Chesapeake BAY CROSSING STUDY

TIER 2 NEPA

Preferred Alternative and Conceptual Mitigation (PACM) Concurrence Package



May 2026

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1 INTRODUCTION

The Chesapeake Bay Crossing Study (Bay Crossing Study) is a two-tiered engineering and environmental study being advanced by the Maryland Transportation Authority (MDTA) in coordination with the Federal Highway Administration (FHWA). The Bay Crossing Study is addressing existing and future transportation issues at the William Preston Lane, Jr. Memorial Bridge (Bay Bridge) and its approaches along U.S. 50/301. Each tier of the Bay Crossing Study has involved development of an Environmental Impact Statement (EIS), in compliance with the National Environmental Policy Act (NEPA), to describe potential significant environmental effects and inform the evaluation of alternatives. Tier 1 of the Bay Crossing Study (Tier 1 Study) was completed in April 2022 and identified the corridor that includes the Bay Bridge and its approaches as the Selected Corridor Alternative for further evaluation. Tier 2 of the Bay Crossing Study (Tier 2 Study) was launched in June 2022 to focus on a project-level (site-specific) analysis within the Tier 1 Selected Corridor Alternative.

The Tier 2 NEPA process was initiated formally with publication of a Notice of Intent (NOI) to prepare an EIS in the Federal Register on November 15, 2024. The NOI identified the Tier 2 western study limit as the MD 2/MD 450 interchange, and the Tier 2 eastern study limit as the U.S. 50/301 split (**Figure 1-1**). A Notice of Availability (NOA) for the Draft EIS was published in the Federal Register on January 23, 2026. The Draft EIS evaluated the degree to which the Alternatives Retained for Detailed Study (ARDS) could meet the study needs and environmental and financial objectives. The Draft EIS also analyzed the potential socioeconomic, natural, and cultural resource impacts that would occur from each of the alternatives. Following these analyses, the MDTA identified Alternative C as its Recommended Preferred Alternative (RPA).

Figure 1-1: Tier 2 Study Limits



A public comment period, including three Public Hearings, was held between January 23, 2026, and March 9, 2026, to provide the public an opportunity to review the study, submit comments, and offer testimony. Public and agency comments were compiled and reviewed to identify themes and major public concerns or recommendations regarding the MDTA's RPA.

Based on a comparison and evaluation of the ARDS presented in the Draft EIS as well as Draft EIS public and agency input received during the public comment period, Alternative C (the MDTA RPA), is being advanced as the Preferred Alternative. The intent of this Preferred Alternative and Conceptual Mitigation (PACM) Concurrence Package is to present rationale for the Preferred Alternative and the MDTA's proposed conceptual mitigation measures for resources affected by the Preferred Alternative. This document also summarizes key aspects of the Draft EIS that informed identification of the Preferred Alternative, including the study Purpose and Need, ARDS, and environmental impacts.

Per the study's Coordination Plan,[1] this document is being provided to cooperating and participating agencies for review. Cooperating agencies will be asked to concur with the Preferred Alternative and Conceptual Mitigation so that these study elements can be carried forward to the Final EIS.

[1] https://www.baycrossingstudy.com/wp-content/uploads/2025/12/Tier_2_Coordination_Plan_-_October_2025a.pdf

2 PURPOSE AND NEED

This section is a summary of Chapter 2 of the *Chesapeake Bay Crossing Study: Tier 2 NEPA Draft EIS*[2] and describes the purpose of the Tier 2 Study, study needs, and additional objectives.

The purpose of the Tier 2 Study is to address existing and future transportation capacity needs and access across the Chesapeake Bay and at the Chesapeake Bay Bridge approaches along the U.S. 50/301 corridor. The Tier 2 Study is evaluating measures to reduce congestion; improve travel times and reliability, mobility, and roadway deficiencies; and accommodate maintenance activities and navigation; while minimizing impacts to local communities and the environment.

The MDTA identified five needs for the Tier 2 Study:

- **Adequate capacity and reliable travel times** – Due to the reduction in the total number of lanes on the Bay Bridge compared to its approaches, the capacity of the bridge is lower than the other segments of U.S. 50/301. Additionally, the reduced lane and shoulder widths on the Bay Bridge encourage slower driving speeds and further constrict the free flow of traffic. This leads to a condition where traffic levels that are free flowing on the approaches can result in slow-moving and congested traffic on the bridge. Therefore, the bridge itself is a constraining factor to travel flow. The existing Bay Bridge carries large volumes of travelers and frequently approaches or exceeds its capacity for long durations. Travel volumes have increased over time and are expected to continue increasing. Additionally, insufficient capacity and resulting congestion leads to poor reliability of trip travel times across the Chesapeake Bay.
- **Mobility** – There is a lack of mobility for all modes of travel, including cars, trucks, and transit services, caused by existing and anticipated future conditions at the Bay Bridge. Mobility is defined as the "safe, efficient, and reliable movement of people, goods and services".[3] Congestion at the Bay Bridge and its approaches and subsequent spillover effects on local roadways limit the movement of people, goods, and services across the Chesapeake Bay and in adjacent communities.
- **Roadway deficiencies** – While the MDTA strives to maximize safety at the Bay Bridge and approaches, the existing bridge does not adhere to current design criteria and/or standards because of the existing lane widths, lack of shoulders, and other factors. The limited existing shoulder space and narrow lanes make it difficult for emergency responders to reach incidents and often impede bridge maintenance activities; the lack of space can cause lane closures and further constrain traffic flow. The current structures also do not have any physical fall protection systems; they do not prevent incidents involving accidental falls, nor do they deter individuals from climbing over the outside of the barriers.
- **Existing and future maintenance needs** – Due to the age and design life of the existing Bay Bridge, substantial maintenance is needed now and in the future. These

[2] *Chesapeake Bay Crossing Study: Tier 2 NEPA, Draft Environmental Impact Statement* (January 2026), p. 2-1.
[3] *Maryland State Highway Mobility Report*, Thirteenth Edition (2024), p.8.

maintenance needs lead to lane closures that make incident management more difficult and cause increased traffic congestion and delays.

- **Navigation** – The existing Bay Bridge serves as a key constraint for ships that travel on the Chesapeake Bay, including to the Port of Baltimore. Accommodating existing and future ship navigation and traffic on the Chesapeake Bay is important to maintaining the vitality of the Port of Baltimore and commerce in Maryland.

In addition to identifying needs, the MDTA considered two objectives:

- **Environmental responsibility** – The MDTA recognizes the significance of the Bay Bridge and the Chesapeake Bay for the State of Maryland and the region. "Environmental Responsibility" in the context of the Tier 2 Study is understanding the significance of the natural, built, and human environment and making decisions to meet the Purpose and Need while limiting negative impacts to these resources. Central to the MDTA's environmental responsibility commitment, any proposed build alternative must consider the sensitive resources of the Chesapeake Bay.
- **Cost and financial responsibility** – The MDTA recognizes that potential build alternatives must be financially responsible. To assess potential build alternatives, as well as the implications of taking no action, financial responsibility will be considered regarding the means to pay for the development, operation, and maintenance of the facilities. The MDTA will explore potential funding strategies for any potential Bay Crossing improvements, which must be deemed financially viable.

These objectives provide additional criteria for evaluating the reasonableness of alternatives and represent issues the MDTA has deemed important given the sensitivity of the Chesapeake Bay as an environmental resource. The MDTA's goal is to balance the potentially substantial benefits and impacts of major infrastructure projects among all users and neighboring communities, given limited availability of funding resources.

3 ALTERNATIVES RETAINED FOR DETAILED STUDY (ARDS)

This section describes the ARDS, and the environmental impacts of the ARDS, that were presented in the Draft EIS. The MDTA identified seven ARDS, including the No-Build Alternative and six build alternatives. Alternative A (the No-Build Alternative) is being advanced as a baseline for comparison to the build alternatives. The build alternatives were formed from the key elements described in Section 3.1.2 of the Draft EIS. The six build alternatives are based on the number of lanes provided across the new bridge, the number of lanes on the approach roadways, and the bridge location. The ARDS were originally presented in the *NOI Additional Project Information Document (APID)*[4] and developed in coordination with cooperating and participating agencies, who reviewed and concurred with the ARDS on March 31, 2025.

3.1 Description of Build Alternatives

For all build alternatives (Alternatives B through G), the MDTA proposes to replace the existing two Bay Bridge spans with a new two-span bridge over the Chesapeake Bay; the existing spans would be removed. The build alternatives also include the following components: an optional pedestrian/bicycle shared-use path (SUP) (if financial considerations allow), tolling, transit-related improvements, transportation system management/transportation demand management (TSM/TDM), stormwater management (SWM), utilities, and truck weigh and inspection stations (TWIS) as described in **Section 3.2**. The six build alternatives are:

- **Alternative B (6-8-6 North):** Alternative B would have eight lanes across two new spans, four in each direction, with six lanes on both shores. The transition from six to eight lanes would occur west of Oceanic Drive and east of Cox Creek. Alternative B would build one new span just north of the existing spans and one between the existing spans. Alternative B would be 8.3 miles in length and would include modifications to some interchange ramps to connect to the widened mainline.
- **Alternative C (6-8-6 South):** Alternative C would have eight lanes across two new spans, four in each direction, with six lanes on both shores. The transition from six to eight lanes would occur west of Oceanic Drive and east of Cox Creek. Alternative C would build one new span just south of the existing spans and one between the existing spans. Alternative C would be 8.3 miles in length and would include modifications to some interchange ramps to connect to the widened mainline.
- **Alternative D (8-8-8 North):** Alternative D would widen U.S. 50/301 to eight lanes throughout the study limits, with eight lanes across a new two-span bridge. The transitions from six to eight lanes would occur at the MD 2/MD 450 interchange and at the U.S. 50/301 split. Alternative D would build one new span just north of the existing spans, and one between the existing spans. Alternative D would be 20.4 miles in length and would include modifications to all interchange ramps between MD 2/MD 450 and the U.S. 50/301 split to connect to the widened mainline. It would require widening of the Kent Narrows Bridge.
- **Alternative E (8-8-8 South):** Alternative E would widen U.S. 50/301 to eight lanes throughout the study limits, with eight lanes across a new two-span bridge. The transitions from six to eight lanes would occur at the MD 2/MD 450 interchange and at the U.S. 50/301 split. Alternative E would build one new span just south of the existing spans, and one

[4] https://www.baycrossingstudy.com/wp-content/uploads/2025/12/BCST2_NOI_APID_2024.11.06_COMBINED.pdf

between the existing spans. Alternative E would be 20.4 miles in length and would include modifications to all interchange ramps between MD 2/MD 450 and the U.S. 50/301 split to connect to the widened mainline. It would require widening of the Kent Narrows Bridge.

- **Alternative F (8-10-8 North):** Alternative F would have ten lanes across two new spans, five in each direction, with eight lanes on U.S. 50/301. The transitions from six to eight lanes would occur at the MD 2/MD 450 interchange and the U.S. 50/301 split. The transitions from eight to ten lanes would occur west of Oceanic Drive and east of Cox Creek. Alternative F would build one new span just north of the existing spans, and one between the existing spans. Alternative F would be 20.4 miles in length and would include modifications to all interchange ramps between MD 2/MD 450 and the U.S. 50/301 split, and reconstruction of the MD 8 interchange, to connect to the widened mainline. It would require widening of the Kent Narrows Bridge.
- **Alternative G (8-10-8 South):** Alternative G would have ten lanes across two new spans, five in each direction, with eight lanes on U.S. 50/301. The transitions from six to eight lanes would occur at the MD 2/MD 450 interchange and the U.S. 50/301 split. The transitions from eight to ten lanes would occur west of Oceanic Drive and east of Cox Creek. Alternative G would build one new span just south of the existing spans, and one between the existing spans. Alternative G would be 20.4 miles in length and would include modifications to all interchange ramps between MD 2/MD 450 and the U.S. 50/301 split, and reconstruction of the MD 8 interchange, to connect to the widened mainline. It would require widening of the Kent Narrows Bridge.

Preliminary design of the build alternatives was completed using the American Association of State Highway and Transportation Officials (AASHTO), MDTA, and State Highway Administration (SHA) design standards. A design speed of 60 miles per hour (mph) was used on the U.S. 50/301 approaches and the Bay Bridge. For the approach roads, the lane and shoulder widths would be 12 feet, and the median widths would vary. On the bridge, the lanes and median/inside shoulder width would be 12 feet, and the outside shoulder width would be 14 feet. If included, the optional SUP across the bridge would be 10 feet wide with 2-foot-wide offsets to the vertical barriers on both sides.

