of total cover: 24		
Sapling Stratum (Plot size: 30' radius)			
1. Acer negundo	12	✓	FAC
2.			
3.			
4.			
5.			
6.			
	12 = Total Cover		
50% of total cover: 6	20% of total cover: 2.4		
Shrub Stratum (Plot size: 30' radius)			
1. Ligustrum sinense	20	✓	FACU
2. Rosa multiflora	10	✓	FACU
3. Rubus phoenicolasius	5		FACU
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Herb Stratum (Plot size: 2' radius)			
1. Ajuga reptans	6	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	6 = Total Cover		
50% of total cover: 3	20% of total cover: 1.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	60	✓	FACU
2. Hedera helix	10		FACU
3. Celastrus orbiculatus	5		FACU
4. Euonymus fortunei	5		UPL
5.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 43 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 = 0
FACW species 70	x 2 = 140
FAC species 62	x 3 = 186
FACU species 116	x 4 = 464
UPL species 5	x 5 = 25
Column Totals: 253 (A)	915 (B)

Prevalence Index = B/A = 3.22

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

22L - UPL

SOIL

Sampling Point: ~~01 T/6 UPL~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/3	100					Si/	
4-12	10YR5/4	100					Si/	w/coarse fragments

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No ✓

Remarks:

Verified MBS/AGA 4-26-2018

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY — 4-26-2018

Project/Site: ~~I-495 IRM Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~11/21/17~~
Applicant/Owner: SHA State: MD Sampling Point: ~~01-J-WET~~ 22L
Investigator(s): ~~AT, MN, AM~~ MBS/AGA Section, Township, Range:
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 1-2
Subregion (LRR or MLRA): MLRA 148 Lat: 38.97321 Long: -77.18064 Datum: NAD83
Soil Map Unit Name: Travilah silt loam, 3 to 8% slopes NWI classification: PEM1A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation N, Soil ____, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation N, Soil N, or Hydrology N 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:
- Appears to have been previously excavated
~~Photo 10 looking NE~~ PHOTOS 2608-2609

A portion of this wetland is considered a vernal pool. Reviewed on 9/9/2020

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? Yes ✓ No ____ Depth (inches): 1-6"
Water Table Present? Yes ____ No ✓ Depth (inches):
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches):

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

22L

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: A1 J WET

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: * regular)			
1. Persicaria punctata	3	✓	OBL
2. Canna annabinacea	6	✓	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	9 = Total Cover		

50% of total cover: 4.5 20% of total cover: 1.8

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)
* Plot is limited to wetland boundary. Wetland is very sparsely vegetated.

221

SOIL

Sampling Point: ~~DRY~~ WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/1	85	7.5YR4/4	15	C	M	sicl	
4-8	10YR4/2	80	7.5YR4/6	20	C	M	sicl	
8-12	2.5Y5/1	100					sc	w/gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 acre Human made?_____ Is wetland part of a wildlife corridor? YES or a "habitat island"?_____

Adjacent land use ROAD Distance to nearest roadway or other development 100'

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22L

Latitude 38.973455 Longitude -77.180525

Prepared by: MBS Date 4-26-2018

Wetland Impact:
Type PEM Area 0.02 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 495/270 Managed Lanes City/County: Montgomery Sampling Date: 10/3/18
Applicant/Owner: State Highway Administration State: MD Sampling Point: 2226-wet
Investigator(s): MFS Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave Slope (%): 0-20%
Subregion (LRR or MLRA): MLRA 148 Lat: 38.970302 Long: -77.178380 Datum: NAD83
Soil Map Unit Name: Rock outcrop-Blocktown complex NWI classification: PFO1C
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 [X], 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 [X] No [ ]
Hydric Soil Present?	Yes ( )	No ( )	
Wetland Hydrology Present?	Yes (✓)	No ( )	

Remarks: wetland is a small low pocket on high floodplain/terrace near bedrock ⇒ hydrology likely perched on bedrock

☆ no soil pit sampled due to limited/non-invasive access to property

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [X] Surface Water (A1)
- [X] High Water Table (A2)
- [ ] Saturation (A3)
- [X] Water Marks (B1)
- [X] Sediment Deposits (B2)
- [X] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [X] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [X] 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)
- [X] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes [X] No [ ] Depth (inches): 0-2"
Water Table Present? Yes [X] No [ ] Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes [X] No [ ] Depth (inches): 0"

Wetland Hydrology Present? Yes (X) No ( )

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

Remarks:
photos 0414 - 0419

A portion of this wetland is considered a vernal pool. Reviewed on 9/9/2020

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 22L wet

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 15' radius)			
1. Box elder (Acer negundo)	40	Y	FAC
2. American Elm (Ulmus americana)	20	Y	FACW
3.			
4.			
5.			
6.			
	060 = Total Cover		
50% of total cover: 0.0 (30)	20% of total cover: 0.0 (12)		
Sapling Stratum (Plot size: 15' radius)			
1. None			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 15' radius)			
1. Lindera benzoin	10	Y	FAC
2. Acer negundo	10	Y	FAC
3. Lonicera sp.	5	N	NI
4.			
5.			
6.			
	25 = Total Cover		
50% of total cover: 0.0 (12.5)	20% of total cover: 0.0 (5)		
Herb Stratum (Plot size: 10' radius)			
1. Persicaria punctata	23	Y	OBL
2. Creeping Jenny (Lysimachia nummularia)	23	Y	FACW
3. Hibiscus moscheutos	10	N	OBL
4. Persicaria (Polygonum) hydropiperoides	5	N	FACW
5. maculosa			
6.			
7.			
8.			
9.			
10.			
11.			
	055 (27.5) = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0 (11)		
Woody Vine Stratum (Plot size: 10' radius)			
1.			
2.			
3. None			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22LL-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◯ No ◯

Remarks:

No soil pit collected on 10/31/18

Was unable to collect soil profile because the property did not have invasive access at the time of the site visit

Digging soil pits is considered invasive work.

Wetland Function-Value Evaluation Form

Total area of wetland 0.05Ac Human made?_____ Is wetland part of a wildlife corridor? Yes or a "habitat island"?_____

Adjacent land use Forest + Bedrock Distance to nearest roadway or other development 140 ft

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22LL

Latitude 38.970275 Longitude -77.178429

Prepared by: MRJ Date 10/31/18

Wetland Impact:
Type PFO Area 0.05Ac

Evaluation based on:
Office_____ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓			wetland is small, perched pool of water on bedrock island
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention		✓			
Nutrient Removal		✓			
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				minor function as open water pool on bedrock island during portions of the year
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet VERIFIED MBS/AHA 4-26-18

Project: ~~I-495 IRVM - Montgomery County~~		**Feature ID:** ~~01-D~~ 22M	**Stream Order:** 3rd
Date: ~~11/18/14~~ 4-26-2018	**State:** MD	**Photos:** ~~47~~ 2610-2611	
Crew: ~~A. Tatone, M. Niehaus~~ MBS/AHA	**County:** Montgomery	**Last Flag Number:** ~~01-D-02A, 01-D-03B~~ LIDAR BOUNDARY	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round) RSUBH		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING RAPIDLY AT HIGH VOLUME & 30' WIDE			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: outside of study area	Downstream: Potomac River	Adjacent/Abutting: 01-C

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
✓ Natural Channel Shape	Width: 30'	✓ Silts	✓ Sands	☐ Muck	RB: forest
☐ Artificial (man-made)	Depth: 8" – 1'	✓ Cobbles	✓ Gravel	☐ Other:	
✓ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: forest
☐ Other:	minor erosion	Side slope: ☐ ≥1:1 ✓ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Rock Run, flows through culvert					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: October	Year: 2014
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○		
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: (***check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
✓ Yes	✓ Clear, natural line impressed on the bank	✓ Sediment deposition	✓ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	✓ Presence of flood litter/debris	☐ Observed/predicted flow events	
	✓ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	✓ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: (***check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: 495/270 Managed Lane Study		Feature ID: 22MM	Stream Order:
Date: 10/31/18	State: MD	Photos: 0420 - 0421 0424 - 0426	
Crew: MRS	County: Montgomery	Last Flag Number: not flagged - Potomac River	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	⊗ TNW – Perennial (Flowing year round) L1 North	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands ○ Non-RPW erosional feature ○ Non-RPW with abutting wetland ○ Non-RPW with adjacent wetland
	○ RPW – Perennial (Flowing year round)		○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: feature is Potomac River and large side channel

Hydrologic Connectivity –	Upstream: NA	Downstream: NA	Adjacent/Abutting: 22NN, 22OO, 22LL

