| Date: | May 3, 2022 |
|-------|--|
| То: | 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.









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.**

| 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 |

| Table 1. | Total | Delineated | Features |
|----------|-------|------------|------------|
| 10010 11 | | Dennearea | i catal co |

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

OP•LANES



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**.

| 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 | | | Waterway 191 is a perennial channel located east of the I-495/MD 187 | | Silt, sand, gravel, muck | | Yes | Yes | No |
| 19J_2 | W157M | Perennial | linterchange that flows northeast into a culvert under I-495 and out of the | - | Width: 3-15 ft | Right: forest, shrubs | Yes | Yes | No |
| 19J_C | | | study area. | | Depth: 2-12 in | Left: forest, dense bamboo | Yes | Yes | No |
| 19J_C1 | | | | | | | Yes | Yes | No |
| Subsegment 20 | | | I | | 1 | | | | |
| 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 | | Silt, cobble, sand, gravel Width: 1-3 ft | Right: Scrub-shrub | Yes | Yes | No |
| 20C_C | - | Intermittent | Greentree Road that flows south through a 4-foot culvert and converges with Waterway 20D. | | Depth: 6 in | Left: Scrub-shrub | Yes | Yes | No |
| 20D | | | Waterway 20D is a perennial channel located south of I-495 and east of | | Silt, sand, gravel, concrete | Dight: hedgerow | Yes | Yes | No |
| 20D_C | - | Perennial | Greentree Road that flows north from outside of the study area and converges with Waterway 20C at a 4-foot culvert. | - | Width: 5 ft Depth: 6 in | Left: hedgerow | 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 | | | Waterway 21B is a perennial channel located east of the I-495 inner loop | | Mud | Pight: forest | Yes | Yes | No |
| 21B_C | W148M | Perennial | and west of Longwood Drive that flows west under I-495 into Waterway 21J. Waterway 21B flows through subsegments 20 and 21. | - | Width: 6 ft Depth: Unknown | Left: forest | Yes | Yes | No |
| 21C | W103M | | | | | | Yes | Yes | No |
| 21C_1 | W142M | | Waterway 21C is a nerennial channel known as Thomas Branch that flows | | Silt sand cobble | | Yes | Yes | No |
| 21C_2 | W109M | Perennial south parallel to the I-270 spur and the I-495 outer loop and into Cabir John Creek. | - | Width: 15-30 ft | Right: forest | Yes | Yes | No | |
| 21C_C | W142M | | John Creek. | | Depth: 4 ft | Left: forest | Yes | Yes | No |
| 21C_C1 | W142M | | | | | | Yes | Yes | No |
| 21C_C2 | W109M | | | | | | Yes | Yes | No |
| 210 | - \\\/110M | | Waterway 21D is an intermittent channel that originates in the portheast | | | Right: scrub-shrub and | Yes | Yes | INO |
| 21D_1 | (downstream) | Tota selle at | cloverleaf of the MD 195/I-495 interchange and flows through a 3-foot pipe | | Concrete, silt, sand | meadow grasses | Yes | Yes | No |
| 21D_C | - | Intermittent | under I-495 in the northwest cloverleaf of the same interchange, under a | - | Wiuu1: 1-3 π Depth: 6 in | Left: hedgerow and scrub- | Yes | Yes | No |
| 21D_C1 | W110M (downstream) | | ramp, and into Waterway 21C. | | | shrub | Yes | Yes | No |
| 21F | | | Waterway 21F is an intermittent channel that originates east of I-495 south | | Silt, sand, cobble, gravel, riprap | Right: forest | Yes | Yes | No |
| 21F_C | - | Intermittent | of the terminus of Cindy Lane and flows southeast under I-495 into Waterway 21C. | - | Width: 5-8 ft Depth: 8 in | Left: forest | 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 |
| 211 | - | 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 |