For all build alternatives, the maximum grade on the bridge would be 3.0 percent. The bridge would have a vertical navigational clearance of 230 feet over the 1,500-foot-wide main navigation channel, as established by the U.S. Coast Guard (USCG) in a Preliminary Navigation Clearance Determination issued November 28, 2025. The bridge would also maintain the vertical navigational clearance over the existing secondary channel located east of the main shipping channel.

The proposed new bridge spans would be longer than the existing bridge spans for all build alternatives. On the Western Shore, the bridge limits would be further inland to accommodate vertical clearance requirements over the main navigational channel. On the Eastern Shore, the bridge limits would be further inland because more space would be required to maintain traffic on the existing bridges during construction. For Alternatives B, D, and F, the bridge spans would extend approximately 700 feet west of the existing bridge abutment on the Western Shore and approximately 580 feet east of the existing bridge abutment on the Eastern Shore. For Alternatives C, E, and G, the bridge spans would extend approximately 50 feet west of the existing

bridge abutment on the Western Shore and approximately 560 feet east of the existing bridge abutment on the Eastern Shore.

Typical sections and schematic lane configurations are shown in **Figures 3-1 through 3-6**.

Figure 3-1: Alternatives B and C (6-8-6) Typical Sections for U.S. 50/301

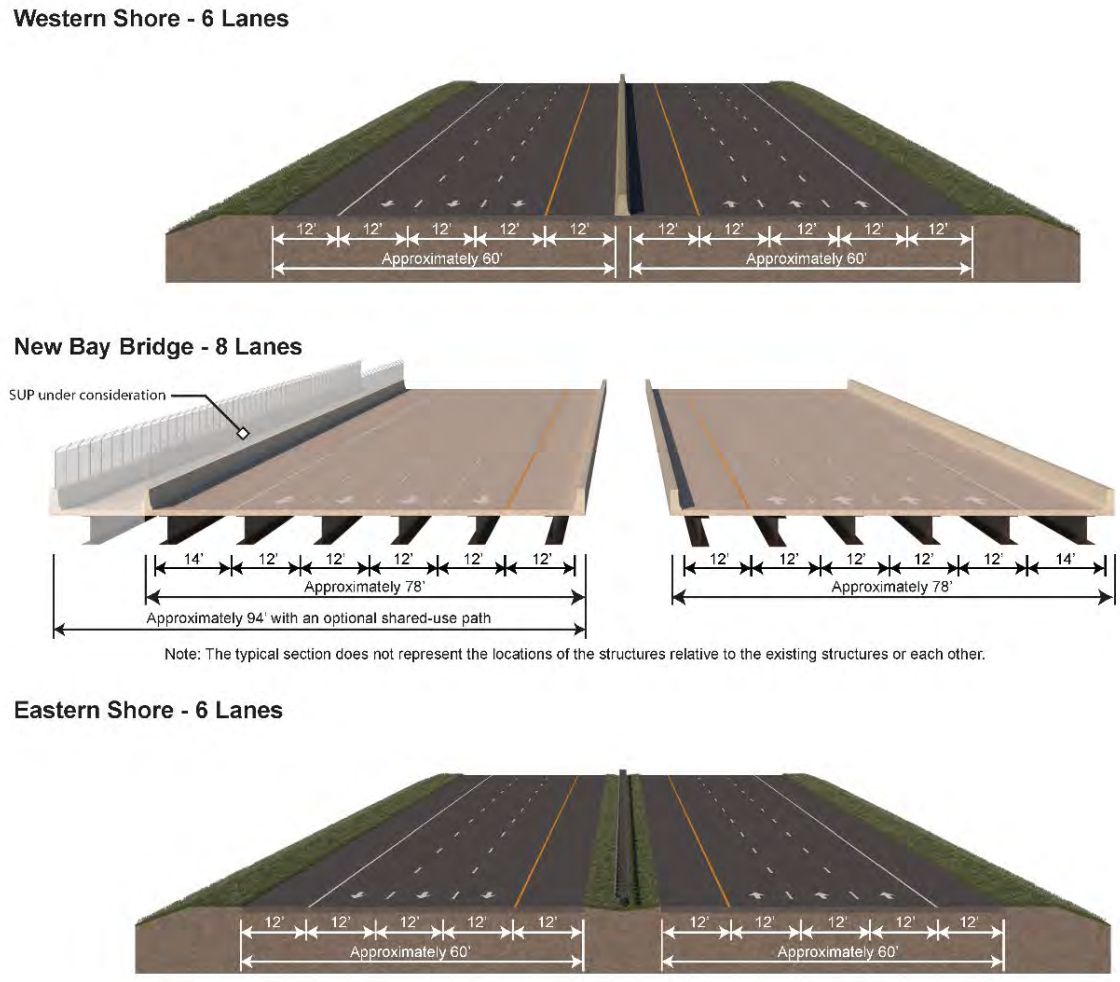
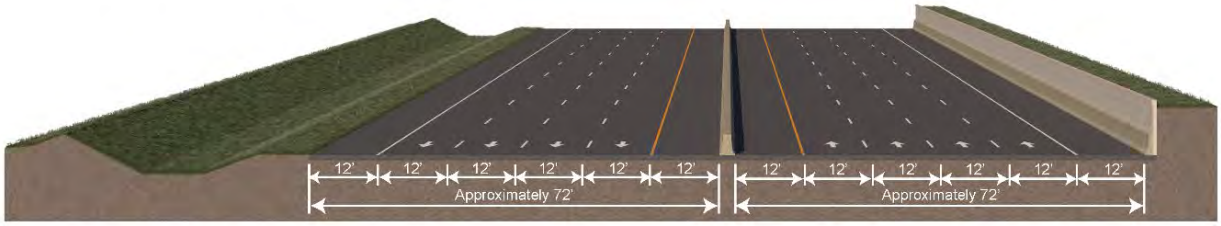
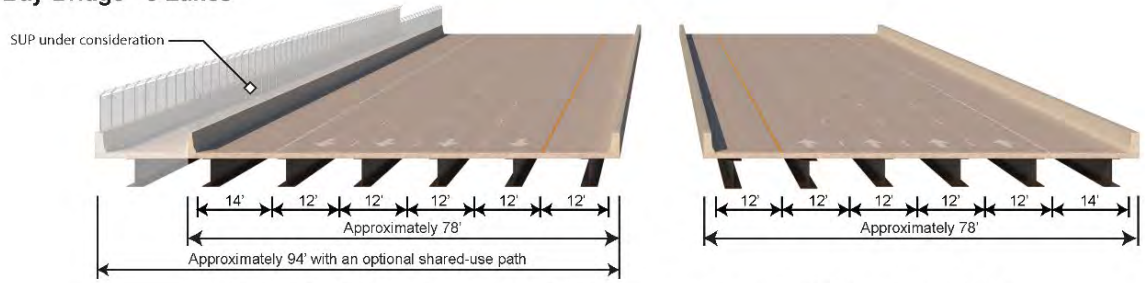


Figure 3-2: Alternatives D and E (8-8-8) Typical Sections for U.S. 50/301

Western Shore - 8 Lanes



New Bay Bridge - 8 Lanes



Note: The typical section does not represent the locations of the structures relative to the existing structures or each other.