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: > 400 ft	☑ Silts	☑ Sands	☑ Muck	RB: forest
☐ Artificial (man-made)	Depth: > 10 ft	☑ Cobbles	☑ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☑ Bedrock	☐ Concrete		LB: forest
☐ Other:	stable to heavily eroding	Side slope: ☑ ≥1:1 ☒ 2:1 ☒ 3:1 ☒ ≤4:1			

Notes:

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php									Month: October		Year: 2018	
⊗	No rain	○	0-0.5	○	○	○	○	○	○	○	○	○	○	○	◉	○	○
○	Light rain	⊗	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4.13	5	6
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☑ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☑ Scour
	☑ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☑ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

I-495/I-270 MANAGED LANES STUDY **Waters of the U.S. Data Sheet** VERIFIED MBS/AGA 4-26-2018

Project: ~~I-495 IRVM - Montgomery County~~		**Feature ID:** ~~01-C~~ 22N	**Stream Order:** 1st
Date: ~~11/18/14~~ 4-26-2018	**State:** MD	**Photos:** ~~18~~ 2612-2613, 2689-2690 (5-2-2018 of intermittent top part)	
Crew: ~~A. Tatone, M. Niehaus~~ MBS/AGA	**County:** Montgomery	**Last Flag Number:** 01-C-20A, 01-C-22B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: ~~also ephemeral~~ at top with concrete intermittent portion Now identified as 22HH			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: ~~W122M~~, 22HH	Downstream: ~~01-D~~ 22M	Adjacent/Abutting: ~~01-E~~ 220

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate				Vegetation Cover Type (MBSS)
✓ Natural Channel Shape	Width: 5'		✓ Silts	☐ Sands	☐ Muck		RB: forest
☐ Artificial (man-made)	Depth: ~~3'~~ 3"		✓ Cobbles	✓ Gravel	☐ Other:		
✓ Manipulated (man-altered)	Bank Erosion/stability:		☐ Bedrock	✓ Concrete			LB: forest
☐ Other:	minor erosion		Side slope: ☐ ≥1:1 ✓ 2:1 ☐ 3:1 ☐ ≤4:1				
Notes: pipes, rip-rap and concrete present							

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: October	Year: 2014
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○	
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark					
✓ Yes	✓ Clear, natural line impressed on the bank	✓ Sediment deposition	✓ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour
	☐ Shelving	✓ Presence of flood litter/debris	☐ Observed/predicted flow events
	✓ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	✓ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: 495/270 Managed Lane Study		Feature ID: 22 NN	Stream Order:
Date: 10/31/18	State: MD	Photos: 0427-0435	
Crew: MRS	County: Montgomery	Last Flag Number: 22 NN - 8	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year) R4SB	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: standing water but not flowing. feature drains wetland 2200 into Potomac River			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: wetland 22 00	Downstream: Potomac River 22MM	Adjacent/Abutting: None

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 8-10 ft	☑ Silts	☑ Sands	☑ Muck	RB: forest
☐ Artificial (man-made)	Depth: 0-0.5 ft	☐ Cobbles	☑ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: area under highway bridge
☐ Other:	moderate erosion	Side slope: ☑ ≥1:1	☑ 2:1	☐ 3:1 ☐ ≤4:1	
Notes:					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php									Month: October		Year: 2018		
⊗	No rain	○	0-0.5	○	○	○	○	○	○	○	○	○	○	○	●	○	○
○	Light rain	⊗	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4.13	5	6	
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark					
☒ Yes	☐ Clear, natural line impressed on the bank	☑ Sediment deposition	☒ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☑ Scour
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

VERIFIED MBS/ABA 5-2-18

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: I-495 JRVM- Montgomery County City/County: Montgomery Co. Sampling Date: 11/18/17 220

Applicant/Owner: SHA State: MD Sampling Point: ~~01-F-UPL~~ UPL

Investigator(s): AT, MN MBS/ABA Section, Township, Range:

Landform (hillslope, terrace, etc.): flood plain Local relief (concave, convex, none): ——— Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97480 Long: -77.17996 Datum: NAD 83

Soil Map Unit Name: Trawlah silt loam, 3 to 8 % slopes NWI classification: ———

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Area is becoming increasingly wet

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches):
Water Table Present?	Yes ✓	No ____	Depth (inches): 11"
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

220-UR

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 01-E-UR

Tree Stratum (Plot size: 38' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus strobus	70	✓	FACU
2. Acer rubrum	20	✓	FAC
3.			
4.			
5.			
6.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling Stratum (Plot size: 30' radius)			
1. Liquidambar styraciflua	10	✓	FAC
2. Acer negundo	5	✓	FAC
3. Quercus rubra	5	✓	FACU
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Shrub Stratum (Plot size: 30' radius)			
1. Rosa multiflora	5	✓	FACU
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size: 30' radius)			
1. Microstegium vimineum	40	✓	FAC
2. Duchesnea indica	5		FACU
3. Cinnamandracea	5		FACU
4. Toxicodendron radicans	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	40	✓	FACU
2. Vitis sp.	15		N/A
3. Toxicodendron radicans	8		FAC
4.			
5.			
	63 = Total Cover		
50% of total cover: 31.5	20% of total cover: 12.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	88	x 3 =	264
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	218 (A)		774 (B)

Prevalence Index = B/A = 3.55

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

220-UPL

SOIL

Sampling Point: ~~0-1 E UPL~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR4/2	95	7.5YR4/6	5	C	PL	sicl	
1-12	2.5Y5/3	95	10YR4/6	5	C	M	fscl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes _____ No ✓

Remarks:

VERIFIED MBS/AGA 5-2-2018 (UPDATED VEG) 4-26-2018

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 IPVM - Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~11/18/14~~

Applicant/Owner: SHA State: MD Sampling Point: ~~01-E-WET~~ 220

Investigator(s): ~~AT, MN~~ MBS/AGA Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): /

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97474 Long: -77.18019 Datum: NAD 83

Soil Map Unit Name: Trivilah silt loam, 3 to 8 % slopes NWI classification: PFOIE

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

PHOTOS 2686-2689

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? *	Yes ✓	No ____	Depth (inches): <1"
Water Table Present?	Yes ✓	No ____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

* <1" of standing water in approximately 20% of plot

220

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~A1 E-WET~~

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Platanus occidentalis	20	✓	FACW
2. Acer negundo	30	✓	FAC
3.			
4.			
5.			
6.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Sapling Stratum (Plot size: 30' radius)			
1. Acer negundo	5	✓	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 30' radius)			
1. ~~Lindera benzoin~~	~~15~~	~~✓~~	~~FAC~~
2.			
3.			
4.			
5.			
6.			
	~~15~~ = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Herb Stratum (Plot size: 30' radius)			
1. Cinna arundinacea	10	✓	FACW
2. Symphyotrichum pilosum	5		FAC
3. Persicaria maculosa	5		FACW
4. Dichanthelium clandestinum	~~30~~ 30	✓	FAC
5. Equisetum fluviatile	20	✓	OBL
6. Lonicera japonica	5		FACU
7.			
8.			
9.			
10.			
11.			
	~~55~~ 100 = Total Cover		
50% of total cover: ~~27.5~~ 50	20% of total cover: ~~11~~ 20		
Woody Vine Stratum (Plot size: 30' radius)			
1. ~~Smilax rotundifolia~~	~~5~~		~~FAC~~
2. ~~Toxicodendron radicans~~	~~5~~	~~✓~~	~~FAC~~
3. ~~Lonicera japonica~~	~~7~~	~~✓~~	~~FACU~~
4.			
5.			
	~~27~~ = Total Cover		
50% of total cover: ~~13.5~~	20% of total cover: ~~5.4~~		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

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SOIL

Sampling Point: ~~01-E WET~~

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/1	95	7.5YR3/4	5	C	PL	sil	w/ organics
4-12	10YR4/1	80	7.5YR4/6	20	C	PL	fscl	U

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.44 ac± Human made? No Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use ROAD/RESIDENTIAL Distance to nearest roadway or other development 100'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 220

Latitude 38.974584 Longitude -77.180507

Prepared by: MBS Date 5-2-2018

Wetland Impact:
Type PFO Area 0.44 ac±

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export	✓				
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓	✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: 495/270 Managed Lanes City/County: Montgomery Sampling Date: 10/31/18
Applicant/Owner: SHA State: MD Sampling Point: 2200 - wet
Investigator(s): MRS Section, Township, Range:
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0-5%
Subregion (LRR or MLRA): MLRA 148 Lat: 38.971083 Long: -77.180070 Datum: NAD83
Soil Map Unit Name: Rock outcrop-Blocktown complex NWI classification: PFO1B
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 [X], 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 [X]	No [ ]	**Is the Sampled Area within a Wetland?** Yes [X] No [ ]
Hydric Soil Present?	Yes [ ]	No [ ]	
Wetland Hydrology Present?	Yes [X]	No [ ]	