| 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 | | | Waterway 21L_D is a perennial ditch that originates east of the I-495 inner | | Silt, sand, cobble, gravel, riprap | Right: herbaceous | Yes | Yes | No |
| 21L_D | - | Perennial | loop southwest of Kittery Lane and flows west under I -495 and into | - | Width: 4-6 ft | Left: herbaceous | Yes | Yes | No |
| 21L_D1 | | | | | Concrete | vegetation | 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. | - | 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 (<i>Acer rubrum</i>) Northern spicebush (<i>Lindera benzoin</i>) Sweet wood-reed (<i>Cinna arundinacea</i>) Green ash (<i>Fraxinus pennsylvanica</i>) River-bank grape (<i>Vitis riparia</i>) | - | - | 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 (<i>Ulmus americana</i>) Red maple Northern spicebush Lizard's-tail (<i>Saururus cernuus</i>) | - | - | 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 (<i>Platanus occidentalis</i>) Red maple Bristly lady's-thumb (<i>Persicaria longiseta</i>) Winter creeper (<i>Euonymus fortunei</i>) Curly dock (<i>Rumex crispus</i>) Japanese stilt grass (<i>Microstegium vimineum</i>) | - | - | Yes | Yes | No |
| 210 | - | 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 | | | | | | 1 | | | |
| 22A | - | Intermittent | Cloverleaf of the MD 195/I-495 interchange that flows south through a 3- | - | Concrete Width: 3 ft | Right: hedgerow | Yes | Yes | No |
| 22A_C | | | foot concrete pipe into Waterway 22C. | | Depth: 6 in | Left: heagerow | Yes | Yes | No |
| 22AA 22AA 1 | | | | | | | Yes | Yes | No |
| 22AA_2 | \\\/111\\/ | Doronnial | Waterway 22AA is a perennial channel known as Cabin John Creek that | | Silt, sand, cobble, bedrock | Right: forest | Yes | Yes | No |
| 22AA_3 | VVIIIM | Perennial | Locks Road. | - | Depth: 10 in | Left: forest | Yes | Yes | No |
| 22AA_B 22AA_B1 | | | | | | | Yes | Yes | No |
| 22AAA | | Deveryorial | Waterway 22AAA is a perennial channel located within the Capital | | Silt, sand, gravel, cobble, boulder | Right: forest | Yes | No | Yes |
| 22AAA_C | WOUS SK | Perenniai | Beltway/George Washington Memorial Parkway interchange. | - | Depth: N/A | Left: forest | Yes | No | Yes |

| 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 | | Riprap Width: 3 ft | Right: hedgerow | Yes | Yes | No |
| 22C_C | | internitterit | concrete pipe and into Waterway 22D. | | Depth: 6 in | Left: hedgerow | Yes | Yes | No |
| 22CC | | | Waterway 22CC is an ephemeral channel located north of the I-495 outer | | Silt, cobble, sand, gravel, concrete | | Yes | No | No |
| 22CC_1 | - Epi | Ephemeral | loop and south of Thornley Court that flows northeast under Seven Locks Road into Waterway 22DD | - | Width: 2- 6 ft Depth: 1-6 in | Left: forest | Yes | No | No |
| 22CC_C | | | | Pod manlo | | | Yes | No | No |
| 22CCC | - | PFO | Wetland is a PFO located southwest of the I-495/Clara Barton Parkway interchange adjacent to Wetland 22W. | Green ash Northern spicebush Rambler rose (<i>Rosa multiflora</i>) Common pawpaw (<i>Asimina triloba</i>) Japanese stiltgrass Sweet wood-reed Horsebrier (<i>Smilax rotundifolia</i>) Japanese honeysuckle (<i>Lonicera japonica</i>) | - | - | 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 | _ | Silt, cobble, sand, gravel, concrete | Right: forest | Yes | Yes | No |
| 22DD_C | | Internitterit | and then north into Waterway 22AA. | | Depth: 1-12 in | Left: forest | 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 (<i>Panicum virgatum</i>) Rough barnyard grass (<i>Echinochloa muricata</i>) | - | - | 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 (<i>Ludwigia palustris</i>) Small carp grass (<i>Arthraxon hispidus</i>) | - | - | 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 |

