



Maryland
Department of
the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

May 19, 2023

Maryland Department of Transportation
State Highway Administration
707 N. Calvert Street
Baltimore, MD 21202
Attn. Mr. Jeffrey Folden

Via email: JFolden1@mdot.maryland.gov

Re: Agency Interest Number: 168251
Tracking Number: 202060649
Water Quality Certification Number: 22-WQC-0023

Dear Mr. Folden:

After examination and consideration of the documents received and evidence in the file and record for the I-495 & I-270 Managed Lanes Project, the Water and Science Administration has determined that the project meets the statutory and regulatory criteria necessary for issuance of an individual Water Quality Certification (WQC).

The individual WQC for this project issued by the Maryland Department of the Environment (Department) is attached. Please read and review the WQC for this project to ensure that you understand the limits of the certified project and all of the general and special conditions. The attached WQC is a final agency decision. Any person aggrieved by the Department's decision to issue this WQC may appeal such a decision in accordance with COMAR 26.08.02.10F(4). A request for appeal shall be filed with the Department within 30 days of publication of the final decision and specify in writing the reason why the final decision should be reconsidered. A request for appeal shall be submitted to: Secretary of the Environment, Maryland Department of the Environment, 1800 Washington Boulevard, Baltimore, MD 21230. Any request for an appeal does not stay the effectiveness of this WQC.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please do not hesitate to contact me at danielle.spendiff1@maryland.gov or 410-537-4023 with any questions.

Sincerely,

Danielle A. Spendiff, Chief
Regulatory and Customer Service Division



STATE OF MARYLAND



DEPARTMENT OF THE ENVIRONMENT WATER AND SCIENCE ADMINISTRATION WATER QUALITY CERTIFICATION

22-WQC-0023

EFFECTIVE DATE: **May 5, 2023**

CERTIFICATION HOLDER: **Maryland Department of Transportation
State Highway Administration
707 N. Calvert Street
Baltimore, MD 21202
Attn: Mr. Jeffrey Folden**

PROJECT LOCATION: **I-495 from the George Washington Memorial
Parkway to east of MD 187; 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 in Montgomery County, Maryland**

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH §9-313 THROUGH §9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE WATER AND SCIENCE ADMINISTRATION (“ADMINISTRATION”) HAS DETERMINED THAT THE REGULATED ACTIVITY DESCRIBED IN THE REQUEST FOR CERTIFICATION OF THE I-495 AND I-270 MANAGED LANES STUDY (MLS) WILL NOT VIOLATE MARYLAND’S WATER QUALITY STANDARDS IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION AND WITH ALL TERMS AND CONDITIONS OF THIS CERTIFICATION.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS. THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

PROJECT DESCRIPTION

Regulated activities are associated with approximately 15 miles of roadway improvements along I-495 and I-270 including the addition of two high-occupancy toll (HOT) managed lanes in each direction along I-495, and the conversion of the existing high-occupancy vehicle (HOV) lane in each direction to a HOT managed lane and the addition of one new HOT managed lane in each direction on I-270 from I-495 to north of I-370 and on the I-270 east and west spurs. The project also includes full replacement of the American Legion Bridge (ALB) with a new, wider bridge to accommodate the two HOT lanes in each direction with a shared use path to provide bicycle and pedestrian connection between Maryland and Virginia; roadway interchange additions and/or

modifications; removal of the existing collector-distributor lanes along I-270 from Montrose Road to I-370; construction of on-site and off-site stormwater management improvements and construction access; the addition of pedestrian and bicycle facilities; and improvements at the Washington Metropolitan Area Transit Authority's Shady Grove Metrorail Station and Westfield Montgomery Mall Transit Center. There are no improvements proposed at this time on I-495 east of the I-270 east spur to MD 5. Mitigation for this project is proposed at the CA-5 and RFP-2 Stream and Wetland Mitigation Sites, an approved Wetland and Stream Mitigation Bank, and on National Park Service (NPS) and Maryland-National Capital Parks and Planning Commission (M-NCPPC) lands for impacts to park properties. Activities associated with impacts to regulated resources for this project include: grading, excavating, and filling; installation of new pavement and resurfacing; removal of vegetation; utility relocations; replacement and extension of existing culverts and bridges; installation of new culverts; installation of rip-rap and slope armoring; installation of noise barriers, retaining walls, sidewalks, and trails; grading and filling associated with the CA-5, RFP-2, and M-NCPPC stream restoration sites; enhancement and creation of wetlands at the RFP-2 and NPS wetland mitigation sites; and use of temporary erosion and sediment controls during construction. This Certification recognizes permanent impacts to: 37,346 square feet of forested nontidal wetlands; 481 square feet of scrub-shrub nontidal wetlands; 115,107 square feet of emergent nontidal wetlands; 272,559 square feet of 25-foot nontidal wetland buffer; 27,272 linear feet of perennial stream; 10,709 linear feet of intermittent stream; and 1,054,683 square feet of disturbance in the 100-year floodplain. This approval also authorizes temporary impacts to: 9,666 square feet of forested nontidal wetland; 11,454 square feet of emergent nontidal wetland; 17,934 square feet of 25-foot nontidal wetland buffer; 1,116 linear feet of perennial stream; 1,184 linear feet of intermittent stream; and 323,257 square feet of disturbance in the 100-year floodplain. The proposed CA-5 and RFP-2 wetland and stream mitigation sites would temporarily impact 3,515 square feet of forested nontidal wetland, 4,889 square feet of emergent nontidal wetland, 27,430 square feet of 25-foot nontidal wetland buffer, 11,860 linear feet of perennial channel, 322 linear feet of intermittent channel, and 1,177,631 square feet of 100-year floodplain. The proposed NPS and M-NCPPC mitigation projects would temporarily impact 106,485 square feet of forested nontidal wetland, 33,870 square feet of 25-foot nontidal wetland buffer, 915 linear feet of perennial channel, 657 linear feet of intermittent channel, and 205,225 square feet of 100-year floodplain. The project begins just north of the George Washington Memorial Parkway in Virginia and continues into Maryland 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 in Montgomery County. The activities described in this section shall be referred to as the Project.

The Certification Holder shall comply with the following conditions:

SPECIAL CONDITIONS

1. Instream Construction Prohibition:

Protect aquatic species and their habitat.

- a. Motor driven vehicles and motor driven construction equipment shall not be allowed within stream channels except on authorized ford crossings.
- b. Activities within all stream channels are prohibited during certain times of the year as determined by the classification of the stream in COMAR 26.08.02.08, unless specifically approved by the Maryland Department of the Environment (Department), Water and Science Administration's Nontidal Wetlands and Waterways Protection Program (Program), including the following:
 - i. Rock Creek and its tributaries are Use I waterways; in-stream work may not be conducted from March 1 through June 15, inclusive, of any year; and
 - ii. Potomac River, Rock Run, Cabin John Creek, Booze Creek, Thomas Branch, Old Farm Creek, Watts Branch, Muddy Branch, Minnehaha Branch, Great Seneca Creek, and Cabin Branch and their tributaries are Use I-P waterways; in-stream work may not be conducted from March 1 through June 15, inclusive, of any year.

2. Water Quality Monitoring Plan (WQM Plan):

Ensure water quality standards are maintained during the duration of the Project.

- a. No activity that impacts regulated resources (regulated resources include wetlands, wetland buffers, waterways, and the nontidal 100-year floodplain) shall commence prior to the Program's approval of a WQM Plan. The WQM Plan shall be submitted at least 90 days prior to commencement of any work authorized under this Certification. The WQM Plan shall ensure consistency with the conditions of this Certification. Upon approval, the WQM Plan shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.
- b. The WQM Plan shall contain the water quality criteria and benchmarks for which the Project shall be monitored and documented to ensure consistency with the requirements of the Clean Water Act, COMAR 26.08.02, and conditions in this Certification, including, at minimum, applicable total suspended solids/turbidity, temperature, dissolved oxygen, and pH criteria.
- c. The WQM Plan shall also contain monitoring methodology, monitoring locations, reporting schedule(s), quality assurance/quality control procedures, and corrective action plans.
- d. The WQM Plan can only be modified upon approval by the Program. Approved modifications shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

3. **Passage of Aquatic Life Plan (PAL Plan):**

Ensure passage of aquatic life is maintained or enhanced in the Project's final design and final built condition.

- a. No activity that impacts regulated resources shall commence prior to the Program's approval of a PAL Plan. The PAL Plan shall be submitted at least 90 days prior to commencement of any work authorized under this Certification. The PAL Plan shall ensure consistency with these Certification conditions. Upon approval, the PAL Plan becomes part of these Certification conditions for the Project for the purposes of any federal license or permit.
 - i. The PAL Plan shall identify the locations where passage of aquatic life is necessary and practicable. Construction plans shall be designed and constructed consistent with the requirements of COMAR 26.17.04 as approved by the Program in coordination with the Maryland Department of Natural Resources (DNR). Locations may include culvert replacements, culvert extensions, stream restorations, mitigation sites, and other similar locations.
 - ii. Construction plans for each change in stream channel or floodplain, including bridges and culverts, shall be submitted for review and must receive approval from the Program prior to the start of construction on each structure.
 - iii. The PAL Plan and construction plans shall include adequate sizing of structures to reduce velocities, promote natural substrate development, and allow adequate depression to accommodate future stream conditions as appropriate. Passage of anadromous fish shall also be addressed where appropriate.
 - iv. All riprap within streams shall have a depressed "low flow" channel or other feature to allow passage for aquatic life. Where appropriate and practicable, structures greater than 150 linear feet shall incorporate provisions to promote passage, including resting areas, baffles, and/or other techniques to promote passage of those species known to occur in the waterway. If riprap is needed for energy dissipation at either end of a stream culvert, it shall be buried below the invert of the stream to protect fish passage during low flows.
 - v. If passage of aquatic life is not practicable at a culvert crossing, the Program may require additional mitigation as a condition of approval.
 - vi. The PAL Plan can only be modified upon approval by the Program. Approved modifications shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

4. **Mussel Protection Plan (MP Plan):**

Protect rare, threatened, or endangered (RTE) mussel populations and their habitat.

- a. No activity within the Potomac River shall commence until the Program approves an MP Plan for the areas that are affected by the Project. The MP Plan shall be submitted at least 90 days prior to commencement of any work authorized under this Certification. The MP Plan shall ensure consistency with these Certification conditions. Upon approval, the MP Plan becomes part of these Certification conditions for the Project for the purposes of any federal license or permit.
- b. At minimum, the MP Plan shall address all areas of the Potomac River in the vicinity of Plummerville Island and the American Legion Bridge where RTE mussels may exist. The MP Plan shall include details on surveys, potential relocations, and impact minimizations for RTE mussels and their habitat.
- c. The Certification Holder shall coordinate with the Program and DNR as design and construction plans progress to minimize potential impacts. The Certification Holder shall provide documentation of coordination with DNR to the Program prior to the start of construction within the Potomac River for approval by the Program.
- d. The MP Plan can only be modified upon approval by the Program. Approved modifications shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

5. Flood Action Plan (FA Plan):

Ensure water quality standards are maintained during significant weather events.

- a. No activity that impacts regulated resources shall commence prior to the Program's approval of a FA Plan. The FA Plan shall be submitted at least 90 days prior to commencement of any work authorized under this Certification. The FA Plan shall ensure consistency with these Certification conditions. Upon approval, the FA Plan becomes part of these Certification conditions for the Project for the purposes of any federal license or permit.
- b. The FA Plan shall include the following:
 - i. Weather and the possibility of a rainfall event shall be monitored on a daily basis, seven days a week through the National Oceanic and Atmospheric Administration. When a significant weather event is forecast, all equipment and construction materials shall be staged outside of all mapped 100-year floodplains. A significant weather event is a greater than 50 percent chance of 1 inch or more rainfall forecast during a 24-hour period within the watershed.
 - ii. Specifically address monitoring of the Potomac River's flood stages and work within the Potomac River's 100-year floodplain.
 - iii. No equipment, construction materials, loose tools, or hazardous materials, including fuel for equipment and pumps, shall be stored within the 100-year floodplain.
- c. Details for each 100-year floodplain shall be submitted for work within each 100-year floodplain prior to construction at each location for approval by the Program.
- d. The FA Plan can only be modified upon approval by the Program. Approved modifications shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

6. Concrete Grouting Plan (CG Plan):

Ensure construction does not cause or contribute to an exceedance of State water quality standards, or exceed the water quality standards in COMAR 26.08.02, including pH, or other water quality requirements of state law or regulation to the maximum extent practicable.

- a. No activity that impacts regulated resources shall commence prior to the Program's approval of a CG Plan. The CG Plan shall be submitted at least 90 days prior to commencement of any work authorized under this Certification. The CG Plan shall ensure consistency with these Certification conditions. Upon approval, the CG Plan becomes part of these Certification conditions for the Project for the purposes of any federal license or permit.
- b. The CG Plan shall include a protocol to manage the curing process in the stream where concrete lining, grouting, or other instream placement of concrete will occur.

- c. The CG Plan can only be modified upon approval by the Program. Approved modifications shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

7. Construction Plan Submittals

Submit the plans below and obtain the Program's concurrence with each plan before beginning construction.

- a. **Stormwater Management Plan Submittal:** Submit concept and final Stormwater Management Plans to the Program for review and obtain the Program's concurrence on the concept and final Stormwater Management Plans prior to beginning any work in regulated resources including wetlands, wetland buffers, nontidal waterways, and nontidal 100-year floodplains. The final stamped plans, and any proposed modifications to those plans, shall be submitted to the Program for concurrence. Upon approval by the Department, these plans shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.
 - i. No stormwater management structures shall be placed in any nontidal wetland, nontidal wetland buffer, nontidal waterway, or 100-year nontidal floodplain unless specifically approved by the Program.
 - ii. Stormwater shall be controlled to prevent discharge of sediments, trash, or debris into nontidal wetlands or nontidal waterways, unless specifically approved by the Program.
- b. **Construction Plan Submittals:** Submit detailed construction plans and obtain Program concurrence prior to disturbing any regulated resource, including wetlands, wetland buffers, waterways, or the nontidal 100-year floodplain.
 - i. Erosion and sediment control plans, including methods for protection of water quality, maintenance of stream flow, and dewatering, shall be submitted to the Program for concurrence prior to initiation of work in each phase. Work on each phase shall not begin until the Program has concurred with the applicable plans for that phase.
 - ii. Any proposed change(s) to approved erosion and sediment control plans shall be forwarded to the Program for concurrence. Work shall not begin that reflects the proposed changes until the Department approves the proposed change(s).
- c. **Culvert Plan Submittals:**
 - i. Submit culvert construction plans for concurrence by the Program prior to any riparian tree clearing at each culvert location.
 - ii. Culvert construction plans shall include hydrologic and hydraulic analysis and construction plans, including stabilization and restoration, for concurrence from the Program consistent with requirements outlined in COMAR 26.17.04.
 - iii. Work shall not begin in any location subject to the culvert construction plans until the Program approves the culvert construction plans.
- d. **Submittal Review:** Develop a submittal schedule indicating anticipated dates for submission of plans and reports, and shall update the schedule as required. No work that affects any regulated resource shall begin without written concurrence from the Program for each plan described in this section.

8. Stormwater Best Management Practices (BMPs) in Use III and IV Watersheds:

Ensure stormwater BMPs/facilities in Use III and IV waters meet designated use temperature criteria.

- a. Design stormwater BMPs/facilities in Use III and IV watersheds as designated in the Maryland Stormwater Design Manual, and COMAR 26.08.02.

9. Plummer's Island Channel:

Ensure untreated stormwater runoff does not enter the Plummer's Island Channel.

- a. The Certification Holder shall not discharge untreated stormwater runoff from the American Legion Bridge (Bridge) into the Plummer's Island Channel or its tributary (located on attached Impact Plate 2 - labeled 22MM and 22QQ). Stormwater from the Bridge shall be directed to the Potomac River mainstem or otherwise managed or with concurrence from the Program.

10. Signage and Portage Instructions:

Protect the designated and existing uses of the Potomac River during construction.

- a. Display signage and portage instructions to protect the swimming, fishing, and boating public within the Potomac River during construction.

11. Independent Environmental Monitors (IEMs):

Assess and report compliance with all conditions of this Certification.

- a. Retain qualified IEMs who are approved by the Program prior to the start of construction within regulated resources. The IEMs shall be independent from the Certification Holder and from all design consultants and construction contractors working on the Project. The Certification Holder shall retain IEMs to assess compliance with all conditions of this Certification. The IEMs shall be full-time unless otherwise approved by the Program. Additional approved IEMs may be required to cover the Project if necessary as determined by the Program. The IEMs shall:
 - i. Review design submittals and construction activities for compliance with all conditions of this Certification;
 - ii. Report findings directly and concurrently to the Program and the Army Corps of Engineers (Corps), notifying them and the Certification Holder immediately of any reported or observed violations or non-compliance issues within the terms or conditions of this Certification, or approved plans and specifications;
 - iii. Assist with identification of ongoing opportunities for further protection of water quality.
- b. The IEMs' schedule shall be based on project needs and overall schedule. The IEMs' schedule must be approved by the Program before the schedule is implemented.
- c. Prior to the start of construction in regulated resources, the Certification Holder shall provide an IEM Manual to the Program, and the IEM Manual must receive approval from the Program. Upon approval, the IEM Manual shall become part of these Certification conditions for the Project for the purposes of any federal license or permit.

12. Temporary Wetland and Waterway Disturbance:

Minimize impacts to wetlands and their buffers and waterways, including the nontidal 100-year floodplain, to the maximum extent practicable.

- a. Restore any temporarily disturbed wetlands, wetland buffers, waterways, and nontidal 100-year floodplains to pre-construction conditions or better, as approved by the Program, prior to completion of the Project.

13. Mitigation:

Mitigate the loss of nontidal wetlands and streams.

- a. Pursuant to COMAR 26.23.04, create and enhance wetlands and restore streams in accordance with a Phase II conceptual mitigation plan that is approved by the Mitigation and Technical Assistance Section ("Section") of the Program. Upon approval, the Phase II conceptual mitigation plan, and subsequent Phase II approval letter from the Program, become part of these Certification conditions for the Project for the purposes of any federal license or permit.

GENERAL CONDITIONS

1. Meet all water quality-related performance standards and conditions required by the Department in any State-issued authorization for activities in Waters of the United States to ensure that any discharges will comply with water quality standards in COMAR 26.08.02 and other water quality requirements of State law or regulation.
2. Avoid placing structures or conducting activities that entangle or interfere with the movement of aquatic life, fish, or other wildlife.
3. Prevent the spread of non-native species that may cause adverse effects on the aquatic ecosystem.
4. Implement and comply with all final approved plans, permits, and modifications that are approved by the State and/or the Corps of Engineers, as applicable. The approved plans, permits and

modifications by MDE and/or the Corps of Engineers are incorporated by reference into this Certification.

5. Meet the requirements in Annotated Code of Maryland, Environment Article, Title 4 and COMAR 26.17.01, including obtaining and complying with an approved erosion and sediment control plan, and following the stabilization requirements set forth in COMAR 26.17.01.07 and the “2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control (2011 Standards)” as amended.
6. Minimize any disturbance to the bottom of waterways and prevent sediment transport into adjacent State waters.
7. Remove and dispose of all unused fill and construction materials in a manner which will prevent their entry into waters of this State.
8. Adhere to the construction time of year restrictions, unless waived or amended by the Program, as identified in a State authorization.
9. Obtain any other authorizations or approvals that the Department requires, including General Permits, and comply with all conditions of such authorizations or approvals.
10. Obtain any required authorizations or approvals from other State, federal, or local agencies.
11. Refrain from causing any injury to private property, invasion of rights, or infringement of federal, State, or local laws or regulations.
12. Inspection and entry. The Certification Holder shall allow the Department, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Certification Holder's premises where a certified activity or operation is located or conducted, or where records must be kept under the conditions of this Certification;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Certification;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Certification; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring compliance or as otherwise authorized by Program, any substances or parameters at any location.
 - e. Allow the Department's authorized representatives access to the Project during normal business hours to conduct inspections and evaluations of operations and records to verify compliance with this Certification.
13. For projects that clear, grade, develop, or redevelop any land, implement a Department-approved plan that provides stormwater management to control or manage runoff from such activities during and after construction, except as provided within the applicable *Maryland Stormwater Management and Erosion & Sediment control Guidelines for State and Federal Projects*.

STATEMENTS OF NECESSITY AND CITATIONS

1. Statement of Necessity for Special Conditions 1-13 and General Conditions 1-13: These conditions are necessary to ensure that water quality standards are met and designated uses are maintained.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; COMAR 26.08; COMAR 26.08.02.02; 26.08.02.03; COMAR 26.17.04; COMAR 26.23; and COMAR 26.23.02.06.

2. Statement of Necessity for Special Conditions 2, 6, 8, and 11: Activities which result or may result in a discharge to regulated waters, including replacement of wetland/water resources as an offset/mitigation, may require monitoring to ensure that water quality standards are met and designated uses are maintained, and to determine if remedial measures are needed to restore compliance with water quality standards if they are not met as a result of the discharge. The conditions are also necessary to ensure that fill material does not increase turbidity or other parameters in violation of narrative or numeric water quality standards or interfere with designated uses, and to ensure that offsets to regulated waters are implemented successfully.

Citations: State laws which authorize these conditions include MD. Env. Code Ann. §9-303.1, §9-313 - 9-316, §9-319 - 9-325, §9-327 and §9-328; MD. Env. Code Ann. §5-901 - 5-911; COMAR 26.08.01.02; COMAR 26.08.02.01; COMAR 26.08.02.02; COMAR 26.08.02.03; COMAR 26.08.02.09; COMAR 26.23.

3. Statement of Necessity for Special Conditions 1-5, 7, 8, 10-12, 13 and General Condition 12: These conditions require precise actions to ensure compliance with water quality standards. Site inspection authority provides a means to verify that limits, methods, and other requirements are met to ensure that water quality standards are met and designated uses are maintained. These conditions ensure that regulated activities are conducted and projects are completed according to terms of this Certification, while allowing for review of in-field modifications to ensure that water quality standards are met.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02; COMAR 26.08.02.03; COMAR 26.08.02.03-3; COMAR 26.23.02.06; COMAR 26.23; and COMAR 26.17.04.

4. Statement of Necessity for Special Conditions 2, 5, 7, and 11: Unauthorized discharges may enter regulated waters as result of activity or structural failure. A plan to address and monitor for unauthorized discharges will prevent or address further violations of water quality standards or failure of water to meet designated uses, including uses of growth and propagation of fish, other aquatic life, wildlife, as well as general water quality criteria that waters would not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

Citations: State laws which authorize these conditions include MD. Env. Code Ann. §9-303.1, §9-313 - 9-316, §9-319 - 9-325, §9-327 and §9-328; COMAR 26.08.02.01; COMAR 26.08.02.02; COMAR 26.08.02.03.

5. Statement of Necessity for Special Conditions 2, 3, 7, and 11-13: Nontidal wetlands, buffers, and waterways provide essential habitat, water quality, food, and movement corridors for wildlife, and support water contact recreation, protection of nontidal aquatic life, and protection of waters. Adaptive plans allow for adjustments to ensure that habitat and the associated designated uses are maintained.

Citations: State laws which authorize these conditions include MD. Env. Code Ann. §9-303.1, §9-313 - 9-316, §9-319 - 9-325, §9-327 and §9-328; MD. Env. Code Ann. §5-901 - 5-911; MD. Env. Code Ann. §1-404 and §5-501 - 5-514; COMAR 26.08.02.02; COMAR 26.08.02.03; COMAR 26.08.02.03-3;

COMAR 26.17.04; and COMAR 26.23.

6. Statement of Necessity for Special Condition 1 and General Condition 8: Restrictions on instream construction protect designated uses for propagation and growth of fish, other aquatic life, and wildlife.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03-3; and COMAR 26.23.02.06.

7. Statement of Necessity for Special Conditions 3, 7 and General Condition 2: Movement of aquatic life and passage of flows is essential for the growth and propagation of aquatic life, fish, and other wildlife to meet these designated uses.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10; COMAR 26.08.02.02; 26.08.02.03; COMAR 26.17.01; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.24; and COMAR 26.17.04.

8. Statement of Necessity for General Condition 3: Nuisance or non-native species may spread and disrupt and dislodge native species, including fish or other aquatic life, from their habitat, leading to declines in distribution, density, growth, or propagation.

Citations: State laws which authorize these conditions include MD. Env. Code Ann. §5-901 - 5-911; COMAR 26.23.02.06; and COMAR 26.23.