Remarks:
Photos 0436-0441
★ soils not sampled because did not have invasive access to property

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [X] Surface Water (A1)
- [X] High Water Table (A2)
- [X] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [X] Iron Deposits (B5)
- [X] Inundation Visible on Aerial Imagery (B7)
- [X] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [X] 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)
- [X] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [X] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes [X] No [ ] Depth (inches): 0-2"
Water Table Present? Yes [X] No [ ] Depth (inches): 0"
Saturation Present? (includes capillary fringe) Yes [X] No [ ] Depth (inches): 0"

Wetland Hydrology Present? Yes [X] No [ ]

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

Remarks:
natural drainage way in middle of wetland full of water and iron oxide flocculate

feature is primarily herbaceous vegetation with from 0-50% tree canopy cover → higher along edges

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 2200

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Sycamore Platanus occidentalis	20	Y	FACW
2. Box elder Acer negundo	20	Y	FAC
3.			
4.			
5.			
6.			
	~~0~~ 40 = Total Cover		
50% of total cover: ~~0.0~~ 20	20% of total cover: ~~0.0~~ 8		
Sapling Stratum (Plot size: 30' radius)			
1. None			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 30' radius)			
1. None			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 20' radius)			
1. Reed canary grass Phalaris arundinacea	80	Y	FACW
2. Mile a minute Persicaria perfoliata	10	N	FAC
3. Lizards tail Saururus cernuus	20	N	OBL
4. Persicaria pensylvanica	10	N	FACW
5. Bochmeria cylindrica	10	N	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	~~0~~ 130 = Total Cover		
50% of total cover: ~~0.0~~ 65	20% of total cover: ~~0.0~~ 26		
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2. None			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:		(A)	0 (B)

Prevalence Index = B/A =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 2200-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◯ No ◯

Remarks:

Soil not sampled on 10/31/18 because project did not have invasive access to the property → Note area is very wet with iron flocculate deposits in surface water

Soils were not collected due to the assumed wetland's proximity to an archaeology site.

Wetland Function-Value Evaluation Form

Total area of wetland >0.5Ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"?

Adjacent land use forest Distance to nearest roadway or other development 50 ft

Dominant wetland systems present PEM/PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Miller

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22 00

Latitude 38.971063 Longitude -77.180070

Prepared by: MRS Date 10/31/18

Wetland Impact:
Type PFO Area >0.5 Ac

Evaluation based on:
Office ____ Field ✓

Corps manual wetland delineation completed? Y ✓ N ____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓	12		
Floodflow Alteration		✓	5,6,9,18		
Fish and Shellfish Habitat		✓	1		
Sediment/Toxicant Retention		✓	4,5,8,		
Nutrient Removal	✓		1,3,5,7,8,9,10,11	✓	Dense vegetation but watershed is primarily small and forested → low sediment load,
Production Export	✓		1,2,4,5,7,8,12,	✓	
Sediment/Shoreline Stabilization		✓	2,3,		
Wildlife Habitat	✓		3,4,8,13,15,18,21,	✓	
Recreation		✓	1,5,12		
Educational/Scientific Value		✓	5,6,		
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓	4,5,8,		
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22P	**Stream Order:** 1
Date: 4-26-2018	**State:** MD	**Photos:** 2614-2615	
Crew: MBS/AGA	**County:** MONTGOMERY	**Last Flag Number:** 2 (centerline)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING SLOWLY AFTER ~0.25" RAIN PREVIOUS DAY, ~3" STANDING WATER IN MUCH OF CHANNEL			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 3' PIPE	Downstream: 22N	Adjacent/Abutting: 22O

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 3'	☒ Silts	☒ Sands	☐ Muck	RB: forest
☐ Artificial (man-made)	Depth: 3"	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: forest
☐ Other:	MODERATE EROSION	Side slope: ☒ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: flocculated iron within channel					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: MARCH Year: 2018												
● No rain	● 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1.45	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☒ Water staining	☒ Scour	
	☒ Shelving	☐ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Verified 10/31/18 MRS

feature 22 PP

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

495/270 Managed Lane Study

Project/Site: ~~I-495 I/VM - Montgomery County~~ City/County: Montgomery County Sampling Date: ~~10/08/15~~ 10/31/18

Applicant/Owner: SHA State: MD Sampling Point: ~~01-PUWET~~

Investigator(s): ~~MH, EJ, BF~~ MRS Section, Township, Range:

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): MLRA 148 Lat: 38.971908 Long: -77.179497 Datum: NAD 83

Soil Map Unit Name: Elksilt loam, 0-3% slopes NWI classification: PFO1A

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

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N 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:

~~Photo #1 facing South~~

Photos 0445-0446 from 10/31/18

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ~~✓~~	Depth (inches): 0-0.5"
Saturation Present? (includes capillary fringe)	Yes ✓	No ~~✓~~	Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

~~Small swale depression located at the base of the sloped roadway embankment~~ ~~culvert likely contributes to hydrology, dry @ time of site visit~~.

feature wetter in 2018 than when visited/delineated in 2015

22 PP

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

Sampling Point: ~~01-P-WET~~

Tree Stratum (Plot size: irregular*)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
5.			
6.			
= Total Cover			

50% of total cover: ____ 20% of total cover: ____

Sapling Stratum (Plot size: irregular*)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americana	5	✓	FACW
2.			
3.			
4.			
5.			
6.			
= Total Cover	5		

50% of total cover: 2.5 20% of total cover: 1

Shrub Stratum (Plot size: irregular*)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera maackii	5	✓	UPL
2.			
3.			
4.			
5.			
6.			
= Total Cover	5		

50% of total cover: 2.5 20% of total cover: 1

Herb Stratum (Plot size: irregular*)

	Absolute % Cover	Dominant Species?	Indicator Status
1. Persicaria hydropiperoides	60	✓	OBL
2. Fraxinus pennsylvanica	5		FACW
3. Lonicera japonica	10		FACU
4. Lonicera maackii	8		UPL
5. Symphyotrichum pilosum	3		FAC
6.			
7.			
8.			
9.			
10.			
11.			
= Total Cover	86		

50% of total cover: 43 20% of total cover: 17.2

Woody Vine Stratum (Plot size: irregular*)

	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
5.			
= Total Cover			

50% of total cover: ____ 20% of total cover: ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

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 = ____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)
*Plot follows limits of swale *Approximately 75% aerial coverage from surrounding tree canopy, only one sapling w/in plot.

Verified 10/31/18 MMJ

22 PP

SOIL

Sampling Point: ~~SP2WET~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/2	95	7.5YR 4/4	5	C	M	Silo	
6-10	10YR 4/2	45	7.5YR 4/4	10	C	M	Silo	w/ coarse fragments
	10YR 4/3	45						
10-12	2.5Y 5/4	50					Silo	fill material
	7.5YR 5/6	50					Silo	fill material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 AC Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? _____

Adjacent land use Forest, roadway Distance to nearest roadway or other development 50 ft

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? Yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22PP

Latitude 35.9919 Longitude -77.175505

Prepared by: MRS Date 10/31/18

Wetland Impact:
Type PFO Area 0.01 AC

Evaluation based on:
Office _____ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				may receive GW seepage from highway embankment
Floodflow Alteration		✓			very limited drainage area
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention		✓			
Nutrient Removal		✓			
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat		✓			
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

I-495/I-270 MANAGED LANES STUDY **Waters of the U.S. Data Sheet** VERIFIED MBS/AGA 4-26-18

Project: ~~I-495 IRVM - Montgomery County~~		**Feature ID:** ~~01-I~~ 22Q	**Stream Order:** 1st
Date: ~~11/20/14~~ 4-26-2018	**State:** MD	**Photos:** ~~18~~ 2616-2620	
Crew: ~~AT,MN,AM~~ MBS/AGA	**County:** Montgomery	**Last Flag Number:** ~~01-I-09A, 01-I-09B~~ 20A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: greater than 1 ft of water in channel			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: ~~01-H~~ 22R	Downstream: outside of study area	Adjacent/Abutting: ~~01-H~~ 22R

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate			Vegetation Cover Type (MBSS)
✓ Natural Channel Shape	Width: 4'		✓ Silts	✓ Sands	☐ Muck	RB: forest
☐ Artificial (man-made)	Depth: 2'		☐ Cobbles	☐ Gravel	☐ Other:	
✓ Manipulated (man-altered)	Bank Erosion/stability: moderate erosion		☐ Bedrock	☐ Concrete		LB: forest
☐ Other:			Side slope: ✓ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: flows to and from concrete pipes						