| 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-К | PFO | Wetland 22G is a PFO located in the median of Cabin John Parkway, south of I-495, that abuts Waterway 22H. | Black willow (<i>Salix nigra</i>) Green ash Rambler rose Red maple Lamp rush Crow garlic (<i>Allium vineale</i>) 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 (<i>Quercus palustris</i>) Lamp rush Wand panic grass | - | - | Yes | Yes | No |
| 22H 22H_1 22H_C | 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 Yes | Yes Yes Yes | No No |
| 22HH_2 22HH_1 22HH_2 | 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 Yes | Yes Yes | No No No |
| 22HH_C 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 (<i>Quercus bicolor</i>) Red maple Chinese privet (<i>Ligustrum sinense</i>) Smooth blackhaw (<i>Viburnum prunifolium</i>) Sweet wood-reed Japanese honeysuckle Horsebrier | - | - | Yes | Yes | No |
| 2211 | - | PFO | Wetland 22II is a PFO located west of the I-495 outer loop and southeast of Lilly Stone Drive. | River birch (<i>Betula nigra</i>) Green ash White grass (<i>Leersia virginica</i>) | - | - | Yes | Yes | No |
| 22J | 01 E | Waterway 22J is an intermittent channel located north of Clara Barton | - S | Silt, sand, cobble, gravel | Right: forest, mowed lawn | Yes | Yes | No | |
| 22J_C | 014 | Internittent | Waterway 22I. | | Depth: 1-6 in | Left: forest, paved road | 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 (<i>Nyssa sylvatica</i>) Japanese stilt grass | - | - | Yes | Yes | No |
| 22К | W125M | PEM | Wetland 22K is a PEM located north of Clara Barton Parkway and west of I-495 that abuts Waterway 22J. | Dotted smartweed (<i>Persicaria punctata</i>) Spotted lady's thumb (<i>Persicaria maculosa</i>) | - | - | Yes | Yes | No |
| 22КК | - | 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- | Dotted smartweed | - | - | Yes | Yes | No |
| 22L_VP | | | 495. A portion of this wetland is considered a vernal pool. | Sweet wood-reed | | | 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. | American elm Northern spicebush Dotted smartweed Creeping-Jenny (<i>Lysimachia nummularia</i>) | - | - | Yes | Yes | No |
| 22M | | | Waterway 22M is a perennial channel known as Rock Run located | | Silt, sand, cobble, gravel | | Yes | Yes | No |
| 22M_1 | 01-D | Perennial | Inorthwest of the Clara Barton Parkway on-ramp from the I-495 outer loop | - | Width: 30 ft | Right: forest | Yes | Yes | No |
| 22M_C1 | | | Barton Parkway. | | Depth: 6 in - 1 ft | | Yes | Yes | No |