9. Statement of Necessity for Special Conditions 5-7, 9, 11 and General Conditions 4-7 and 13: Fill or construction material within or adjacent to regulated resources or other earth disturbance may result in discharges that impact water quality, clarity, growth and propagation of fish, other aquatic life, wildlife, potable water, or other designated uses; and cause or contribute to a failure to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be harmful, unsightly, or create a nuisance.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02; COMAR 26.08.02.03; COMAR 26.08.02.10; COMAR 26.17.01; COMAR 26.23.02.06; COMAR 26.23; and COMAR 26.17.04.

10. Statement of Necessity for Special Conditions 5-7, 9, 11 and General Conditions 4-7 and 13: Material within or adjacent to regulated resources may result in discharges that harm water quality or designated uses.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md.

Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02; COMAR 26.08.02.03; COMAR 26.23.02.06; COMAR 26.17.04; and COMAR 26.23.

11. Statement of Necessity for Special Condition 1 and General Condition 8: The time of year restrictions are necessary to maintain the designated uses.

Citations: State laws which authorize these conditions include MD. Env. Code Ann. §9-313 - 9-316, §9-319 - 9-320, §9-325, §9-327 and §9-328; COMAR 26.08; COMAR 26.08.02.02; and COMAR 26.08.02.03-3.

12. Statement of Necessity for General Conditions 9-11: These conditions are necessary to clarify the scope of this Certification to ensure compliance with water quality regulations without limiting restrictions through other requirements that also affect water quality.

Citations: Federal and State laws which authorize these conditions include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10; COMAR 26.23.02.06; COMAR 26.17.04; and COMAR 26.23.

13. Statement of Necessity for Special Condition 13: Mitigation is required to ensure that waters continue to meet designated uses, as losses of wetlands or waterways result in water quality degradation. Wetlands provide essential habitat, water quality, food, and movement corridors for wildlife. Losses may result in discharges which interfere with designated uses, including growth and propagation of fish, other aquatic life, and wildlife through loss of stream channel habitat and wetlands.

Citations: Federal and state laws that authorize this condition include: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.01; COMAR 26.08.02.02; COMAR 26.08.02.07; COMAR 26.08.02.10; COMAR 26.17.04; COMAR 26.23; COMAR 26.23.02.06; COMAR 26.24.

This Certification is valid for the Project identified herein and the associated U.S. Army Corps of Engineers authorization until such time that it expires.

CERTIFICATION APPROVED

D. Lee Currey
D. Lee Currey (May 5, 2023 11:56 EDT)

D. Lee Currey, Director
Water and Science Administration

WQC No: 22-WQC-0023

Page 11

Tracking Number:

202060649

Agency Interest Number: 168251

Effective Date: May 5, 2023

Attachments: Impact Plates

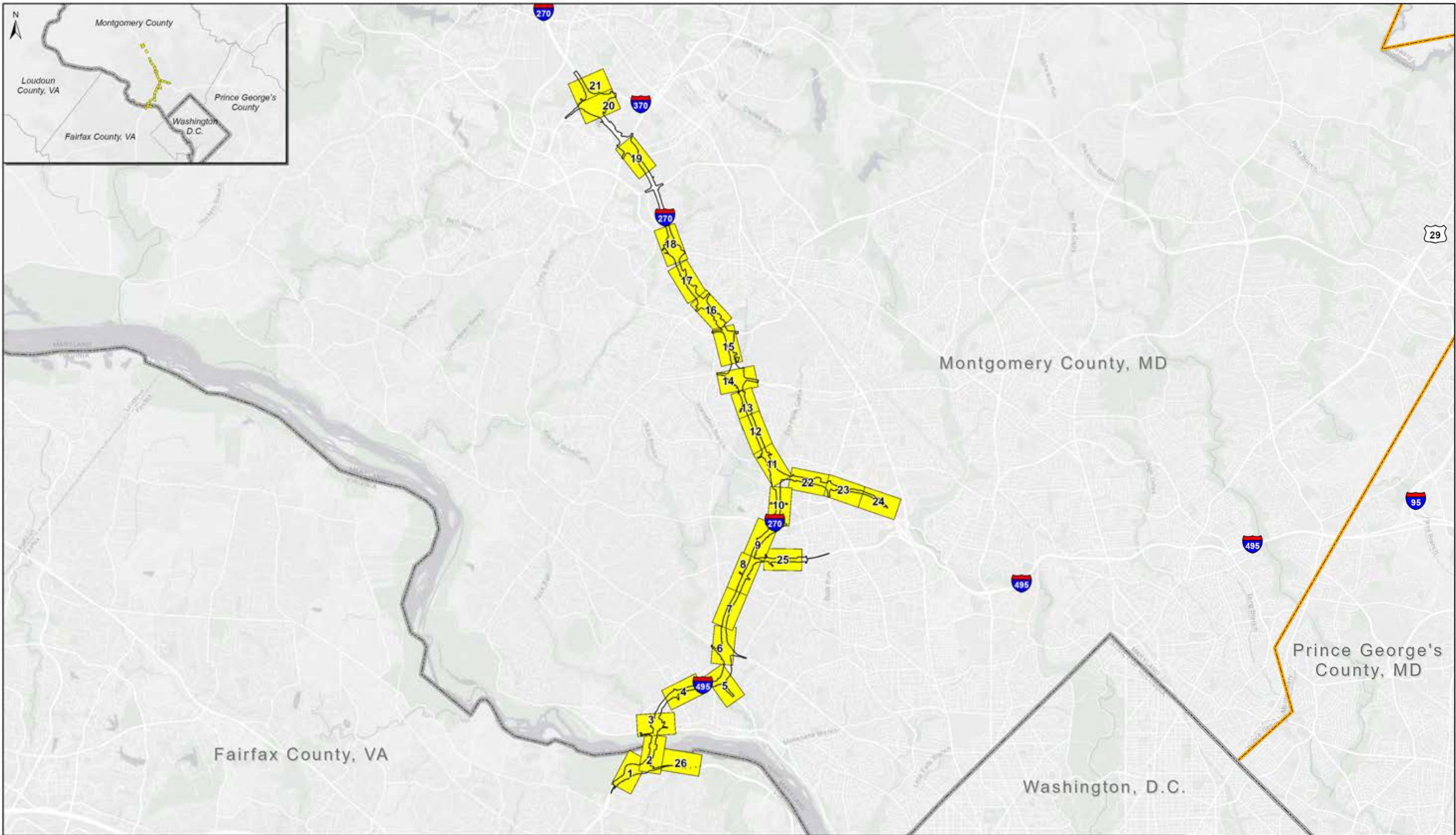
cc: WSA Inspection & Compliance Program
U.S. Army Corps of Engineers

Wetland and Waterway Impact Plates



OP • LANES™
M A R Y L A N D

I-495 & I-270 Managed Lanes Study



LEGEND

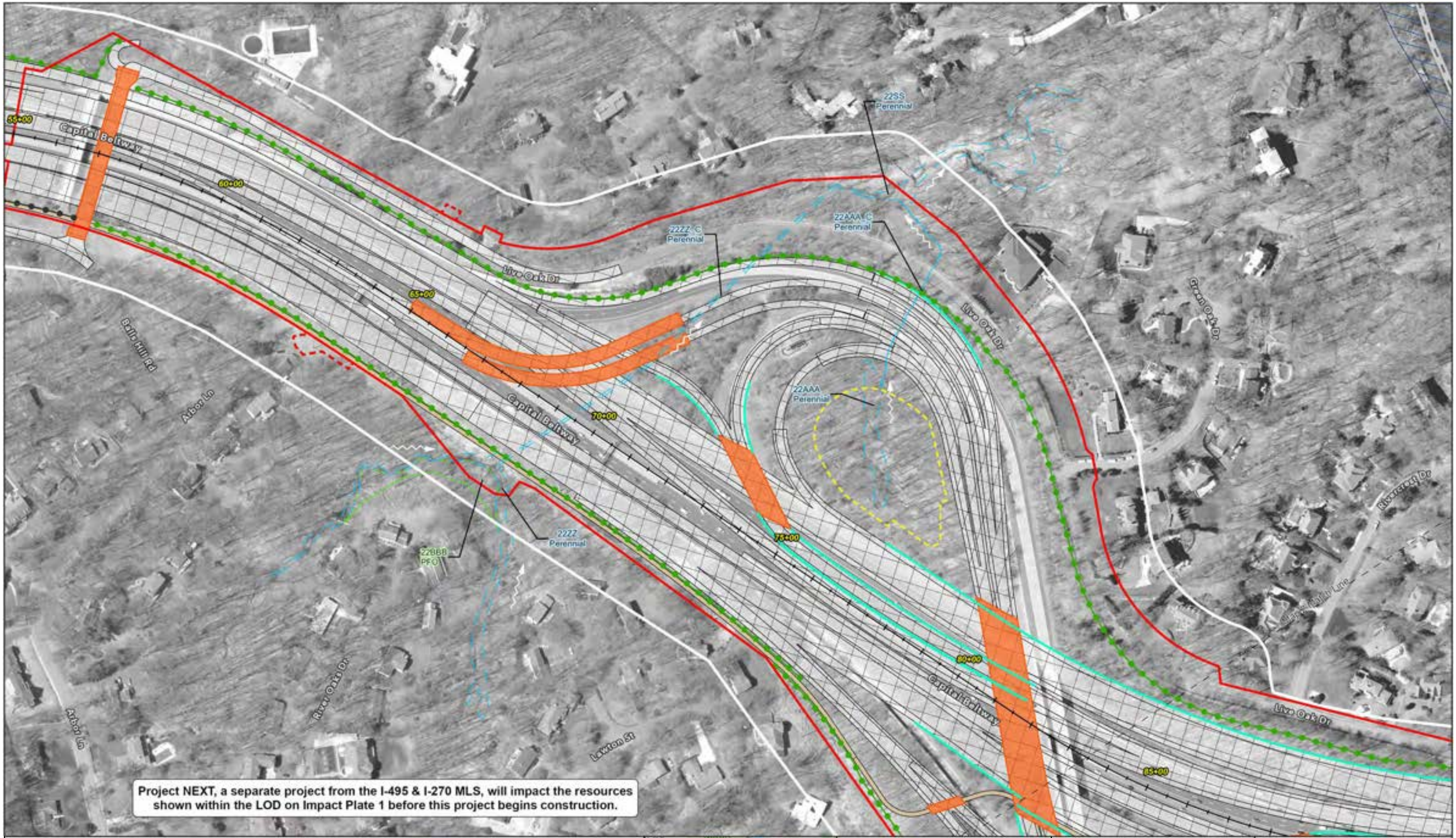
- Impact Plate
- Limit of Disturbance
- State Boundary
- County Boundary

0 0.75 1.5 3 Miles

June 2022

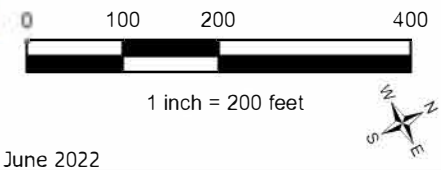
**Wetland and Waterway
Impact Plates
Key Sheet**





Project NEXT, a separate project from the I-495 & I-270 MLS, will impact the resources shown within the LOD on Impact Plate 1 before this project begins construction.

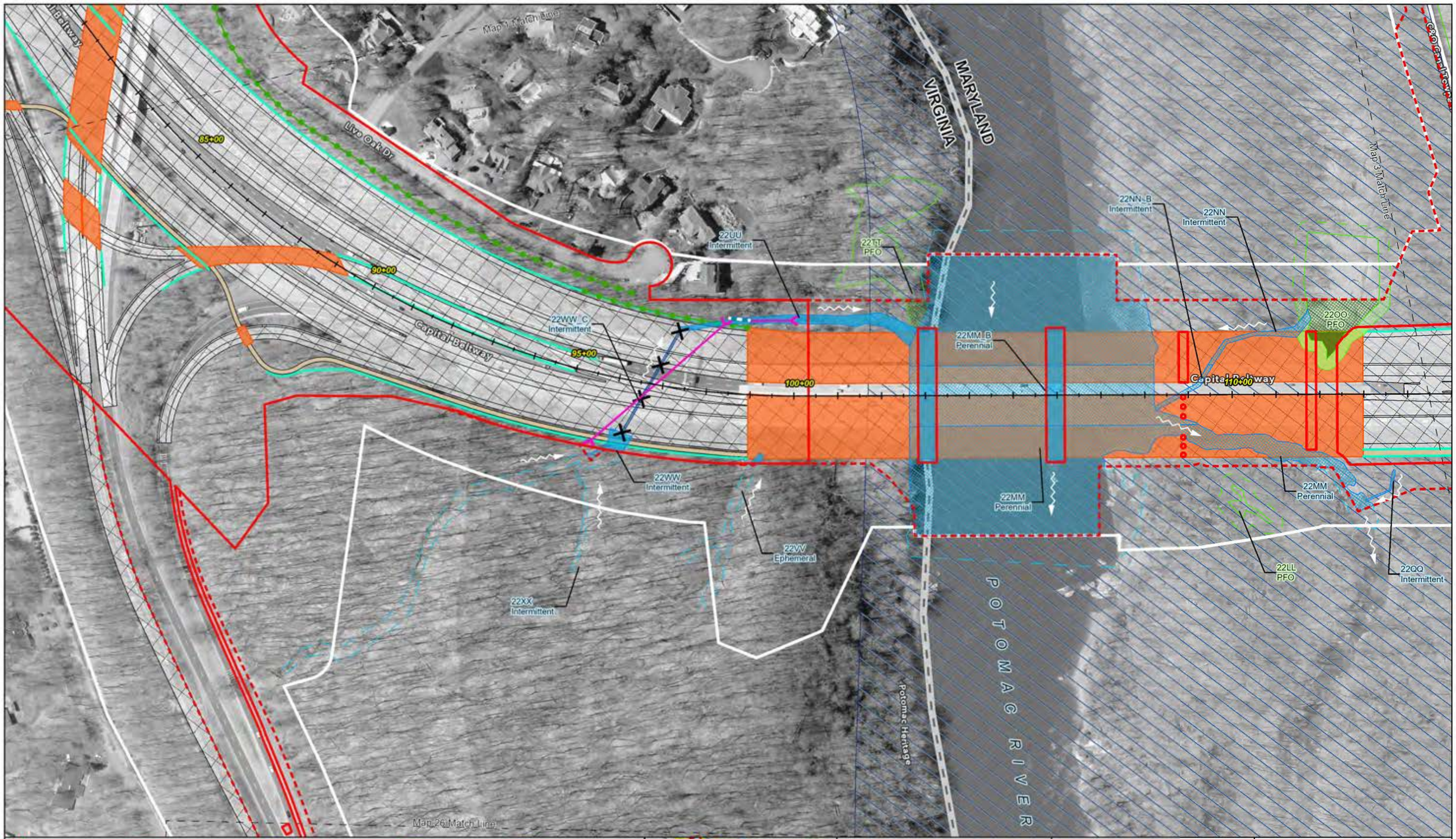
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|-------------------------------|----------------------------|---------------------------------|----------------------|----------------------------|
| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |



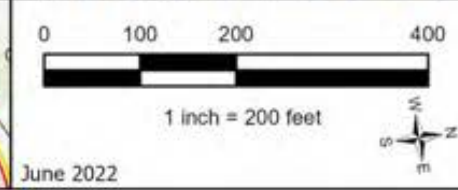
June 2022

Virginia
Wetland and Waterway
Impact Plates
 Mainline Impact Plate 1



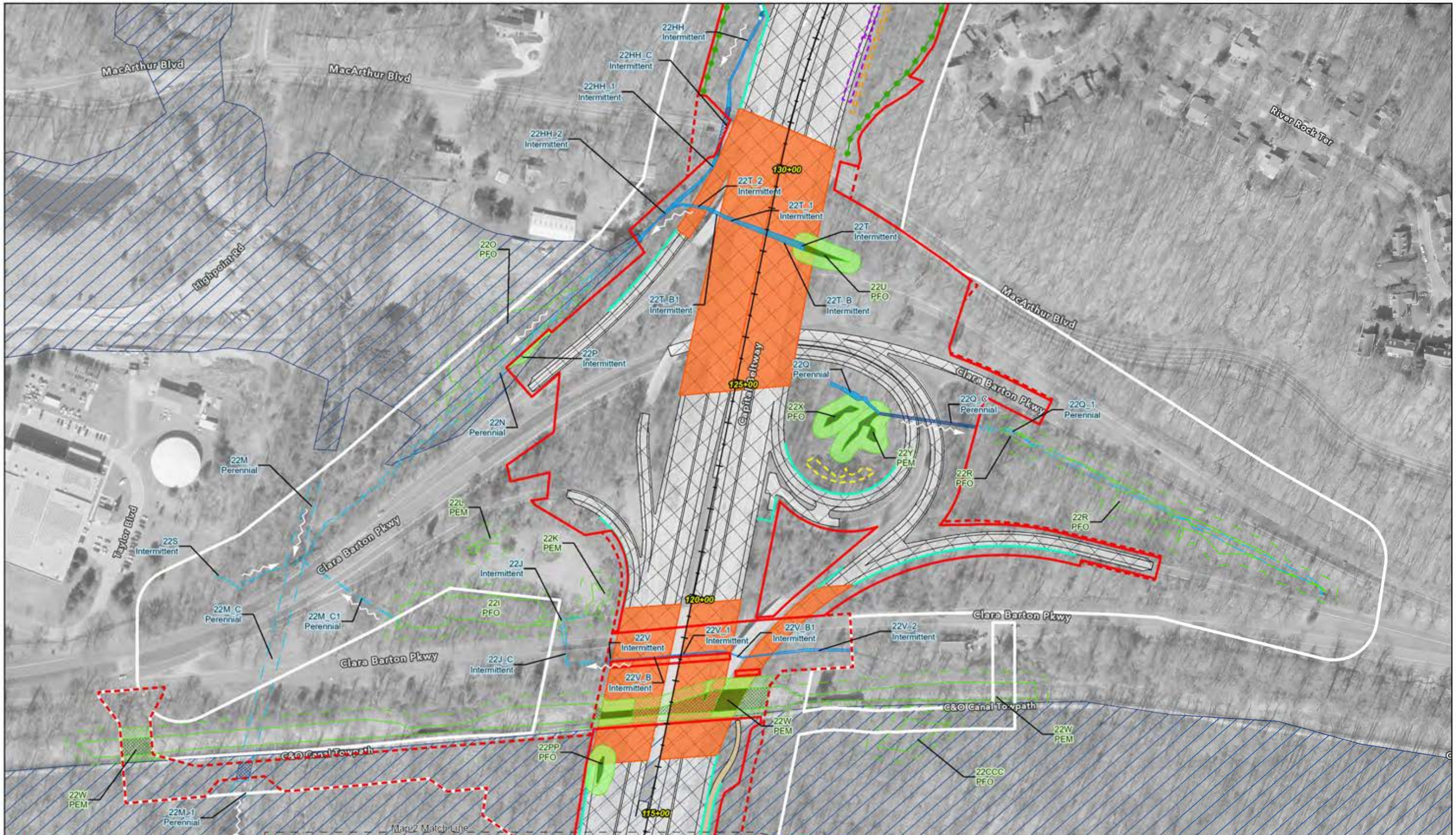


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| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |

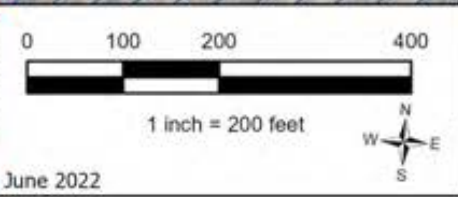


**Virginia
Wetland and Waterway
Impact Plates**
Mainline Impact Plate 2





RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



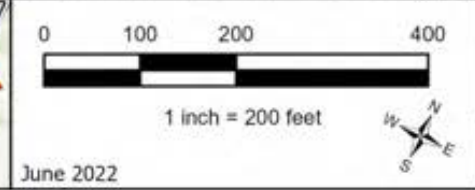
Maryland
Wetland and Waterway
Impact Plates
 Mainline Impact Plate 3



June 2022

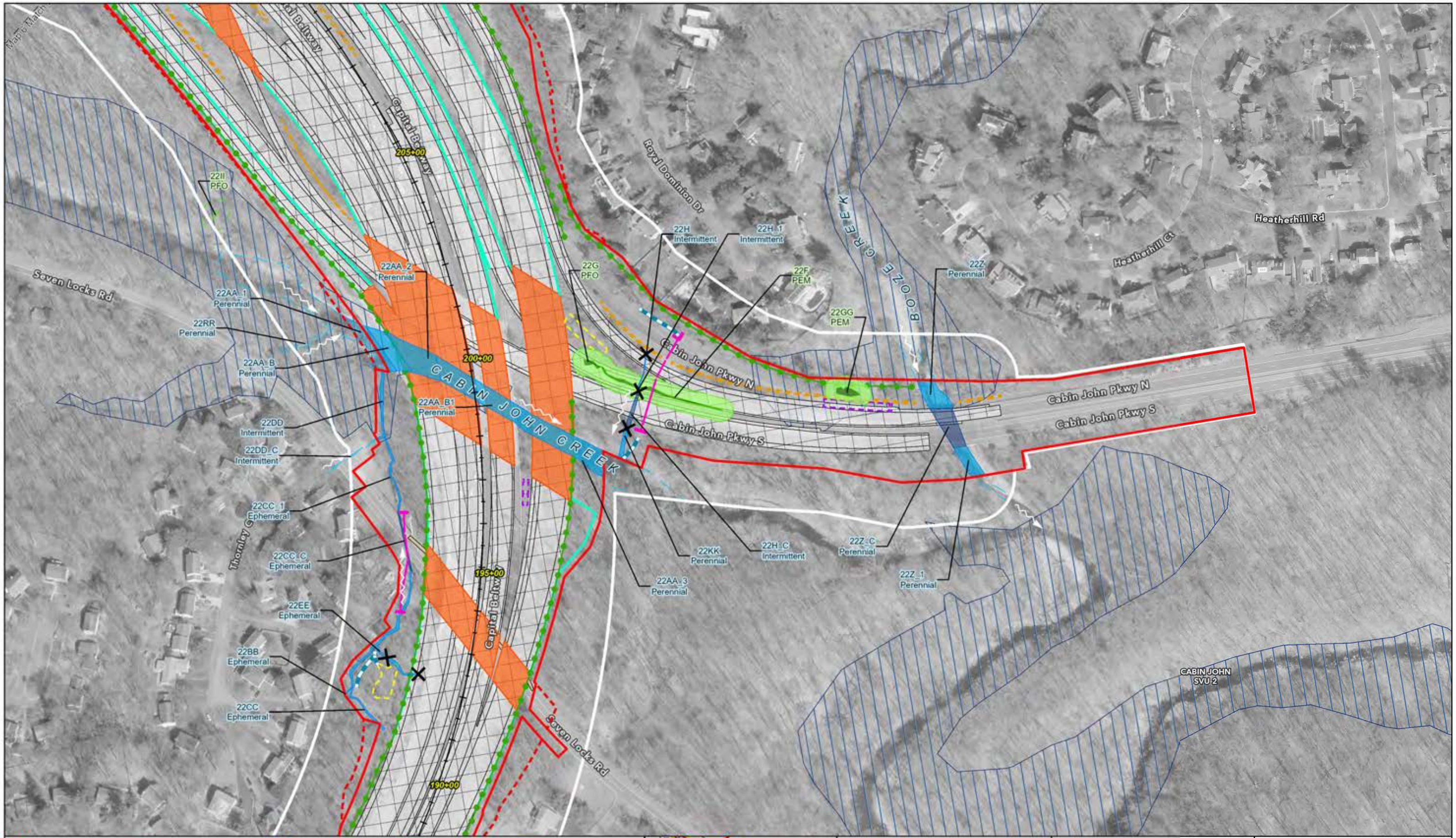


RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

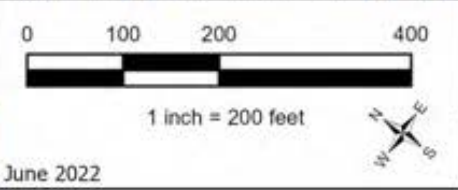


**Maryland
Wetland and Waterway
Impact Plates**
Mainline Impact Plate 4



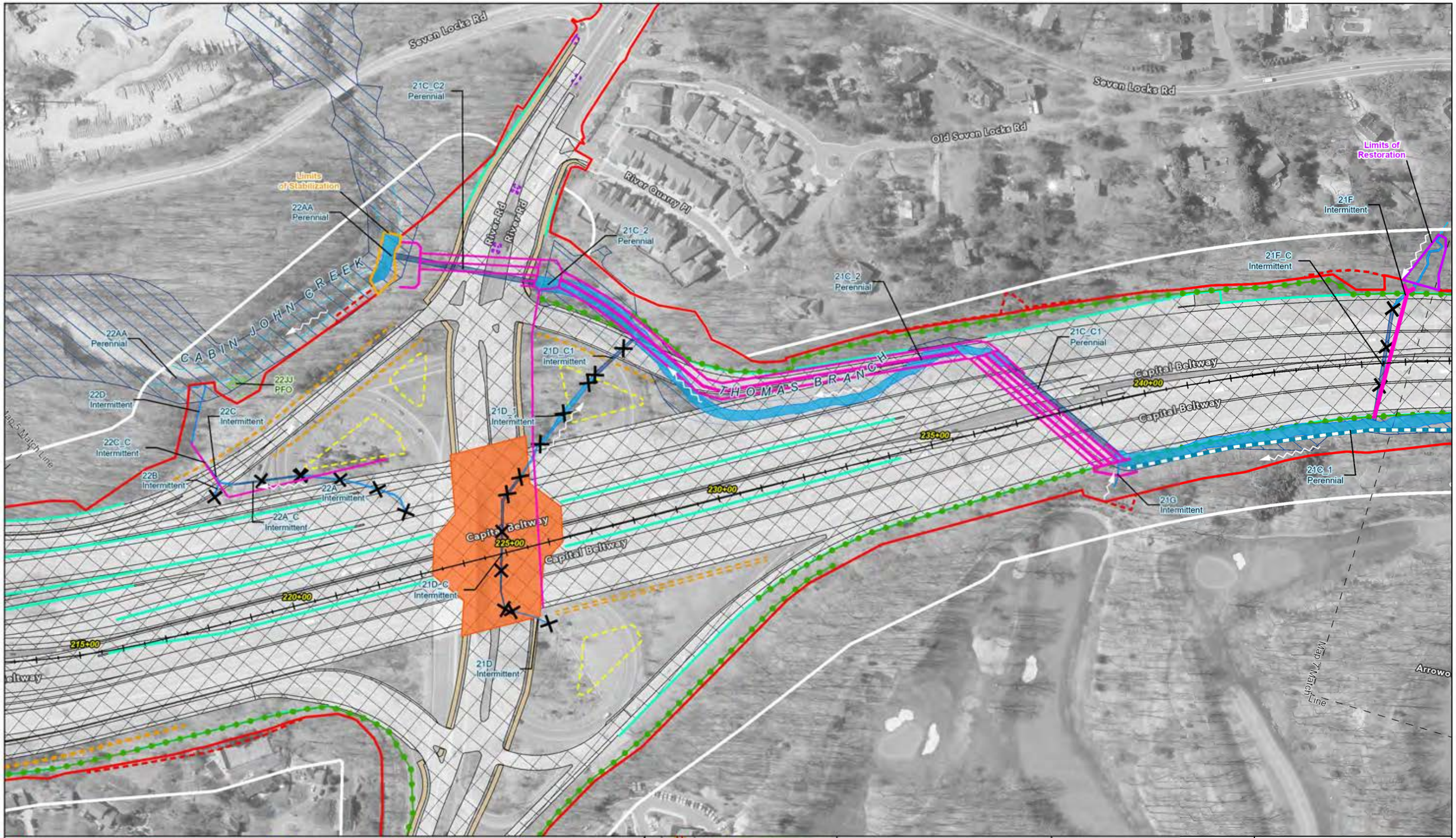


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| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |

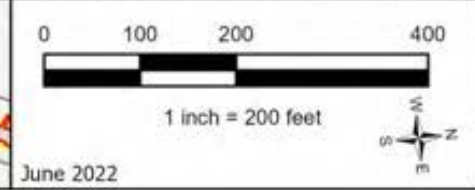


**Maryland
Wetland and Waterway
Impact Plates**
Mainline Impact Plate 5





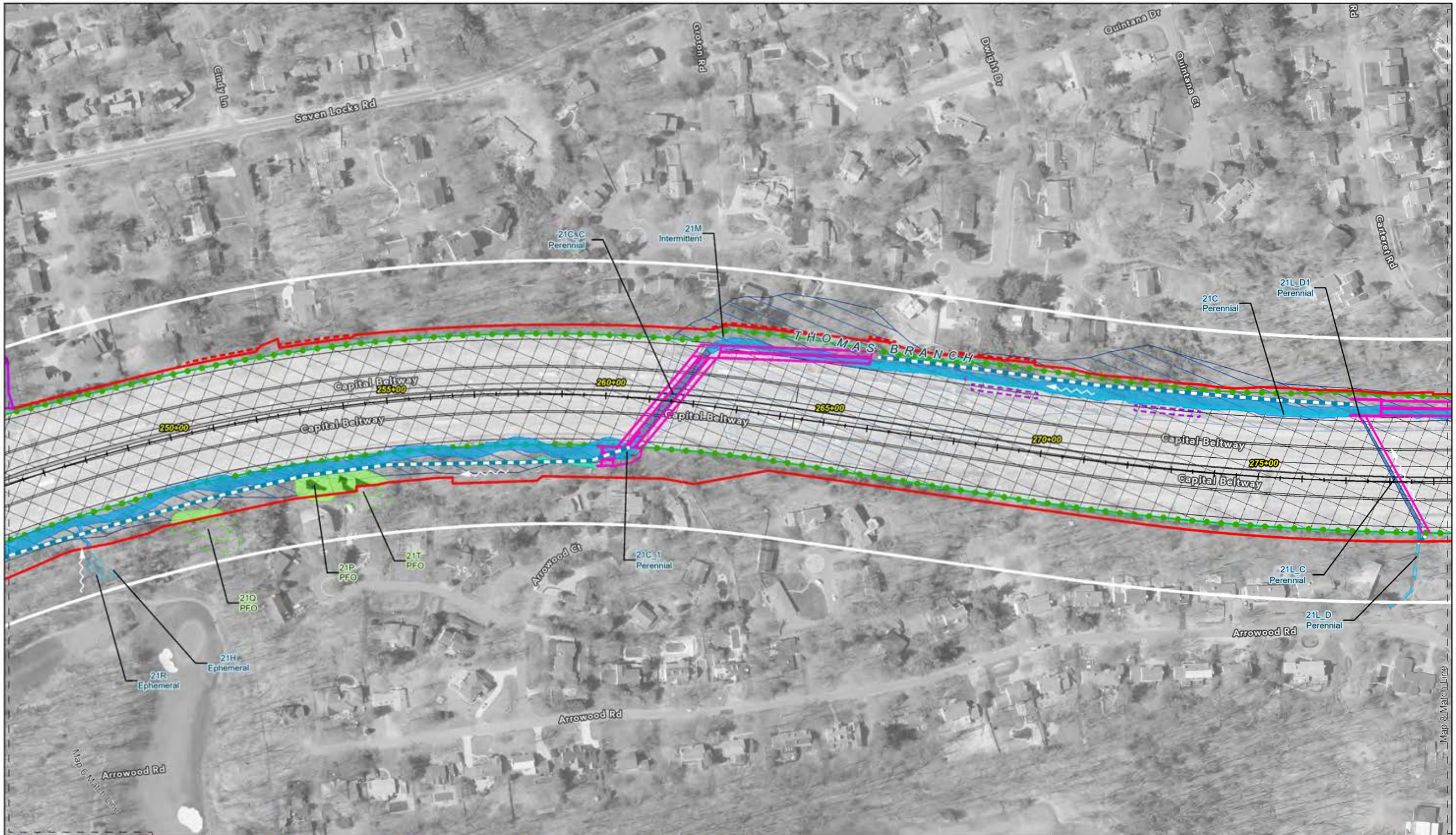
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RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



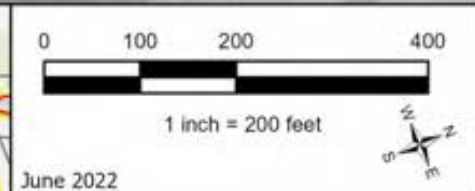
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 6



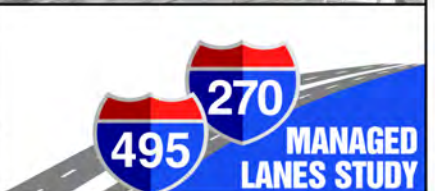


RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



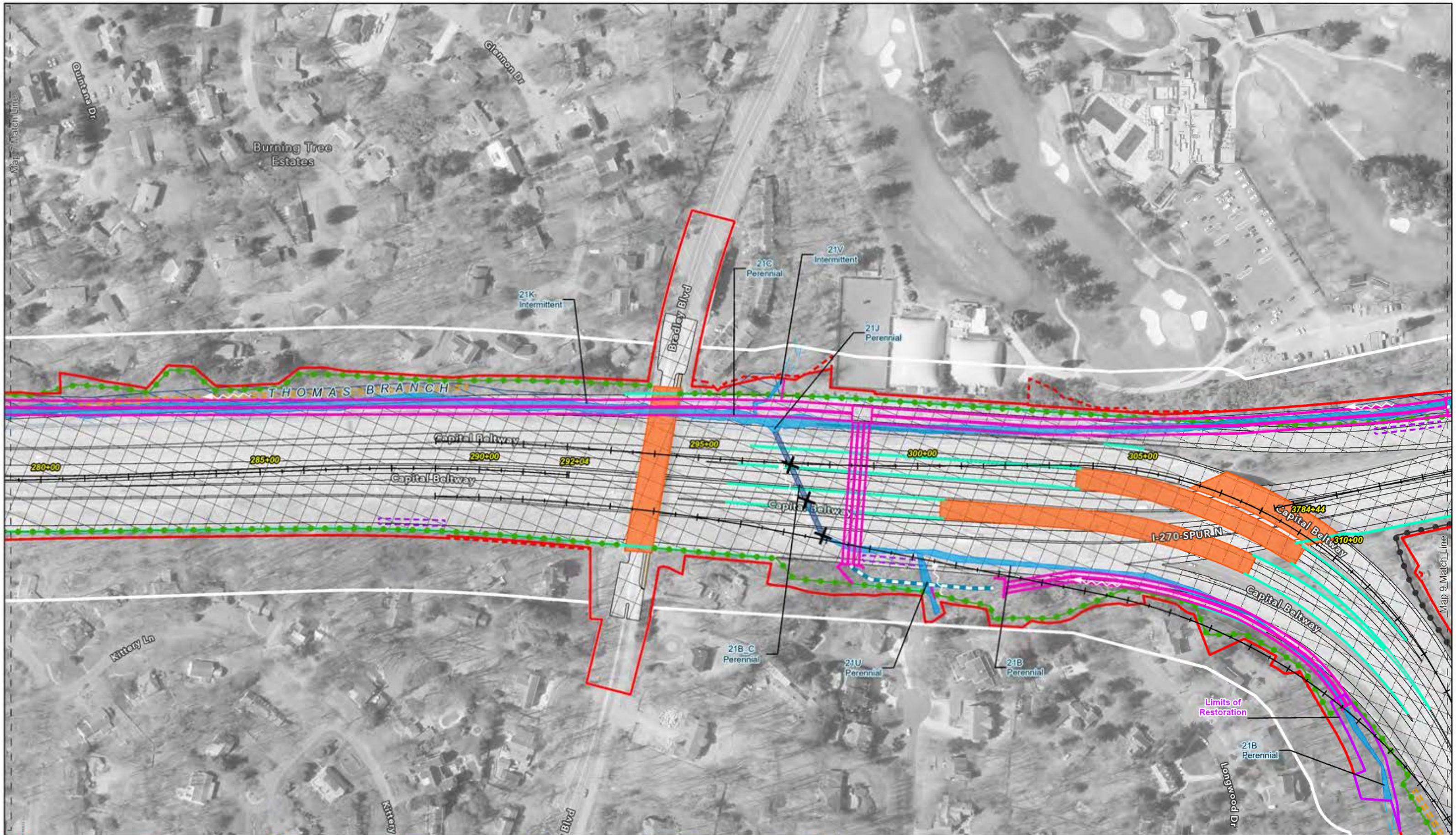
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 7

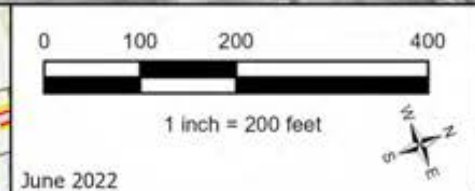


June 2022

Map & Match Line

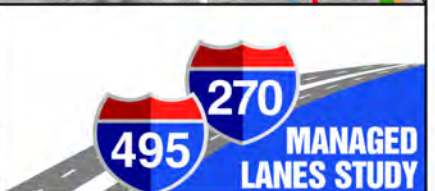


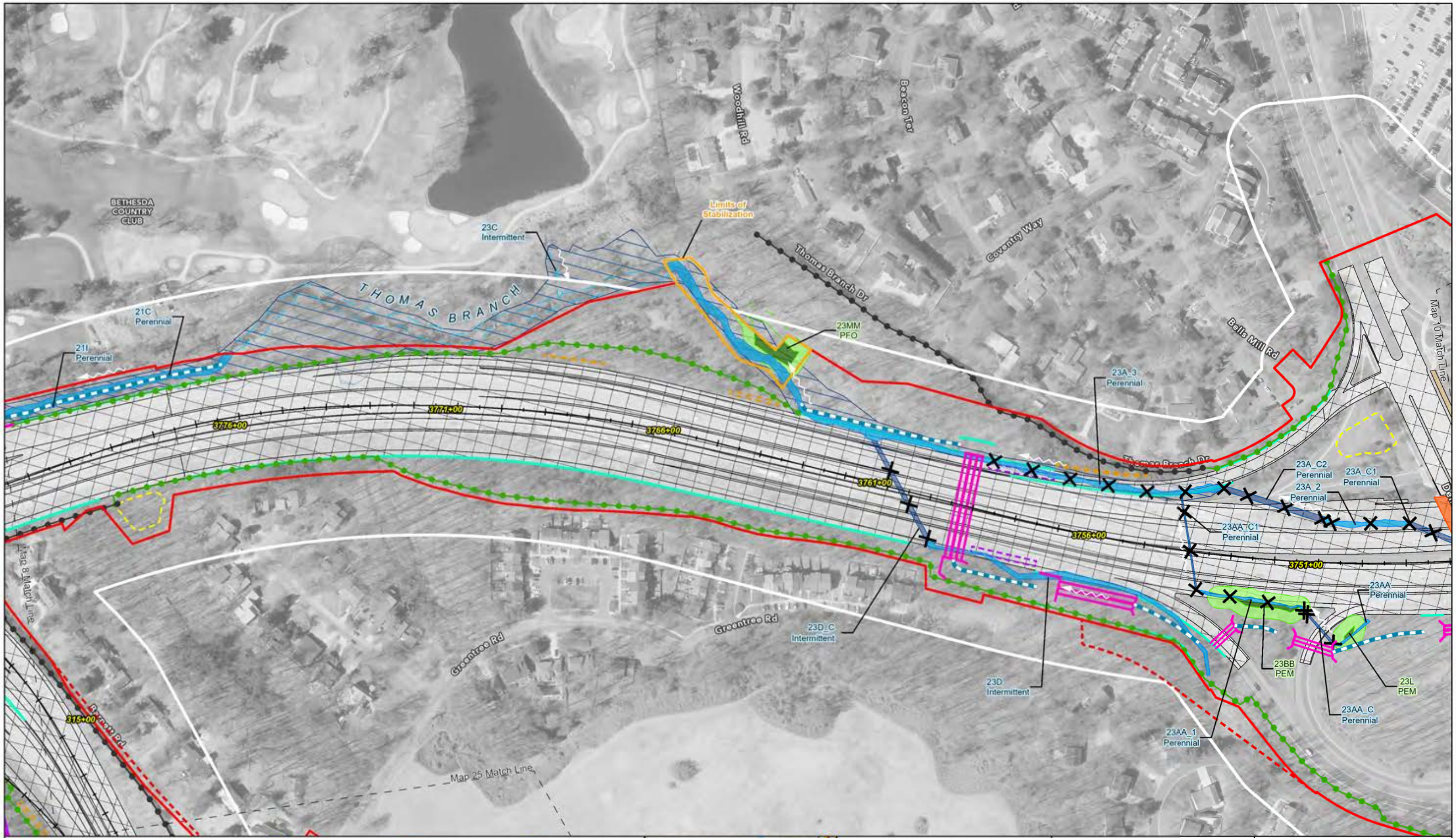
RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



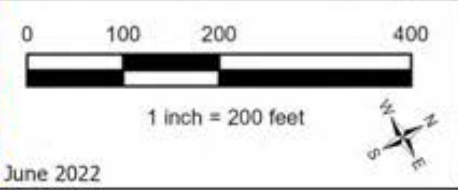
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 8





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|-------------------------------|----------------------------|---------------------------------|----------------------|----------------------------|
| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Shared Use Path | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |

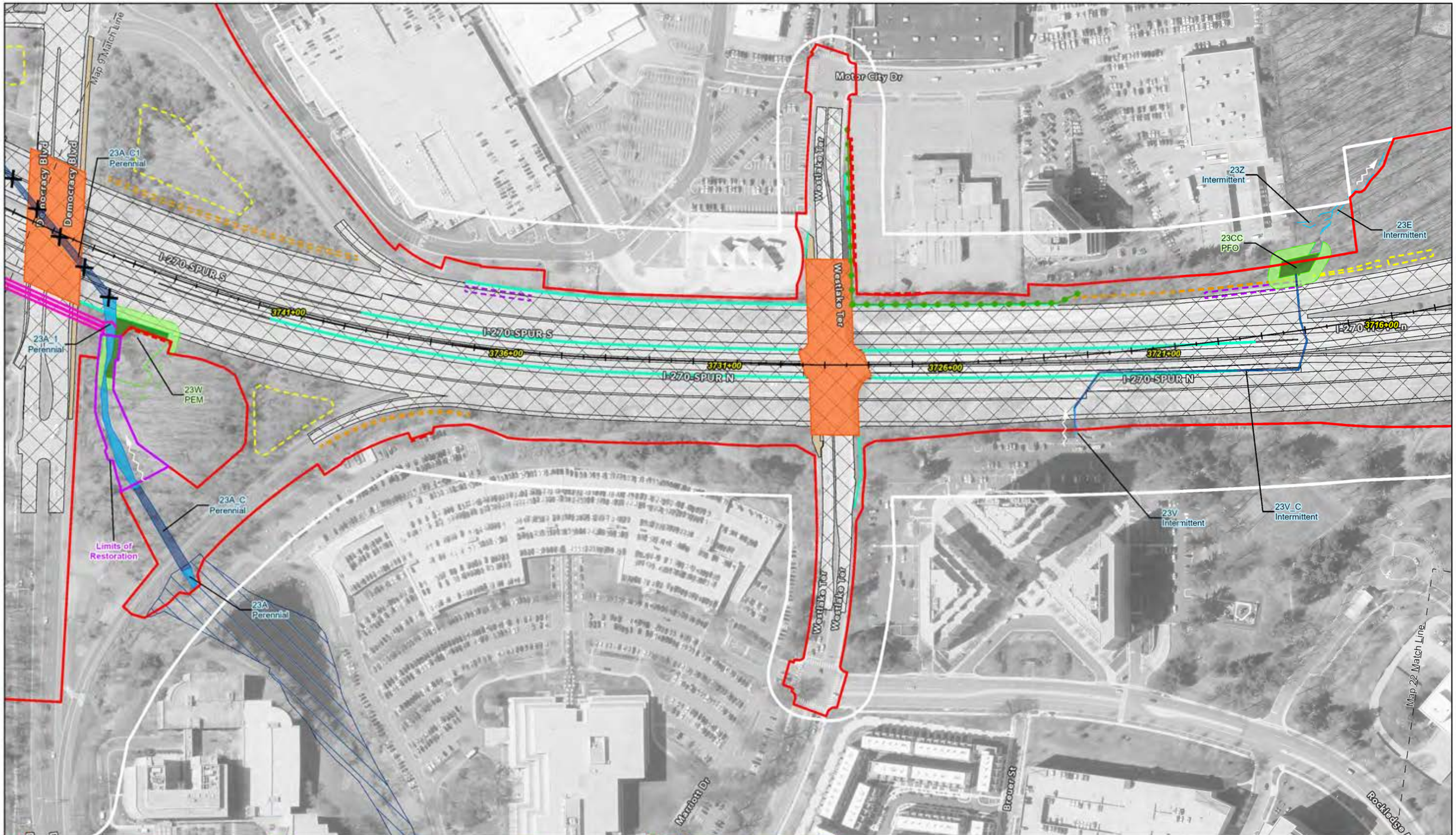


**Maryland
Wetland and Waterway
Impact Plates**

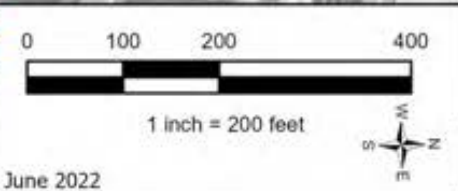
Mainline Impact Plate 9



June 2022

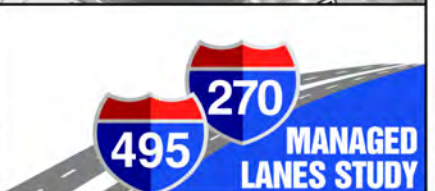


- RPA Limit of Disturbance Temp
- RPA Limit of Disturbance Perm
- Delineation Limits
- Proposed Pavement
- Noise Wall Proposed
- Noise Wall Existing
- Proposed Retaining Wall
- New/Augmented Pipe/Culvert
- Relocated Channel
- Proposed SWM - Pond
- Proposed SWM - Swale
- Proposed SWM - Vault
- Bridge
- Limit Of Improved SWM / Storage
- Limit Of Restoration
- Limit Of Stabilization
- Shared Use Path
- Flow Direction
- Waterway Impact Perm
- Waterway Impact Temp
- Culvert Impact Perm
- Culvert Impact Temp
- Wetland Impact Perm
- Wetland Impact Temp
- Wetland Buffer Impact Perm
- Wetland Buffer Impact Temp
- Stream No Impact
- Wetland No Impact
- Wetland Buffer No Impact
- FEMA 100-Year Floodplain