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month:	Year:
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○	october	2014
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
✓ Yes	✓ Clear, natural line impressed on the bank	✓ Sediment deposition	✓ Sediment sorting	
☐ No	☐ Changes in the character of soil	✓ Water staining	✓ Scour	
	✓ Shelving	☐ Presence of flood litter/debris	☐ Observed/predicted flow events	
	✓ Vegetation matted down, bent, or absent	✓ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	✓ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: 495/270 Managed Lanes		**Feature ID:** 22QQ	**Stream Order:**
Date: 10/31/18	**State:** MD	**Photos:** 0447 - 0451	
Crew: MRS	**County:** Montgomery	**Last Flag Number:** 22QQ-5	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
TNW (Subject to ebb and flow)	TNW – Perennial (Flowing year round)	X RPW – Seasonal (must flow at least 3 months a year)	Non-RPW draining uplands
	RPW – Perennial (Flowing year round)		Non-RPW erosional feature
			Non-RPW with abutting wetland
			Non-RPW with adjacent wetland
Describe rational for hydrologic class: observed surface water, barely/not flowing, but full of iron oxide flocculate = GW discharge?			Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: None	Downstream: 22MM = Potomac River = side channel	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate						Vegetation Cover Type (MBSS)
X	Natural Channel Shape	Width: 2'-6'		Silts	X	Sands	X	Muck	RB: forest
	Artificial (man-made)	Depth: 0.0 - 0.1'		Cobbles		Gravel		Other:	
	Manipulated (man-altered)	Bank Erosion/stability:		Bedrock		Concrete			LB: forest
	Other:	moderate erosion	Side slope: X ≥1:1 X 2:1 ☐ 3:1 ☐ ≤4:1						
Notes: feature is naturally eroded channel from SW outfall									

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php Month: October Year: 2018												
X	No rain		0-0.5											X		
	Light rain	X	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4.13	5	6
	Heavy Rain		>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks		Ordinary High Water Mark					
X	Yes	X	Clear, natural line impressed on the bank		Sediment deposition		Sediment sorting
	No		Changes in the character of soil	X	Water staining	X	Scour
			Shelving		Presence of flood litter/debris	X	Observed/predicted flow events
			Vegetation matted down, bent, or absent		Destruction of terrestrial veg.		Abrupt change in plant community
			Leaf litter disturbed		Presence of wrack line		Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
	Oil or scum line along shore objects		Survey to available datum		Water is clear
	Fine shell or debris deposits (foreshore)		Physical markings		Water is discolored
	Physical markings/characteristics		Vegetation lines/changes in types		Oily film
	Tidal gauges				Other:
Notes:					

VERIFIED MBS
4-26-18

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~I-495 IRVM Montgomery County~~ City/County: Montgomery Co. Sampling Date: 4/26/18

Applicant/Owner: SHA State: MD Sampling Point: ~~SP-1~~ 22R-UPL

Investigator(s): ~~AT, MN, AM~~ MBS/AGA Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): convex Slope (%): 3-4

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97392 Long: -77.17586 Datum: NAD 83

Soil Map Unit Name: Watchung silty clay, 0 to 3% slopes NWI classification:

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches):
Water Table Present?	Yes ____	No ✓	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches):

Wetland Hydrology Present? Yes ____ **No** ✓

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

Remarks:

22R-UPL

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~6-FT-UPL~~

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	70	✓	FACU
2. Acer rubrum	5		FAC
3. Quercus falcata	10		FACU
4.			
5.			
6.			
	85	= Total Cover	
50% of total cover: 42.5	20% of total cover: 17		
Sapling Stratum (Plot size: 30' radius)			
1. Carpinus caroliniana	5	✓	FAC
2. Asimina triloba	5	✓	FAC
3.			
4.			
5.			
6.			
	10	= Total Cover	
50% of total cover: 5	20% of total cover: 2		
Shrub Stratum (Plot size: 30' radius)			
1. Ilex opaca	10	✓	FACU
2. Rubus phoenicolasius	15	✓	FACU
3. Rosa multiflora	15	✓	FACU
4.			
5.			
6.			
	40	= Total Cover	
50% of total cover: 20	20% of total cover: 8		
Herb Stratum (Plot size: 30' radius)			
1. Duchesnea indica	10	✓	FACU
2. Polystichum acrostichoides	8	✓	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	18	= Total Cover	
50% of total cover: 9	20% of total cover: 3.6		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	15	✓	FACU
2. Smilax rotundifolia	5	✓	FAC
3. Hedera helix	5	✓	FACU
4.			
5.			
	25	= Total Cover	
50% of total cover: 12.5	20% of total cover: 5		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 27 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	158	x 4 =	632
UPL species	0	x 5 =	0
Column Totals:	178 (A)		692 (B)

Prevalence Index = B/A = 3.89

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

22R-UPL

SOIL

Sampling Point: ~~D1 H UPL~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR4/3	98	10YR4/6	2	C	M	sicl	
6-12	10YR4/4	60	7.5YR4/4	5	C	M	fscl	
	10YR4/6	45						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

VERIFIED MBS/AGA 4-26-18
EXTENDED SHAPE

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

I-495/I-270 MANAGED LANES STUDY

4-26-2018

Project/Site: ~~I-495 FRVM-Montgomery County~~ City/County: Montgomery Co. Sampling Date: ~~11/20/18~~

Applicant/Owner: SHA State: MD Sampling Point: ~~B-11-WET~~ 22R

Investigator(s): ~~AT, MA, AM~~ MBS/AGA Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): MLRA 148 Lat: 38.97356 Long: -77.17452 Datum: NAD83

Soil Map Unit Name: Watchung silty clay loam, 0 to 3% slopes NWI classification: PFO1E

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

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

Are Vegetation N, Soil N, or Hydrology N 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:

PHOTOS 2621-2624

• Separated feature into PEM/PFO (PEM is 22Y).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?* Yes ✓ No ___ Depth (inches): 2-4"

Water Table Present? Yes ✓ No ___ Depth (inches):

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

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

* 2-4 in of water present in approx. 25% of plot

22R

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: ~~OLH WET~~

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	✓	FAC
2. Platanus occidentalis	40	✓	FACW
3.			
4.			
5.			
6.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling Stratum (Plot size: 30' radius)			
1. Asimina triloba	5	✓	FAC
2. Nyssa sylvatica	8	✓	FAC
3.			
4.			
5.			
6.			
	13 = Total Cover		
50% of total cover: 6.5	20% of total cover: 2.6		
Shrub Stratum (Plot size: 30' radius)			
1. Asimina triloba	15	✓	FAC
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Herb Stratum (Plot size: 30' radius)			
1. Dichanthelium clandestinum	12		FAC
2. Microstegium vimineum	45	✓	FAC
3. Cinna arundinacea	20	✓	FACW
4. Symphyotrichum pilosum	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	92 = Total Cover		
50% of total cover: 41	20% of total cover: 16.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. Lonicera japonica	15	✓	FACU
2. Smilax rotundifolia	3		FAC
3.			
4.			
5.			
	18 = Total Cover		
50% of total cover: 9	20% of total cover: 3.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5 (A/B)

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 =

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22R ~~OFF-WET~~

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y3/2	60	7.5YR5/8	5	C	PL	sicl	many wetlands
	10YR3/2	35						
2-8	2.5Y3/1	85	7.5YR4/6	15	C	PL, M	sicl	
8-12	5Y4/2	80	7.5YR4/4	20	C	M	sicl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ✓ No ___

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.3ac Human made?_____ Is wetland part of a wildlife corridor? Y or a "habitat island"?_____

Adjacent land use ROADWAY Distance to nearest roadway or other development 50 ft.