| FEATURE ID | PREVIOUS FEATURE # | CLASSIFICATION | DESCRIPTION | DOMINANT VEGETATION | CHANNEL (Approximate widths/depths) | COVER TYPE (Left & Right Banks) | USACE JURISDICTION | MDE JURISDICTION | VDEQ JURISDICTION |
|----------------|-----------------------|---|--|--|---|------------------------------------|-----------------------|---------------------|----------------------|
| 22MM | | | Waterway 22MM is a perennial TNW known as the Potomac River located | | Silt, sand, muck, cobble, gravel, | Dicht: forost | Yes | Yes | No |
| 22MM_B | - | Perennial | south of the I-495/Clara Barton Parkway interchange that flows east under I-495. | - | Width: > 400 ft Depth: > 10 ft | Left: forest | 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- | | Silt, sand, gravel, muck | Right: forest | Yes | Yes | No |
| 22NN_B | | Intermittent | to Waterway 22MM. | | Depth: 0 – 6 in | Left: bare area under I-495 | Yes | Yes | No |
| 220 | 01-E | PFO | Wetland 220 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 (<i>Dichanthelium clandestinum</i>) Water horsetail (<i>Equisetum fluviatile</i>) | - | - | Yes | Yes | No |
| 2200 | - | PFO | Wetland 2200 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 (<i>Phalaris arundinacea</i>) | - | - | 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 (<i>Lonicera maackii</i>) Swamp smartweed (<i>Persicaria hydropiperoides</i>) | - | - | Yes | Yes | No |
| 22Q | - | | Waterway 22Q is a perennial channel located east of the I-495 inner loop | | Silt_sand | | Yes | Yes | No |
| 22Q_1 | 01-I | Perennial | 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 | - | Width: 4 ft | Right: forest Left: forest | Yes | Yes | No |
| 22Q_C | - | | under Clara Barton Parkway. | | Depth: 2 ft | | 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 |
| 225 | - | 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 |
| 2255 | 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 | | | | | | | Yes | Yes | No |
| 221_1 22T_2 | W122M | Waterway 22T is an intern M Intermittent Parkway and south of Ma | Waterway 221 is an intermittent channel located north of Clara Barton Parkway and south of MacArthur Boulevard that flows west from Wetland | - | - Silt, cobble, sand, concrete, riprap - Width: 3-6 ft | Right: forest | Yes | Yes | NO |
| 22T_B | | | 22U, under I-495, and into Waterway 22HH. | | Depth: 3 in | Left: forest | Yes | Yes | No |
| 22T_B1 | | | | | | | Yes | Yes | No |

| 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 (<i>Ulmus rubra</i>) 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 | | | | | | | Yes | Yes | No |
| 22V_1 | | | Waterway 22V is an intermittent channel located south of Clara Barton | | Silt, sand, cobble, gravel | Right: hedgerow, riprap | Yes | Yes | No |
| 22V_2 | - | - Intermittent Parkway that flows east under I-495 and into a roadside swale, followed by an 18-inch pipe. | - | Width: 1-4 ft | Left: hedgerow, riprap | Yes | Yes | No | |
| 22V_B | | | an 18-inch pipe. | | | | Yes | Yes | No |
| 22V_B1 | 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 (<i>Sagittaria latifolia</i>) Straw-color flat sedge (<i>Cyperus strigosus</i>) Narrow-leaf cat-tail (<i>Typha angustifolia</i>) Ribbon-leaf pondweed (<i>Potemogeton epihydrus</i>) | - | - | Yes | Yes | No |
| 22WW | | | Waterway 22WW is an intermittent channel located eact of the I-495 inner | | Silt, sand, gravel | Pight: forest | Yes | No | Yes |
| 22WW_C | WOUS DK | Intermittent | loop that flows northwest. | - | Width: 25 ft Depth: N/A | Left: forest | 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 (<i>Toxicodendron radicans</i>) Sweet wood-reed Asian bittersweet (<i>Celastrus orbiculatus</i>) | - | - | 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-Н | 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 (<i>Juncus effusus</i>) Sweet wood-reed Deer-tongue rosette grass Japanese stilt grass | - | - | Yes | Yes | No |
| 22Z | | | Waterway 22Z is a perennial channel known as Booze Creek that flows | | Sand, cobble, gravel | Right: forest | Yes | Yes | No |
| 22Z_1 | 01-N | Perennial | southwest through a triple box culvert under Cabin John Parkway to | - | Width: 40 ft | Left: forest | Yes | Yes | No |
| 22Z_C | | | Waterway 22AA. | | Depth: 6 ft | | Yes | Yes | No |
| 22ZZ | | Denermial | Waterway 22ZZ is a perennial channel located east of the I-495 inner loop | s | Silt, sand, gravel, cobble | Right/Left: forest, | Yes | No | Yes |
| 22ZZ_C | | Perenniai | that flows east. | - | Depth: N/A | impervious surface | Yes | No | Yes |