Eastern Shore - 8 Lanes

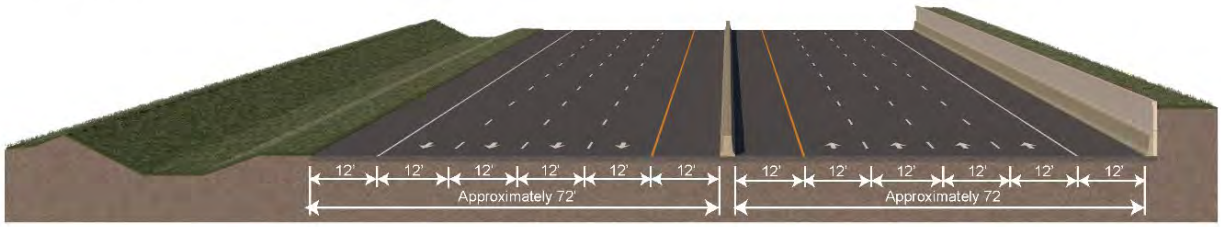


Figure 3-3: Alternatives F and G (8-10-8) Typical Sections for U.S. 50/301

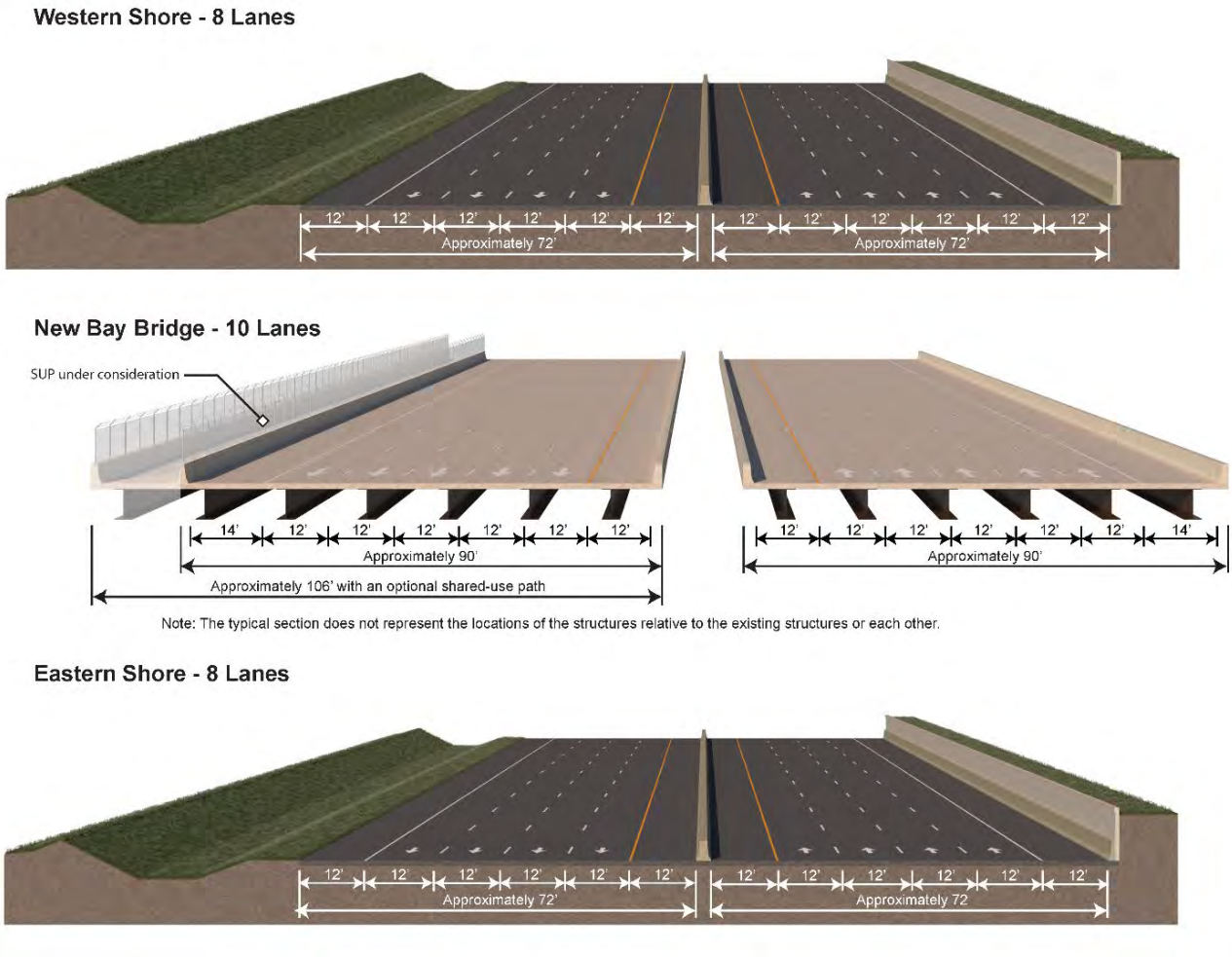


Figure 3-4: Alternatives B and C

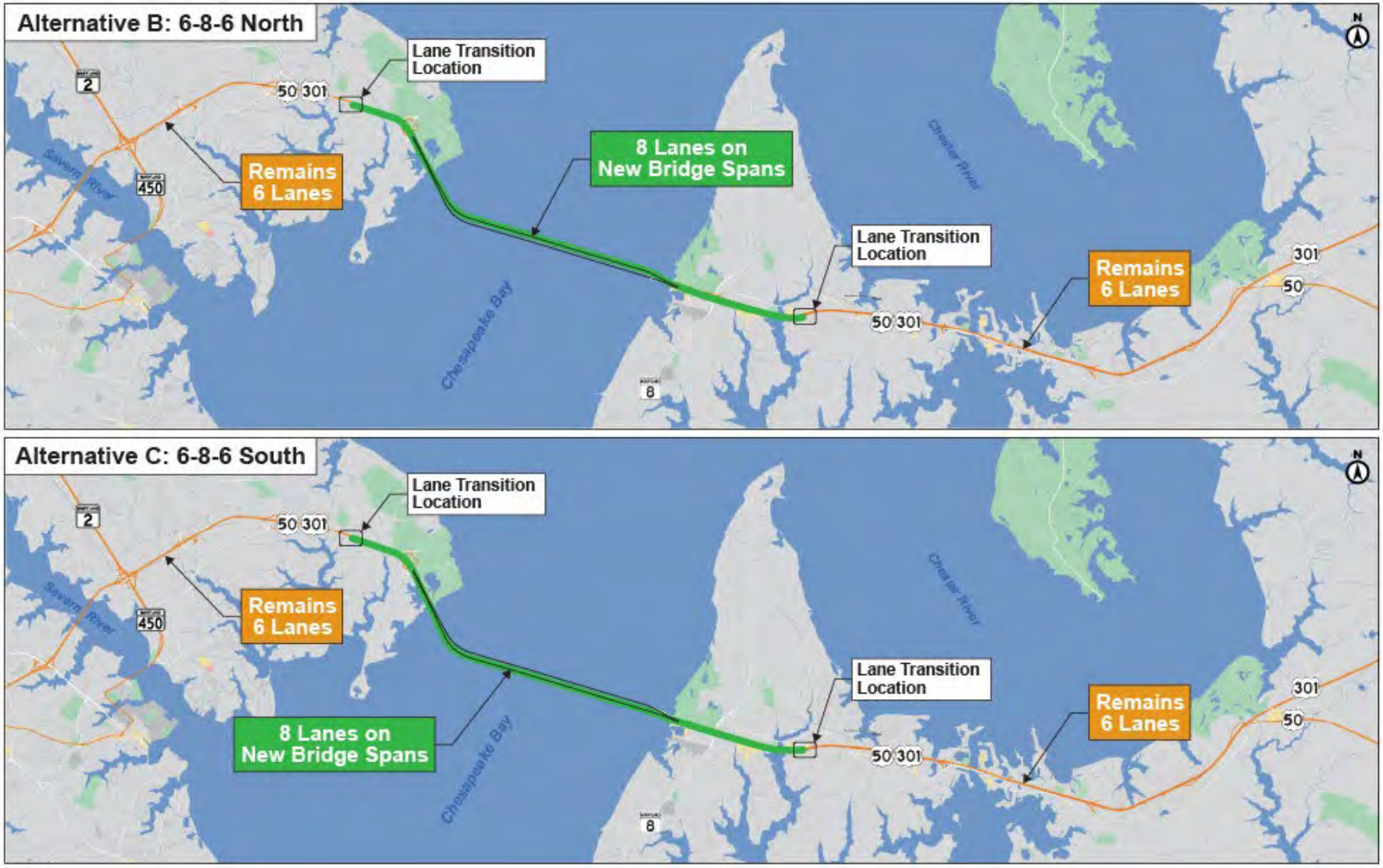


Figure 3-5: Alternatives D and E



Figure 3-6: Alternatives F and G



3.2 Other Components of the Build Alternatives

In addition to the number of lanes and location of the build alternatives described in the prior section, there are other components that have been included in the build alternatives. These components differ slightly based on the needs of each build alternative, and include an optional pedestrian/bicycle SUP, tolling, transit-related improvements, TSM/TDM, SWM, utilities, and TWIS. These items are described in detail in the Draft EIS and summarized below.

- **Optional pedestrian and bicycle shared-use path (SUP)** – The safe inclusion of an SUP on a new Bay Bridge is being considered and would provide connectivity for pedestrians and bicyclists between the Eastern and Western Shores, allowing these types of users to cross the Chesapeake Bay. An SUP across a new Bay Bridge would be a two-way facility on the westbound span that would be separated from the adjacent travel lanes by a physical barrier. An SUP would connect to Oceanic Drive and MD 8; trail connections beyond these points would be determined by the potential responsible county or state agency with input from the traveling public and adjacent property owners. Following the combined Final EIS/Record of Decision (ROD), the MDTA will perform further financial analysis and determine whether an SUP would be included on a new Bay Bridge. If the SUP is included, additional coordination would occur among other agencies regarding connections, parking, maintenance, and other features, as well as consistency with local pedestrian and bicycle plans, the 2025 Maryland State Transportation Trails Strategic Plan, and the Maryland's Complete Streets Policy.

- **Tolling** – The MDTA owns and operates the Bay Bridge and uses tolls from its eight facilities to maintain and operate all their facilities. The Bay Bridge will continue to be a tolled facility and the MDTA will continue to manage it and the toll rates to address current and future traffic and associated congestion.

- **Transit-related improvements** – Transit-related improvements would be made through a financial commitment from the MDTA providing a one-time investment for local transit agencies near the Bay Bridge. The same commitment would be made for all build alternatives and would not be used to differentiate between alternatives. All transit-related opportunities would be determined in the future, closer to the time of construction. The MDTA would coordinate with Maryland Transit Administration (MTA), local governments, and local transit agencies to help them determine the opportunities. However, these agencies would determine the transit-related improvements that would be most beneficial for them at that time, and they would be separate and distinct projects from the Bay Crossing.

- **TSM/TDM considerations** – Two TSM/TDM improvements were considered with the retained build alternatives for potential implementation: congestion pricing and part-time shoulder use (PTSU) lanes.

    - Congestion pricing could be used in the future to provide flexibility for toll management strategies that the MDTA could use to further reduce congestion and achieve future transportation goals. Public input would be requested prior to the implementation of congestion pricing.

  - The shoulders on the new bridge spans would be full width (12 and 14 feet wide) to accommodate future maintenance needs and incident management. Therefore, the shoulders would also be wide enough to accommodate a PTSU lane, which would be an operational management strategy that could be used for peak period vehicular operations or bus-on-shoulder operations. Additionally, PTSU could be used on the U.S. 50/301 approaches in the future if there is adequate width to accommodate a full-width paved shoulder. Although the build alternatives have been developed to accommodate PTSU, the operation of PTSU lanes is not being included as part of the build alternatives. Future implementation of PTSU is not precluded.

- **Stormwater management (SWM)** – A planning-level, conceptual SWM analysis identified the stormwater needs and potential treatment locations throughout the study area based on the requirements of the Maryland *Stormwater Management Act of 2007*, which establishes a comprehensive process for implementing Environmental Site Design (ESD)[5] to the Maximum Extent Practicable (MEP) during planning. Therefore, the treatment approach for this study emphasized integrating Best Management Practices (BMP) into the roadway section to capture and treat runoff at the source.

- **Utilities** – The study area along U.S. 50/301 contains public utilities including: potable water, sanitary sewer, natural gas, electric power/distribution, communications, and cable television. The build alternatives would impact some of these utilities that are in close proximity to U.S. 50/301, resulting in a larger limit of disturbance (LOD) and higher costs. There are electric and telecommunication lines on the existing bridge spans that would need to be replaced, and several utilities within the LOD may need to be encased or relocated.

- **TWIS** – There are two existing TWIS along U.S. 50/301 between Oceanic Drive and the Bay Bridge, one in each direction. In the eastbound direction, the existing facility would be reconfigured to accommodate the changing approach to the Bay Bridge; the same LOD was included for all build alternatives. In the westbound direction, there is a single existing scale, west of the MDTA office facility on the Western Shore that accommodates approximately three trucks. The existing lane striping would be adjusted to accommodate the changing departure from the Bay Bridge. The MDTA would prefer to have a TWIS on the Eastern Shore to inspect westbound trucks before they travel over the bridge; however, a potential site on the Eastern Shore has not yet been identified.

- **Limits of Disturbance (LOD)** – The LOD is the proposed boundary that would include all construction, erosion and sediment control (ESC), SWM, right-of-way offsets, dredging, demolition of the existing bridges, temporary trestles for construction, and a pier protection system. The LODs for the build alternatives were developed from the proposed horizontal and vertical geometry, typical sections, roadside design, and proposed interchange modifications. The LODs include areas for construction staging and storage of materials along the corridor, primarily near the bridges and interchanges. Other off-site staging

[5] The Act (codified at Title 4, Subtitle 2 of the Environment Article) defines ESD as "...using small-scale stormwater management practices, nonstructural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources."

areas may be identified by the contractor prior to construction. The LODs associated with each build alternative were used to calculate the direct environmental impacts.

The assumptions regarding construction duration are based on the current preliminary design considerations for the build alternatives and the best available information from similar bridge projects including the Francis Scott Key Bridge, Tappan Zee (Cuomo) Bridge, and Nice-Middleton Bridge. The MDTA is currently considering a cable-stayed or suspension bridge for the main span over the navigation channel and a tied arch bridge for the secondary channel. The MDTA developed a preliminary construction duration with two general activities: construction of two new bridge spans and demolition of the two existing spans, as follows:

- Construct first bridge span plus approach roads: years 1 to 5;
- Demolish first bridge span: years 6 to 7;
- Construct second bridge span plus approach roads: years 7 to 13; and
- Demolish second bridge span: years 14 to 15.

3.3 Environmental Impacts and Costs of the Build Alternatives

Table 3-1 quantifies potential direct environmental impacts from the retained build alternatives including the approach roadways and new bridge spans. Direct environmental impacts are generally defined as physical changes or resource losses from the permanent footprint of project infrastructure or from construction activities (e.g., permanent fill, dredging, tree clearing). The impact values are estimated based on the LODs of these build alternatives. Because the SUP is being advanced as an option to the build alternatives, **Table 3-2** separately quantifies the potential direct environmental impacts from the optional SUP.

The LODs for all build alternatives were developed with preliminary measures to avoid and minimize impacts to sensitive resources. Where appropriate, the roadside design would reduce impacts to sensitive resources adjacent to the roadway. In certain locations where space would allow, small shifts in roadway alignment were included to avoid impacts, if the shift did not increase impacts to other resources.

Green shading in **Table 3-1** represents the lowest impact per category by alternative (excluding the No-Build, which would not have any direct environmental impacts); this emphasizes that Alternatives B and C (6-8-6 lane configuration) and the southern alignments have the least direct environmental impacts of the build alternatives.

The complexity and scale of the alternatives, coupled with the key sensitive resources in the area, demanded a careful comparison of the potential impacts of the build alternatives in consideration of the study's environmental responsibility objective. The environmental impact comparison, and degree of environmental impact from each of the ARDS, was of critical importance for identifying the Preferred Alternative.