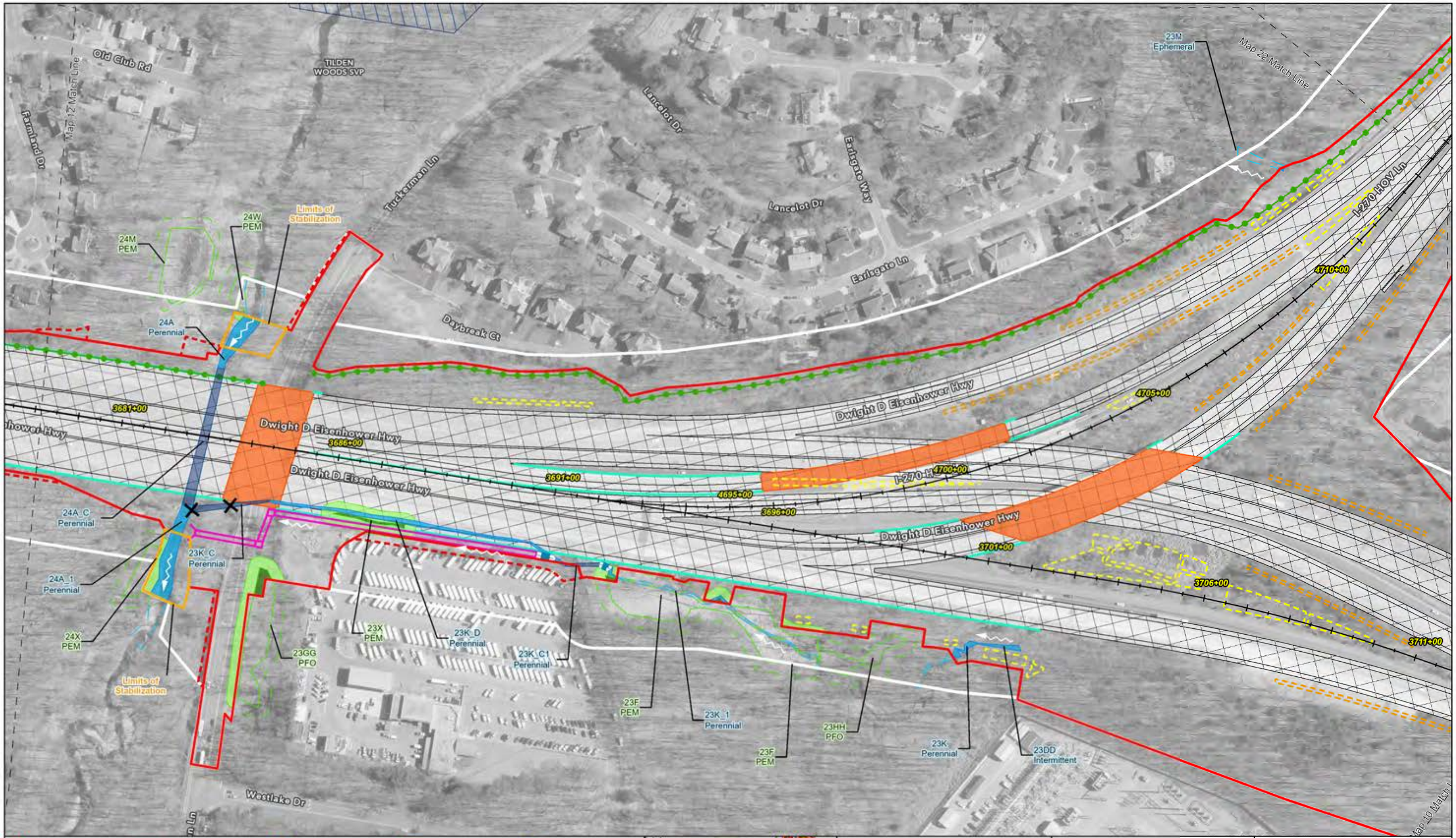


**Maryland
Wetland and Waterway
Impact Plates**

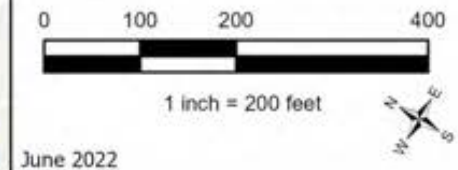
Mainline Impact Plate 10



June 2022



RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

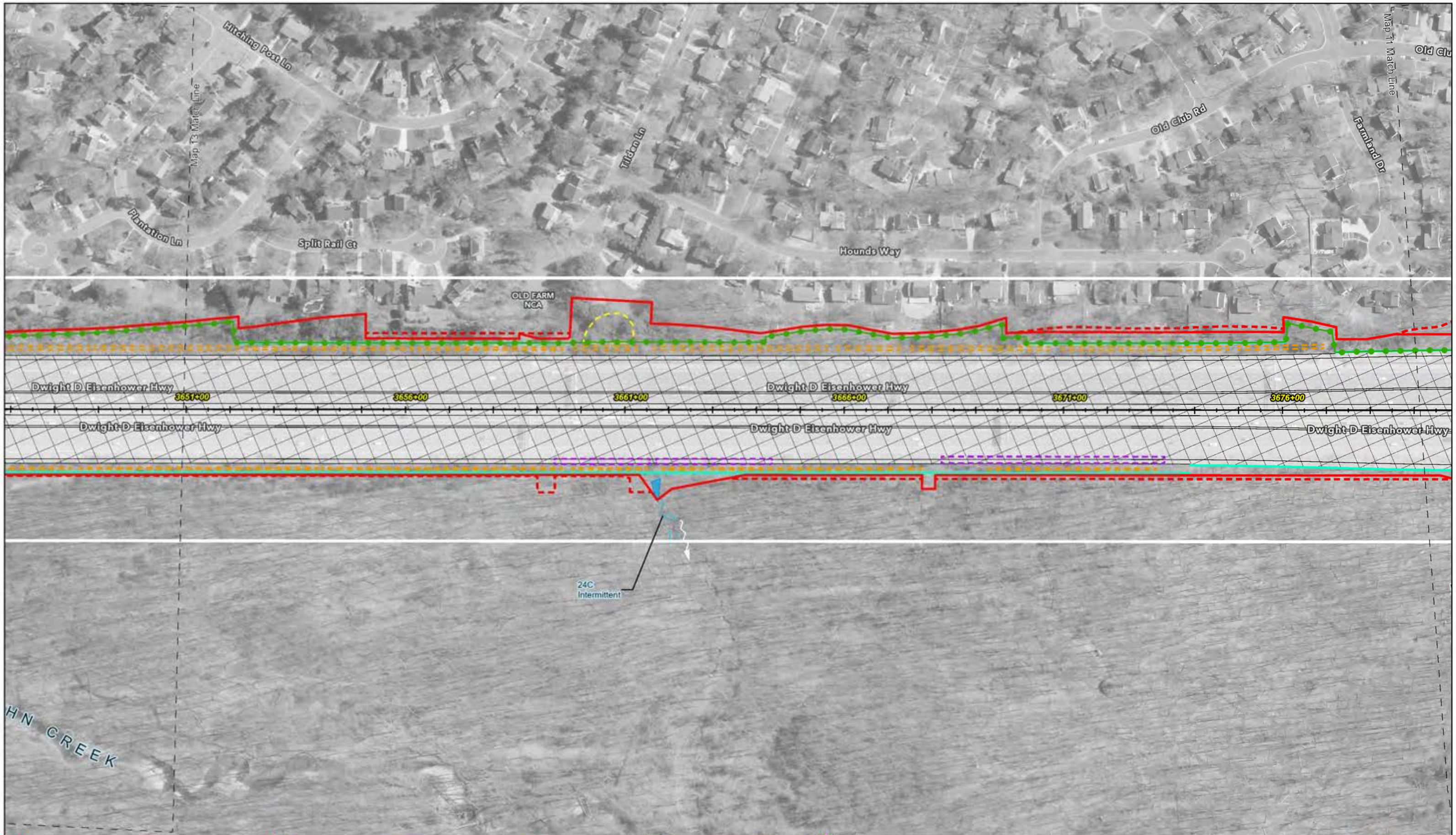


June 2022

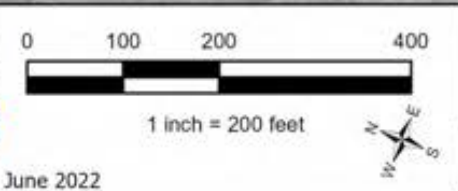
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 11



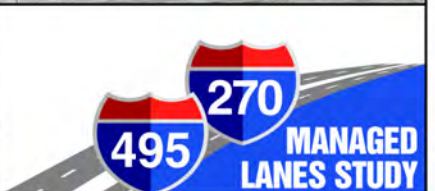


RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

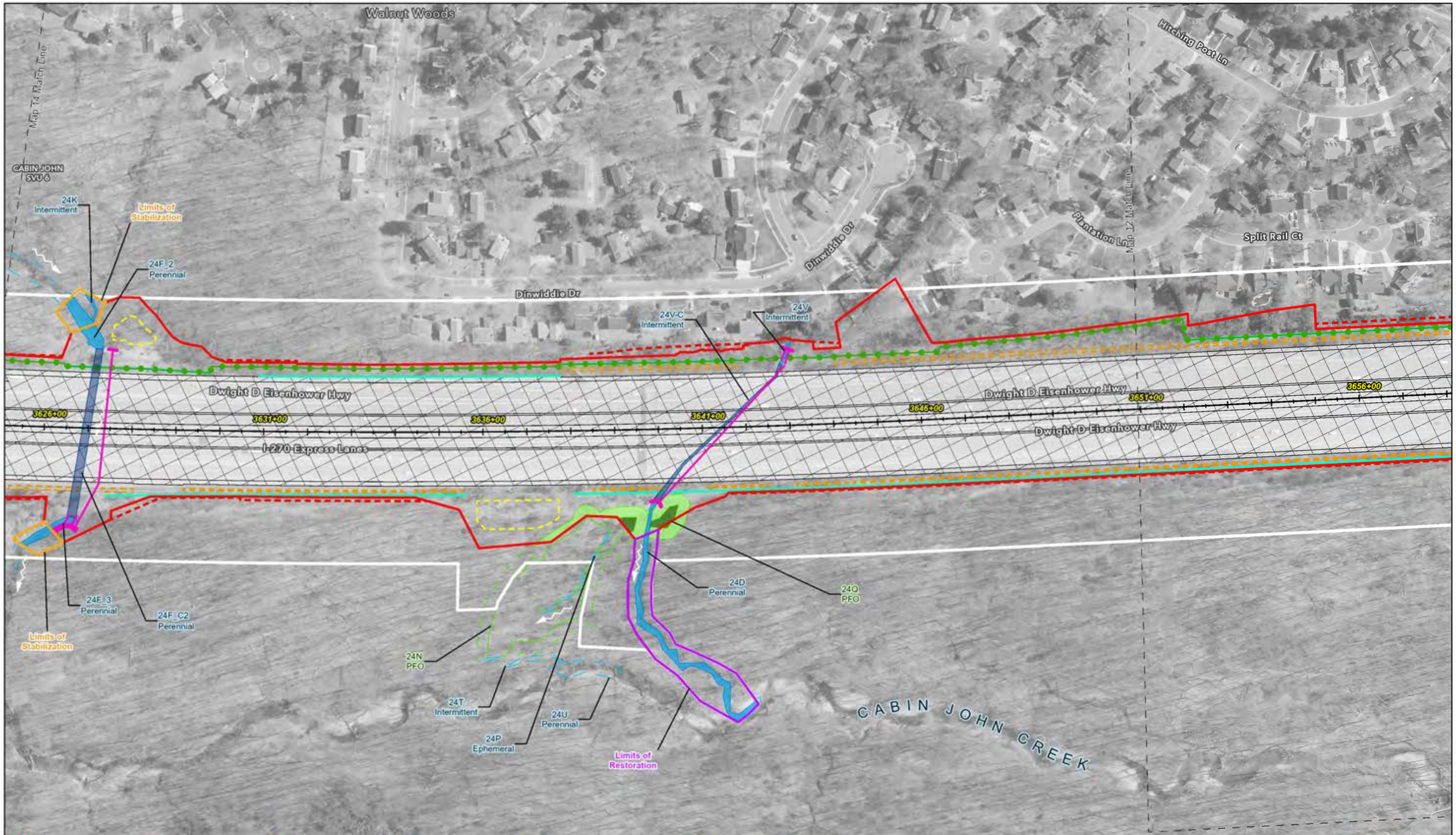


**Maryland
Wetland and Waterway
Impact Plates**

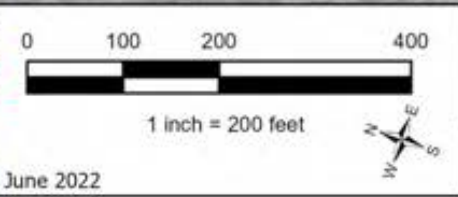
Mainline Impact Plate 12



June 2022



RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



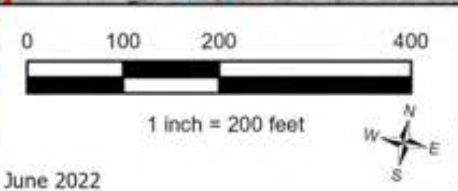
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 13

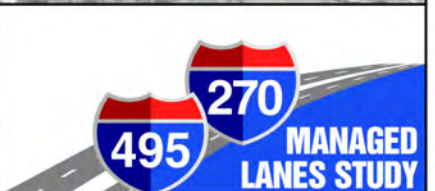




RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

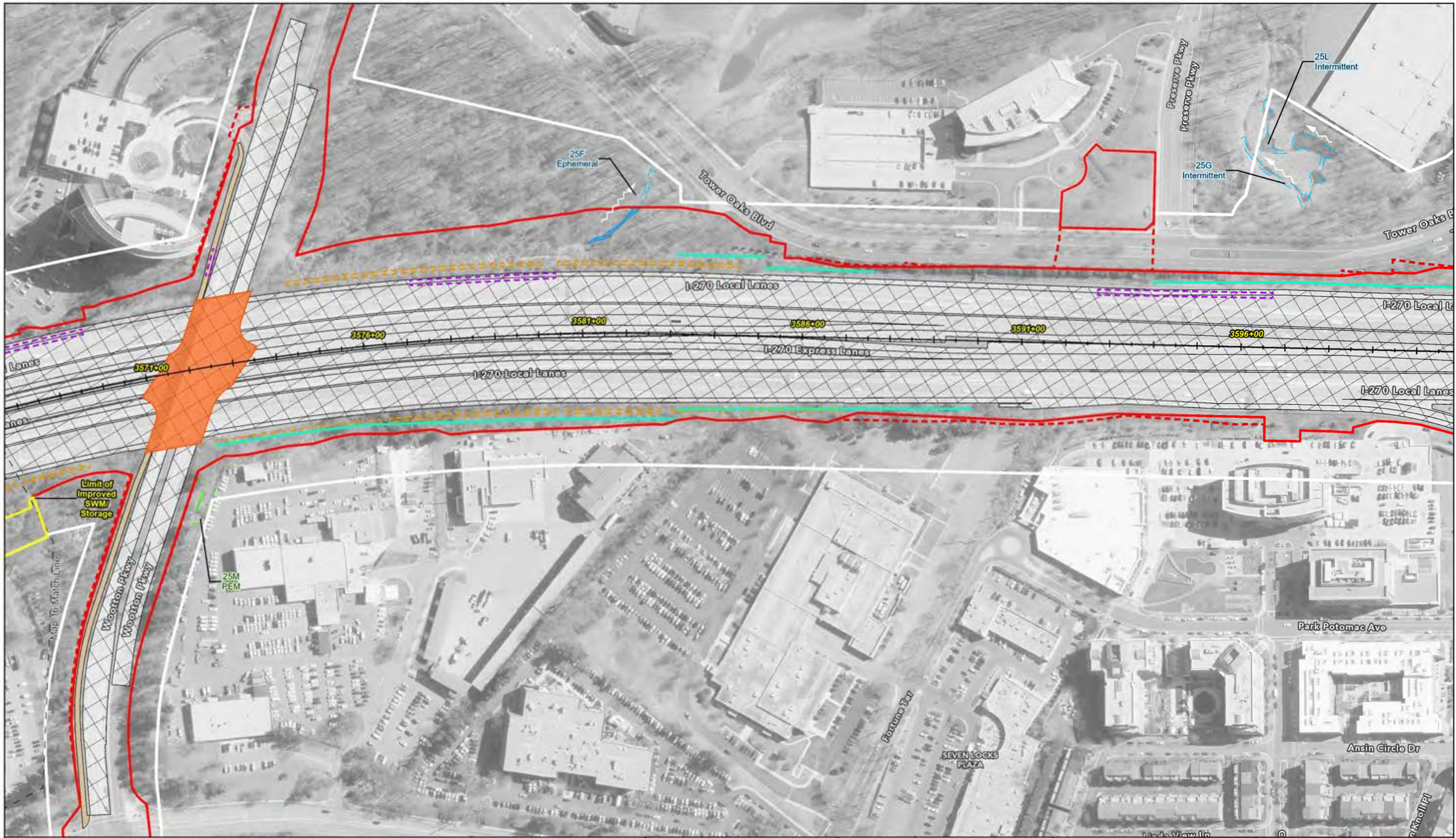


Maryland
Wetland and Waterway
Impact Plates
 Mainline Impact Plate 14

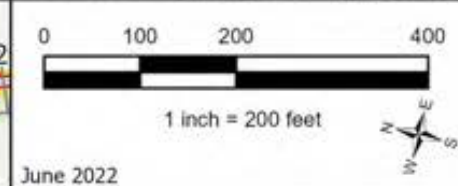


Map 13 Match Line

June 2022

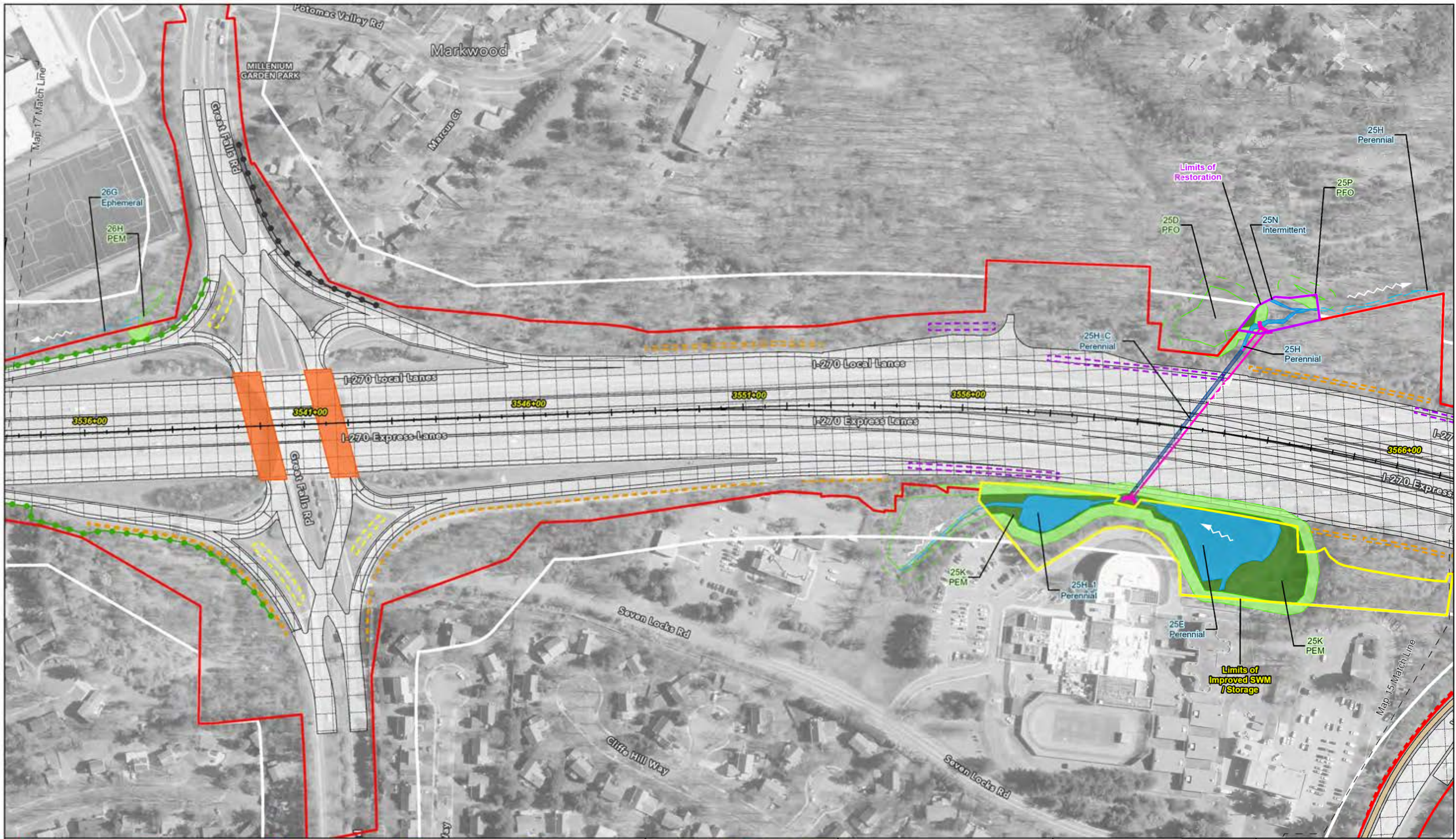


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| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |

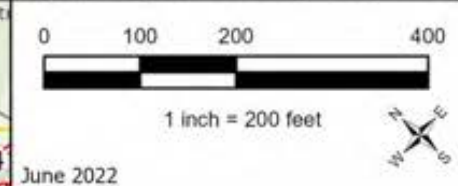


**Maryland
Wetland and Waterway
Impact Plates**
Mainline Impact Plate 15





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| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |



**Maryland
Wetland and Waterway
Impact Plates**

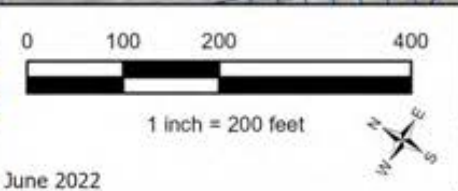
Mainline Impact Plate 16



June 2022



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|-------------------------------|----------------------------|---------------------------------|----------------------|----------------------------|
| RPA Limit of Disturbance Temp | Proposed Retaining Wall | Bridge | Waterway Impact Perm | Wetland Buffer Impact Perm |
| RPA Limit of Disturbance Perm | New/Augmented Pipe/Culvert | Limit Of Improved SWM / Storage | Waterway Impact Temp | Wetland Buffer Impact Temp |
| Delineation Limits | Relocated Channel | Limit Of Restoration | Culvert Impact Perm | Stream No Impact |
| Proposed Pavement | Proposed SWM - Pond | Limit Of Stabilization | Culvert Impact Temp | Wetland No Impact |
| Noise Wall Proposed | Proposed SWM - Swale | Shared Use Path | Wetland Impact Perm | Wetland Buffer No Impact |
| Noise Wall Existing | Proposed SWM - Vault | Flow Direction | Wetland Impact Temp | FEMA 100-Year Floodplain |