| 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 | | | | | | | Yes | Yes | No |
| 23A_1 | | | | | | | Yes | Yes | No |
| 23A_2 | | | Waterway 23A is a perennial channel known as Thomas Branch that flows | | Silt, sand, cobble | Dight, forest | Yes | Yes | No |
| 23A_3 | WUS 01 | Perennial | south parallel to the I-270 spur and the I-495 outer loop and into Cabin | - | Width: 15-30 ft | l eft: forest | Yes | Yes | No |
| 23A_C | | | John Creek. | | Depth: 4 ft | | Yes | Yes | No |
| 23A_C1 | | | | | | | Yes | Yes | No |
| 23A_C2 | | | | | | | Yes | Yes | No |
| 23AA | | | Waterway 23AA is a perennial channel located southeast of the I- | | Silt. sand | | Yes | Yes | No |
| 23AA_1 | - | Perennial | 270/Democracy Boulevard interchange that originates at a culvert under | - | Width: 2-3 ft | Right: forest | Yes | Yes | No |
| 23AA_C | | | the I-270 on-ramp and flows south through another culvert. | | Depth: 2-4 in | Leit: Torest | Yes | Yes | No |
| ZSAA_CI | | | | Sweet-gum (<i>Liquidambar styraciflua</i>) | | | Tes | Tes | INU |
| 23BB | - | PEM | Wetland 23BB is a PEM located southeast of the I-270/Democracy Boulevard interchange that abuts Waterway 23AA. | 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 (<i>Diervilla lonicera</i>) Eastern poison ivy Swamp smartweed | - | - | Yes | Yes | No |
| 23D | | | Waterway 23D is an intermittent channel located southeast of the I- | | Silt, sand, cobble, gravel | Diabty forest | Yes | Yes | No |
| | WUS 02 | Intermittent | 270/Democracy Boulevard interchange that flows from 23-SWM8, under I- | - | Width: 7 ft | l eft: forest | | | |
| 23D_C | | | 270, and into Thomas Branch. | | Depth: 2 ft | | 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 (<i>Vitis labrusca</i>) Unknown grass species (<i>Poa sp.</i>) | - | - | 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 | | | Waterway 23G is a perennial channel located south of the Grosvenor | | Silt, sand, cobble | Right: forest | Yes | Yes | No |
| 23G_1 | WUS 34 | Perennial | Place/Englishman Drive intersection that flows adjacent to and under I-270 | - | Width: 8-10 ft | Left: forest | Yes | Yes | No |
| 23G_C | | | and out of the study area. | Ded month | Depth: 6-12 in | | 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 (<i>Rumex britannica</i>) New York fern (<i>Parathelypteris noveboracensis</i>) Japanese honeysuckle | - | - | Yes | Yes | No |