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present YES

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MIDDLE

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22R

Latitude 38.973539 Longitude -77.174689

Prepared by: MBS Date 4-26-2018

Wetland Impact:
Type_____ Area_____

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Waters of the U.S. Data Sheet

Project: I-495/I-270 Managed Lanes Study		Feature ID: 22RR	Stream Order:
Date: 9/6/18	State: MD	Photos: 0607 - 0608	
Crew: KJH, SDF	County: Mo.	Last Flag Number: NA	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: Flowing during site visit. Fish

Hydrologic Connectivity –	Upstream: outside study Area	Downstream: Cabin John Creek	Adjacent/Abutting: None

Feature Description: *(check all that apply)* 22AA

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 6-15'	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2-10"	☑ Cobbles	☑ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Severe erosion	Side slope: ☑ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes:

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php — Month: August Year: 2018													
◉ No rain	○ 0-0.5	○	○	○	○	○	○	○	○	○	○	◉	○	○	
○ Light rain	◉ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: *(check all that apply; include photos for each & list photo #)*

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☐ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☑ Scour
	☑ Shelving	☑ Presence of flood litter/debris	☐ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☑ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: *(check all that apply; include photos for each & list photo #)*

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 225	**Stream Order:**
Date: 5-2-2018	**State:** MD	**Photos:** 2681-2685	
Crew: MBS/AGA	**County:** MONTGOMERY	**Last Flag Number:** 9 (continue)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING DURING FIELD INVESTIGATION, SEVERAL DAYS AFTER RAIN			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 1' PIPE	Downstream: 22M	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 1-7'	☒ Silts	☒ Sands	☐ Muck	RB: FOREST
☐ Artificial (man-made)	Depth: 6"	☒ Cobbles	☒ Gravel	☒ Other: FLAT STONE SLABS	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: FOREST
☐ Other:	STABLE	Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI (https://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018												
●	No rain	○	0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	Heavy Rain	●	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting	
☐ No	☒ Changes in the character of soil	☒ Water staining	☒ Scour	
	☒ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events	
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Stream Assessment Form (Form 1)

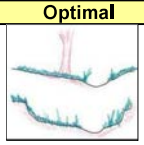
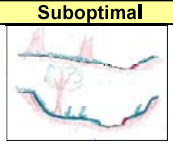
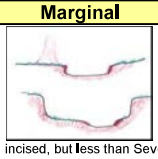
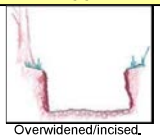
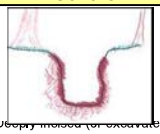
Unified Stream Methodology for use in Virginia

For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
	I-495 NEXT	Fairfax	R3	02070008	8/20/2018	~~CC/CD~~ 22SS		

Name(s) of Evaluator(s)	Stream Name and Information
Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer	unnamed tributary to the Potomac

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

	Conditional Category					
	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which contribute to stability.	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 Deeply incised (or excavated), vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%, AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.6
NOTES>>	Banks are significantly incised throught with evidence of erosion.					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

	Conditional Category							
	Optimal	Suboptimal		Marginal		Poor		NOTES>> The buffer is has significant areas of disturbance on the left bank including houses and lawns. The right bank has more natural features but still has lawns which intersect.
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and a non-maintained understory. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	80%	20%					100%	
	Score >	1.5	0.6						
									CI= (Sum % RA * Scores*0.01)/2
Left Bank	% Riparian Area>	90%	10%					100%	Rt Bank CI > 1.32 / CI
	Score >	1.5	0.6						Lt Bank CI > 1.41 / CI 1.37

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

NOTES>> Habitat elements are present in the majority of the stream.

	Conditional Category				
	Optimal	Suboptimal	Marginal	Poor	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	CI
Score	1.5	1.2	0.9	0.5	1.50

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
	VDOT	Fairfax	R3	0207008	8/20/18	CC/CD		

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>> alteration/straightening has occurred on a small section of this stream

	Conditional Category						
	Negligible	Minor		Moderate		Severe	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.	
SCORE	1.5	1.3	1.1	0.9	0.7	0.5	1.30

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	1.15
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	0
CR = RCI X LF X IF	

INSERT PHOTOS:

DESCRIBE PROPOSED IMPACT:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY		**Feature ID:** 22T	**Stream Order:** 1
Date: 5-2-2018	**State:** MD	**Photos:** 2693-2696	
Crew: MBS/AGA	**County:** MONTGOMERY	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	⊗ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: FLOWING RAPIDLY ~4 DAYS AFTER RAINFALL			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: 22U	Downstream: 22HH	Adjacent/Abutting: N/A

Feature Description: *(check all that apply)*

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 3-6'	☐ Silts	☒ Sands	☐ Muck	RB: FORESTED
☐ Artificial (man-made)	Depth: 3"	☒ Cobbles	☐ Gravel	☒ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☒ Concrete	RIPRAP	LB: FORESTED
☐ Other:	STABLE	Side slope: ☐ ≥1:1 ☐ 2:1 ☒ 3:1 ☐ ≤4:1			
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI (http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php) Month: APRIL Year: 2018												
● No rain	○ 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	● >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark					
☒ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☒ Water staining	☐ Scour
	☐ Shelving	☒ Presence of flood litter/debris	☒ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: I-495 Northern Express Lanes City/County: Fairfax County Sampling Date: 8/16/2018

Applicant/Owner: Virginia Department of Transportation State: VA Sampling Point: ~~DP-DC~~ 22TT

Investigator(s): Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR or MLRA): LRR S Lat: 38.9630 Long: -77.1741 Datum: NAD83

Soil Map Unit Name: Codorus and Hatboro soils, 0 to 2 percent slopes, occasionally flooded NWI classification: PFO

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:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [✓] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] 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)
- [ ] FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes (●) No ( ) Depth (inches): 4"

Wetland Hydrology Present? Yes X No

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DP-DC

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	40	✓	FAC
2. Fraxinus pennsylvanica	10		FACW
3. Platanus occidentalis	5		FACW
4. Liriodendron tulipifera	5		FACU
5.			
6.			
7.			
	60	= Total Cover	

Sapling Stratum (Plot size: 30)			
1. Fraxinus pennsylvanica	25	✓	FACW
2. Acer rubrum	5		FAC
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	

Shrub Stratum (Plot size: 15)			
1. Lindera benzoin	15	✓	FAC
2. Fraxinus pennsylvanica	5		FACW
3.			
4.			
5.			
6.			
7.			
	5	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Microstegium vimineum	75	✓	FAC
2. Osmundastrum cinnamomeum	5		FACW
3. Ligustrum japonicum	5		UPL
4. Lonicera japonica	5		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	= Total Cover	

Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	135	x 3 =	405
FACU species	10	x 4 =	40
UPL species	10	x 5 =	50
Column Totals:	205 (A)		595 (B)

Prevalence Index = B/A = 2.9

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP-DC

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR3/2	80	10YR4/6	20	C	M	SL	silt loam
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				
		0%		0%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

VERIFIED MBS/AGA 5-2-2018

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY

Project/Site: Capital Beltway	**Date:** ~~8/17/2004~~ 5-2-2018
Project No:	**County:** Montgomery
Applicant/Owner: SHA	**State:** MD
Investigators: ~~WMM/MRS/BCR~~ MBS/AGA	**Plot ID:** ~~W-121~~ UPL 22U UPL

Do Normal Circumstances exist on the site?	Yes	No	**Community ID:** Upland	ET 3/18/15
Is the site significantly disturbed (Atypical Situation)?	Yes	No	**Transect ID:**	
Is the area a potential Problem Area?	Yes	No	**Field Location:**	
(If needed, explain on the reverse side)				

VEGETATION **(USFWS Region No.1)**

Dominant Plant Species (Latin/Common)	Stratum	Indicator	Dominant Plant Species (Latin/Common)	Stratum	Indicator
Juniperus virginiana	S	FACU			
Eastern Red cedar					
Liriodendron tulipifera	OS	FACU			
Tulip tree					
Rosa multiflora	S	FACU			
Multiflora rose					
Toxicodendron radicans	WV	FAC			
Poison Ivy					
Lonicera japonica	WV	FAC-			
Japanese honeysuckle					
Parthenocissus quinquefolia	WV	FACU			
Virginia creeper					
Cercis Canadensis	S	FACU-			
Eastern redbud					

Percent Dominant Species that are OBL, FACW, or FAC: (excluding FAC-) 15%	**FAC Neutral:** **Numeric Index:**

Remarks:

HYDROLOGY

___ **Recorded Data (Describe in Remarks):**	**Wetland Hydrology Indicators**
___ **Stream, Lake or Tide Gauge**	**Primary Indicators**
___ **Aerial Photographs**	___ **Inundated**
___ **Other**	___ **Saturated in Upper 12 Inches**
X **No Recorded Data**	___ **Water marks**
	___ **Drift Lines**
Field Observations	___ **Sediment Deposits**
	___ **Drainage patterns in Wetlands**
Depth of Surface Water: N/A inches	**Secondary Indicators (2 or more required)**
	___ **Oxidized Root Channels in Upper 12 Inches**
Depth to Free Water in Pit: >10 inches	___ **Water-Stained Leaves**
	___ **Local Soil Survey Data**
Depth to Saturated Soil: >10 inches	___ **FAC-Neutral Test**
	___ **Other (Explain in Remarks)**

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY 5-2-2018

Project/Site: ~~Capital Beltway~~ **Project No:** **Applicant/Owner:** **Investigators:** WMM/MRS/BCR	**Date:** ~~8/17/2004~~ **County:** Montgomery **State:** MD (ET 3/18/15) **Plot ID:** ~~WF21-UPL~~ 724-UPL

SOILS

Map Unit Name (Series and Phase): Travilah silt loam, 3 to 8 percent slopes
Map Symbol: 37B **Drainage Class:** Somewhat poorly **Mapped Hydric Inclusion?** No
Taxonomy (Subgroup): Aquic Hapludulfs **Field Observations Confirm Mapped Type?** **Yes** **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	B1	10YR4/4	N/A	N/A	loam
2-10	B2	10YR5/6	N/A	N/A	Loamy sand