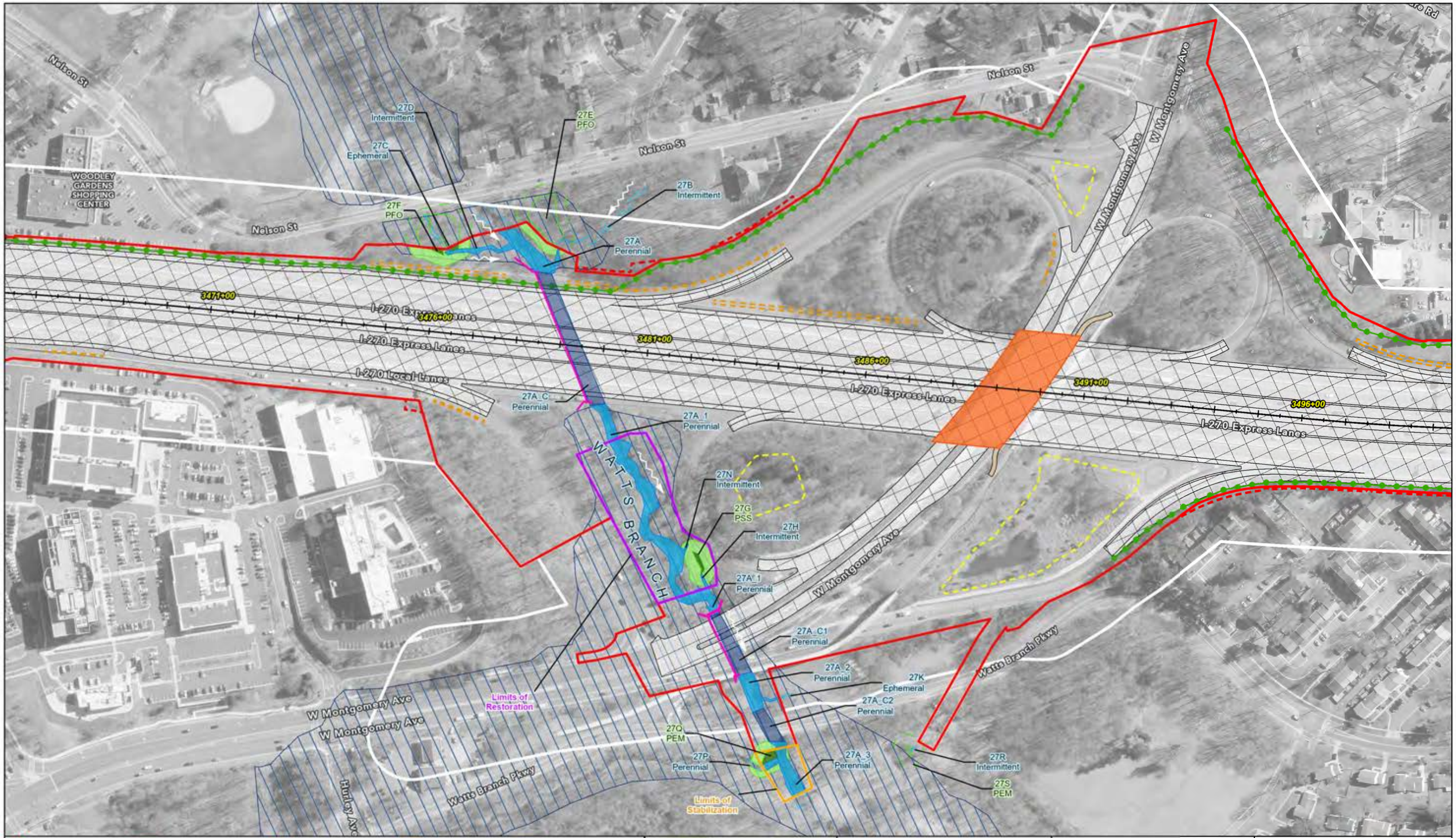


**Maryland
Wetland and Waterway
Impact Plates**

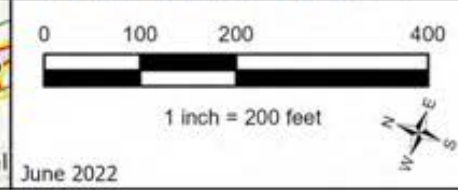
Mainline Impact Plate 17



June 2022



RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

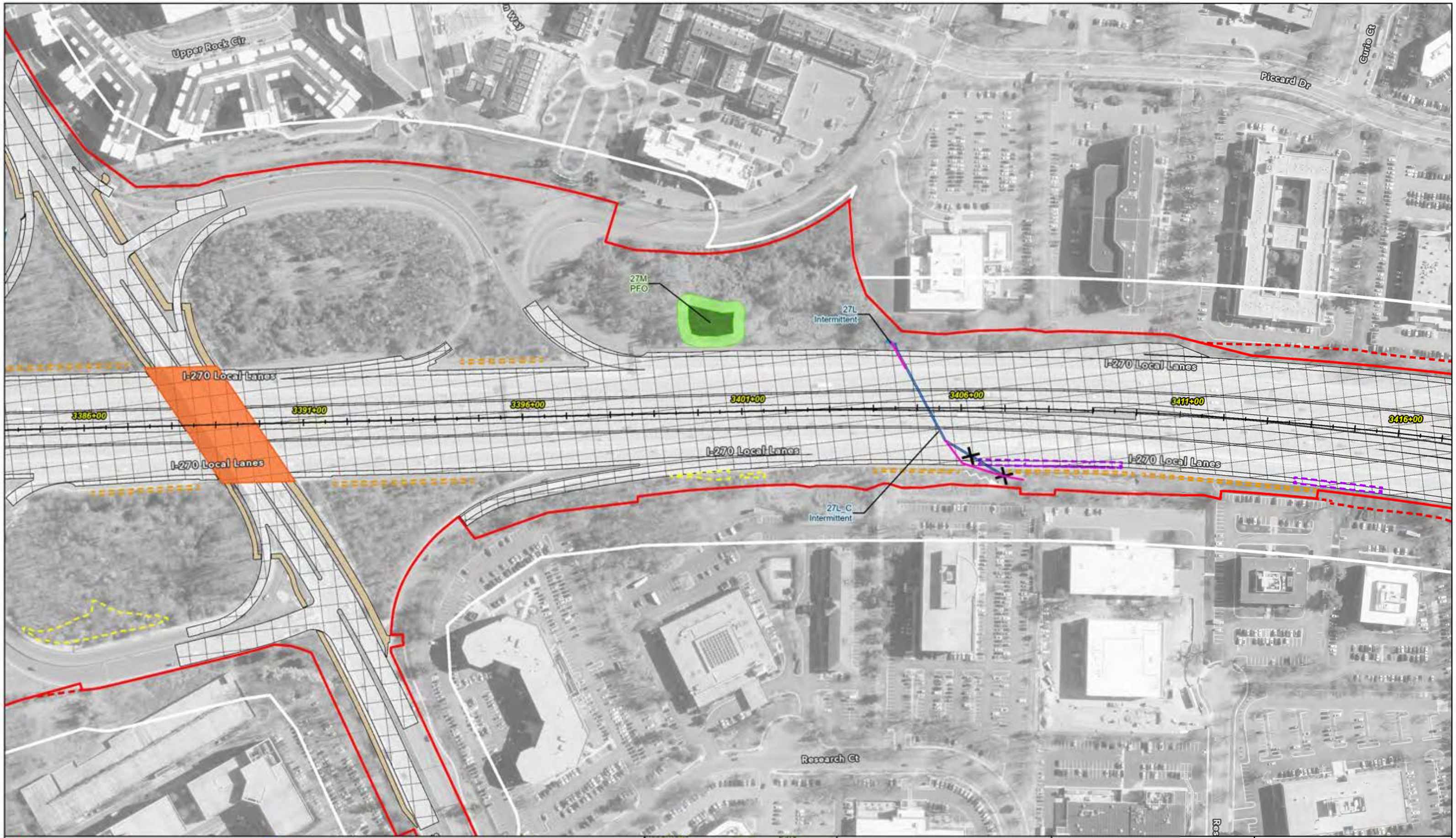


**Maryland
Wetland and Waterway
Impact Plates**

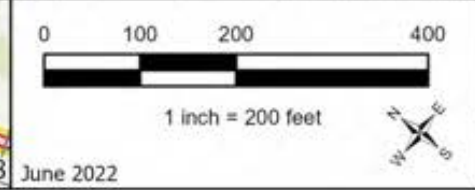
Mainline Impact Plate 18



June 2022



- RPA Limit of Disturbance Temp
- RPA Limit of Disturbance Perm
- Delineation Limits
- Proposed Pavement
- Noise Wall Proposed
- Noise Wall Existing
- Proposed Retaining Wall
- New/Augmented Pipe/Culvert
- Relocated Channel
- Proposed SWM - Pond
- Proposed SWM - Swale
- Proposed SWM - Vault
- Bridge
- Limit Of Improved SWM / Storage
- Limit Of Restoration
- Limit Of Stabilization
- Shared Use Path
- Flow Direction
- Waterway Impact Perm
- Waterway Impact Temp
- Culvert Impact Perm
- Culvert Impact Temp
- Wetland Impact Perm
- Wetland Impact Temp
- Wetland Buffer Impact Perm
- Wetland Buffer Impact Temp
- Stream No Impact
- Wetland No Impact
- Wetland Buffer No Impact
- FEMA 100-Year Floodplain



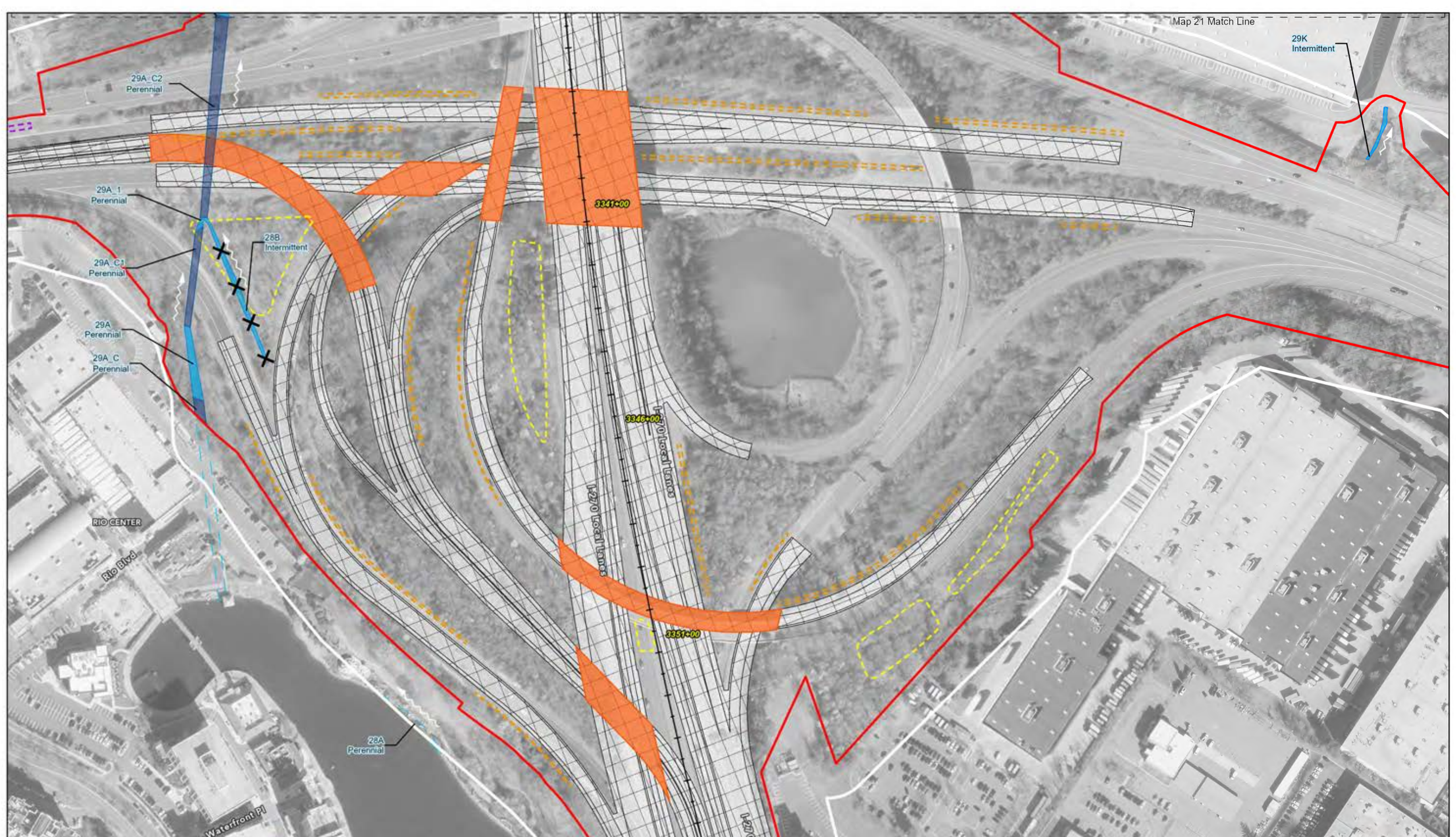
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 19

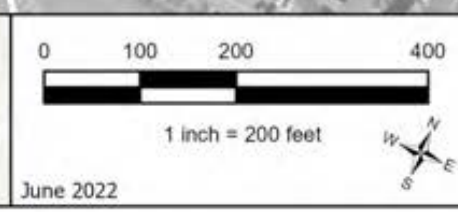


June 2022

29K Intermittent

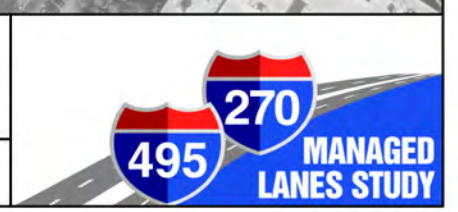


RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



**Maryland
Wetland and Waterway
Impact Plates**

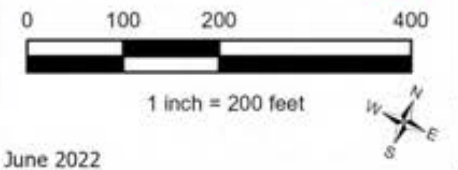
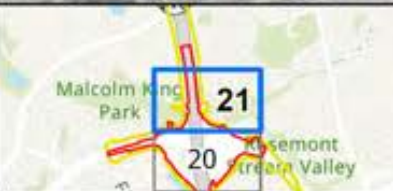
Mainline Impact Plate 20





Map 20 Match Line

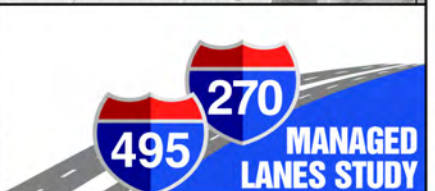
RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

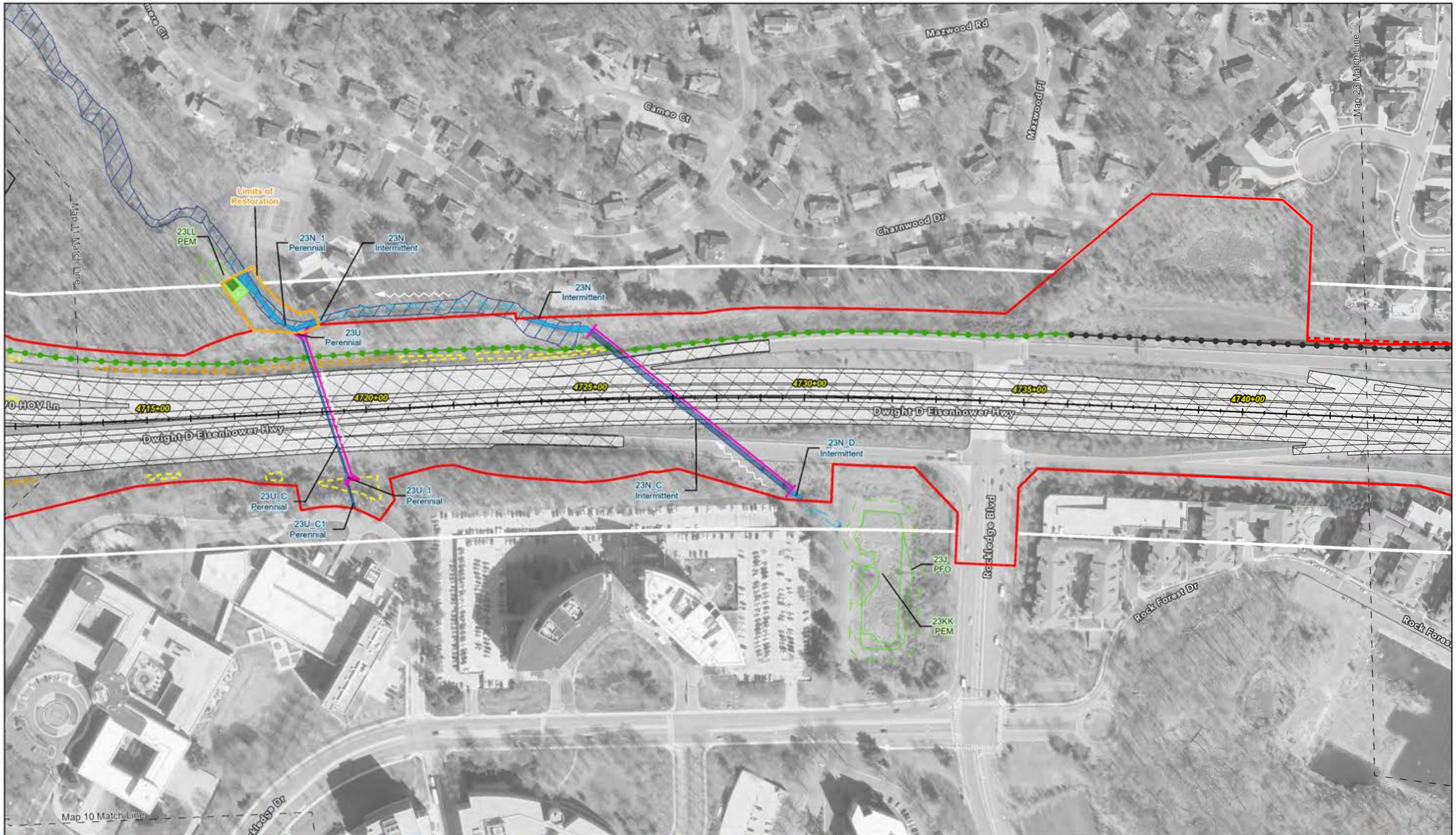


June 2022

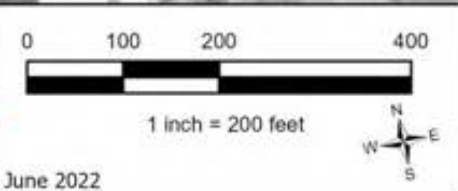
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 21





RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



**Maryland
Wetland and Waterway
Impact Plates**

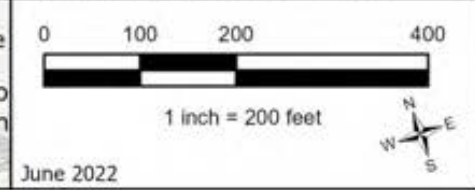
Mainline Impact Plate 22



June 2022



RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain

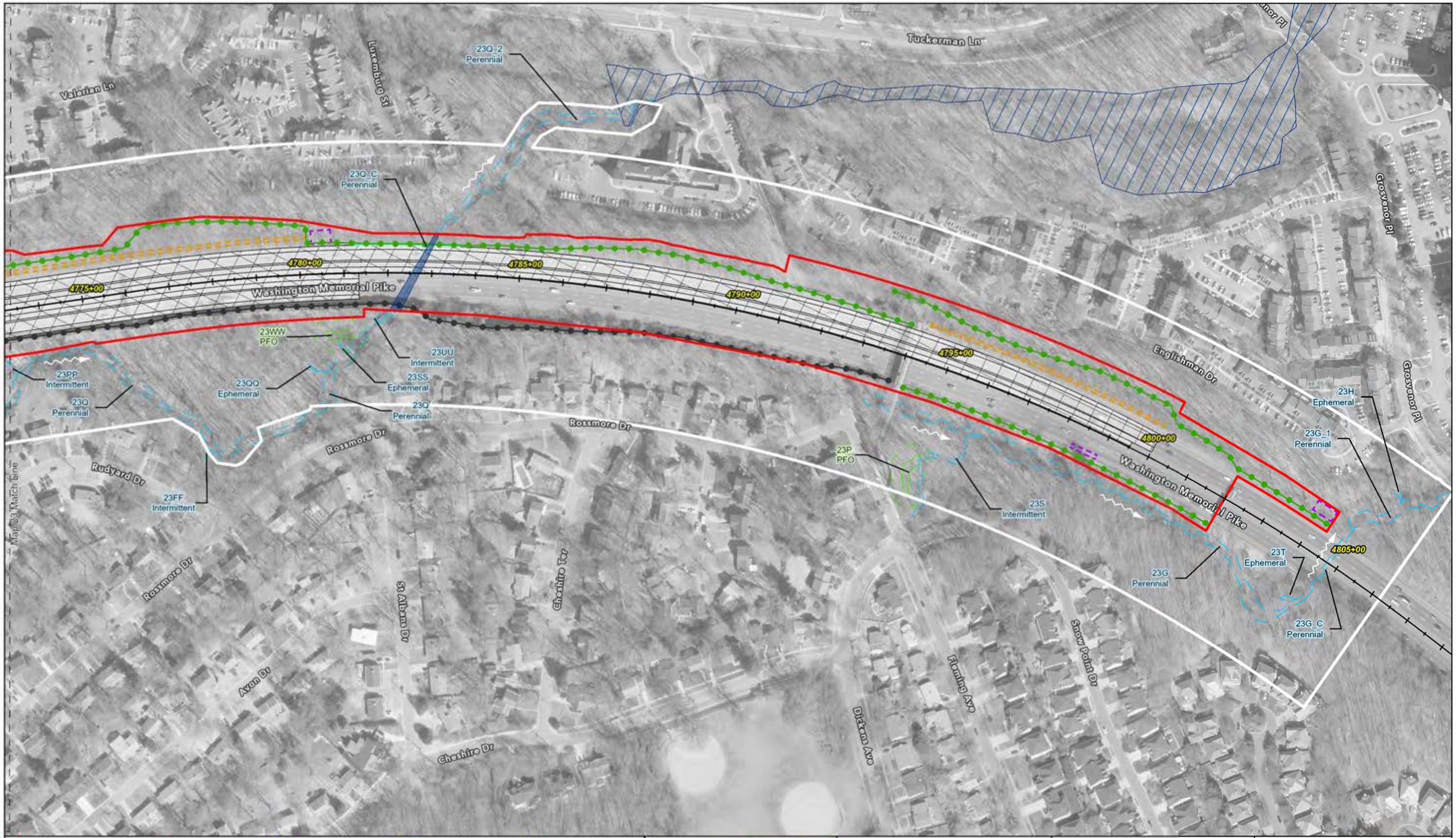


Maryland
Wetland and Waterway
Impact Plates
 Mainline Impact Plate 23

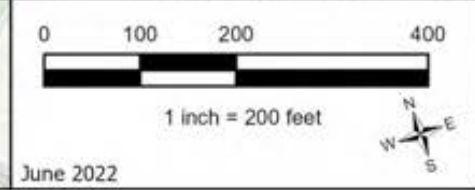


Map 24 Match Line

June 2022



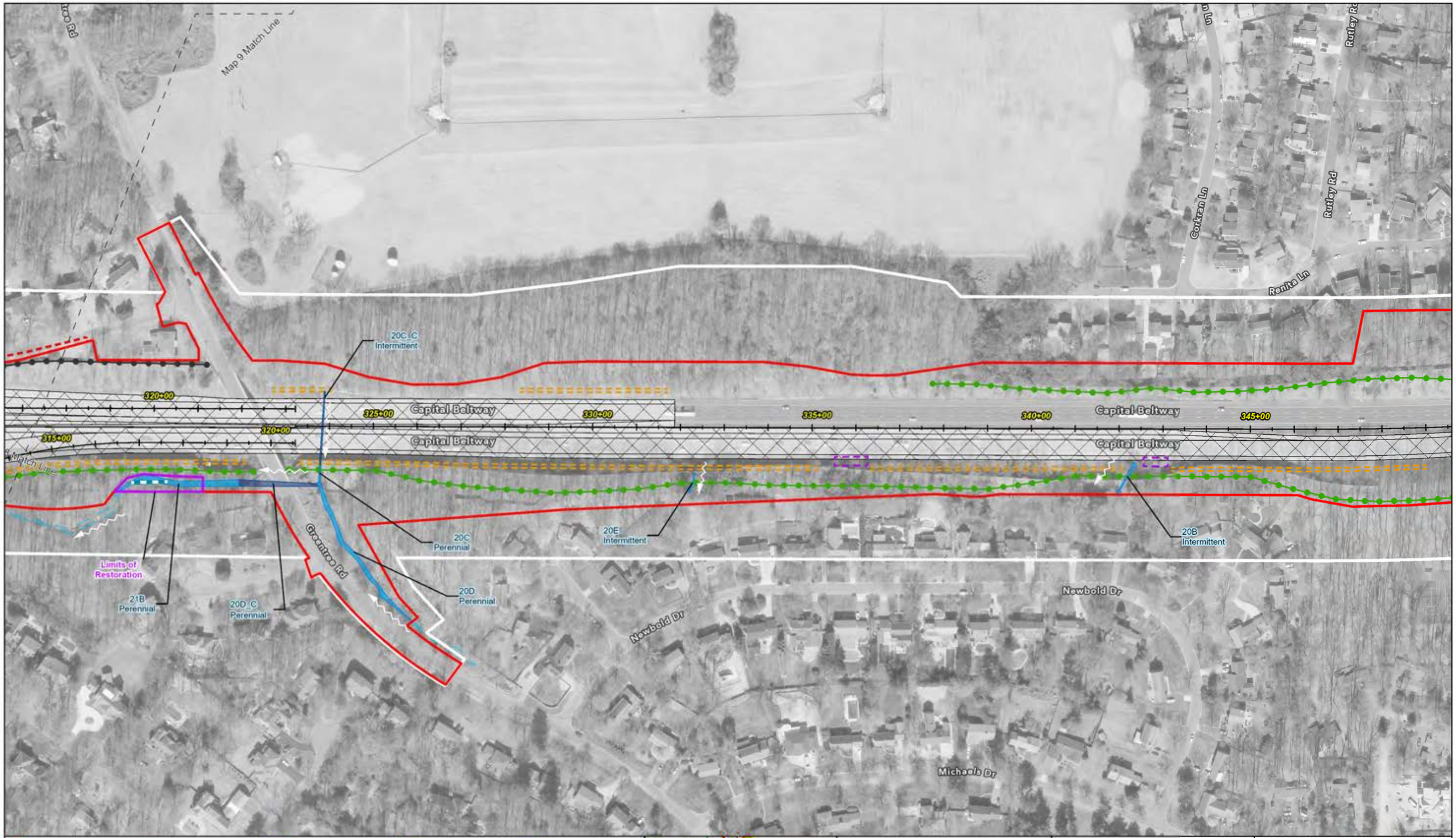
RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
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Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



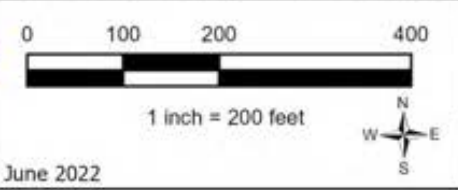
**Maryland
Wetland and Waterway
Impact Plates**

Mainline Impact Plate 24





RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



**Maryland
Wetland and Waterway
Impact Plates**

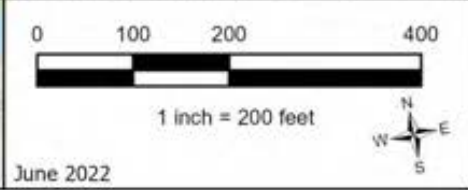
Mainline Impact Plate 25





LOD is limited to existing pavement and thus Dead Run will not be impacted.