| FEATURE ID | PREVIOUS FEATURE # | CLASSIFICATION | DESCRIPTION | DOMINANT VEGETATION | CHANNEL (Approximate widths/depths) | COVER TYPE (Left & Right Banks) | USACE JURISDICTION | MDE JURISDICTION | VDEQ JURISDICTION |
|------------|-----------------------|----------------|--|--|--|------------------------------------|-----------------------|---------------------|----------------------|
| 23Н | - | 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 |
| 23НН | - | PFO | Wetland 23HH is a PFO located west of the I-270 south spur that drains into Waterway 23K. | Black tupelo American hornbeam (<i>Carpinus caroliniana</i>) | | | 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 (<i>Alnus incana</i>) Black willow American sycamore | | | Yes | Yes | No |
| 23K | | | Waterway 23K is a perennial channel located west of the I-270 south spur | | | | Yes | Yes | No |
| 23K_1 | | Devennial | and east of Westlake Drive that originates at a stormwater management | | Silt, sand, cobble, gravel | Right: forest | Yes | Yes | No |
| 23K_C | - | Perenniai | pond and flows north into Waterway 24A. Waterway 23K flows through | - | Depth: 3 ft | Left: forest | Yes | Yes | NO |
| 23K D | | | subsegments 23 and 24. | | | | Yes | Yes | No |
| 23КК | - | 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 (<i>Persicaria sagittata</i>) | | | 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 (<i>Typha latifolia</i>) 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 (<i>Boehmeria cylindrica</i>) 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 (<i>Liriodendron tulipifera</i>) | - | - | Yes | Yes | No |
| 23N | | Intermittent | Waterway 23N is an intermittent channel located between Windermere | | Cand cabble gravel ripran | | Yes | Yes | No |
| 23N_1 | - | Perennial | Circle and I-270 that flows northwest out of the study area into Old Farm | <u>-</u> | Width: 9 ft | Right: forest | Yes | Yes | No |
| 23N_C | | Intermittent | Creek. Waterway 23N becomes perennial (23N_1) downstream of its | | Depth: 1 ft | Left: forest | Yes | Yes | No |
| D | | Intermittent | | | Sand, cobble, gravel, bedrock | | Yes | res | INO |
| 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. | - | 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 (<i>Arisaema triphyllum</i>) | - | - | 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 | | | Waterway 23Q is a perennial channel located north of the intersection of | | Sand, cobble, gravel, bedrock, riprap | Right: forest | Yes | Yes | No |
| 23Q_2 | WUS 33 | Perennial | Rudyard Drive and Farnham Drive that flows outside the study area | - | Width: 15 ft | Left: forest | Yes | Yes | No |
| 23Q_C | | | uownstream. | | Silt sand | | 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. | - | Width: 2 ft Depth: 6 in | Right: forest Left: forest | Yes | No | No |

| FEATURE ID | PREVIOUS | CLASSIFICATION | DESCRIPTION | DOMINANT VEGETATION | CHANNEL (Approximate widths/depths) | COVER TYPE (Left & Right Banks) | USACE JURISDICTION | | VDEQ JURISDICTION |
|------------|-------------|----------------|---|---|--|------------------------------------|-----------------------|-----|----------------------|
| 23R | | | | | | | Yes | Yes | No |
| 23R_1 | | | Waterway 23R is an intermittent channel located east of the I-270/Old | | Silt, cobble, gravel, bedrock | Right: forest | Yes | Yes | No |
| 23R_2 | - | Intermittent | Georgetown Road Interchange that enters the study area from a culvert | - | Width: 15 ft | Left: forest | Yes | Yes | No |
| 23R_C | | | and nows east under 1-270 and out of the study area. | | | | 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 |
| 235 | - | 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 |
| 2355 | - | 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 |
| 23Т | - | 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 | | | | | Sand, cobble, gravel, riprap Width: 6 ft | Right: forest Left: forest | Yes | Yes | No |
| 23U_1 | - | Perennial | Waterway 23U is a perennial channel located between Windermere Circle and I-270 that flows north into Waterway 23N. | - | | | Yes | Yes | No |
| 23U C | | | | | Depth: 1 ft | | 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 | | | Waterway 23V is an intermittent channel located northeast of the I-270 | | Silt | Pight: forest | Yes | Yes | No |
| 23V C | SB12/NB01-D | Intermittent | Spur/Westlake Terrace intersection that originates from a culvert and flows west under I-270 | - | Width: 2 – 8 ft Depth: 1 in | Left: forest | 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 (<i>Diospyros virginiana</i>) Reed canary grass Uptight sedge (<i>Carex stricta</i>) | - | - | 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 (<i>Viburnum dilatatum</i>) Green ash Japanese stilt grass Frost grape (<i>Vitis vulpina</i>) 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 (<i>Symplocarpus foetidus</i>) Virginia-creeper (<i>Parthenocissus quinquefolia</i>) Fox grape | - | - | Yes | Yes | No |
| 232 | - | 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 |