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer in Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation present?	Yes	No	Is the Sampling Point within the Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

VERIFIED MBS/AGA 5-2-2018

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY

Project/Site: ~~Capital Beltway~~	**Date:** ~~8/17/2004~~ 5-2-2018
Project No: 103-087	**County:** Montgomery
Applicant/Owner: SHA	**State:** MD
Investigators: ~~WMM/MRS/BCR~~ MBS/AGA	**Plot ID:** ~~W-12T~~ 22U

Do Normal Circumstances exist on the site?	Yes	No	**Community ID:** PFO	ET 3/18/15
Is the site significantly disturbed (Atypical Situation)?	Yes	No	**Transect ID:**	
Is the area a potential Problem Area?	Yes	No	**Field Location:**	
(If needed, explain on the reverse side)				

VEGETATION (USFWS Region No.1)

Dominant Plant Species (Latin/Common)	Stratum	Indicator	Dominant Plant Species (Latin/Common)	Stratum	Indicator
Acer rubrum	OS/S	FAC			
Red maple					
Salix nigra	OS	FACW+			
Black willow					
Ulmus rubra	OS	FAC			
Slippery elm					
Acer negundo	OS	FAC+			
Boxelder					

Percent Dominant Species that are OBL, FACW, or FAC: (excluding FAC-) 100%	**FAC Neutral:** **Numeric Index:**

Remarks:
PHOTOS 2697-2699

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake or Tide Gauge
- ___ Aerial Photographs
- ___ Other

X No Recorded Data

Field Observations

Depth of Surface Water:	0-6 inches
Depth to Free Water in Pit:	0 inches
Depth to Saturated Soil:	0 inches

Wetland Hydrology Indicators
Primary Indicators
- X Inundated
- X Saturated in Upper 12 Inches
- ___ Water marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage patterns in Wetlands

Secondary Indicators (2 or more required)
- ___ Oxidized Root Channels in Upper 12 Inches
- X Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

I-495/I-270 MANAGED LANES STUDY 5-2-2018

Project/Site: ~~Capital Beltway~~ **Project No:** 103-087 **Applicant/Owner:** **Investigators:** ~~WMM/MRS/BCR~~ MBS/AGA	**Date:** ~~8/17/2004~~ **County:** Montgomery **State:** MD **Plot ID:** ~~W-121~~ 22U

SOILS

Map Unit Name (Series and Phase): Travilah silt loam, 3 to 8 percent slopes
Map Symbol: 37B **Drainage Class:** Somewhat poorly **Mapped Hydric Inclusion?** No
Taxonomy (Subgroup): Aquic hapludulfs **Field Observations Confirm Mapped Type?** **Yes** **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		5Y3/1	2.5Y5/3	Faint	Silty clay loam

Hydric Soil Indicators:

___ **Histosol**
___ **Histic Epipedon**
___ **Sulfidic Odor**
___ **Aquic Moisture Regime**
_X_ **Reducing Conditions**
_X_ Gleyed or Low Chroma Colors
___ **Concretions**
___ **High Organic Content in Surface Layer in Sandy Soils**
___ **Organic Streaking in Sandy Soils**
___ **Listed on Local Hydric Soils List**
___ **Listed on National Hydric Soils List**
___ **Other (Explain in Remarks)**

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation present?	Yes	No	Is the Sampling Point within the Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks: Depressional area with standing water up to 6"

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 acre Human made? No Is wetland part of a wildlife corridor? ✓ or a "habitat island"?

Adjacent land use ROAD/RESIDENTIAL Distance to nearest roadway or other development 50'

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? TOP

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22U

Latitude 38.975211 Longitude -77.178032

Prepared by: MBS Date 5-2-2018

Wetland Impact:
Type PFO Area 0.02 acre

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration	✓				
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export	✓				
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Stream Assessment Form (Form 1)

Unified Stream Methodology for use in Virginia

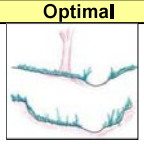
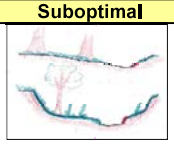
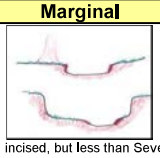
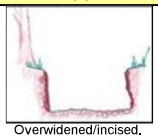
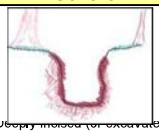
For use in wadeable channels classified as intermittent or perennial

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
	I-495 NEXT	Fairfax	R3	02070008	8/20/2018	~~DF~~ 22UU		

Name(s) of Evaluator(s)	Stream Name and Information
Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer	unnamed tributary to the Potomac

1. Channel Condition: Assess the cross-section of the stream and prevailing condition (erosion, aggradation)

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	Severe	
Channel Condition	 Very little incision or active erosion; 80-100% stable banks. Vegetative surface protection or natural rock, prominent (80-100%). AND/OR Stable point bars/bankfull benches are present. Access to their original floodplain or fully developed wide bankfull benches. Mid-channel bars, and transverse bars few. Transient sediment deposition covers less than 10% of bottom.	 Slightly incised, few areas of active erosion or unprotected banks. Majority of banks are stable (60-80%). Vegetative protection or natural rock prominent (60-80%) AND/OR Depositional features contribute to stability. The bankfull and low flow channels are well defined. Stream likely has access to bankfull benches, or newly developed floodplains along portions of the reach. Transient sediment covers 10-40% of the stream bottom.	 Often incised, but less than Severe or Poor. Banks more stable than Severe or Poor due to lower bank slopes. Erosion may be present on 40-60% of both banks. Vegetative protection on 40-60% of banks. Streambanks may bevertical or undercut. AND/OR 40-60% of stream is covered by sediment. Sediment may be temporary/transient, contribute instability. Deposition that contribute to stability, may be forming/present. AND/OR V-shaped channels have vegetative protection on > 40% of the banks and depositional features which contribute to stability.	 Overwidened/incised. Vertically/laterally unstable. Likely to widen further. Majority of both banks are near vertical. Erosion present on 60-80% of banks. Vegetative protection present on 20-40% of banks, and is insufficient to prevent erosion. AND/OR 60-80% of the stream is covered by sediment. Sediment is temporary/transient in nature, and contributing to instability. AND/OR V-shaped channels have vegetative protection is present on > 40% of the banks and stable sediment deposition is absent.	 Deeply incised (or excavated), vertical/lateral instability. Severe incision, flow contained within the banks. Streambed below average rooting depth, majority of banks vertical/undercut. Vegetative protection present on less than 20% of banks, is not preventing erosion. Obvious bank sloughing present. Erosion/raw banks on 80-100%. AND/OR Aggrading channel. Greater than 80% of stream bed is covered by deposition, contributing to instability. Multiple thread channels and/or subterranean flow.	CI
Score	3	2.4	2	1.6	1	1.6
NOTES>>	Banks are significantly incised throught with evidence of erosion.					

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category

	Optimal	Suboptimal		Marginal		Poor		NOTES>>
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and a non-maintained understory. Wetlands located within the riparian areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with > 30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	NOTES>> Both sides of the stream are wetland/floodplain mosaic. The right bank has I-495 which runs through it while the left bank has a home and yard.
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	30%	70%					100%		
	Score >	1.5	0.5							
									CI= (Sum % RA * Scores*0.01)/2	
Left Bank	% Riparian Area>	90%	10%					100%	Rt Bank CI >	0.80	CI
	Score >	1.5	0.6						Lt Bank CI >	1.41	1.11

3. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths; woody and leafy debris; stable substrate; low embededness; shade; undercut banks; root mats; SAV; riffle poole complexes, stable features.