RPA Limit of Disturbance Temp	Proposed Retaining Wall	Bridge	Waterway Impact Perm	Wetland Buffer Impact Perm
RPA Limit of Disturbance Perm	New/Augmented Pipe/Culvert	Limit Of Improved SWM / Storage	Waterway Impact Temp	Wetland Buffer Impact Temp
Delineation Limits	Relocated Channel	Limit Of Restoration	Culvert Impact Perm	Stream No Impact
Proposed Pavement	Proposed SWM - Pond	Limit Of Stabilization	Culvert Impact Temp	Wetland No Impact
Noise Wall Proposed	Proposed SWM - Swale	Shared Use Path	Wetland Impact Perm	Wetland Buffer No Impact
Noise Wall Existing	Proposed SWM - Vault	Flow Direction	Wetland Impact Temp	FEMA 100-Year Floodplain



**Virginia
Wetland and Waterway
Impact Plates**
Mainline Impact Plate 26



MDE IMPACT SUMMARY TABLES



OP-LANES™
M A R Y L A N D

I-495 & I-270 Managed Lanes Study

June 2022

MDE IMPACT TABLES

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MDE IMPACT TABLES

IMPACT ID DESIGNATION KEY

FEATURE NAMING CONVENTION ¹	DESCRIPTION
IMPACT ID_ 1 ²	Used to designate separate segments of a waterway feature to characterize differences such as channel type, classification, watershed, or geography.
IMPACT ID_ C	Used to designate a culvert channel type, usually flowing between two segments of a waterway feature that have different channel types. Some features may have a “culvert” channel type without the “_C” designation if they do not have multiple segments.
IMPACT ID_ D	Used to designate a ditch channel type. Some features may have a “ditch” channel type without the “_D” designation if they do not have multiple segments.
IMPACT ID_ B	Used to designate features that are bridged. All features that are underneath bridges are given this designation.
IMPACT ID_ C1	Used to designate more than one culverted, bridged, or ditched section of a feature.

¹ Impact IDs are not limited to one naming convention. An impacted feature may have multiple designations (e.g. 11M, 11M_1, 11M_B).

² Impact IDs with “_1” are not limited to one number. An impacted feature may have multiple segments (e.g. 21C_1, 21C_2).

MDE IMPACT TABLES

SUMMARY OF IMPACTS TO WATERWAYS BY HUC 8 WATERSHED

WATERSHED	WATERWAYS (SF)			WATERWAYS (LF)		
	Intermittent	Perennial	Total	Intermittent	Perennial	Total
02070008	87,456	848,410	935,866	11,660	28,029	39,689
Permanent	79,494	533,725	613,219	10,476	26,913	37,389
Temporary	7,962	314,685	322,647	1,184	1,116	2,300
02070010	635	3,246	3,881	204	203	407
Permanent	635	3,246	3,881	204	203	407
Total	88,091	851,656	939,747	11,864	28,232	40,096

SUMMARY OF IMPACTS TO WETLANDS BY HUC 8 WATERSHED

IMPACT TYPE	WETLANDS (SF)				WETLANDS (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
Permanent	115,107	37,346	481	152,934	2.64	0.86	0.01	3.51
Temporary	11,454	9,666	0	21,120	0.26	0.22	0.00	0.48
Total	126,561	47,012	481	174,054	2.91	1.08	0.01	4.00

NOTE: All wetlands and their buffers are located in the Middle Potomac-Catoctin (HUC8 02070008) watershed.

SUMMARY OF IMPACTS TO WETLAND BUFFERS BY HUC 8 WATERSHED

IMPACT TYPE	WETLAND BUFFER (SF)				WETLAND BUFFER (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
Permanent	146,183	121,535	4,841	272,559	3.36	2.79	0.11	6.26
Temporary	14,479	3,455	0	17,934	0.33	0.08	0.00	0.41
Total	160,662	124,990	4,841	290,493	3.69	2.87	0.11	6.67

NOTE: All wetlands and their buffers are located in the Middle Potomac-Catoctin (HUC8 02070008) watershed.

MDE IMPACT TABLES

SUMMARY OF IMPACTS TO WATERWAYS BY MDE 8-DIGIT WATERSHED

WATERSHED	WATERWAYS (SF)			WATERWAYS (LF)		
	Intermittent	Perennial	Total	Intermittent	Perennial	Total
02140202	48,736	413,580	462,316	5,310	4,748	10,058
Permanent	40,852	101,980	142,832	4,136	3,714	7,850
Temporary	7,884	311,600	319,484	1,174	1,034	2,208
02140206	635	3,246	3,881	204	203	407
Permanent	635	3,246	3,881	204	203	407
02140207	38,720	434,830	473,550	6,350	23,281	29,631
Permanent	38,642	431,745	470,387	6,340	23,199	29,539
Temporary	78	3,085	3,163	10	82	92
Total	88,091	851,656	939,747	11,864	28,232	40,096

SUMMARY OF IMPACTS TO WETLANDS BY MDE 8-DIGIT WATERSHED

WATERSHED	WETLANDS (SF)				WETLANDS (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
02140202	82,552	33,710	481	116,743	1.90	0.77	0.01	2.68
Permanent	71,455	24,044	481	95,980	1.64	0.55	0.01	2.20
Temporary	11,097	9,666	0	20,763	0.25	0.22	0.00	0.48
02140207	44,009	13,302	0	57,311	1.01	0.31	0.00	1.32
Permanent	43,652	13,302	0	56,954	1.00	0.31	0.00	1.31
Temporary	357	0	0	357	0.01	0.00	0.00	0.01
Total	126,561	47,012	481	174,054	2.91	1.08	0.01	4.00

MDE IMPACT TABLES

SUMMARY OF IMPACTS TO WETLAND BUFFERS BY MDE 8-DIGIT WATERSHED

WATERSHED	WETLAND BUFFER (SF)				WETLAND BUFFER (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
02140202	62,980	67,537	4,841	135,358	1.45	1.55	0.11	3.11
Permanent	48,599	64,082	4,841	117,522	1.12	1.47	0.11	2.70
Temporary	14,381	3,455	0	17,836	0.33	0.08	0.00	0.41
02140207	97,682	57,453	0	155,135	2.24	1.32	0.00	3.56
Permanent	97,584	57,453	0	155,037	2.24	1.32	0.00	3.56
Temporary	98	0	0	98	0.00	0.00	0.00	0.00
Total	160,662	124,990	4,841	290,493	3.69	2.87	0.11	6.67

MDE IMPACT TABLES

SUMMARY OF IMPACTS TO 100-YEAR FLOODPLAINS

ASSOCIATED WATERWAY	RELATED FEATURES	FIRM PANEL	IMPACT PLATE	HUC 8 NAME	PERMANENT IMPACT (SF)	TEMPORARY IMPACT (SF)	TOTAL IMPACT (SF)	TOTAL IMPACT (AC)
Watts Branch 1	27A, 27A_C, 27D	24031C0333D, 51059C0075E	18	Middle Potomac-Catoctin	14,366	108	14,474	0.33
Watts Branch 2	27A_1, 27A_2, 27A_3, 27A_C1, 27A_C2, 26C_1	24031C0333D, 51059C0075E	17, 18	Middle Potomac-Catoctin	136,456	0	136,456	3.13
Thomas Branch 1	23A, 23A_C	24031C0345D, 51059C0075E	10	Middle Potomac-Catoctin	4,918	0	4,918	0.11
Thomas Branch 2	21C, 21C_1, 21C_2, 21C_C, 21C_C1, 23A_3	24031C0345D, 24031C0435D, 51059C0075E	6, 7, 8, 9	Middle Potomac-Catoctin	581,793	2,313	584,106	13.41
Cabin John Creek	22AA, 22AA_1, 22AA_2, 22AA_B, 22AA_B1, 22DD	24031C0435D, 51059C0160E	5, 6	Middle Potomac-Catoctin	30,058	3,386	33,444	0.77
Potomac River	22HH_2, 22M_C, 22MM, 22MM_B, 22NN, 22NN_B, 22P, 22QQ, 22UU	24031C0435D, 51059C0160E	2, 3	Middle Potomac-Catoctin	158,691	315,859	474,550	10.89
Unnamed tributary to Old Farm Creek	23N, 23N_C, 23U	24031C0342D, 51059C0075E	22	Middle Potomac-Catoctin	8,369	0	8,369	0.19
Booze Creek	22Z, 22Z_C	24031C0435D, 51059C0160E	5	Middle Potomac-Catoctin	42,362	0	42,362	0.97
Muddy Branch	29B, 29B_1, 29B_C, 29P	24031C0327D, 51059C0075E	21	Middle Potomac-Catoctin	67,903	0	67,903	1.56
Rock Run	22HH_2, 22M, 22N	24031C0435D, 51059C0160E	3	Middle Potomac-Catoctin	2,849	0	2,849	0.07
Unnamed tributary to Muddy Branch	29D_D	24031C0327D, 51059C0075E	21	Middle Potomac-Catoctin	3,460	0	3,460	0.08
Unnamed tributary to Watts Branch	26C_1, 26C_C, 26C_C1	24031C0333D, 51059C0075E	17	Middle Potomac-Catoctin	0	1,591	1,591	0.04
TOTAL					1,051,225	323,257	1,374,482	31.55

NOTE: Floodplain impacts are not shown in their entirety on the impact plates

MDE IMPACT TABLES

PLATE 2 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
22MM	Perennial	Open Channel	14,142	167	Permanent
22MM	Perennial	Open Channel	243,446	855	Temporary
22MM_B	Perennial	Bridge	11,563	0	Permanent
22MM_B	Perennial	Bridge	67,060	140	Temporary
22NN	Intermittent	Open Channel	3,474	276	Temporary
22NN_B	Intermittent	Bridge	10	8	Permanent
22NN_B	Intermittent	Bridge	1,589	159	Temporary
22QQ	Intermittent	Open Channel	469	106	Temporary

PLATE 2 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
2200	PFO	2,471	5,706	Permanent
2200	PFO	9,666	3,455	Temporary

PLATE 2 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Potomac River	73,160	Permanent
Potomac River	198,809	Temporary

MDE IMPACT TABLES

PLATE 3 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
22HH	Intermittent	Ditch	1,157	230	Permanent
22HH_1	Intermittent	Ditch	925	154	Permanent
22HH_2	Intermittent	Open Channel	608	117	Permanent
22HH_C	Intermittent	Culvert	422	47	Permanent
22HH_C	Intermittent	Culvert	590	67	Temporary
22M_C	Perennial	Culvert	1,094	39	Temporary
22P	Intermittent	Open Channel	26	10	Permanent
22Q	Perennial	Open Channel	1,112	136	Permanent
22Q_C	Perennial	Culvert	1,263	223	Permanent
22T	Intermittent	Open Channel	127	9	Permanent
22T_1	Intermittent	Open Channel	261	35	Permanent
22T_2	Intermittent	Open Channel	497	92	Permanent
22T_B	Intermittent	Bridge	1,803	153	Permanent
22T_B1	Intermittent	Bridge	194	28	Permanent
22V	Intermittent	Ditch	190	76	Temporary
22V_1	Intermittent	Ditch	2	1	Permanent
22V_1	Intermittent	Ditch	91	40	Temporary
22V_2	Intermittent	Ditch	1,083	255	Temporary
22V_B	Intermittent	Bridge	331	168	Temporary
22V_B1	Intermittent	Bridge	2	2	Permanent
22V_B1	Intermittent	Bridge	67	27	Temporary

MDE IMPACT TABLES

PLATE 3 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
22K	PEM	0	44	Temporary
22O	PFO	0	1,512	Permanent
22PP	PFO	643	5,433	Permanent
22U	PFO	1,007	7,449	Permanent
22W	PEM	4,099	5,469	Permanent
22W	PEM	11,023	13,378	Temporary
22X	PFO	1,120	6,040	Permanent
22Y	PEM	1,791	9,133	Permanent

PLATE 3 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Potomac River	117,050	Temporary
Potomac River	85,531	Permanent
Rock Run	2,849	Permanent

PLATE 4 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
22E	PEM	237	4,256	Permanent

MDE IMPACT TABLES

PLATE 5 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
22AA_1	Perennial	Open Channel	1,439	24	Permanent
22AA_1	Perennial	Open Channel	2,912	53	Temporary
22AA_2	Perennial	Open Channel	5,477	99	Permanent
22AA_3	Perennial	Open Channel	10,295	332	Permanent
22AA_B	Perennial	Bridge	3,245	42	Permanent
22AA_B1	Perennial	Bridge	8,112	201	Permanent
22DD	Intermittent	Open Channel	945	167	Permanent
22H	Intermittent	Ditch	170	78	Permanent
22H_1	Intermittent	Open Channel	51	10	Permanent
22H_C	Intermittent	Culvert	760	95	Permanent
22KK	Perennial	Open Channel	556	58	Permanent
22Z	Perennial	Open Channel	3,177	75	Permanent
22Z_1	Perennial	Open Channel	2,210	81	Permanent
22Z_C	Perennial	Culvert	3,601	99	Permanent

PLATE 5 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
22F	PEM	928	10,820	Permanent
22G	PFO	850	8,444	Permanent
22GG	PEM	804	4,339	Permanent

PLATE 5 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Booze Creek	42,362	Permanent
Cabin John Creek	1,773	Temporary
Cabin John Creek	22,689	Permanent

MDE IMPACT TABLES

PLATE 6 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
21C_1	Perennial	Open Channel	15,733	645	Permanent
21C_2	Perennial	Open Channel	30,835	1,233	Permanent
21C_C1	Perennial	Culvert	4,836	321	Permanent
21C_C2	Perennial	Culvert	3,824	328	Permanent
21D	Intermittent	Ditch	105	106	Permanent
21D_1	Intermittent	Ditch	1,952	291	Permanent
21D_C	Intermittent	Culvert	1,035	316	Permanent
21D_C1	Intermittent	Culvert	798	119	Permanent
21F	Intermittent	Open Channel	1,054	228	Permanent
21F_C	Intermittent	Culvert	1,837	258	Permanent
21G	Intermittent	Ditch	128	54	Permanent
22A	Intermittent	Ditch	724	269	Permanent
22A_C	Intermittent	Culvert	439	152	Permanent
22AA	Perennial	Open Channel	3,545	181	Permanent
22AA	Perennial	Open Channel	1	1	Temporary
22B	Intermittent	Ditch	99	36	Permanent
22C	Intermittent	Ditch	146	51	Permanent
22C_C	Intermittent	Culvert	203	91	Permanent
22D	Intermittent	Ditch	305	144	Permanent

PLATE 6 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Cabin John Creek	1,613	Temporary
Cabin John Creek	7,369	Permanent
Thomas Branch 2	79,181	Permanent

MDE IMPACT TABLES

PLATE 7 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
21C	Perennial	Open Channel	39,681	1,702	Permanent
21C_1	Perennial	Open Channel	38,400	1,487	Permanent
21C_C	Perennial	Culvert	3,633	252	Permanent
21L_C	Perennial	Culvert	1,743	270	Permanent
21L_D	Perennial	Ditch	298	40	Permanent
21L_D1	Perennial	Ditch	83	20	Permanent
21M	Intermittent	Ditch	57	25	Permanent

PLATE 7 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
21P	PFO	709	3,844	Permanent
21Q	PFO	0	2,342	Permanent
21T	PFO	1,054	3,935	Permanent

PLATE 7 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Thomas Branch 2	298,330	Permanent
Thomas Branch 2	1,974	Temporary

MDE IMPACT TABLES

PLATE 8 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
21B	Perennial	Open Channel	15,123	1,547	Permanent
21B_C	Perennial	Culvert	2,746	261	Permanent
21C	Perennial	Open Channel	67,012	3,286	Permanent
21J	Perennial	Ditch	243	13	Permanent
21K	Intermittent	Open Channel	28	5	Permanent
21U	Perennial	Open Channel	2,082	143	Permanent
21V	Intermittent	Open Channel	827	115	Permanent
21V	Intermittent	Open Channel	78	10	Temporary

PLATE 8 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Thomas Branch 2	111,623	Permanent
Thomas Branch 2	340	Temporary

MDE IMPACT TABLES

PLATE 9 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
21C	Perennial	Open Channel	10,501	551	Permanent
21I	Perennial	Open Channel	22	6	Permanent
23A_2	Perennial	Open Channel	2,301	200	Permanent
23A_3	Perennial	Open Channel	21,607	1,460	Permanent
23A_C1	Perennial	Culvert	1,619	147	Permanent
23A_C2	Perennial	Culvert	2,977	236	Permanent
23AA	Perennial	Open Channel	551	104	Permanent
23AA_1	Perennial	Open Channel	1,332	257	Permanent
23AA_C	Perennial	Culvert	453	101	Permanent
23AA_C1	Perennial	Culvert	675	220	Permanent
23D	Intermittent	Ditch	7,793	775	Permanent
23D_C	Intermittent	Culvert	2,456	255	Permanent

PLATE 9 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
23BB	PEM	1,406	10,320	Permanent
23L	PEM	253	3,661	Permanent
23MM	PFO	2,932	4,520	Permanent

PLATE 9 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Thomas Branch 2	92,659	Permanent

MDE IMPACT TABLES

PLATE 10 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
23A	Perennial	Open Channel	732	44	Permanent
23A_1	Perennial	Open Channel	7,762	454	Permanent
23A_C	Perennial	Culvert	4,185	216	Permanent
23A_C1	Perennial	Culvert	4,001	260	Permanent
23V	Intermittent	Ditch	117	51	Permanent
23V_C	Intermittent	Culvert	2,245	777	Permanent

PLATE 10 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
23CC	PFO	2,985	7,657	Permanent
23W	PEM	3,981	6,751	Permanent
23W	PEM	357	44	Temporary

PLATE 10 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Thomas Branch 1	4,918	Permanent

MDE IMPACT TABLES

PLATE 11 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
23DD	Intermittent	Open Channel	641	98	Permanent
23K	Perennial	Open Channel	766	89	Permanent
23K_1	Perennial	Open Channel	598	102	Permanent
23K_C	Perennial	Culvert	1,711	178	Permanent
23K_C1	Perennial	Culvert	505	64	Permanent
23K_C1	Perennial	Culvert	122	20	Temporary
23K_D	Perennial	Ditch	5,035	691	Permanent
23K_D	Perennial	Ditch	50	8	Temporary
24A	Perennial	Open Channel	4,008	138	Permanent
24A_1	Perennial	Open Channel	6,789	224	Permanent
24A_C	Perennial	Culvert	6,427	320	Permanent

PLATE 11 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
23F	PEM	365	3,677	Permanent
23GG	PFO	1,389	8,384	Permanent
23X	PEM	1,039	8,732	Permanent
24W	PEM	0	264	Permanent
24X	PEM	91	1,855	Permanent

MDE IMPACT TABLES

PLATE 12 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
24C	Intermittent	Open Channel	600	44	Permanent

PLATE 13 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
24D	Perennial	Open Channel	8,048	697	Permanent
24F_2	Perennial	Open Channel	3,902	135	Permanent
24F_3	Perennial	Open Channel	2,276	134	Permanent
24F_C2	Perennial	Culvert	7,102	390	Permanent
24K	Intermittent	Open Channel	449	67	Permanent
24V	Intermittent	Open Channel	292	52	Permanent
24V_C	Intermittent	Culvert	2,544	425	Permanent

PLATE 13 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
24N	PFO	917	6,399	Permanent
24Q	PFO	1,744	5,471	Permanent

MDE IMPACT TABLES

PLATE 14 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
24F_C1	Perennial	Culvert	3,688	191	Permanent

PLATE 14 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
24R	PFO	0	2,240	Permanent

PLATE 15 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
25M	PEM	0	81	Permanent
25M	PEM	0	54	Temporary

MDE IMPACT TABLES

PLATE 16 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
25E	Perennial	Open Channel	27,438	360	Permanent
25H	Perennial	Open Channel	1,589	220	Permanent
25H_1	Perennial	Open Channel	10,254	336	Permanent
25H_C	Perennial	Culvert	2,682	420	Permanent
25N	Intermittent	Open Channel	350	72	Permanent

PLATE 16 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
25D	PFO	637	3,032	Permanent
25K	PEM	34,215	45,608	Permanent
25P	PFO	85	1,185	Permanent
26H	PEM	10	1,374	Permanent

MDE IMPACT TABLES

PLATE 17 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
26B	Intermittent	Open Channel	5,791	432	Permanent
26B_1	Intermittent	Open Channel	315	22	Permanent
26B_C	Intermittent	Culvert	6,809	306	Permanent
26B_C1	Intermittent	Culvert	489	47	Permanent
26C	Intermittent	Open Channel	2,814	373	Permanent
26C_1	Intermittent	Open Channel	388	30	Permanent
26C_C	Intermittent	Culvert	4,317	360	Permanent
26C_C1	Intermittent	Culvert	376	22	Permanent
26J	Intermittent	Open Channel	191	31	Permanent
26K	Intermittent	Open Channel	3,920	328	Permanent
26L	Intermittent	Open Channel	69	11	Permanent

PLATE 17 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
26A	PFO	12,406	22,370	Permanent
26D	PEM	817	4,096	Permanent
26E	PEM	356	3,543	Permanent
26E	PEM	74	959	Temporary
26F	PEM	63,439	18,032	Permanent

PLATE 17 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Unnamed tributary to Watts Branch	1,591	Temporary
Watts Branch 2	5,396	Permanent

MDE IMPACT TABLES

PLATE 18 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
27A	Perennial	Open Channel	4,702	141	Permanent
27A_1	Perennial	Open Channel	15,652	648	Permanent
27A_2	Perennial	Open Channel	2,914	89	Permanent
27A_3	Perennial	Open Channel	3,463	131	Permanent
27A_C	Perennial	Culvert	10,081	325	Permanent
27A_C1	Perennial	Culvert	4,089	152	Permanent
27A_C2	Perennial	Culvert	2,472	85	Permanent
27B	Intermittent	Open Channel	352	46	Permanent
27D	Intermittent	Open Channel	1,468	162	Permanent
27H	Intermittent	Open Channel	207	35	Permanent
27N	Intermittent	Open Channel	98	19	Permanent
27P	Perennial	Open Channel	529	39	Permanent

PLATE 18 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
27E	PFO	0	2,108	Permanent
27F	PFO	535	3,562	Permanent
27G	PSS	481	4,841	Permanent
27Q	PEM	706	2,656	Permanent
27S	PEM	0	40	Permanent

PLATE 18 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Watts Branch 1	14,366	Permanent
Watts Branch 1	108	Temporary
Watts Branch 2	131,060	Permanent

MDE IMPACT TABLES

PLATE 19 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
27L	Intermittent	Open Channel	101	19	Permanent
27L_C	Intermittent	Culvert	1,632	405	Permanent

PLATE 19 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
27M	PFO	5,862	9,902	Permanent

PLATE 20 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
28B	Intermittent	Ditch	3,222	354	Permanent
29A	Perennial	Open Channel	2,956	169	Permanent
29A_1	Perennial	Open Channel	280	26	Permanent
29A_C	Perennial	Culvert	1,065	48	Permanent
29A_C1	Perennial	Culvert	3,346	224	Permanent
29A_C2	Perennial	Culvert	10,314	461	Permanent
29K	Intermittent	Open Channel	896	129	Permanent

MDE IMPACT TABLES

PLATE 21 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
29A_2	Perennial	Open Channel	5,233	280	Permanent
29A_C2	Perennial	Culvert	101	4	Permanent
29B_C	Perennial	Culvert	6,703	366	Permanent
29D_D	Intermittent	Ditch	1,363	119	Permanent

PLATE 21 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Muddy Branch	67,903	Permanent
Unnamed tributary to Muddy Branch	3,460	Permanent

MDE IMPACT TABLES

PLATE 22 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
23N	Intermittent	Open Channel	2,095	199	Permanent
23N_1	Perennial	Open Channel	2,225	184	Permanent
23N_C	Intermittent	Culvert	6,176	583	Permanent
23N_D	Intermittent	Ditch	275	33	Permanent
23U	Perennial	Ditch	184	31	Permanent
23U_1	Perennial	Open Channel	77	18	Permanent
23U_C	Perennial	Culvert	1,225	317	Permanent
23U_C1	Perennial	Culvert	274	68	Permanent

PLATE 22 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
23LL	PEM	570	1,476	Permanent

PLATE 22 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Unnamed tributary to Old Farm Creek	6,292	Permanent
Unnamed tributary to Old Farm Creek	2,077	Permanent

MDE IMPACT TABLES

PLATE 23 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
23R_C	Intermittent	Culvert	635	204	Permanent

PLATE 24 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
23Q_C	Perennial	Culvert	3,246	203	Permanent

PLATE 25 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
20B	Intermittent	Open Channel	351	83	Permanent
20C	Perennial	Ditch	112	37	Permanent
20C_C	Intermittent	Culvert	455	169	Permanent
20D	Perennial	Open Channel	3,027	390	Permanent
20D_C	Perennial	Culvert	1,895	180	Permanent
20E	Intermittent	Open Channel	140	47	Permanent
21B	Perennial	Open Channel	3,261	289	Permanent