| 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 | | | Waterway 24A is a perennial channel located north of the I-270/Tuckerman | ckerman C | Cobble, gravel, sand, silt | Right: forest, scrub-shrub, | Yes | Yes | No |
| 24A_1 | - | Perennial | Lane intersection that flows west out of the study area into Cabin John | - | Width: 20 ft | maintained | Yes | Yes | No |
| 24A_C | | | Сгеек. | | Depth: 6 in | Left: forest, scrub-shrub | 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 | - | | | | | | Yes | Yes | No |
| 24F_1 | WUS 14 | | Waterway 24E is a perennial channel legated southeast of the I | | | | Yes | Yes | No |
| 24F_2 | WUS 14 | | 270/Montrose Road interchange that flows south into a culvert under I-270 | | Cobble, gravel, sand, silt | Right: forest scrub-shrub | Yes | Yes | No |
| 24F_3 | WUS 14 | Perennial | and west out of the study area. Waterway 24F flows through subsegments | - | Width: 15 ft | Left: forest, scrub-shrub | Yes | Yes | No |
| 24F_C | - | | 24 and 25. | | Depth: 6 in | | 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 |
| 24К | - | 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 |

| 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 (<i>Leersia oryzoides</i>) 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 | | Concrete | Right: hedgerow | Yes | Yes | No |
| 24V_C | - | Internittent | 24D. | | Depth: 3 in | Left: hedgerow | 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 | | | | | | | 4 | | |
| 25A | - | | Waterway 25A is a perennial channel located east of the I-270/Montrose | | Silt sand, riprap | Right: forest | Yes | Yes | No |
| 25A_1 25A_C | WUS 13 - | Perennial | Road interchange that originates at a culvert and flows west into Waterway 24F. | - | Width: 8 ft Depth: 4 ft | Left: forest, scrub-shrub | 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 (<i>Acer saccharinum</i>) Red maple Pin oak Northern spicebush Japanese barberry (<i>Berberis thunbergii</i>) Sensitive fern (<i>Onoclea sensibilis</i>) 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 (<i>Viburnum dentatum</i>) 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 |

| 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 | Devenial | Waterway 25H is a perennial channel located south of the I-270/Falls Road | | Silt, sand, gravel | Right/Left: wetlands, | Yes | Yes | No |
| 25H_1 25H_C | - WUS 16 | Perenniai | interchange within 25-SWM1. | - | Depth: 3-6 ft | areas | 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 (<i>Baccharis halimifolia</i>) Crimson-eyed rose-mallow (<i>Hibiscus moscheutos</i>) Narrow-leaf cat-tail Lamp rush Shallow sedge (<i>Carex lurida</i>) | - | - | 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 (<i>Cyperus esculentus</i>) 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. | Red maple Black tupelo Southern arrow-wood Eurasian-buttercup (<i>Ficaria verna</i>) White grass | - | - | Yes | Yes | No |
| 26B | | | | | Silt, sand, cobble, riprap | | Yes | Yes | No |
| 26B_1 26B_C | 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. | - | Width: 8 ft | Right: forest Left: forest | Yes | Yes | No |
| 26B_C1 | | | Hontgomery Avende interendinge that nows southwest under 1 270. | | Depth: 4 ft | | Yes | Yes | No |
| 26C | - | | | | Sand, cobble, gravel, riprap | Diable familie | Yes | Yes | No |
| 26C_1 26C_C | WUS 17 WUS 17 | Intermittent | Rose Drive that flows northwest and then west under I-270. | - | Width: 9 ft | Right: forest Left: scrub-shrub | Yes | Yes | No |
| 26C_C1 | WUS 17 | | | | Depth: 1 ft | | 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 (<i>Lonicera tatarica</i>) 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 (<i>Poa palustris</i>) | - | - | 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 (<i>Persicaria pensylvanica</i>) Rice cut grass Virginia-creeper | - | - | Yes | Yes | No |