Conditional Category

	Optimal	Suboptimal	Marginal	Poor	NOTES>>	
Instream Habitat/ Available Cover	Habitat elements are typically present in greater than 50% of the reach.	Stable habitat elements are typically present in 30-50% of the reach and are adequate for maintenance of populations.	Stable habitat elements are typically present in 10-30% of the reach and are adequate for maintenance of populations.	Habitat elements listed above are lacking or are unstable. Habitat elements are typically present in less than 10% of the reach.	NOTES>> Habitat elements are not present, the majority of the channel has been riprapped	CI
Score	1.5	1.2	0.9	0.5		0.50

Stream Impact Assessment Form Page 2

Project #	Applicant	Locality	Cowardin Class.	HUC	Date	Data Point	SAR length	Impact Factor
	VDOT	Fairfax	R4	0207008	8/20/18	DE		

4. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel, channelization, embankments, spoil piles, constrictions, livestock

NOTES>> The majority of the channel has been altered through straightening and riprap

	Conditional Category						
	Negligible	Minor		Moderate		Severe	
Channel Alteration	Channelization, dredging, alteration, or hardening absent. Stream has an unaltered pattern or has naturalized.	Less than 20% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	20-40% of the stream reach is disrupted by any of the channel alterations listed in the parameter guidelines.	40 - 60% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	60 - 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines AND/OR 80% of banks shored with gabion, riprap, or cement.	
SCORE	1.5	1.3	1.1	0.9	0.7	0.5	0.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.74
RCI= (Sum of all CI's)/5	
COMPENSATION REQUIREMENT (CR) >>	0
CR = RCI X LF X IF	

INSERT PHOTOS:

DESCRIBE PROPOSED IMPACT:

Waters of the U.S. Data Sheet

Project: I-495/I-270 MANAGED LANES STUDY	Feature ID: 22V	Stream Order: 1
Date: 5-9-2018 — State: MD	Photos: 2733-2735	
Crew: MBS/SJF — County: MONTGOMERY	Last Flag Number: 12	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	☒ RPW – Seasonal (must flow at least 3 months a year) R4	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: SOME STANDING WATER W/ CHANNEL, WRACK LINE AND SCOUR INDICATE PERIODIC HIGH FLOW			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)
Hydrologic Connectivity –	Upstream: 22J	Downstream: ROADSIDE SWALE/18" RCP (outside study area)	Adjacent/Abutting: N/A

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☒ Natural Channel Shape	Width: 1–4'	☒ Silts	☒ Sands	☐ Muck	RB: HEDGEROW/ RIPRAP
☐ Artificial (man-made)	Depth: 6"	☒ Cobbles	☒ Gravel	☐ Other:	
☒ Manipulated (man-altered)	Bank Erosion/stability: ERODED	☐ Bedrock	☐ Concrete		
☐ Other:		Side slope: ☒ ≥1:1 ☒ 2:1 ☐ 3:1 ☐ ≤4:1			LB: "
Notes:					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI — Month: APRIL Year: 2018												
● No rain	○ 0-0.5	○	○	○	○	○	●	○	○	○	○	○	○	○
○ Light rain	● 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☒ Yes	☒ Clear, natural line impressed on the bank	☒ Sediment deposition	☐ Sediment sorting
☐ No	☒ Changes in the character of soil	☒ Water staining	☒ Scour
	☒ Shelving	☒ Presence of flood litter/debris	☐ Observed/predicted flow events
	☒ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☒ Leaf litter disturbed	☒ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Ephemeral Stream Assessment Form (Form 1a)

Unified Stream Methodology for use in Virginia

For use in ephemeral streams

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
	I-495 NEXT	Fairfax	EPH - R6	02070008	8/20/2018	~~DJ~~ 22VV		

Name(s) of Evaluator(s)	Stream Name and Information
Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer	unnamed tributary to the Potomac

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

Conditional Category								NOTES>> Both sides of the stream are wetland/floodplain mosaic.
	Optimal	Suboptimal		Marginal		Poor		
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and an non-maintained understory. Wetlands areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with >30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%						100%			
	Score >	1.5									
									CI= (Sum % RA * Scores*0.01)/2		
Left Bank	% Riparian Area>	100%						100%	Rt Bank CI >	1.50	CI
	Score >	1.5							Lt Bank CI >	1.50	1.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.75

RCI= (Riparian CI)/2

COMPENSATION REQUIREMENT (CR) >>	0

CR = RCI X LF X IF

INSERT PHOTOS:

DESCRIBE PROPOSED IMPACT:

DATA FORM Verified 10/31/18 MRS
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: ~~Capital Beltway~~ I-495/I-270 MANAGED LANES STUDY	**Date:** ~~8/24/04~~ 10/31/18
Project No: 103-087	**County:** Montgomery
Applicant/Owner: SHA	**State:** MD
Investigators: ~~WMM/DAL~~ ~~MRS~~ MRS	**Plot ID:** ~~W-132, DP#1~~ 22W-WET

Do Normal Circumstances exist on the site?	Yes	No	**Community ID:** PEM 1Yx
Is the site significantly disturbed (Atypical Situation)?	Yes	No	**Transect ID:**
Is the area a potential Problem Area? (If needed, explain on the reverse side)	Yes	No	**Field Location:**

VEGETATION **(USFWS Region No.1)**

Dominant Plant Species (Latin/Common)	Stratum	Indicator	Dominant Plant Species (Latin/Common)	Stratum	Indicator
Sagittaria latifolia Broad-leaf Arrowhead	Herb	OBL			
Cyperus strigosus Straw-color flatsedge	Herb	FACW			
Typha augustifolia Narrow-leaf cattail	Herb	OBL			
Potamogeton epihydrus Ribbonleaf pondweed	Herb	OBL			

Percent Dominant Species that are OBL, FACW, or FAC: (excluding FAC-) 100%	**FAC Neutral:** Yes **Numeric Index:**

Remarks:
Emergent marsh in C&O Canal Photos 0404-0413

HYDROLOGY

___ **Recorded Data (Describe in Remarks):** ___ **Stream, Lake or Tide Gauge** ___ **Aerial Photographs** ___ **Other** __ **No Recorded Data**	**Wetland Hydrology Indicators** **Primary Indicators** ___ **Inundated** _X_ **Saturated in Upper 12 Inches** _X_ **Water marks** ___ **Drift Lines** _X_ **Sediment Deposits** ___ **Drainage patterns in Wetlands** **Secondary Indicators (2 or more required)** ___ **Oxidized Root Channels in Upper 12 Inches** _X_ **Water-Stained Leaves** ___ **Local Soil Survey Data** _X_ **FAC-Neutral Test** ___ **Other (Explain in Remarks)**
Field Observations **Depth of Surface Water:** N/A inches **Depth to Free Water in Pit:** 8 inches **Depth to Saturated Soil:** 0 inches	

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: ~~Capital Beltway~~ **Project No:** ~~103-087~~ **Applicant/Owner:** SHA **Investigators:** ~~WMM/DAL~~ MRS	**Date:** ~~8/24/04~~ 10/31/18 **County:** Montgomery **State:** MD **Plot ID:** ~~W-132, DP#1~~ ZZW-WET

SOILS

Map Unit Name (Series and Phase): Elk silt loam, 0-3% slopes, occasionally flooded
Map Symbol: 43A **Drainage Class:** Well **Mapped Hydric Inclusion?** No
Taxonomy (Subgroup): Ultic Hapludulfs **Field Observations Confirm Mapped Type?** Yes **No**

Profile Description

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		5Y4/1	N/A	None	Silty clay
8-12+		5Y3/1	N/A	None	Silty clay

Hydric Soil Indicators:

___ **Histosol**
___ **Histic Epipedon**
___ **Sulfidic Odor**
___ **Aquic Moisture Regime**
___ **Reducing Conditions**
___ **Gleyed or Low Chroma Colors**
___ **Concretions**
___ **High Organic Content in Surface Layer in Sandy Soils**
___ **Organic Streaking in Sandy Soils**
___ **Listed on Local Hydric Soils List**
___ **Listed on National Hydric Soils List**
___ **Other (Explain in Remarks)**

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation present?	Yes	No	Is the Sampling Point within the Wetland?	Yes	No
Wetland Hydrology Present?	Yes	No			
Hydric Soils Present?	Yes	No			

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland >1.66 Ac Human made? Yes Is wetland part of a wildlife corridor? Yes or a "habitat island"?

Adjacent land use forest, tow path Distance to nearest roadway or other development 0-150 Ft

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Middle

How many tributaries contribute to the wetland? Several * Wildlife & vegetation diversity/abundance (see attached list)

* outside study area

Wetland I.D. 22W - C+O canal

Latitude 38.97241 Longitude -77.178513

Prepared by: MMS Date 10/31/15

Wetland Impact:
Type PEM Area 70.60Ac

Evaluation based on:
Office ____ Field ✓

Corps manual wetland delineation completed? Y ✓ N ____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		2, 7, 15, 8, 13		
Floodflow Alteration	✓		3, 4, 5, 6, 7, 8, 9, 10, 13, 15	✓	
Fish and Shellfish Habitat		✓	4, 7		
Sediment/Toxicant Retention	✓		1, 2, 3, 4, 5, 8,		
Nutrient Removal	✓		3, 4, 5, 6, 7, 8, 9, 10, 11		
Production Export	✓		1, 2, 4, 7, 5, 8, 9, 12, 14		
Sediment/Shoreline Stabilization		✓	3, 15		
Wildlife Habitat	✓		3, 4, 5, 6, 7, 8, 9, 13, 14, 19, 20, 21,	✓	
Recreation	✓		1, 4, 6, 9, 12		
Educational/Scientific Value		✓	5		
Uniqueness/Heritage	✓		12, 13, 16, 17, 19, 21, 22, 23, 25	✓	C+O canal
Visual Quality/Aesthetics		✓	2, 3, 5, 7, 8, 9, 12		
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