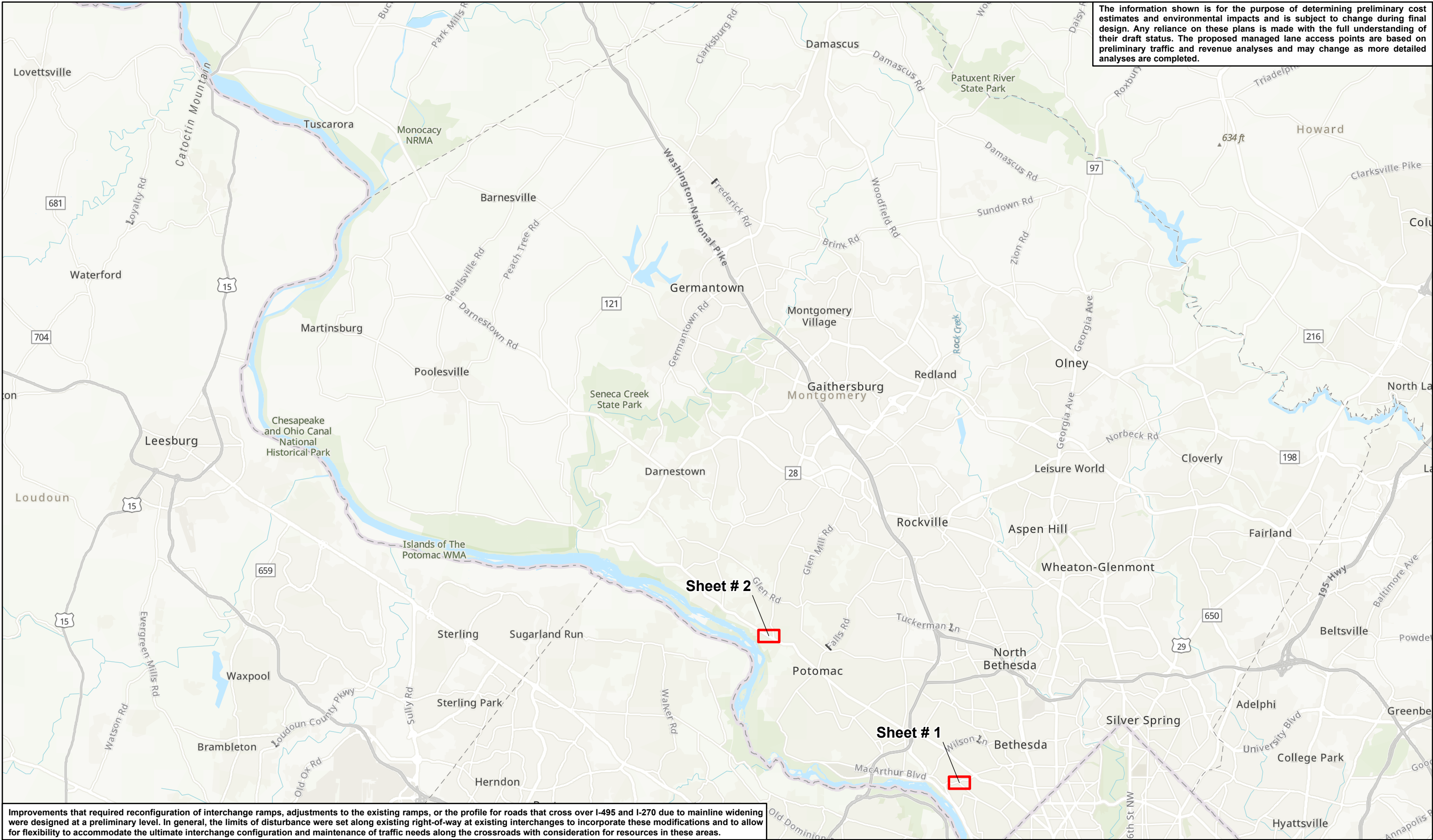
Compensatory Stormwater Management Wetland and Waterway Impact Plates



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M A R Y L A N D

I-495 & I-270 Managed Lanes Study

The information shown is for the purpose of determining preliminary cost estimates and environmental impacts and is subject to change during final design. Any reliance on these plans is made with the full understanding of their draft status. The proposed managed lane access points are based on preliminary traffic and revenue analyses and may change as more detailed analyses are completed.

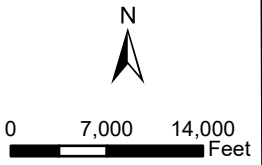


Improvements that required reconfiguration of interchange ramps, adjustments to the existing ramps, or the profile for roads that cross over I-495 and I-270 due to mainline widening were designed at a preliminary level. In general, the limits of disturbance were set along existing right-of-way at existing interchanges to incorporate these modifications and to allow for flexibility to accommodate the ultimate interchange configuration and maintenance of traffic needs along the crossroads with consideration for resources in these areas.

 Plate Number

May 2022

**Key
Map**



**Wetland and Waterway
Impact Plates
Compensatory SWM**

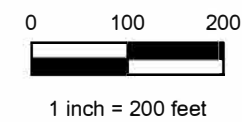
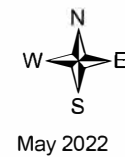




Limit of Disturbance - SWM Site
 Delineation Limits - SWM Site

 Waterway Impact	 Waterway - No Impact
 Culvert Impact	 Culvert - No Impact
 Wetland Impact	 Wetland - No Impact
 Wetland Buffer Impact	 Wetland Buffer - No Impact

FEMA 100-Year Floodplain













Wetland and Waterway Impact Plates


Compensatory SWM Impact Plate 1




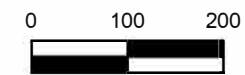


 Limit of Disturbance - SWM Site
 Delineation Limits - SWM Site

 Waterway Impact	 Waterway - No Impact
 Culvert Impact	 Culvert - No Impact
 Wetland Impact	 Wetland - No Impact
 Wetland Buffer Impact	 Wetland Buffer - No Impact

 FEMA 100-Year Floodplain


 May 2022


 1 inch = 200 feet

Wetland and Waterway Impact Plates

Compensatory SWM Impact Plate 2



COMPENSATORY SWM MDE IMPACT SUMMARY TABLES



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I-495 & I-270 Managed Lanes Study

May 2022

MDE IMPACT TABLES

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MDE IMPACT TABLES

SUMMARY OF IMPACTS TO WATERWAYS BY HUC-8 WATERSHED

IMPACT TYPE	WATERWAYS (SF)				WATERWAYS (LF)			
	Ephemeral	Intermittent	Perennial	Total	Ephemeral	Intermittent	Perennial	Total
Permanent	0	79	1,676	1,755	0	29	156	185
Total	0	79	1,676	1,755	0	29	156	185

Note: All waterway impacts are within the Middle Potomac-Catoctin (02070008) HUC-8 Watershed.

SUMMARY OF IMPACTS TO 100-YEAR FLOODPLAIN BY HUC-8 WATERSHED

ASSOCIATED WATERWAY	RELATED FEATURES	FIRM PANEL	IMPACT PLATE	HUC 8 NAME	PERMANENT IMPACT (SF)	TEMPORARY IMPACT (SF)	TOTAL (SF)	TOTAL (AC)
Minnehana Branch	32L, 32M	24031C0435D	1	Middle Potomac-Catoctin (02070008)	3,458	0	3,458	0.08

MDE IMPACT TABLES

PLATE 1 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	SITE
32L	Perennial	Open Channel	1,173	95	WAS-3622
32M	Perennial	Open Channel	503	61	WAS-3622

PLATE 1 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Minnehana Branch	3,458	Permanent

PLATE 2 – WATERWAY IMPACTS

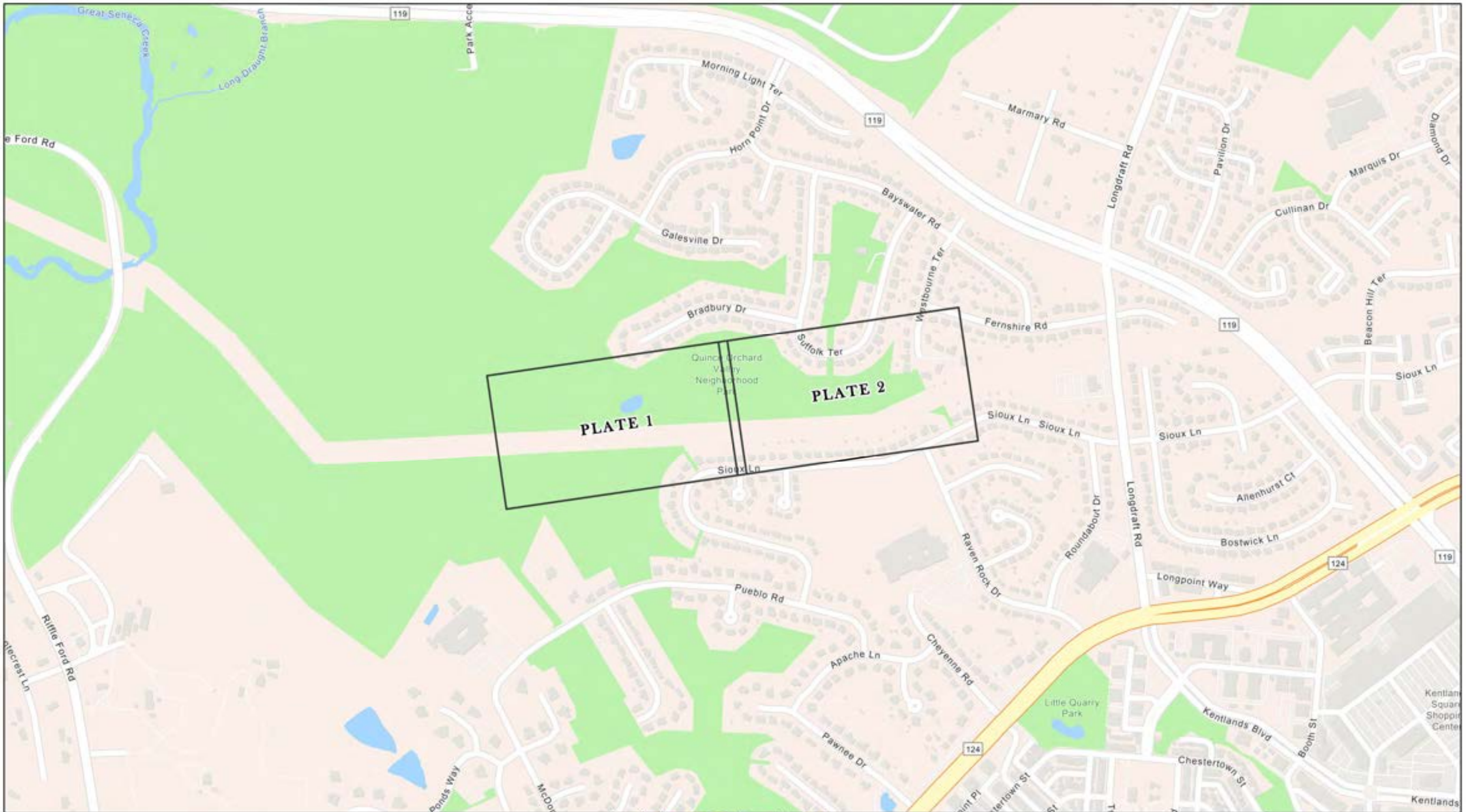
IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	SITE
31000	Intermittent	Open Channel	79	29	WAS-4641

404 Mitigation Wetland and Waterway Impact Plates and Tables



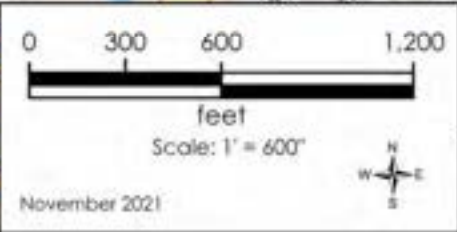
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Legend

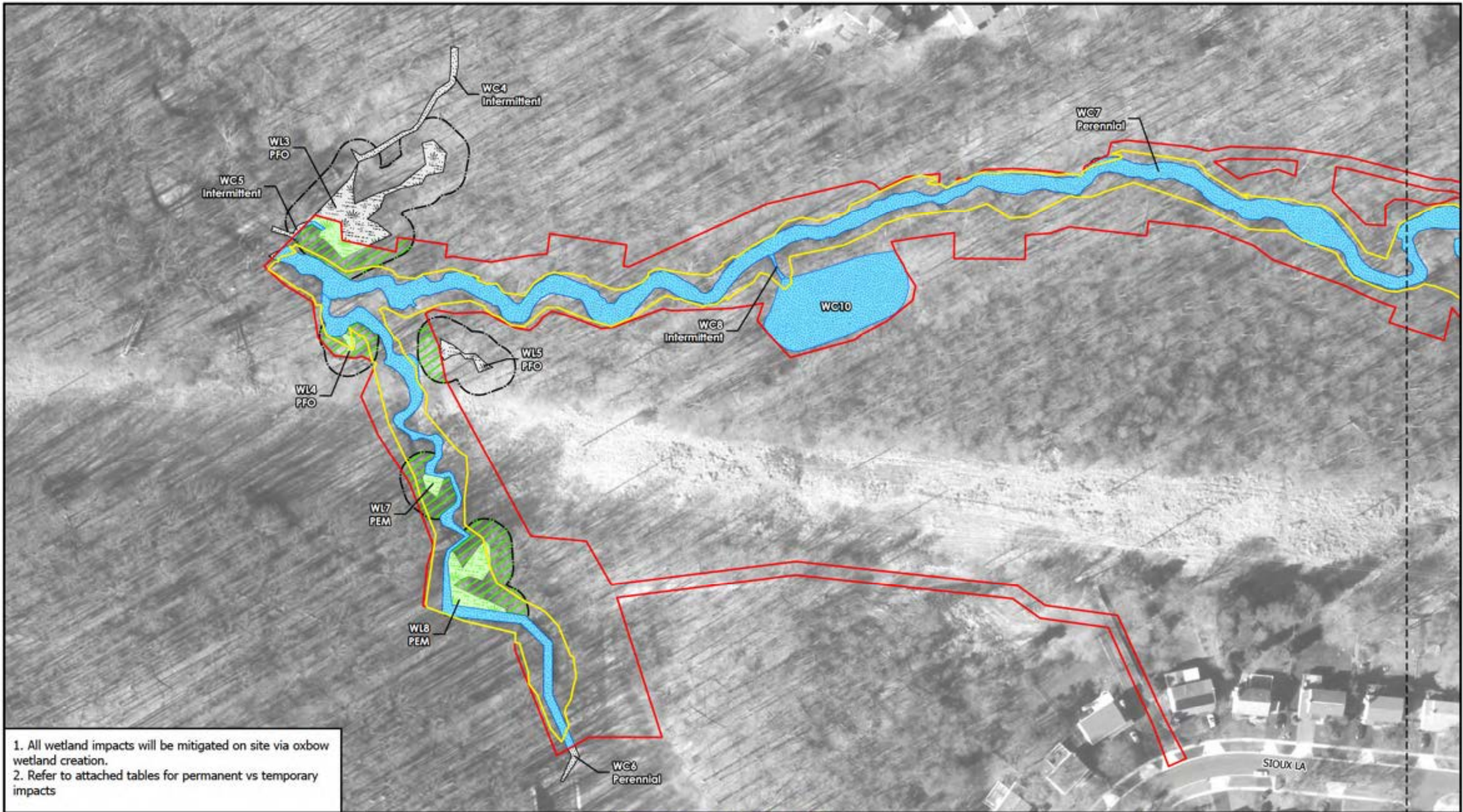
□ Impact Plate



**CA-5
Wetland and Waterway
Impact Plates**

Key Sheet

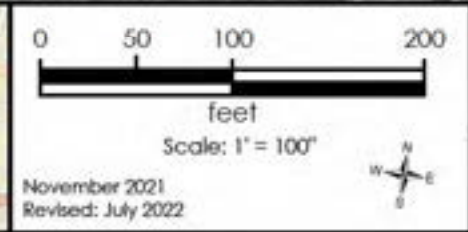
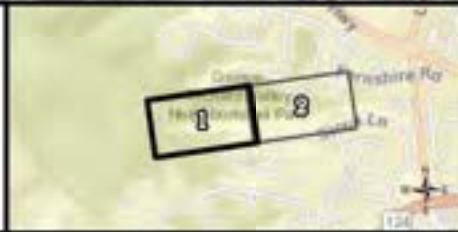




1. All wetland impacts will be mitigated on site via oxbow wetland creation.
 2. Refer to attached tables for permanent vs temporary impacts

Legend	
Limit of Disturbance	Wetland Buffer
Limit of Grading Area	Wetland, Outside LOD
Sheet Boundary	Water, Outside LOD

Impacts	
Waterway	
Wetland	
Buffer	



**CA-5
Wetland and Waterway
Impact Plates**

Page 1 of 2

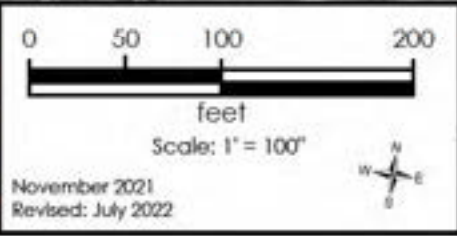
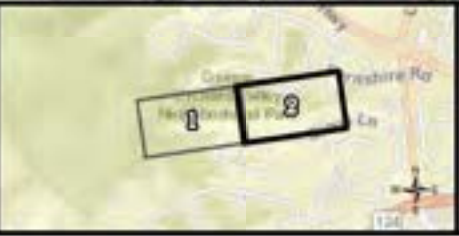




1. All wetland impacts will be mitigated on site via oxbow wetland creation.
 2. Refer to attached tables for permanent vs temporary impacts

Legend	
Limit of Disturbance	Welland Buffer
Limit of Grading Area	Welland, Outside LOD
Sheet Boundary	Water, Outside LOD

Impacts	
Waterway	
Welland	
Buffer	



**CA-5
 Wetland and Waterway
 Impact Plates**

Page 2 of 2



November 2021
 Revised: July 2022

UNNAMED TRIBUTARY TO GREAT SENICA CREEK (CA-5) MITIGATION SITE IMPACTS

Table E-1: MDE Waterway Impacts Summary

RESOURCE TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)
Perennial	3,605	65,994	0	0
Intermittent	322	2126	0	0
Total:	3,927	68,120	0	0

Table E-2: USACE Waterway Impacts Summary

RESOURCE TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)
Perennial	0	0	3,605	54,392
Intermittent	0	0	322	2,126
Open Water	0	0	0	11602
Ephemeral	0	0	0	0
Total:	0	0	3,927	68,120

Table E-3: MDE Wetland Impacts Summary

RESOURCE TYPE	TEMPORARY WETLAND IMPACT (SF)	TEMPORARY WETLAND BUFFER IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	PERMANENT WETLAND BUFFER IMPACT (SF)
PFO	3,515	14,029	0	0
PSS	0	0	0	0
PEM	2378	6689	0	0
Total:	5,893	20,718	0	0

All wetland impacts will be mitigated on site via oxbow wetland creation.

Table E-4: USACE Wetland Impacts Summary

RESOURCE TYPE	TEMPORARY WETLAND IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)
PFO	2,343	1,172
PSS	0	0
PEM	0	2378
Total:	2,343	3,550

All wetland impacts will be mitigated on site via oxbow wetland creation.

UNNAMED TRIBUTARY TO GREAT SENICA CREEK (CA-5) MITIGATION SITE IMPACTS

Table E-5: MDE Waterway Feature Impacts

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)	IMPACT TYPE
WC2	Perennial	Open Channel	47	327	0	0	Restoration
WC3	Intermittent	Open Channel	139	667	0	0	Restoration
WC5	Intermittent	Open Channel	21	112	0	0	Restoration
WC6	Perennial	Open Channel	759	7,369	0	0	Restoration
WC7	Perennial	Open Channel	2799	46,696	0	0	Restoration
WC8	Intermittent	Open Channel	30	95	0	0	Restoration
WC9	Intermittent	Open Channel	132	1,252	0	0	Restoration
WC10	Perennial	Waterway	0	11,602	0	0	Enhancement
Total:			3,927	68,120	0	0	

Table E-6: USACE Waterway Feature Impacts

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	TEMPORARY IMPACT (LF)	TEMPORARY IMPACT (SF)	PERMANENT IMPACT (LF)	PERMANENT IMPACT (SF)	IMPACT TYPE
WC2	Perennial	Open Channel	0	0	47	327	Restoration
WC3	Intermittent	Open Channel	0	0	139	667	Restoration
WC5	Intermittent	Open Channel	0	0	21	112	Restoration
WC6	Perennial	Open Channel	0	0	759	7,369	Restoration
WC7	Perennial	Open Channel	0	0	2799	46,696	Restoration
WC8	Intermittent	Open Channel	0	0	30	95	Restoration
WC9	Intermittent	Open Channel	0	0	132	1,252	Restoration
WC10	Open Water	Pond	0	0	0	11,602	Enhancement
Total:			0	0	3,927	68,120	

UNNAMED TRIBUTARY TO GREAT SENICA CREEK (CA-5) MITIGATION SITE IMPACTS

Table E-7: MDE Wetland Feature Impacts

IMPACT ID	CLASSIFICATION	TEMPORARY WETLAND IMPACT (SF)	TEMPORARY WETLAND BUFFER IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	PERMANENT WETLAND BUFFER IMPACT (SF)	IMPACT TYPE
WL1	PFO	0	85	0	0	Restoration
WL2	PFO	618	5,332	0	0	Restoration
WL3	PFO	1,042	2,953	0	0	Restoration
WL4	PFO	177	1,645	0	0	Restoration
WL5	PFO	0	1,338	0	0	Restoration
WL6	PFO	1,678	2,676	0	0	Restoration
WL7	PEM	349	2,183	0	0	Restoration
WL8	PEM	2,029	4,506	0	0	Restoration
Total:		5,893	20,718	0	0	

All wetland impacts will be mitigated on site via oxbow wetland creation.

Table E-8: USACE Wetland Feature Impacts

IMPACT ID	CLASSIFICATION	TEMPORARY WETLAND IMPACT (SF)	PERMANENT WETLAND IMPACT (SF)	IMPACT TYPE
WL1	PFO	0	0	Restoration
WL2	PFO	618	0	Restoration
WL3	PFO	1,042	0	Restoration
WL4	PFO	0	177	Restoration
WL5	PFO	0	0	Restoration
WL6	PFO	683	995	Restoration
WL7	PEM	0	349	Restoration
WL8	PEM	0	2,029	Restoration
Total:		2,343	3,550	

All wetland impacts will be mitigated on site via oxbow wetland creation.