| 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 | | Silt, cobble, sand, and gravel | Right: forest | Yes | No | No |
| 26G_1 | WUS 17A | Intermittent | rthwest of the I-270/Great Falls Road interchange that flows north from etland 26H. | - | Width: 6 ft Depth: 3 ft | Left: forest | 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 (<i>Juglans nigra</i>) Northern bush honeysuckle Sensitive fern Spotted touch-me-not (<i>Impatiens capensis</i>) 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 |
| 26К | - | 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 27A_1 27A_2 27A_3 | 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 | - | Bedrock, cobble, gravel, concrete, sand, silt Width: 17 ft | Right: forest, scrub-shrub, wetland Left: forest, scrub-shrub, | Yes Yes Yes Yes | Yes Yes Yes Yes | No No No No |
| 27A_C | | | study area. | | Depth: 7 in | wetland | Yes | Yes | No |
| 27A_C1 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 (<i>Cephalanthus occidentalis</i>) 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 (<i>Prunus serotina</i>) Green ash Smooth blackhaw Skunk-cabbage Eastern poison ivy | - | - | Yes | Yes | No |

| FEATURE ID | PREVIOUS FEATURE # | CLASSIFICATION | DESCRIPTION | DOMINANT VEGETATION | CHANNEL (Approximate widths/depths) | COVER TYPE (Left & Right Banks) | USACE JURISDICTION | MDE JURISDICTION | VDEQ JURISDICTION |
|---------------|-----------------------|-----------------|---|-----------------------------|--|---|-----------------------|---------------------|----------------------|
| 27Н | 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 |
| 27К | 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 | - | Silt, sand, cobble, riprap Width: 2-4 ft | Right: hedgerow Left: hedgerow | 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 |
| 27Р | - | 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 |
| 275 | - | 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 | | | | | | Yes | Yes | No |
| 29A_1 | WUS 20 | | Waterway 20A is a perophial channel located northwast of the I 270/I 270 | | Silt cand cobble ground ringen | | Yes | Yes | No |
| 29A_2 | - | Perennial | Interchange that flows north from a stormwater nond into Muddy Branch | _ | Width: 20 ft | Right: forest | Yes | Yes | No |
| 29A_C | WUS 20 | i ci ci i i i u | Waterway 29A flows through subsegments 28 and 29. | | Depth: 2 ft | Left: forest | Yes | Yes | No |
| 29A_C1 | WUS 20 | | | | | | Yes | Yes | No |
| 29A_C2 | WUS 20 | | | | | | Yes | Yes | No |
| 29B | M/UC 22 | Davia | Waterway 29B is a perennial channel that flows under I-270 through a | | Bedrock, sand, cobble, gravel | Right: forest | Yes | Yes | No |
| 29B_1 | WUS 23 | Perennial | culvert located southwest of Bralan Court. | | Width: 20 π Depth: 2 ft | Left: forest | Yes | Yes | NO |
| 29B_C | | | | | Cobble gravel ripran | | 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. | - | 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 | | Silt, sand, cobble, riprap Width: 4 ft | Right: forest | Yes | Yes | No |
| 29D_D | | | stormwater pond, under I-370, and continues outside the study area into Muddy Branch. | | Depth: 3 ft | Left: forest | Yes | Yes | No |

| 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 | | Waterway 29E is a perennial channel located east of I-270 and south of | | Silt, cobble, gravel | | Yes | Yes | No |
| 29E 1 | WUS 35 | Perennial | Muddy Branch Road that flows southeast from a stormwater pond into | - | Width: 5 ft | Right: scrub-shrub | Yes | Yes | No |
| 29F C | WUS 35 | | Waterway 29C. | | Depth: 1 ft | Left: scrub-shrub | 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 |
| 29Н | 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 (<i>Galium palustre</i>) | - | - | Yes | Yes | No |
| 29К | - | 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 (<i>Lonicera</i> sp.) Horsebrier Unknown sedge species (<i>Carex</i> 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 (<i>Virbunum lentago</i>) Ash-leaf maple Unknown honeysuckle species (<i>Lonicera sp.</i>) Unknown sedge species (<i>Carex sp.</i>) 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 (<i>Carex blanda</i>) | - | - | 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 |