Ephemeral Stream Assessment Form (Form 1a)

Unified Stream Methodology for use in Virginia

For use in ephemeral streams

Project #	Project Name	Locality	Cowardin Class.	HUC	Date	SAR #	Impact/SAR length	Impact Factor
	I-495 NEXT	Fairfax	INT R4SB/ EPH R6	02070008	8/20/2018	~~DK/DL~~ 22WW/22XX		

Name(s) of Evaluator(s)	Stream Name and Information
Scott Shifflett, Laura Cooper, Kyle Haynes, Evan Fowler, Emily Onufer	unnamed tributary to the Potomac

2. RIPARIAN BUFFERS: Assess both bank's 100 foot riparian areas along the entire SAR. (rough measurements of length & width may be acceptable)

	Conditional Category							NOTES>> Both sides of the stream are wetland/floodplain mosaic.
	Optimal	Suboptimal		Marginal		Poor		
Riparian Buffers	Tree stratum (dbh > 3 inches) present, with > 60% tree canopy cover and an non-maintained understory. Wetlands areas.	**High Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with 30% to 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	**Low Suboptimal:** Riparian areas with tree stratum (dbh > 3 inches) present, with >30% tree canopy cover and a maintained understory. Recent cutover (dense vegetation).	**High Marginal:** Non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh > 3 inches) present, with <30% tree canopy cover.	**Low Marginal:** Non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, hay production, ponds, open water. If present, tree stratum (dbh >3 inches) present, with <30% tree canopy cover with maintained understory.	**High Poor:** Lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	**Low Poor:** Impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	
Condition Scores	1.5	1.2	1.1	0.85	0.75	0.6	0.5	

1. Delineate riparian areas along each stream bank into Condition Categories and Condition Scores using the descriptors.
2. Determine square footage for each by measuring or estimating length and width. Calculators are provided for you below.
3. Enter the % Riparian Area and Score for each riparian category in the blocks below.

Ensure the sums of % Riparian Blocks equal 100

Right Bank	% Riparian Area>	100%						100%			
	Score >	1.5									
									CI= (Sum % RA * Scores*0.01)/2		
Left Bank	% Riparian Area>	100%						100%	Rt Bank CI >	1.50	CI
	Score >	1.5							Lt Bank CI >	1.50	1.50

REACH CONDITION INDEX and STREAM CONDITION UNITS FOR THIS REACH

NOTE: The CIs and RCI should be rounded to 2 decimal places. The CR should be rounded to a whole number.

THE REACH CONDITION INDEX (RCI) >>	0.75
RCI= (Riparian CI)/2	
COMPENSATION REQUIREMENT (CR) >>	0
CR = RCI X LF X IF	

INSERT PHOTOS:

DESCRIBE PROPOSED IMPACT:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 MANAGED LANES STUDY City/County: MONTGOMERY Sampling Date: 5-09-18
Applicant/Owner: SHA State: MD Sampling Point: 22X-WET
Investigator(s): MVBS/SJF Section, Township, Range: POTOMAC
Landform (hillslope, terrace, etc.): BOWL Local relief (concave, convex, none): CONCAVE Slope (%): 3
Subregion (LRR or MLRA): MLRA Lat: 38.974275 Long: -77.177121 Datum: NAD83
Soil Map Unit Name: Watchung, Travilah, Elk NWI classification: PFO
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:
In floodplain of 22Q. Photos 2740-2742

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ✓	No ____	Depth (inches): 8"
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 2"

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

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

Sampling Point: ZZX-WET

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	100	✓	FAC
2.			
3.			
4.			
5.			
6.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Sapling Stratum (Plot size: 30')			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size: 30')			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size: 10'X20')			
1. Juncus effusus	10	N	OBL
2. Cinna arundinacea	20	✓	FACW
3. Carex sp.	10	N	N/A
4. Toxicodendron radicans	40	✓	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		

50% of total cover: 40 20% of total cover: 16

Woody Vine Stratum (Plot size: _____)			
1. Celastrus orbiculatus	5	✓	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 22X-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	GLEY2 5/5B	60	2.5YR 3/6	40	C	M	clay	
8-15	GLEY2 5/5B	20	5YR 4/6	15	C	PL	sandy clay	
	5Y 5/1	65						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (LRR N)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (MLRA 147, 148)
- ___ Thin Dark Surface (S9) (MLRA 147, 148)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- ___ Umbric Surface (F13) (MLRA 136, 122)
- ___ Piedmont Floodplain Soils (F19) (MLRA 148)
- ___ Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (MLRA 147)
- ___ Coast Prairie Redox (A16) (MLRA 147, 148)
- ___ Piedmont Floodplain Soils (F19) (MLRA 136, 147)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 AC Human made? No Is wetland part of a wildlife corridor?_____ or a "habitat island"? ✓

Adjacent land use ROADWAY Distance to nearest roadway or other development 90 ft.

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? UPPER

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 22X

Latitude_____ Longitude_____

Prepared by: MES Date 5-9-18

Wetland Impact:
Type_____ Area_____

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓				
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-495/I-270 MANAGED LANES STUDY City/County: MONTGOMERY Sampling Date: 5-9-2018
Applicant/Owner: SHA State: MD Sampling Point: 224-WET
Investigator(s): MBS/SJF Section, Township, Range: POTOMAC
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): NONE Slope (%): 3
Subregion (LRR or MLRA): MLRA 148 Lat: 38.974208 Long: -77.177566 Datum: NAD83
Soil Map Unit Name: Watchung, Travilah, Elk NWI classification: PEM
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:
Photos 2743-2744 Drains to waters feature 22Q.
PFO portion is 22R.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ 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)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3"
Water Table Present?	Yes ✓	No _____	Depth (inches): 12"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: 22Y-WET

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling Stratum (Plot size: 10' x 30')			
1. Green ash (Fraxinus pennsylvanica)	5	Y	FACW
2. River birch (Betula nigra)	5	Y	FACW
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: 10' x 30')			
1. Juncus effusus	20	Y	OBL
2. Dichanthelium clandestinum	15	Y	FACW
3. Carex crinita	20	Y	FACW
4. Microstegium vimineum	15	Y	FAC
5. Carex sp.	10	N	N/A
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

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 = _____

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)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: ZZ4-WGT

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	GLEY 1 5/10Y	85	5YR 4/4	15	C	M/PL	silty clay loam	
12-18	5YR 2.5/1	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.04 Human made? No Is wetland part of a wildlife corridor?_____ or a "habitat island"? ✓

Adjacent land use ROADWAY Distance to nearest roadway or other development ~100ft

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present YES

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? UPPER

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 224

Latitude_____ Longitude_____

Prepared by: MBS Date 5-9-18

Wetland Impact:
Type_____ Area_____

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N_____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		✓			
Floodflow Alteration		✓			
Fish and Shellfish Habitat		✓			
Sediment/Toxicant Retention	✓				
Nutrient Removal	✓				
Production Export		✓			
Sediment/Shoreline Stabilization		✓			
Wildlife Habitat	✓				
Recreation		✓			
Educational/Scientific Value		✓			
Uniqueness/Heritage		✓			
Visual Quality/Aesthetics		✓			
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

I-495/I-270 MANAGED LANES STUDY **Waters of the U.S. Data Sheet** VERIFIED 5-9-2018 MBS/SJF

Project: ~~I-495 IRVM – Montgomery County~~		**Feature ID:** ~~01-N~~ 22Z	**Stream Order:** 3rd
Date: ~~11/24/14~~ 5/9/2019	**State:** MD	**Photos:** ~~10~~ 2745-2746	
Crew: ~~AT,MN,AM~~ MBS/SJF	**County:** Montgomery	**Last Flag Number:** ~~01-N-08A, 01-N-07B~~ LIDAR	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: 6-12in of water in stream at time of field visit			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: outside of study area	Downstream: ~~W111M~~ 22AA	Adjacent/Abutting: ~~01-O~~ 22GG

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 40'	☐ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 6'	☑ Cobbles	☑ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete	rip-rap	LB: Forest
☐ Other:	moderate erosion	Side slope: ☐ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: stream name is Booze Creek, flows through culvert, lined with rip-rap, ~~plantings along bank~~					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php								Month: October		Year: 2014		
◉ No rain	◉ 0-0.5	○	○	○	○	○	○	○	○	◉	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☑ Clear, natural line impressed on the bank	☑ Sediment deposition	☑ Sediment sorting	
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour	
	☐ Shelving	☑ Presence of flood litter/debris	☐ Observed/predicted flow events	
	☑ Vegetation matted down, bent, or absent	☑ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☑ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		