Table 3-1: Summary of Potential Direct Impacts from the ARDS without the Optional SUP

Resource Type[1]	Resource	Unit	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
			No-Build, 6-5-6	6-8-6 North	6-8-6 South	8-8-8 North	8-8-8 South	8-10-8 North	8-10-8 South
Alternative Area[2]	Total Length of Build Alternative	miles	N/A	8.3	8.3	20.4	20.4	20.4	20.4
	Total Area of Build Alternative	acres	N/A	357.2	357.2	858.5	858.7	879.6	879.2
Community Resources	Residential Property Displacements	#	0	0	0	0	0	1	1
	Commercial Property Displacements	#	0	2	2	7	7	7	7
	Partial Acquisitions	#	0	46	46	204	204	207	207
	Total Property Impact	#	0	48	48	211	211	215	215
	Total Property Impact	acres	0	20.5	20.8	82.0	82.3	86.2	86.4
	Number of Community Facilities	#	0	8	8	26	26	26	26
	Community Facility Property Area	acres	0	9.2	9.5	16.4	16.7	18.2	18.4
	Number of Parks	#	0	4	4	9	9	9	9
	Park Property Area	acres	0	2.8	2.4	3.9	3.5	4.7	4.2
Historic Resources	Number of Historic Properties[3]	#	0	3	3	4	4	4	4
	Historic Property Area	acres	0	1.3	0.9	1.4	1.0	1.9	1.3
Natural Resources	Agricultural Land	acres	0	0	0	1.5	1.5	1.5	1.5
	100-Year Floodplain Area	acres	0	33.5	35.6	57.0	59.0	59.1	60.7
	Wetlands (Field Delineated)	acres	0	5.9	5.6	11.5	11.2	12.1	11.6
		acres	0	0.1	0.1	0.9	0.9	0.9	0.9

Resource Type[1]	Resource	Unit	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
			No-Build, 6-5-6	6-8-6 North	6-8-6 South	8-8-8 North	8-8-8 South	8-10-8 North	8-10-8 South
	Surface Waters – Non-tidal	linear ft	0	700	670	3520	3490	3600	3550
	Surface Waters – Tidal[4]	acres	0	1.1	1.0	4.9	4.7	5.4	5.3
		linear ft	0	290	290	860	860	900	900
	Chesapeake Bay Tidal Water Impacts[5]	acres	0	130.7	131.9	130.7	131.9	134.1	135.0
	Critical Areas	acres	0	166.5	164.1	397.7	395.4	402.0	398.8
	Critical Area (100-ft) Buffer	acres	0	19.0	17.7	28.2	26.9	28.8	27.3
	Submerged Aquatic Vegetation (2019-2023)	acres	0	0.4	0.0	0.7	0.4	0.9	0.4
	Public Shellfishery Areas	acres	0	5.6	6.1	8.8	9.3	9.3	9.8
	Oyster Sanctuaries	acres	0	0.6	0.6	1.1	1.1	1.6	1.6
	Natural Oyster Bars	acres	0	9.4	10.2	12.6	13.3	13.8	14.6
	Essential Fish Habitat	acres	0	133.2	136.0	137.0	139.8	140.4	143.5
	FIDS Habitat	acres	0	12.1	12.1	33.3	33.3	34.5	34.5
	SSPRA Habitat	#	0	7	7	8	8	8	8
		acres	0	110.0	109.4	119.4	118.8	122.5	121.2
	Forest Areas	acres	0	27.4	27.4	87.2	87.2	88.6	88.6
Noise	Noise Sensitive Areas	#	0	28	28	35	35	38	39

Resource Type[1]	Resource	Unit	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
			No-Build, 6-5-6	6-8-6 North	6-8-6 South	8-8-8 North	8-8-8 South	8-10-8 North	8-10-8 South
Other Resources/ Preservation Areas	Number of Section 4(f) Properties	#	0	9	9	13	13	13	13
	Section 4(f) Properties	acres	0	3.1	2.7	4.5	4.1	5.3	4.7
	Number of Section 6(f) Properties	#	0	2	2	2	2	2	2
	Conservation Easements	acres	0	2.1	1.7	2.1	1.7	2.3	1.7
	Habitat Connectivity Network[6] (HCN)	acres	0	0.4	0.4	21.2	21.2	21.2	21.2
	Local Protected Land	acres	0	0.7	0.7	1.4	1.4	1.9	1.9
	Environmental Trust Easements	acres	0	2.1	0.0	4.7	4.7	4.7	4.7
Cost Estimate		2025 $	$3.8 Billion[7]	$15.1 - $16.6 Billion	$14.8 - $16.4 Billion	$17.5 - $19.0 Billion	$17.3 - $18.8 Billion	$19.5 - $21.1 Billion	$19.2 - $20.8 Billion

[1] This table includes key impacts, further impact details can be found in respective Technical Reports.
[2] Not representative of impacts. Includes the total area of the build alternatives, including existing right-of-way.
[3] Historic properties also include two bridges, the Chesapeake Bay Bridge and the MD 18 Kent Narrows Bridge. These historic bridges are not included in the impact area calculations.
[4] Impacts do not include the Chesapeake Bay proper.
[5] Includes impacts from new bridge construction and old bridge pier removal.
[6] Habitat Connectivity Network (HCN) was previously known as Green Infrastructure.
[7] Estimated cost of maintenance and rehabilitation of the existing bridge spans from 2024 through 2065.
Note: Green shading represents the lowest impact per category by alternative (excluding the No-Build, which would not have any direct impacts).

Table 3-2: Summary of Additional Potential Direct Impacts from the Optional SUP

Resource Type[1]	Resource	Unit	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
			No-Build, 6-5-6	6-8-6 North	6-8-6 South	8-8-8 North	8-8-8 South	8-10-8 North	8-10-8 South
Community Resources	Total Area of Additional Right-of-way	acres	0	2.2	2.0	2.2	2.0	2.2	1.9
	Total Property Impact	#	0	0	0	0	0	0	0
	Total Property Impact	acres	0	1.8	1.2	1.8	1.2	1.9	1.2
	Number of Community Facilities	#	0	0	0	0	0	0	0
	Community Facility Property Area	acres	0	1.8	1.2	1.8	1.2	1.9	1.2
	Number of Parks	#	0	0	0	0	0	0	0
	Park Property Area	acres	0	1.8	1.2	1.8	1.2	1.9	1.2
Historic Resources	Number of Historic Properties	#	0	0	0	0	0	0	0
	Historic Property Area	acres	0	0.7	0.6	0.7	0.6	0.7	0.6
Natural Resources	Agricultural Land	acres	0	0	0	0	0	0	0
	100-Year Floodplain Area	acres	0	1.6	1.4	1.6	1.4	1.9	1.4
	Wetlands (Field Delineated)	acres	0	0.7	0.7	0.7	0.7	0.8	0.7
	Surface Waters – Non-tidal	acres	0	<0.1	<0.1	<0.1	<0.1	0	<0.1
		linear ft	0	20	30	20	30	0	50
	Surface Waters – Tidal[2]	acres	0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		linear ft	0	0	0	0	0	0	0
	Chesapeake Bay Tidal Water Impacts[3]	acres	0	1.9	1.9	1.9	1.9	1.9	2.0
	Critical Areas	acres	0	3.4	2.5	3.4	2.5	3.3	2.6
	Critical Area (100-ft) Buffer	acres	0	1.2	1.0	1.2	1.0	1.2	1.0

Resource Type[1]	Resource	Unit	Alt A	Alt B	Alt C	Alt D	Alt E	Alt F	Alt G
			No-Build, 6-5-6	6-8-6 North	6-8-6 South	8-8-8 North	8-8-8 South	8-10-8 North	8-10-8 South
	Submerged Aquatic Vegetation (2019-2023)	acres	0	0.3	0	0.3	0	0.4	0
	Public Shellfishery Areas	acres	0	0.5	0.6	0.5	0.6	0.5	0.6
	Oyster Sanctuaries	acres	0	0	0	0	0	0	0
	Natural Oyster Bars	acres	0	0.8	0.9	0.8	0.9	0.8	0.9
	Essential Fish Habitat	acres	0	4.0	4.0	4.0	4.0	4.2	4.3
	FIDS Habitat	acres	0	0.2	0.2	0.2	0.2	0.1	0.1
	SSPRA Habitat	#	0	0	0	0	0	0	0
		acres	0	4.3	4.5	4.3	4.5	4.2	4.6
	Forest Areas	acres	0	0.5	0.2	0.5	0.2	0.5	0.2
Noise	Noise Sensitive Areas	#	0	0	0	0	0	0	0
Other Resources/ Preservation Areas	Number of Section 4(f) Properties	#	0	0	0	0	0	0	0
	Section 4(f) Properties	acres	0	1.9	1.2	1.9	1.2	2.0	1.3
	Number of Section 6(f) Properties	#	0	0	0	0	0	0	0
	Conservation Easements	acres	0	0.7	0.6	0.7	0.6	0.7	0.6
	Habitat Connectivity Network (HCN)[4]	acres	0	0.1	0.1	0.1	0.1	0.1	0.1
	Local Protected Land	acres	0	1.2	0.6	1.2	0.6	1.3	0.7
	Environmental Trust Easements	acres	0	0	0	0	0	0	0
Cost Estimate		2025 $	$0.0	$1.3 Billion	$1.2 Billion	$1.3 Billion	$1.2 Billion	$1.3 Billion	$1.2 Billion

[1] This table represents additional impacts for the optional SUP only and includes key impacts. Further impact details can be found in respective Technical Reports.
[2] Impacts do not include the Chesapeake Bay proper.
[3] Includes impacts from new bridge construction and old bridge pier removal.
[4] Habitat Connectivity Network (HCN) was previously known as Green Infrastructure.

4 PREFERRED ALTERNATIVE

This section provides the rationale for identification of Alternative C as the Preferred Alternative based on the comparison of the ARDS presented in the Draft EIS.

The Bay Bridge is a critical link in the Maryland transportation network, being the only crossing of the Chesapeake Bay in the state. The existing Bay Bridge does not provide adequate capacity or reliable travel times, hinders mobility in the region, has existing roadway deficiencies, and does not accommodate the USCG required navigational clearance. The MDTA is committed to delivering a financially responsible solution to the challenges in the study area while minimizing environmental impacts.

The six build alternatives meet the study's purpose and need and would therefore be reasonable to implement. Although the build alternatives would have a higher initial cost than Alternative A (No-Build), they would require less maintenance and rehabilitation over the next several decades. The cost of a new Bay Bridge would be an important investment for the future of Maryland, an investment that would allow the MDTA to build new infrastructure that would provide an improvement to the challenges in the study area.

The traffic analysis described in the Draft EIS showed that the alternatives with 8-8-8 or 8-10-8 lane configurations (Alternatives D, E, F, and G) would provide relatively modest improvements to queuing and travel time compared to the alternatives with 6-8-6 lane configurations (Alternatives B and C). However, Alternatives B and C would have fewer environmental impacts and a lower cost than Alternatives D, E, F, and G. Furthermore, the southern alignment alternatives (Alternative C, E, and G) would have less environmental impact than the northern alignment alternatives (Alternative B, D, and F).

Therefore, based on analysis of a wide range of engineering, environmental, and cost considerations, as described in the Draft EIS, as well as input received from the public and state and Federal agencies, **Alternative C has been identified as the Preferred Alternative**. Alternative C offers several advantages over the other build alternatives as described below.

The build alternatives differ in the degree of transportation benefit they would provide as well as the likely environmental impacts and cost, as described in the following sections. However, Alternative C would allow the MDTA to deliver a more financially responsible solution because it would maximize the amount of transportation benefit provided for the cost. Alternatives D, E, F, and G would cost at least $2.6 billion more than Alternative C. The additional transportation benefit provided by these larger alternatives would not outweigh the combination of the additional cost and increased environmental impact.

4.1 Alternative C Description

Alternative C (6-8-6 South) would meet the study's purpose and need, which is described in **Section 2**, by replacing the two existing Bay Bridge spans that have five total travel lanes with two new bridge spans that would have eight total travel lanes (four lanes in each direction).

Alternative C extends 8.3 miles along U.S. 50/301 from west of Oceanic Drive to east of Cox Creek to allow sufficient room to transition from six lanes on the approach and departure roadways to eight lanes on the new bridge crossing. The existing roadway alignment and number of lanes beyond these end points on the Western Shore and Eastern Shore would not change. The travel

lanes would be 12 feet wide on the Bay Bridge and approach roadways. Within the limits of these improvements, the median shoulders would be 12 feet wide on the Bay Bridge and approach roadways, and the outside shoulders would be 12 feet wide on the approach roadways and 14 feet wide on the Bay Bridge.

Replacing both spans would eliminate the need for extensive maintenance and rehabilitation of the existing spans. Alternative C would limit the use of two-way operations; therefore, the number of lanes would remain constant on a regular day, would not be affected by inclement weather, and would improve the reliability of crossing the Bay. The vertical navigational clearance would be increased to meet the height established by the USCG, which is 230 feet to the underside of the main span.

Alternative C could include an optional SUP that would provide new connectivity for bicyclists and pedestrians across the Bay Bridge. Following the combined Final EIS/ROD, the MDTA will perform further financial analysis and determine whether a SUP would be included on a new Bay Bridge. If the SUP is included, additional coordination would occur among other agencies regarding connections, parking, maintenance, and other features, as well as consistency with local pedestrian and bicycle plans, the 2025 Maryland State Transportation Trails Strategic Plan, and the Maryland's Complete Streets Policy.

Alternative C would include transit-related improvements that would be made through a financial commitment from the MDTA providing a one-time investment for local transit agencies near the Bay Bridge. The MDTA would coordinate with MTA, local governments, and local transit agencies to help them determine the opportunities. These transit agencies would determine the transit-related improvements that would be most beneficial for them at that time, and they would be separate and distinct projects from the Bay Crossing.