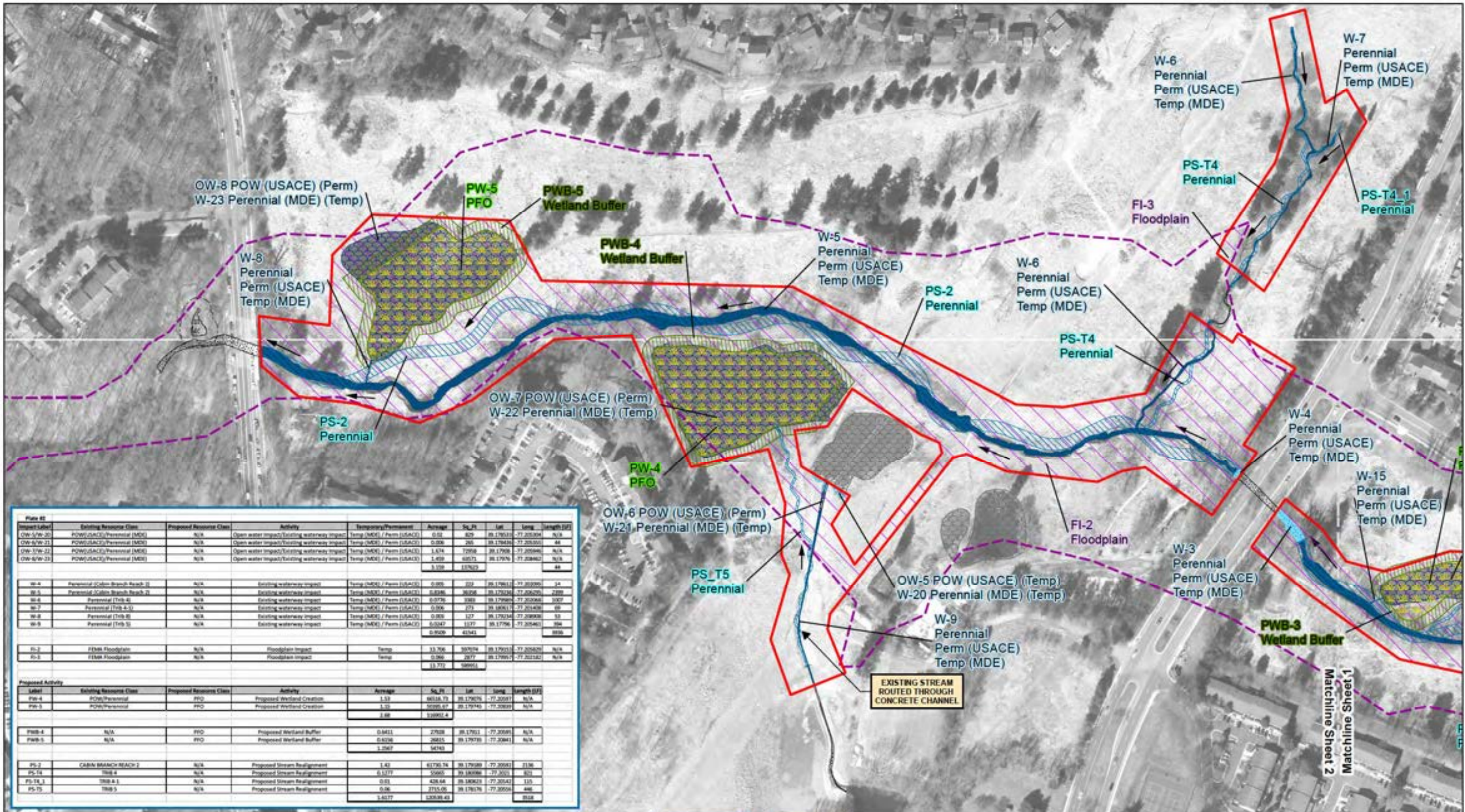


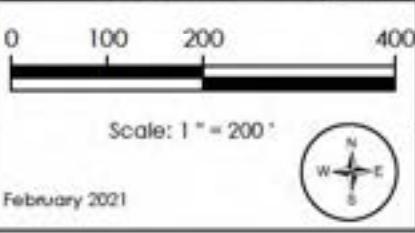
Plate #1	Impact Label	Existing Resource Class	Proposed Resource Class	Activity	Temporary/Permanent	Average	Ac. Ft.	Lat	Long	Length (ft)	
	OW-5/W-20	POW/USACE/Perennial (MDE)	N/A	Open water impact/Existing waterway impact	Temp (MDE) / Perm (USACE)	0.02	629	88.17613	-77.20304	N/A	
	OW-6/W-21	POW/USACE/Perennial (MDE)	N/A	Open water impact/Existing waterway impact	Temp (MDE) / Perm (USACE)	0.006	265	88.17638	-77.20300	44	
	OW-7/W-22	POW/USACE/Perennial (MDE)	N/A	Open water impact/Existing waterway impact	Temp (MDE) / Perm (USACE)	1.674	12958	88.17608	-77.20346	N/A	
	OW-8/W-23	POW/USACE/Perennial (MDE)	N/A	Open water impact/Existing waterway impact	Temp (MDE) / Perm (USACE)	1.459	60571	88.17576	-77.20840	N/A	
						3.139	13702			44	
	W-4	Perennial (Cabin Branch Reach 2)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.000	222	88.17611	-77.20290	14	
	W-5	Perennial (Cabin Branch Reach 2)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.026	3026	88.17638	-77.20270	2280	
	W-6	Perennial (Trb 4)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.076	1363	88.17568	-77.20266	1007	
	W-7	Perennial (Trb 4-1)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.006	273	88.18011	-77.20438	60	
	W-8	Perennial (Trb 6)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.000	127	88.17634	-77.20306	11	
	W-9	Perennial (Trb 3)	N/A	Existing waterway impact	Temp (MDE) / Perm (USACE)	0.047	1127	88.17796	-77.20540	384	
						0.160	4341			880	
	FI-2	F100 Floodplain	N/A	Floodplain impact	Temp	11.706	36704	88.17613	-77.20260	N/A	
	FI-3	F100 Floodplain	N/A	Floodplain impact	Temp	0.060	2077	88.17991	-77.20182	N/A	
						11.772	38781				
	Proposed Activity										
	Label	Existing Resource Class	Proposed Resource Class	Activity	Average	Ac. Ft.	Lat	Long	Length (ft)		
	PW-4	PFO/Perennial	PFO	Proposed Wetland Creation	1.33	46138.73	88.176276	-77.202811	N/A		
	PW-5	PFO/Perennial	PFO	Proposed Wetland Creation	1.33	52200.67	88.176740	-77.203039	N/A		
					2.66	108339.4					
	PWB-4	N/A	PFO	Proposed Wetland Buffer	0.6411	27028	88.17611	-77.20285	N/A		
	PWB-5	N/A	PFO	Proposed Wetland Buffer	0.6326	26815	88.176735	-77.20341	N/A		
					1.2737	53843					
	PS-2	CABIN BRANCH REACH 2	N/A	Proposed Stream Realignment	1.43	61761.74	88.17608	-77.20303	1136		
	PS-T4	Trb 4	N/A	Proposed Stream Realignment	0.1377	5660	88.18006	-77.2011	621		
	PS-T4_1	Trb 4-1	N/A	Proposed Stream Realignment	0.01	426.64	88.180623	-77.20142	135		
	PS-T5	Trb 5	N/A	Proposed Stream Realignment	0.06	2715.06	88.176176	-77.20204	446		
					1.6077	120838.43			8528		

LEGEND

- Limits of Disturbance
- Proposed Stream Realignment
- 100 Year Floodplain
- Proposed PFO Wetland
- Proposed PFO Wetland Buffer
- Existing Wetlands
- Existing Waterways
- Wetland Buffer
- Flow Direction

IMPACTS

- Waterway (Perm)
- Waterway (Temp)
- Waterway (Outside)
- Wetland Buffer (Temp)
- Wetland Enhancement
- Open Water (USACE) (Perm)
- Perennial (MDE) (Perm)
- Open Water (Temp)
- Floodplain

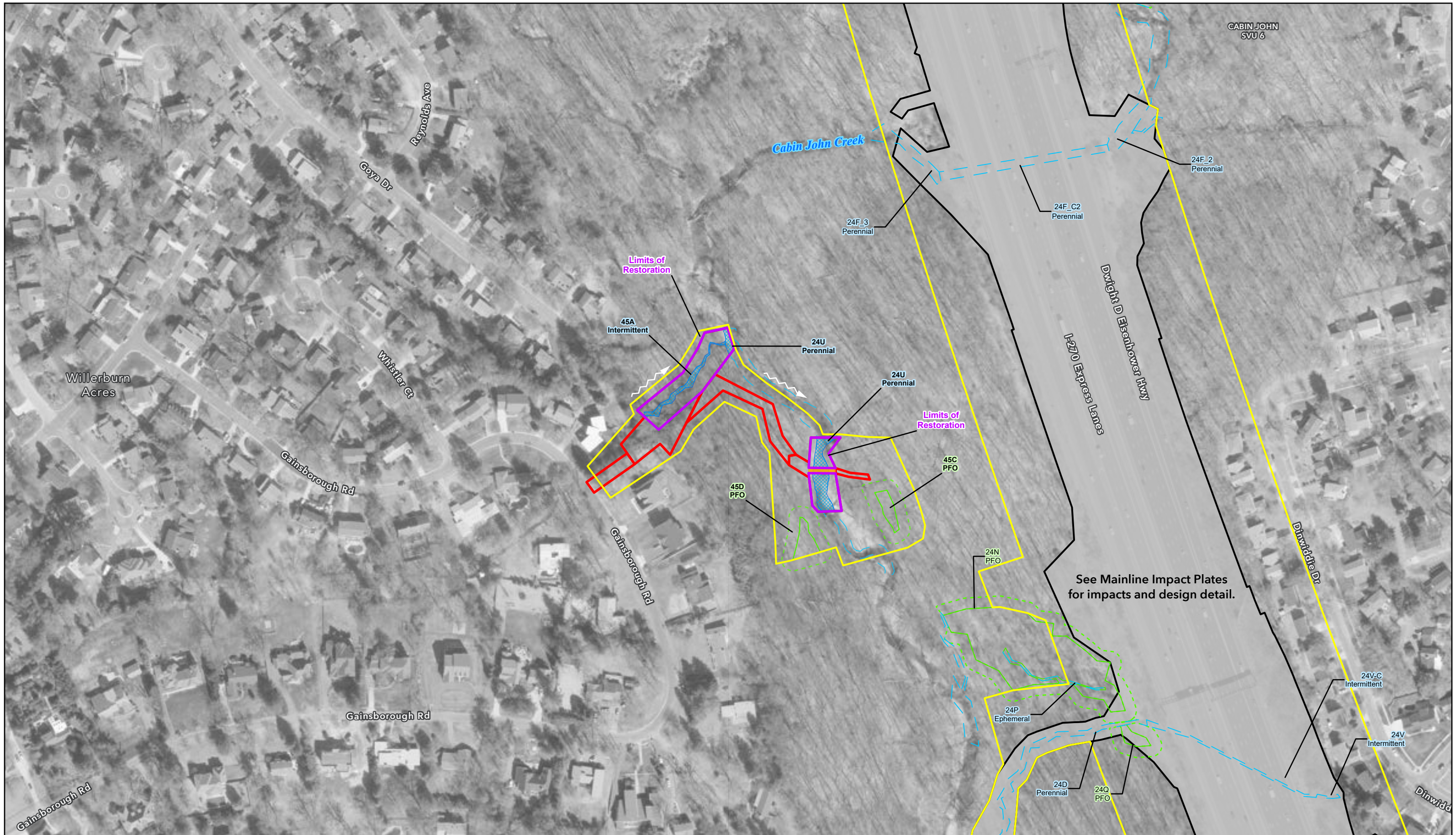


Wetland and Waterway Impact Plates

Plate 02 of 02

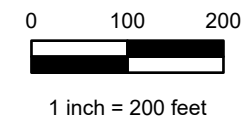


February 2021



- ▭ LOD - Park Mitigation
- ▭ Limit Of Restoration
- ▭ Limit Of Stabilization
- ▭ Aerial Structure
- ▭ Wetland Impact (Temp)
- ▭ Wetland Buffer Impact (Temp)
- ▭ Waterway Impact (Temp)
- ▭ FEMA Impact
- ▭ Delineated Wetland
- ▭ Delineated Wetland Buffer
- ▭ Delineated Waterway

NOTE: All impacts are considered Temporary.



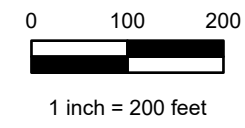
Wetland and Waterway Impact Plates
 Park Mitigation Impact Plate 1





- LOD - Park Mitigation
- Limit Of Restoration
- Limit Of Stabilization
- Corridor Study Boundary
- MLS Mainline
- Aerial Structure
- Wetland Impact (Temp)
- Wetland Buffer Impact (Temp)
- Delineated Wetland
- Delineated Wetland Buffer
- Delineated Waterway
- Waterway Impact (Temp)
- FEMA Impact
- FEMA Impact
- FEMA Impact

NOTE: All impacts are considered Temporary.



Wetland and Waterway Impact Plates

Park Mitigation Impact Plate 2





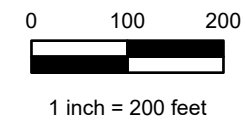
▭ LOD - Park Mitigation
▭ MLS Mainline
▭ Corridor Study Boundary

▭ Limit Of Restoration
▭ Limit Of Stabilization
▭ Aerial Structure

▨ Wetland Impact (Temp)
▨ Wetland Buffer Impact (Temp)
▨ Waterway Impact (Temp)
▨ FEMA Impact

▭ Delineated Wetland
▭ Delineated Wetland Buffer
▭ Delineated Waterway

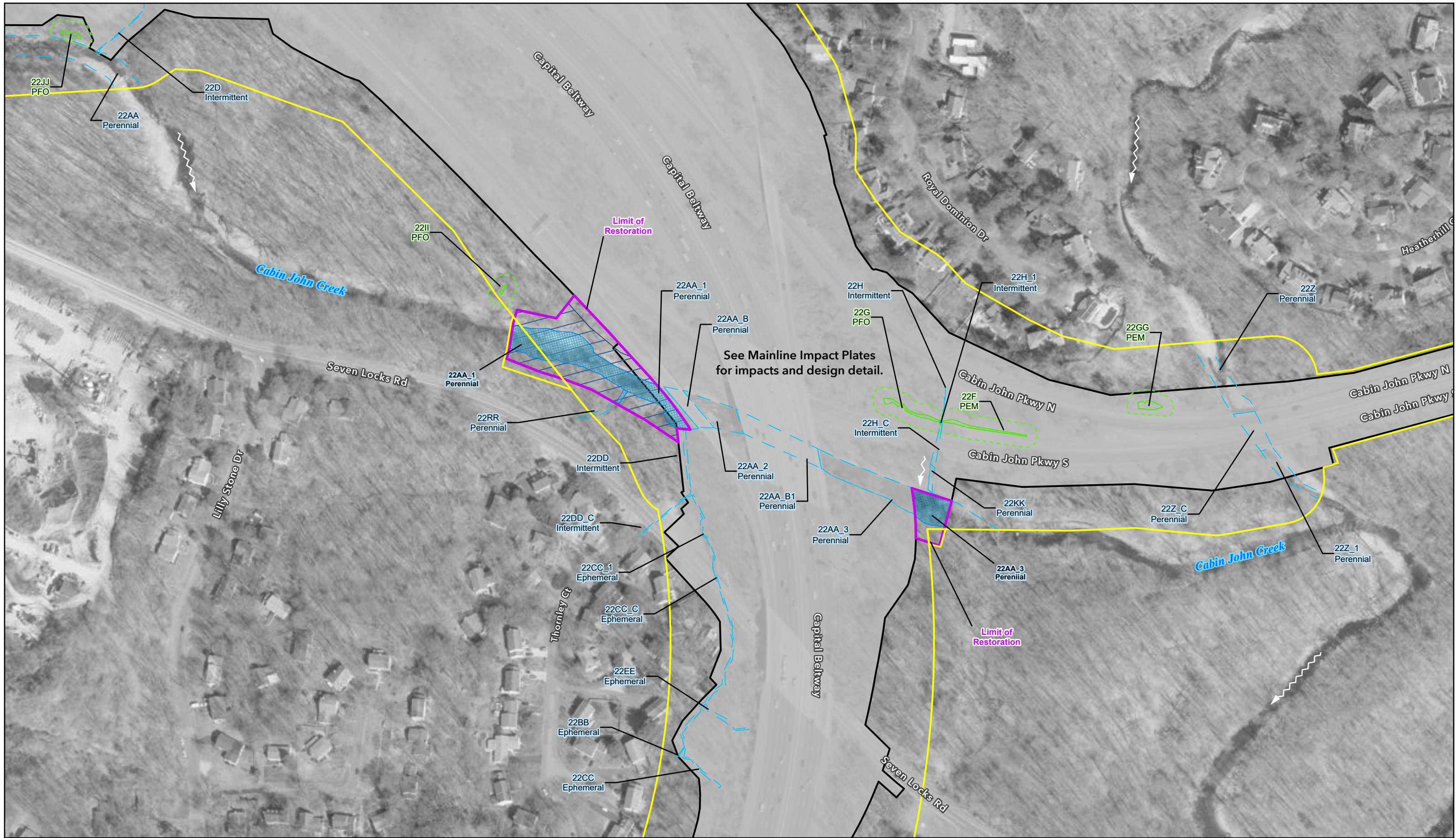
NOTE: All impacts are considered Temporary.



Wetland and Waterway Impact Plates

Park Mitigation Impact Plate 3





LOD - Park Mitigation
 MLS Mainline
 Corridor Study Boundary

Limit Of Restoration
 Limit Of Stabilization
 Aerial Structure

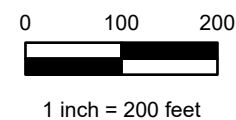
Wetland Impact (Temp)
 Wetland Buffer Impact (Temp)
 Waterway Impact (Temp)
 FEMA Impact

Delineated Wetland
 Delineated Wetland Buffer
 Delineated Waterway

NOTE: All impacts are considered Temporary.



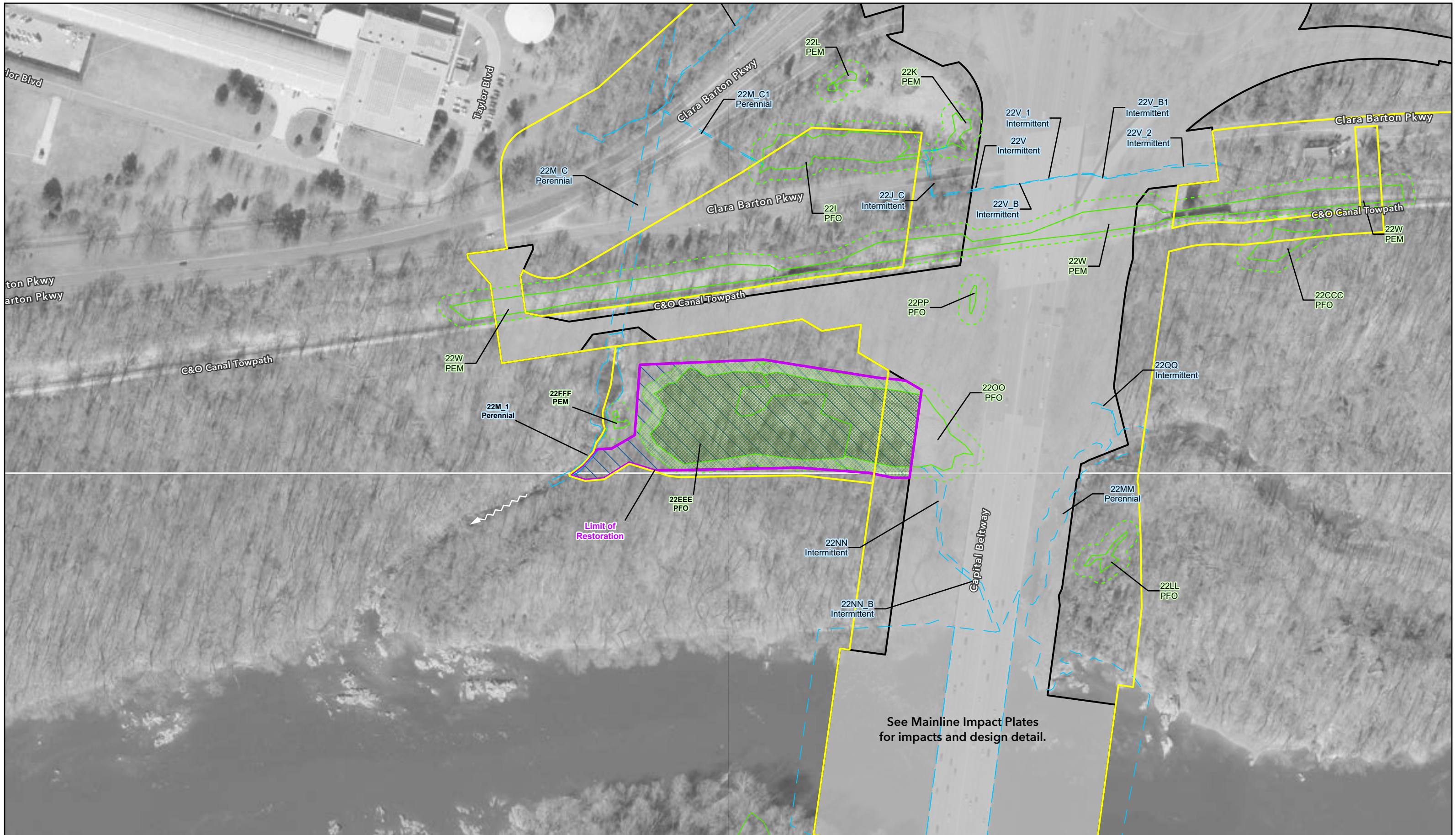
March 2023



Wetland and Waterway Impact Plates

Park Mitigation Impact Plate 4



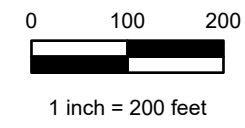


▭ LOD - Park Mitigation
▭ MLS Mainline
▭ Corridor Study Boundary

▭ Limit Of Restoration
▭ Limit Of Stabilization
▭ Aerial Structure

▭ Wetland Impact (Temp)
▭ Wetland Buffer Impact (Temp)
▭ Waterway Impact (Temp)
▭ FEMA Impact
▭ Delineated Wetland
▭ Delineated Wetland Buffer
▭ Delineated Waterway

NOTE: All impacts are considered Temporary.



Wetland and Waterway Impact Plates

Park Mitigation Impact Plate 5



MDE IMPACT SUMMARY TABLES PARK MITIGATION



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April 2023

MDE PARK MITIGATION IMPACT TABLES

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SUMMARY OF IMPACTS TO WETLAND BUFFERS.....	1
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PLATE 5 – WETLAND IMPACTS.....	7
PLATE 5 – FLOODPLAIN IMPACTS	7

MDE PARK MITIGATION IMPACT TABLES

SUMMARY OF IMPACTS TO WATERWAYS

IMPACT TYPE	WATERWAYS (SF)				WATERWAYS (LF)			
	Ephemeral	Intermittent	Perennial	Total	Ephemeral	Intermittent	Perennial	Total
Permanent	0	0	0	0	0	0	0	0
Temporary	0	4,779	34,153	38,932	0	657	915	1,572
Total	0	4,779	34,153	38,932	0	657	915	1,572

NOTE: All waterways are located in the Middle Potomac-Catoctin (USGS HUC8 02070008) watershed.

SUMMARY OF IMPACTS TO WETLANDS

IMPACT TYPE	WETLANDS (SF)				WETLANDS (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
Permanent	0	0	0	0	0	0	0	0
Temporary	0	106,485	0	106,485	0	2.44	0	2.44
Total	0	106,485	0	106,485	0	2.44	0	2.44

NOTE: All wetlands and their buffers are located in the Middle Potomac-Catoctin (USGS HUC8 02070008) watershed.

SUMMARY OF IMPACTS TO WETLAND BUFFERS

IMPACT TYPE	WETLAND BUFFER (SF)				WETLAND BUFFER (AC)			
	PEM	PFO	PSS	Total	PEM	PFO	PSS	Total
Permanent	0	0	0	0	0	0	0	0
Temporary	370	33,500	0	33,870	0.01	0.77	0	0.78
Total	370	33,500	0	33,870	0.01	0.77	0	0.78

NOTE: All wetlands and their buffers are located in the Middle Potomac-Catoctin (USGS HUC8 02070008) watershed.

MDE PARK MITIGATION IMPACT TABLES

SUMMARY OF IMPACTS TO 100-YEAR FLOODPLAINS

ASSOCIATED WATERWAY	RELATED FEATURES	FIRM PANEL	IMPACT PLATE	HUC 8 NAME	PERMANENT IMPACT (SF)	TEMPORARY IMPACT (SF)	TOTAL IMPACT (SF)	TOTAL IMPACT (AC)
Cabin John Creek	22AA_1, 22RR	24031C0435D, 51059CO160E	4	Middle Potomac-Catoctin	0	48,141	48,141	1.11
Potomac River	22OO, 22EEE, 22M_1	24031C0435D, 51059CO160E	5	Middle Potomac-Catoctin	0	157,084	157,084	3.61
TOTAL					0	205,225	205,225	4.72

MDE PARK MITIGATION IMPACT TABLES

PLATE 1 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
24U	Perennial	Open Channel	5,568	227	Temporary
45A	Intermittent	Open Channel	2,218	279	Temporary

MDE PARK MITIGATION IMPACT TABLES

PLATE 2 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
45E	Perennial	Open Channel	558	43	Temporary
45E_B	Perennial	Bridge	165	11	Temporary
45E_1	Perennial	Open Channel	775	42	Temporary

MDE PARK MITIGATION IMPACT TABLES

PLATE 3 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
45F	Intermittent	Open Channel	2,561	378	Temporary

MDE PARK MITIGATION IMPACT TABLES

PLATE 4 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
22AA_1	Perennial	Open Channel	21,104	387	Temporary
22AA_3	Perennial	Open Channel	5,197	84	Temporary
22RR	Perennial	Open Channel	318	38	Temporary

PLATE 4 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Cabin John Creek	48,141	Temporary

MDE PARK MITIGATION IMPACT TABLES

PLATE 5 – WATERWAY IMPACTS

IMPACT ID	CLASSIFICATION	CHANNEL TYPE	IMPACT (SF)	IMPACT (LF)	IMPACT TYPE
22M_1	Perennial	Open Channel	468	83	Temporary

PLATE 5 – WETLAND IMPACTS

IMPACT ID	CLASSIFICATION	IMPACT (SF)	BUFFER IMPACT (SF)	IMPACT TYPE
2200	PFO	40,284	13,370	Temporary
22EEE	PFO	66,201	20,130	Temporary
22FFF	PEM	0	370	Temporary

PLATE 5 – FLOODPLAIN IMPACTS

FLOODPLAIN	IMPACT (SF)	IMPACT TYPE
Potomac River	157,084	Temporary