Alternative C would have a cost of $14.8 to $16.4 Billion **without** the SUP, which would be the lowest cost of the build alternatives. The SUP would cost an additional $1.2 billion for a total cost of $16.1 to $17.6 billion **with** the optional SUP, which would still be the lowest cost of the build alternatives.

4.2 Traffic Analysis for Alternative C

This section summarizes the detailed traffic analysis for Alternative C that was provided in the Draft EIS. All build alternatives would limit the need for two-way operations, thus improving reliability for crossing the Bay. All build alternatives would also avoid the bottlenecks projected under Alternative A (No-Build) at the Bay Bridge on non-summer weekdays (NSWD). There would be a bottleneck downstream of the Bay Bridge heading westbound, but no bottlenecks eastbound on NSWD under all build alternatives. On summer weekend days (SWED), there would be bottlenecks downstream of the bridge in both directions under all build alternatives; however, Alternative A (No-Build) would have a bottleneck starting at the Bay Bridge.

As detailed in Section 3.5 and Section 8.1.1 of the Draft EIS, Alternative C would generally perform better than Alternative A (No-Build) and better than or similar to Alternatives B, D, E, F, and G. Based on an analysis of the **queues** for all alternatives, Alternative C would provide the following operational benefits:

- **Eastbound NSWD:** There would be no bottlenecks approaching or downstream of the Bay Bridge.
- **Westbound NSWD:** There would be no bottlenecks approaching the Bay Bridge compared to Alternative A (No-Build), which would have a 2.4-mile queue. Queues would be shorter beyond the Bay Bridge (2.8 miles) compared to Alternative A (No-Build) (3.9 miles).
- **Eastbound SWED:** There would be no queues approaching the Bay Bridge compared to Alternative A (No-Build), which would have a queue longer than 7.1 miles. The queues beyond the Bay Bridge (4.4 miles) would be the shortest compared to the other build alternatives (4.4 to 11.1 miles).
- **Westbound SWED:** Queues approaching the Bay Bridge would not be worse than Alternative A (No-Build) within the study area. Under Alternatives A, B, C, D, and E the queues would extend beyond the study limits. The queue beyond the Bay Bridge (8.7 miles) would be slightly shorter compared to the other build alternatives (8.7 to 9.3 miles).

Based on an analysis of the **travel times** for all alternatives, Alternative C would provide the following operational benefits within the study area:

- **Eastbound NSWD:** Overall travel time through the entire study limits from MD 2/450 to the U.S. 50/301 split (25 minutes) and travel time approaching the Bay Bridge from MD 2/450 to the Bay Bridge (8 minutes) would be shorter than Alternative A (No-Build) (33 minutes total, 17 minutes approaching the Bay Bridge) and approximately the same as the other build alternatives (23 to 25 minutes total, 6 to 8 minutes approaching the Bay Bridge).
- **Westbound NSWD**: Overall travel time through the study area (36 minutes) would be shorter than Alternative A (No-Build) (53 minutes). Travel time approaching the Bay Bridge from the U.S. 50/301 split to the Bay Bridge (9 minutes) would be shorter than Alternative A (No-Build) (20 minutes) and approximately the same as the other build alternatives (9 to 10 minutes).
- **Eastbound SWED:** Overall travel time through the study area (40 minutes) and travel time approaching the Bay Bridge (9 minutes) would be shorter than Alternative A (70 minutes total, 54 minutes approaching the Bay Bridge) and shorter than or approximately the same as the other build alternatives (40 to 85 minutes total, 6 to 10 minutes approaching the Bay Bridge).
- **Westbound SWED:** Overall travel time through the study area (126 minutes) would be shorter than the other build alternatives (126 to 154 minutes); travel time approaching the Bay Bridge (75 minutes) would be approximately the same as Alternative A (No-Build) (79 minutes). All alternatives, including the No-Build, would have average travel speeds below 10 mph approaching the bridge, predominantly caused by the bottleneck at/near the west end of the study limits and the resulting queues could extend back across the Bay Bridge.

Throughput is the amount of traffic that can get across the Bridge and is expressed as a percentage of the traffic that wants to cross the Bay Bridge. Based on an analysis of throughput for all alternatives, Alternative C would provide the following operational benefits:

- **Eastbound and Westbound NSWD:** Throughput (90 to 100 percent) would be higher than Alternative A (No-Build) (80 to 90 percent) and within the same range as the other build alternatives.
- **Eastbound SWED:** Throughput (80 to 90 percent) would be higher than Alternative A (No-Build) (60 to 70 percent).
- **Westbound SWED:** Throughput (80 to 90 percent) would be higher than Alternative A (No-Build) (70 to 80 percent) and within the same range as the other build alternatives.

4.3 Environmental Impacts

Alternative C would have the least impact to cultural, socioeconomic, and most natural resources compared to the other build alternatives, as follows:

- Least impact to historic properties.
- Lowest acreage of impact to residential, industrial, open urban land, and institutional properties.
- Least impact to Section 4(f) properties, including park properties.
- Least impact to wetlands and non-tidal surface waters.
- Least impact to historic oyster bottom and submerged aquatic vegetation (SAV).
- Least impact to forested areas, Critical Areas and Critical Area Buffers.

Alternative C would impact three historic properties, and result in an adverse effect per Section 106 of the National Historic Preservation Act (NHPA) to the fewest number of historic properties. Alternative C would have an adverse effect on two historic properties: the Chesapeake Bay Bridge and Skidmore. Alternative C would also have the smallest area of impact to historic properties (0.9 acre) compared to the other build alternatives (1.3 to 1.9 acres).

Alternative C would result in the least impact to residential, industrial, open urban land, and institutional properties compared to the other build alternatives. Alternative C would have a slightly larger area of impact to commercial properties, and as a result, 0.3 acre more overall right-of-way would be required for Alternative C compared to Alternative B. However, Alternative C would require 60 to 70 acres less than Alternatives D, E, F, and G. Although Alternative B would have slightly less impact to tidal waters of the Chesapeake Bay and right-of-way compared to Alternative C, it is not the Preferred Alternative because it would cause other environmental impacts that Alternative C avoids, such as larger impacts to wetlands, SAV, and the Chesapeake Bay Critical Area.

Following the combined Final EIS/ROD, the MDTA will perform further financial analysis and determine whether an SUP would be included on a new Bay Bridge. If the SUP is included, there would be additional impacts to resources. If the SUP is implemented, Alternative C would still have the least impact to cultural, socioeconomic, and most natural resources compared to other build alternatives.

4.3.1 Section 4(f) of the U.S. Department of Transportation Act and Section 6(f) of the Land and Water Conservation Fund Act

Alternative C would likely result in the least overall harm to Section 4(f) properties. It would require the use[6] of the fewest number of Section 4(f) properties, with a potential *de minimis*[7] impact to Broadneck Peninsula Trail, Sandy Point State Park (public park and historic site), Holly Beach Farm (public park), Kent Island Water Trails, Terrapin Nature Park, Eisinger Property, and Stevensville Middle School. Alternative C (and the other build alternatives) would also require permanent Section 4(f) use of the Chesapeake Bay Bridge due to the removal of the historic bridge spans. Alternatives B and C would avoid Section 4(f) use of the Cross Island Trail, Piney Creek Nature Area, Kent Narrows Landing, and Dutch Mill Farm Restaurant, and the other build alternatives would require use of these properties.

Alternative C would likely result in a *de minimis* impact to Sandy Point State Park, whereas Alternative B would require permanent Section 4(f) use of the park due to the larger encroachment into park property required for the northern bridge alignment. The new bridge piers proposed with Alternative B would impact the southern part of the park's beach area that Alternative C would avoid. Additionally, Alternative B would result in traffic noise increases that extend further into the park, whereas Alternative C would only result in a traffic noise increase along the beach immediately adjacent to the bridge.

Alternatives C, E, and G would convert less park lands protected by Section 6(f) to non-recreational land than Alternatives B, D, and F.

4.3.2 Section 404 of the Clean Water Act

The MDTA considered the Section 404(b)(1) Guidelines (23 CFR 230) when identifying the Preferred Alternative. The guidelines require that activities requiring discharge of dredged or fill material into waters of the U.S. (WOTUS) be the "least environmentally damaging practicable alternative" (LEDPA) to the proposed action. The LEDPA is also referred to as a "no practicable alternative" requirement,[8] and the following questions have been considered:

1. *Is the alternative **practicable**?*

All build alternatives, including Alternative C, would address the project purpose and are practicable. Alternative A (No-Build) would not address the project purpose and is therefore not practicable.

[6] A Section 4(f) use is defined by 23 CFR 774.17 as a permanent incorporation of land into a transportation facility; a temporary occupancy of land that is adverse in terms of the Section 4(f) preservation purpose; or a constructive use as determined by the criteria in 23 CFR 774.15.

[7] Per FHWA Section 4(f) regulations (23 CFR 774), for historic sites, a *de minimis* impact means no historic property is affected or there will be "no adverse effect"; for parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for Section 4(f) protection.

[8] AASHTO, "Applying the Section 404(b)(1) Guidelines in Transportation Project Decision-Making" (2016).

2. *If it is practicable, does it cause **less adverse impact to the aquatic ecosystem** than other practicable alternatives?*

Alternatives B and C would cause less adverse impact to the aquatic ecosystem (WOTUS, including wetlands) than Alternatives D, E, F, and G. Alternative B would have comparable aquatic ecosystem impacts to Alternative C, resulting in 0.3 acre more impacts to wetlands and 30 additional linear feet of impact to non-tidal surface waters. Alternatives B and C would both impact 290 linear feet of tidal surface waters. Alternative C would impact slightly more tidal surface waters than Alternative B – 132.9 acres compared to 130.7 acres – because Alternative C would require a slightly longer bridge given the Chesapeake Bay shoreline location. Overall, Alternative B would have 1.5 acres less impact to the aquatic ecosystem than Alternative C.

3. *If it is practicable and causes less adverse impact to the aquatic ecosystem, does it have **other significant adverse environmental consequences**?*

Although Alternative B would have slightly less impact to the aquatic ecosystem compared to Alternative C, it is not the Preferred Alternative because it would cause other significant adverse environmental consequences that Alternative C would avoid. Alternative B would require bridge piers within the historic Sandy Point State Park, resulting in permanent acquisition of a portion of the public beach and introducing a new vertical clearance restriction to waterway access to Mezick Pond. These improvements would result in 0.4 acre more impact than Alternative C, a Section 4(f) permanent use (i.e., permanent incorporation of land into a transportation facility), as well as conversion of land protected under Section 6(f). Alternative C would minimize the amount of land impacted within the park. Alternative B would directly impact 0.7 acre of historic and existing SAV beds, whereas Alternative C would avoid direct impacts to SAV. Alternative B would also result in greater impacts to horseshoe crab habitat and historic oyster bottom than Alternative C.

Therefore, based on the review completed to date, the Section 404 LEDPA for the Tier 2 Study appears to be Alternative C. However, USACE and USEPA would make the LEDPA determination following their further review.

5 ALTERNATIVES NOT PREFERRED

The six build alternatives all met the study's purpose and need and would be reasonable to implement. However, based on the analysis of a wide range of engineering, environmental, and cost considerations, and input from the public and from state and Federal agencies, Alternatives A, B, D, E, F, and G are not preferred.

Alternative A (No-Build) was included in the Draft EIS as the baseline condition for alternatives comparison; however, it is not the Preferred Alternative because it would not meet the Tier 2 Study purpose and need. The Bay Bridge is and would remain the major bottleneck in the study area under Alternative A (No-Build), even with two-way operations. Currently, with two-way traffic operations, the Bay Bridge is not a bottleneck under NSWD, but is a bottleneck under SWED. If Alternative A (No-Build) were selected, the Bay Bridge would become a bottleneck under NSWD, and a larger bottleneck than it is today under SWED, even with two-way operations.

Alternative A (No-Build) would not increase roadway capacity or mobility, correct roadway deficiencies, or provide the vertical navigational clearance established by the USCG. Alternative A (No-Build) would also require substantial maintenance and related lane closures that would further increase congestion over time and compound existing traffic congestion, mobility, and roadway deficiency issues. It would require the MDTA to continue to frequently operate two-way traffic during peak periods, resulting in continued concerns with operations due to the limitations of two-way traffic. Alternative A (No-Build) would have the lowest environmental impact, but it would not meet the Tier 2 Study purpose and need and therefore, would not be reasonable.

Alternatives B, D, E, F, and G are not preferred but would meet the Tier 2 Study purpose and need by replacing the two existing Bay Bridge spans with two new spans. They could also include an optional SUP that would provide connectivity for bicyclists and pedestrians across the Bay Bridge where it does not currently exist. However, where Alternatives D, E, F, and G would offer some advantages over Alternative C, the larger footprint, increased environmental impact, and limited additional transportation benefit would not be enough at this time to justify spending an additional $2.6 billion. Additional details on the impacts for Alternatives B, D, E, F, and G can be found in **Chapter 4** of the Draft EIS.

The following points provide a brief overview of why Alternatives B, D, E, F, and G are not preferred due to the traffic operations, followed by a discussion of the environmental impacts.

- Alternative B would provide the same operational benefits as Alternative C.
- Eastbound on NSWD, Alternatives D, E, F, and G would not provide any improvement in bottlenecks over Alternative C and travel times would be approximately the same.
- Westbound on NSWD, Alternatives D, E, F, and G would not provide any improvement in bottlenecks over Alternative C approaching the Bay Bridge. While there would be additional queuing downstream of the Bay Bridge in Alternative C compared to Alternatives D, E, F, and G, the congestion would not be caused by the Bay Bridge but rather a downstream bottleneck. The travel times for Alternatives D, E, F, and G would be about 11 minutes shorter in the westbound direction on NSWD than Alternative C between the Bay Bridge and MD 2/MD 450.

- Eastbound on SWED, Alternatives D, E, F, and G would not provide any improvement in queuing over Alternative C and would actually have additional queuing both approaching the Bay Bridge (Alternatives D and E) and downstream of the Bay Bridge (Alternatives D, E, F, and G). Total travel times through the corridor in the eastbound direction on SWED would be about 37 to 45 minutes longer for Alternatives D, E, F, and G than for Alternative C.
- Westbound on SWED, Alternatives D and E would not provide any improvement in queuing over Alternative C. While Alternatives F and G would provide an improvement in queuing over Alternative C, the primary cause of congestion in this area would not be caused by the Bay Bridge, but rather a bottleneck downstream of the Bay Bridge. The total travel times through the corridor would be about 10 to 28 minutes longer in the westbound direction on SWED for Alternatives D, E, F, and G than for Alternative C.

Alternative B would have the same typical section as Alternative C, but it would follow a northern bridge alignment (one bridge span north of the existing spans and one bridge span in between the existing spans). Alternative B would have similar impacts to Alternative C, and in some cases slightly lower impacts; however, Alternative B would result in greater impacts to wetlands, Critical Areas and buffers, SAV (including coverage recorded in the last 5 years and historic SAV areas), horseshoe crab habitat, and historic oyster bottom than Alternative C. Additionally, Alternative B would result in greater impacts to historic and park properties, including Sandy Point State Park, due to the bridge alignment crossing over the southern part of the park's beach area.

Alternative D would follow a northern bridge alignment and increase the number of lanes across the Bay Bridge from five to eight (four in each direction) and the number of lanes on the approach and departure roadways from six to eight (four in each direction). **Alternative E** would have the same typical section as Alternative D, but it would follow a southern bridge alignment. The increased number of lanes on the approach roadways would require a longer transition area, necessitating a 20.4-mile-long project that would require design modifications, reconfigurations, and major reconstruction at several interchanges and bridges. Alternatives D and E would cost substantially more than Alternatives B and C.

Alternative F would follow a northern bridge alignment and increase the number of lanes across the Bay Bridge from five to ten (five in each direction) and the number of lanes on the approach and departure roadways from six to eight (four in each direction). **Alternative G** would have the same typical section as Alternative F, but it would follow a southern bridge alignment. Similar to Alternatives D and E, the number of lanes on the approach roadways would require a longer transition area, necessitating a 20.4-mile-long project that would require design modifications, reconfigurations, and major reconstruction at several interchanges and bridges. Alternatives F and G would cost substantially more than Alternatives B and C.

Alternatives D, E, F, and G would have the highest impacts to aquatic and on-land natural resources, cultural resources, and socioeconomic resources due to the widening required to accommodate the additional lanes on the approach and departure roadways. Compared to Alternative C, these alternatives would result in greater impacts to waters and wetlands, floodplains, forested areas, Forest Interior Dwelling Species (FIDS) habitat, SAV (including coverage recorded in the last 5 years and historic SAV beds), habitat connectivity network (HCN) (formerly green infrastructure), oyster sanctuaries and historic oyster bottom, public shellfishery

areas, farmland soils, and local protected lands and environmental trust easements. Alternatives D, E, F, and G would impact approximately 235 more acres of Critical Areas and more historic properties (adversely affecting the Dutch Mill Farm Restaurant) than Alternative C. They would impact more community facilities (26 properties compared to 8 properties for Alternative C), more business displacements (7 compared to 2 for Alternative C), and more residential displacements (1 for Alternatives F and G compared to 0 for Alternative C). The larger footprints of Alternatives D, E, F, and G would require more right-of-way acquisition, including more than 80 acres of right-of-way and partial acquisition from 211 to 215 properties, versus approximately 21 acres of right-of-way from 48 properties for Alternative C.

6 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

A comprehensive public engagement and agency coordination program has been conducted throughout the Tier 2 Study. The MDTA and FHWA have provided opportunities for meaningful agency coordination and public involvement with the initial Tier 2 Study activities, publication of the NOI in the Federal Register, and the release of the Draft EIS.

6.1 Public Engagement

Public engagement activities were initiated shortly after the launch of the Tier 2 Study in June 2022 and continued through the Draft EIS NOA. Activities included:

- the creation of and regular updates to the Bay Crossing Study website (www.baycrossingstudy.com);
- three rounds of public meetings (September 2022, September 2023, and December 2024) to gather public input at key Tier 2 Study milestones;
- a Transit and Bicycle/Pedestrian Listening Meeting (June 2023);
- attendance at fifty-seven community events throughout the corridor and surrounding area to engage the public and direct them to additional information about the Study.

A detailed summary of public engagement prior to January 23, 2026, including common themes of the comments received during the Tier 2 Study, is provided in the Draft EIS. Following the Draft EIS NOA, the MDTA (in coordination with FHWA) held three Public Hearings to provide an opportunity for the public to review the Study, ask the Study team questions, submit comments, and offer testimony on the Draft EIS including the MDTA RPA. A virtual hearing was held on February 9, 2026, and in-person hearings were held on February 10, 2026, in Anne Arundel County and on February 12, 2026, in Queen Anne's County. During the comment period (January 23 to March 9, 2026) the public was encouraged to submit comments on the Draft EIS through the Bay Crossing Study website, email, mail, or phone.

6.2 Agency Coordination

The MDTA is engaging Federal, state, regional, and local agencies (including adjacent counties) and other stakeholders in the Tier 2 Study. The MDTA developed a coordination plan that outlines the public and agency review process and ensures active participation in the Tier 2 Study. The coordination plan is available in Appendix B of the Draft EIS and on the Study website at https://www.baycrossingstudy.com.

Since the Tier 2 Study began, Interagency Coordination Meetings (ICMs) have been held regularly with the cooperating and participating agencies identified at the Federal, state, local, and regional levels in accordance with 23 CFR 771.107 and 23 USC § 139. At each ICM, the MDTA presented information about a variety of Tier 2 Study topics and sought initial agency feedback. All cooperating and participating agencies have been encouraged to provide comments at ICMs or via email between meetings. To date, the MDTA has received concurrence from cooperating agencies on the coordination plan and Study schedule, purpose and need, environmental methodologies, and ARDS. Concurrence provided by the agencies on these milestones indicates the agency's agreement that the level of information provided and analysis

conducted is sufficient to inform NEPA decision-making under 23 USC § 139 and that the alternatives development process has not resulted in the elimination of any alternatives necessary for permits or approvals required under any other Federal law.

In addition to ICMs, the MDTA has held targeted agency working group meetings to coordinate design considerations and specific technical areas of the Tier 2 Study with Federal, state, and local agencies with specialized expertise, management responsibilities, or regulatory jurisdiction.

6.3 Draft EIS Public and Agency Comments Received

The Draft EIS comment period was from January 23 through March 9, 2026. In total, 1,043 public comments were received.

Common themes expressed in the public comments received during the Draft EIS comment period included:

- Support for the SUP and its benefits including:
  - Recreation & transportation
  - Economic vitality
  - Access for underserved communities
  - Access to community facilities
- Recommendations for locating the crossing elsewhere.
- Safety & incident management concerns; recommendations on safety features to include in the bridge design.
- Visual aesthetics of a new bridge and visual impacts to surrounding properties in landward areas.
- Concerns about existing and future traffic conditions, congestion and traffic management in the corridor.
- Concerns about costs, funding, and cost effectiveness.
- Recommendations for integrating enhanced transit options into the project and providing multi-modal infrastructure.
- Concerns about the study limits and recommendations to expand them.

Comments received from cooperating and participating agencies are summarized below and included in **Appendix A**.

Comments from **Anne Arundel County** expressed support for including a protected SUP for bicyclists and pedestrians, as well as multimodal transit funding in the design of the future Chesapeake Bay Bridge to enhance equitable access, connectivity, and economic vitality. Anne Arundel County Department of Recreation and Parks also provided comments through the Maryland Department of Planning (MDP) Clearinghouse regarding potential temporary impacts to the newly constructed Broadneck Peninsula Trail and MDTA's stated commitment to fully restore the trail following any impacts.

Comments from the **Maryland Department of the Environment (MDE)** and comments received through MDP Clearinghouse coordination on March 11, 2026, included the following:

- MDE expressed support for the selection of Alternative C for the Chesapeake Bay Crossing due to its lower environmental and community impacts, while emphasizing the

need for continued impact minimization, appropriate mitigation planning, and adherence to regulatory requirements throughout the project's design and construction phases.

- MDE's Water and Science Administration found the Tier 2 Study consistent with applicable standards, provided the project adheres to relevant floodplain guidelines. They also recommended that the project incorporate climate resiliency measures.

- MDE's Solid Waste Program emphasized proper disposal and recycling of waste, including construction, demolition and land clearing debris and stated that the Program should be contacted in later phases of the project regarding compliance with hazardous waste regulations.

Comments from the **Maryland Department of Natural Resources (MDNR)** included a request to add clarifying statements to the EIS on the avoidance of impacts to Sandy Point State Park, and the potential for temporary access impacts to Mezick Pond during construction. MDNR also requested additional discussion of impacts to commercial fisheries and made various recommendations on improvements to technical documentation for several resources in the EIS, while offering technical guidance on specific issues and requesting ongoing coordination to ensure environmental concerns and species protection are addressed as the project advances.

Maryland Department of Planning (MDP) provided comments in support of the MDTA's RPA (Alternative C) for its reduced environmental impact. MDP also recommended further clarification and collaboration on transit, transportation management, safety measures, and documentation to maximize project effectiveness and alignment with other state and local transportation projects, plans and programs. In addition, MDP recognized that Alternative C (MDTA's RPA) would be exempted from Priority Funding Area laws and recommended that the MDTA document this in the Final EIS.

A letter dated March 9, 2026, from the **Maryland Department of Planning (MDP) Clearinghouse** recommends the Chesapeake Bay Crossing Study Tier 2 NEPA Draft EIS as generally consistent with relevant state and local plans, programs, and objectives. This recommendation is subject to qualifying comments from MDE, Maryland Historical Trust (MHT), and AA County related to environmental, historic, and community impact. MDP supports proceeding with Alternative C, contingent upon compliance with all applicable regulations and commitments to mitigate adverse effects.

The **Maryland Historical Trust (MHT)** provided a statement through the MDP Clearinghouse that they have been coordinating with the MDTA, FHWA, and other consulting parties to develop and execute a Programmatic Agreement to resolve adverse effects to historic properties under Section 106 of the NHPA, prior to issuance of the Final EIS/ROD.

Comments from the **National Oceanic and Atmospheric Administration (NOAA) Fisheries Habitat and Ecosystem Services Division** included three minor clarifications regarding underwater noise tool attribution and fish stock assessment data accuracy.

Comments from **Queen Anne's County** express strong support for adding capacity to the Bay Crossing to alleviate congestion and improve mobility and noted that the Draft EIS alternatives are generally consistent with local plans. The County requested continued involvement in the planning and future design, including coordination on corridor and interchange improvements,

consideration of future widening, and attention to local traffic impacts and multimodal needs as the project advances.

Comments from the **U.S. Environmental Protection Agency (USEPA)** supported the ongoing efficient environmental review process, and provided recommendations to ensure the final environmental documentation includes comprehensive water resource impact analyses and coordination.

Comments from the **U.S. Army Corps of Engineers (USACE)** recommended all alternatives, environmental impacts, permitting requirements, and mitigation measures, particularly those related to WOTUS and USACE Civil Works projects, are thoroughly evaluated and incorporated in the Final EIS, while expressing support for continued interagency coordination as the project advances.

Comments from the **U.S. Department of the Interior (DOI) National Park Service (NPS) and U.S. Geological Survey (USGS)** support the identification of Alternative C as the Preferred Alternative, while recommending enhancements to mitigation plans for natural resources, noise, lighting, signage, and groundwater protection. DOI also supported ongoing coordination to minimize impacts to Section 4(f) and 6(f) properties.

Public and agency comments have been considered in the refinement of the Preferred Alternative and development of the Final EIS/ROD. The Final EIS will include comments received from the public and agencies, as well as responses to the comments.

7 REFINEMENTS TO THE PREFERRED ALTERNATIVE

Following identification of Alternative C as the Preferred Alternative, the MDTA advanced engineering to further avoid and minimize impacts to sensitive resources to support a more accurate conceptual compensatory mitigation package. The following modifications were made to the conceptual design of Alternative C and resulted in avoiding impacts to Sandy Point State Park, Holly Beach Farm, and two business displacements, minimized impacts to historic properties, and reduced impacts to Critical Areas, FIDS habitat, HCN, and mapped Sensitive Species Project Review Areas (SSPRAs).

- On the Western Shore, the eastbound lane transition from three to four lanes has been shifted approximately 600 feet to the east. This change avoids one business displacement (automotive retail center) adjacent to Whitehall Road and one partial commercial property acquisition in Jemal's Bay 50 Shopping Center.
- On the Western Shore, a potential SWM pond in the southwest corner of Sandy Point State Park has been removed from the Preferred Alternative. This change avoids the roadway-related impact to Sandy Point State Park, which is a Section 4(f) and Section 6(f) property.
- On the Western Shore, the business displacement (tree/lawn care) adjacent to Log Inn Road that was identified in the Draft EIS is being reclassified as a partial acquisition because the existing building is not being impacted.
- On the Western Shore, the Skidmore Drive alignment has been shifted to the north and a retaining wall has been added. With this change, the Preferred Alternative would avoid the impact to Holly Beach Farm, which is a Section 4(f) and Section 6(f) property.
- On the Eastern Shore, along westbound U.S. 50/301, the linear SWM facility adjacent to Island Plaza, west of Duke Street, has been removed from the Preferred Alternative. This change reduces the impact to the primary parking lot for this business plaza.

Table 7-1 provides a comparison of the impacts from Alternative C as presented in the Draft EIS to the impacts of the refined Preferred Alternative. Impact numbers that are reduced for the Preferred Alternative ("Refined Alternative C") from what was presented in the Draft EIS for the MDTA RPA (Alternative C) are highlighted in green. Impacts that increased for the Preferred Alternative relative to Alternative C as presented in the Draft EIS are highlighted in yellow and include forest area impacts and new impervious surfaces.

The increase in forest impacts is due to field verification of the forest boundaries within the LOD of the Preferred Alternative. Additional areas that meet the Maryland Forest Conservation Act definition of a forest were identified during field surveys which were not previously identified during the desktop review. These areas are primarily located within the interchange loops of Oceanic Drive as well as smaller forest edge areas just west of Oceanic Drive and at the northwest corner of MD 8 and U.S. 50/301. Impervious surfaces increased due to the shift in Skidmore Drive described above, as well as a revised methodology used to calculate new impervious areas.

Table 7-1: Comparison of Potential Impacts between Draft EIS (MDTA RPA) Alternative C and the Preferred Alternative

Resource Type	Resource	Unit	Draft EIS MDTA-RPA (Alt. C)	Preferred[1] Alternative (Refined Alt. C)
Community Resources	Commercial Displacements	#	2	0
	Total Property Impact	#	48	45
		acres	20.8	18.2
	Community Facilities	#	8	7
		acres	9.5	7.8
	Number of Parks	#	4	2
	Park Property Area	acres	2.4	0.8
Noise	Noise Sensitive Areas	#	28	28
Historic Resources	Number of Historic Properties[2]	#	3	2
	Historic Property Area	acres	0.9	0.4
Other Resources/ Preservation Areas	Number of Section 4(f) Properties	#	9	6
	Section 4(f) Properties	acres	2.7	0.9
	Number of Section 6(f) Properties	#	2	0
	Conservation Easements	acres	1.7	0
	Habitat Connectivity Network (HCN)	acres	8.0	7.2
	Local Protected Land	acres	0.7	0.7
Natural Resources	100-Year Floodplain Area	acres	35.6	35.6
	Wetlands (Field Delineated)	acres	5.6	5.6
	Surface Waters: Non-tidal	acres	0.1	0.1
		linear feet	670	670
	Surface Waters: Tidal[3]	acres	1.0	1.0
		linear feet	290	290
	Chesapeake Bay Tidal Water Impacts[4]	acres	131.9	131.9
	Critical Areas	acres	164.1	162.5
	Critical Area (100-ft) Buffer	acres	17.7	17.7
	Public Shellfishery Areas	acres	6.1	6.1
	Oyster Sanctuaries	acres	0.6	0.6
	Natural Oyster Bars	acres	10.2	10.2
	Essential Fish Habitat	acres	136.0	136.0
	FIDS Habitat	Acres	12.1	11.4
	Mapped SSPRA	#	7	7
		acres	109.4	109.1
	Forest Areas	acres	27.4	57.7
	Impervious Surface	acres	95.7	98.4

[1] Green highlighting denotes impacts that decreased from the MDTA-RPA Alt. C in the Draft EIS to the Preferred Alternative, while yellow highlighting denotes impacts that decreased.

[2] Historic properties also include the Chesapeake Bay Bridge. This historic bridge is not included in the impact area calculations.

[3] Impacts do not include the Chesapeake Bay proper.

[4] Includes impacts from new bridge construction and old bridge pier removal.

8 ENVIRONMENTAL IMPACTS AND MITIGATION

8.1 Overview

This section summarizes environmental impacts resulting from the Preferred Alternative and the conceptual mitigation measures developed to address them. Impact values discussed in this section reflect the refinements made to Alternative C after it was identified as the Preferred Alternative, as described in **Section 7**. Mitigation discussions are provided for those resources that have statutory mitigation requirements beyond the implementation of best management practices (BMPs) and other required avoidance and minimization measures.

Impacts to environmental resources have been avoided and minimized where practicable. Efforts to further reduce impacts will continue through the design phase should the Preferred Alternative be selected. Examples of avoidance and minimization measures implemented to date include:

- Preliminary alternatives that were deemed not reasonable due to their environmental impacts were not included in the ARDS (see NOI for details).
- LODs for the ARDS were adjusted where practicable to reduce impacts to sensitive resources.
    - The LODs of the ARDS were narrowed using steeper side slopes, and/or shifted to avoid larger stream and wetland complexes, a cemetery, historic properties, and park properties per Section 4(f)/6(f), where practicable.
- The potential trail connections for the optional SUP were relocated to reduce impacts to Sandy Point State Park and Terrapin Nature Park following coordination with MDNR and Queen Anne's County, respectively.
- The environmental impact footprint was substantially reduced by identification of Alternative C as the Preferred Alternative compared to the other build alternatives, avoiding numerous natural, socioeconomic, and other resources.

Further engineering refinements to the Preferred Alternative that avoided impacts to Sandy Point State Park, Holly Beach Farm, and other resources have also been made as described in **Section 7**.

Proposed compensatory mitigation is conceptual and based on desktop analysis and windshield assessment only. All potential compensatory mitigation will require property owner coordination, technical investigations and screening, and agency coordination and approval during the design and permitting phase for the Selected Alternative. The MDTA is committed to mitigating the impacts of the Preferred Alternative and eventual Selected Alternative in accordance with Federal and state regulations, and will work with the regulatory agencies and resource managers through design and construction to develop approved final compensatory mitigation plans, obtain all applicable permits, and prepare construction monitoring plans as applicable, as well as post-construction monitoring plans for any permittee-responsible mitigation (PRM) elements.

8.2 Socioeconomic Resources

8.2.1 Impacts

The Preferred Alternative will not result in residential, community facility, or business displacements; bisect residential areas; or create new impediments to travel through residential communities. The Preferred Alternative will include the partial acquisition of 18.2 acres of right-of-way from 45 parcels. The optional SUP would increase the acreage required for partial acquisition by 1.2 acres.

Partial acquisitions will be required from undeveloped strips of land within community facility properties along U.S. 50/301, including Stevensville Middle School, Kent Island United Methodist Church, Broadneck Peninsula Trail, Terrapin Nature Park, Chesapeake Bay Trail, the DNR Police – Southern Region Broadneck Office, Stevensville Park & Ride, Bay Bridge Marina, and Delmarva Power & Light Company. The Preferred Alternative will not impact building facilities or restrict access; therefore, community facilities and services will continue unimpeded by the Preferred Alternative. The optional SUP would require additional partial acquisition from Terrapin Nature Park and would have additional impacts to Sandy Point State Park.

8.2.2 Mitigation

Complete avoidance of property impacts for conversion to transportation right-of-way under the Preferred Alternative is not practicable. However, the MDTA has reduced impacts where practicable and, through LOD refinements, avoided two business displacements previously reported in the Draft EIS. The MDTA will continue to evaluate minimization measures to reduce impacts from the Selected Alternative through final design and construction. All property owners, from whom property right-of-way would be obtained, will be compensated and paid fair market value for the affected property in accordance with Federal and state requirements under the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended. The compensation value will be proportionate to the amount of property taken. Trails that are impacted by construction of the Selected Alternative, including the Broadneck Peninsula Trail, will be restored after construction, to maintain trail continuity through the project area.

8.3 Visual Resources

8.3.1 Impacts

Visual impacts for the Preferred Alternative include: clearing vegetation; making the road more visible from surrounding land uses; increased visibility of roadway lanes and the new, higher bridge from the Chesapeake Bay and surrounding land; and the potential lighting on the Bay Bridge. The construction process will temporarily disrupt the landscape, with cranes, scaffolding, and other equipment altering the view. If advanced, the optional SUP would have minimal additional visual impact since it would be constructed on the new bridge structure; however, it would require additional lighting features. The use of the new recreational facility would be a visual change for motorists crossing the bridge. For users of the facility, the optional SUP would provide new views of the Chesapeake Bay and nearby shorelines from the new bridge.

8.3.2 Mitigation

Mitigation measures to lessen the visual impact of the Selected Alternative will be considered as appropriate during final design in accordance with FHWA guidelines and coordinated with relevant agencies and stakeholders. Incorporating aesthetic elements into the project design can reduce visual impacts and enhance the viewer's experience and acceptance of the visual change. The

design of the highway elements and new Bay Bridge could incorporate elements that enhance visual appeal. This may include landscaping enhancements on the approach roadways and aesthetic architectural elements on a new bridge, as well as the lighting design.

Measures to ensure safety and navigational compliance, and minimize impacts on the environment and natural species, may be considered in the lighting design. These measures could include full-cutoff luminaires to prevent light spill into adjacent habitat, and consideration of DarkSky International guidelines to protect nocturnal species.[9] The MDTA will develop a lighting plan for a new bridge during final design. Elements of the lighting plan would depend on structure type of the new bridge and whether the optional SUP is included.

8.4 Cultural Resources

8.4.1 Impacts

The Preferred Alternative will result in the demolition of the Chesapeake Bay Bridge (William Preston Lane Jr. Memorial Bridge) (Maryland Inventory of Historic Properties [MIHP] No. AA-47, AA-48), which is eligible for inclusion in the National Register of Historic Places (NRHP). Only the Administration Building, which contributes to the significance of the bridge, will remain. Demolition of the two bridge spans will result in an adverse effect on the Chesapeake Bay Bridge under Section 106 of the NHPA.

Impacts to Skidmore historic district (MIHP No. AA-2594), also NRHP eligible, include a total of 0.4 acre at 1015 Colbert Road, 1019, 1021, and 1031 Skidmore Drive. Impacts to historic properties were avoided and minimized by reducing the footprint of the Preferred Alternative. For example, a concrete barrier or a retaining wall would be constructed instead of grading near historic properties. In certain locations, the alignment of adjacent frontage roadways were shifted slightly to further reduce impacts to historic properties.

While physical impacts are only located within the Skidmore historic district's non-contributing parcels, these impacts diminish integrity of setting, feeling, and association of the district, as discussed in the Draft EIS. In addition, the Preferred Alternative will result in cumulative adverse effects on Skidmore as determined under Section 106 (36 CFR §800.5[1]) due to the past actions in the Area of Potential Effects (APE) that have diminished the spatial organization, design, setting, and feeling of Skidmore; physical impacts to Skidmore by the Preferred Alternative will augment previous diminishment of these aspects of integrity and result in an adverse effect to the historic district.

An effect determination was transmitted to the MHT and Section 106 consulting parties on January 23, 2026. MHT concurred with the effect determination on February 27, 2026. FHWA and the MDTA will execute a Programmatic Agreement to resolve adverse effects, anticipated in September 2026. A draft of the Programmatic Agreement was provided for public review in the Draft EIS, Appendix D. The Programmatic Agreement provides for the resolution of adverse effects to historic properties, and establishes procedures for continued consultation as design advances, including additional historic properties identification for in-water portions of the Preferred Alternative LOD, any stream and wetland mitigation sites, or future expansion of the

[9] https://darksky.org/resources/guides-and-how-tos/lighting-principles/

APE or archaeological survey area. Under oversight of FHWA, the MDTA will implement the terms of the Programmatic Agreement as the project continues following the ROD.

8.4.2 Mitigation

Mitigation measures are currently being identified through the Section 106 consultation process to address the adverse effect; this mitigation will be recorded in the Section 106 Programmatic Agreement. A draft of this agreement was included with the Draft EIS and will be executed prior to the Final EIS/ROD.

Potential Chesapeake Bay Bridge mitigation measures could include documentation of the bridge through photography of the bridge prior to demolition and digitally scanning the bridge (such as 3D laser scanning, LiDAR, and/or high-definition photogrammetry). Additional mitigation measures could include approximately four interpretive panels installed at publicly accessible locations in Anne Arundel and/or Queen Anne's counties; online interpretive content about the history and significance of the bridge; and a playground/interactive outdoor interpretive area at Sandy Point State Park.

Proposed mitigation measures to resolve adverse effects on Skidmore include documentation of the history of descendant communities of the Broadneck Peninsula through a Multiple Property Documentation form. This type of document groups related resources and identifies significant themes, trends and patterns of history that are common among these resources. The documentation would establish the framework for evaluating the National Register eligibility of these properties. Additional mitigation measures could include the development of interpretive panels that provide information about the history of the community. Additionally, a booklet aimed at the general public with information about the history of Skidmore descendent communities of Broadneck Peninsula, could be prepared and distributed to the Maryland Historical Trust and Anne Arundel County organizations such as public libraries, schools, and/or historical societies.

Prior to final design, the MDTA will complete Phase I archaeological investigation of the LOD and consult with MHT regarding the level of effort required. Methods could include side-scan sonar, magnetometer, sector scan, and sub-bottom profiler. Should any resources be identified as the result of the underwater survey that may be eligible for the NRHP, the MDTA will follow procedures outlined in the Programmatic Agreement to evaluate the resource for NRHP eligibility, assess effects, and identify potential for avoidance, minimization, or mitigation for any adverse effects to NRHP-eligible historic properties.

8.5 Natural Resources

8.5.1 Soils and Farmland Soils

8.5.1.1 Impacts

The Preferred Alternative will require cut/cover, excavation, filling, cutting, pile driving, vegetation clearing, addition of impervious surface, and new physical elements that would displace soil. Soil may also be compacted by heavy equipment over non-paved areas. The Preferred Alternative would impact 3.9 acres of Prime Farmland Soils and 15.7 acres of Farmland Soils of Statewide Importance. The optional SUP would add 0.6 acre of impact to Prime Farmland Soils and 0.3 acre of impact to Farmland Soils of Statewide Importance.

8.5.1.2 Mitigation

The MDTA will prepare the NRCS-CPA-106 (Farmland Conversion Impact Rating for Corridor Type Projects) form for submission to Natural Resources Conservation Service (NRCS) in accordance with the Farmland Protection Policy Act (FPPA) for the Preferred Alternative. The completed form will be included in the Final EIS. The MDTA will prepare an Erosion and Sediment Control (ESC) Plan during final design in accordance with Maryland Department of the Environment (MDE) guidelines and will ensure the appropriate BMPs are in place during construction of the Selected Alternative to minimize impacts to soils.

8.5.2 Surface Water Resources and Groundwater

8.5.2.1 Impacts

The Preferred Alternative would require approximately 98.4 acres of new impervious surface across four MD 12-digit watersheds: Lower Severn River, Chesapeake Bay Proper (mainstem), Kent Island Shore, and Northern Eastern Bay. The optional SUP would require an additional 12.3 acres of new impervious surface. Increased impervious surfaces could cause changes in surface hydrology and introduce additional roadway contaminants to surface waters, potentially increasing water impairment and affecting the total maximum daily loads (TMDLs) of these waterways. The Preferred Alternative could also impact the quantity and quality of groundwater recharge due to greater impervious surfaces redirecting potential groundwater recharge to surface water bodies. Additionally, the Preferred Alternative would impact five inactive groundwater wells. Active wells are near, but not within, the Preferred Alternative LOD, and impacts are not anticipated.

Impacts to the state-designated Scenic Severn River are limited to minor visual differences in the view of the Bay Bridge from the mouth of the river due to the larger and higher structure proposed and temporary visual impacts during construction. These potential visual impacts are not expected to substantially impact the overall scenic nature of the river.

8.5.2.2 Mitigation

The MDTA will continue to avoid and minimize impacts to surface and groundwater resources through design and construction. The MDTA will coordinate with USGS and the MDE Water Supply Program during final design to confirm potential impacts to inactive and active groundwater wells and determine if any groundwater wells require abandonment. Any necessary abandonment procedures will also be coordinated, and the need for mitigation, such as well relocation, will be determined.

SWM plans to mitigate impacts from new impervious surfaces will be developed in compliance with all applicable MDE regulations and guidance and designed in accordance with the SWM Act of 2007 and MDE's 2000 Maryland Stormwater Design Manual (Rev. May 2009) or updated guidance. SWM systems will be designed to help control and treat runoff and reduce peak flows in accordance with COMAR 26.17.02. Strict ESC measures will be implemented in accordance with COMAR 26.17.01 during construction to minimize erosion and prevent downstream deposition of roadway constituents and sediment. Specific measures to further minimize impacts to the Chesapeake Bay during construction will be evaluated in design.

During project design and permitting, a Section 401 Water Quality Certification (WQC) request will be submitted to MDE, and the MDTA will work with MDE to obtain approval that anticipated

discharges will comply with Federally mandated water quality standards. The WQC request will detail SWM and ESC techniques, landward and in-water BMPs and other avoidance and minimization measures to reduce water quality impacts determined during design of the Selected Alternative. The MDTA will also develop a Stormwater Pollution Prevention Plan to ensure that stormwater runoff does not intercept potentially harmful chemicals, hazardous materials, sanitary and other wastes, wash waters, and any other potential pollutants that may be found at a construction site.

The MDTA will continue to coordinate with MDNR and the Severn River Commission in accordance with the Maryland Scenic and Wild River Act throughout the design process to minimize impacts to vistas from the mouth of the Severn River.

8.5.3 Floodplains

8.5.3.1 Impacts

Potential encroachments on the FEMA 100-year floodplain by the Preferred Alternative and the optional SUP are included in **Table 8-1** by associated waterway.

Table 8-1: FEMA 100-Year Floodplain Encroachments (Acres)

Floodplain	Impacts	Additional Optional SUP Impacts
Meredith Creek	0.4	0.0
Mezick Pond	0.6	0.9
Chesapeake Bay	32.5	0.4
Thompson Creek	0.2	0.0
Cox Creek	1.8	0.0
Total Floodplain*	**35.6**	**1.3**

**Due to rounding, totals may not equal the sum of all individual floodplain encroachments.*

The Preferred Alternative will result in longitudinal floodplain encroachments at various locations where culverts are extended. Encroachments will result in permanent loss or reduction in natural and beneficial floodplain values such as flood flow moderation, sediment and pollutant retention, groundwater recharge, and wildlife habitat. Roadway expansion and extended culverts for the Preferred Alternative may increase the size of existing floodplain encroachments but will not result in new significant encroachments into the floodplain as defined in 23 CFR 650.105(q).

8.5.3.2 Mitigation

Preliminary design of the Preferred Alternative has avoided or reduced floodplain encroachments to maintain hydrologic function and wildlife habitat, where practicable, using steeper slopes, retaining walls, and other measures to reduce the LOD. Further impact minimization will be achieved by incorporating BMPs as identified in COMAR 26.17.01 for ESC and COMAR 26.17.02 for SWM to minimize the risks or impacts to beneficial floodplain values due to encroachments.

A detailed Hydrologic & Hydraulic (H&H) study will be prepared during final design. If H&H studies identify an increase in the flood elevation, mitigation or other actions will be required in accordance with floodplain regulations, including potential acquisition of areas subject to increased flooding, submittal of a Conditional Letter of Map Revision (CLOMR) and subsequent Letter of Map Revision (LOMR) if elevations are determined to increase by greater than 0.1 foot. The MDTA will submit project plans to MDE for approval of structural evaluations, fill volumes, proposed

grading evaluations, structural flood-proofing, and flood protection measures in compliance with FEMA requirements, and 23 CFR 650 Subpart A. Improvements to existing culverts are required to maintain existing 100-year flood elevations. Culvert improvements and new culvert design will ensure that flood risk to adjacent properties is not increased, a requirement of COMAR 26.17.04.11 and 23 CFR 650.115(a). If H&H analyses determine there could be increases to flood elevations, culverts will be adjusted to avoid the increase as practicable. The MDTA will mitigate any unavoidable increases through the purchase of easements or additional right-of-way to contain increased floodwaters as required.

Hydraulic modeling based on final design of the new bridge will be conducted to evaluate current and future flow patterns, scour potential, tidal movements, and water level fluctuations at the proposed Bay Bridge. Analysis of current and future tidal floodplain elevations where widening is proposed along existing U.S. 50/301 will also be analyzed during final design to ensure a Selected Alternative is resilient to tidal fluctuations.

The MDTA has avoided placing proposed staging areas in nontidal floodplains. If additional staging and stockpile areas are identified and required during design, the MDTA will avoid placing them within floodplains to the extent practicable. The MDTA will continue avoidance and minimization efforts in final design and coordinate with MDE to determine the encroachments on regulated floodplains and potential mitigation measures.

8.5.4 Waters of the U.S. and Wetlands

8.5.4.1 Impacts

Table 8-2 identifies impacts to tidal and nontidal waterways associated with the Preferred Alternative and optional SUP. **Table 8-3** identifies the total impacts to tidal and nontidal wetlands associated with the Preferred Alternative and optional SUP. Tidal wetland classifications within the Preferred Alternative LOD were further verified through aerial photography after the Draft EIS was published. This verification resulted in the determination that the tidal wetland identified as E2SS/E2FO in the Draft EIS did not contain forested habitats within the LOD. Therefore, **Table 8-3** only includes impacts to emergent and scrub-shrub tidal wetlands. The Preferred Alternative will also impact approximately 9.8 acres of state-regulated 25-foot wetland buffer. There are no wetland buffer impacts associated with the optional SUP.

Table 8-2: Waterway Impact Summary (Acres/Linear Feet)

Resource Classification	Impacts	Additional Optional SUP Impacts
Nontidal Perennial (R2)	0.1 / 290	0 / 0
Nontidal Intermittent[1] (R4)	<0.1 / 380	< 0.1 / 30
Nontidal Waterway TOTAL[2, 4]	**0.1 / 670**	**< 0.1 / 30**
Chesapeake Bay (E1)[3]	131.9	1.9
Other Tidal Waterways (E1)	1.0 / 290	<0.1 / 0
Tidal Waterway TOTAL[2]	**132.9 / 290**	**1.9 / 0**

[1]Intermittent streams identified meet the definition of relatively permanent waters of the U.S. (88 Federal Register 61964).

[2]Due to rounding, totals may not equal the sum of all individual waterway impacts.

[3]Linear feet not included for impacts to the Chesapeake Bay.

[4]All impacts to nontidal waterways occur in the Severn River MDE 8-digit watershed.

Table 8-3: Tidal and Nontidal Wetland Impact Summary (Acres)

Resource Classification	Impacts	Additional Optional SUP Impacts
PEM	0.9	0
PSS	<0.1	0
PFO	3.3	0
PUB	0	0
Nontidal Wetland Total	**4.2**	**0**
E2EM	1.4	0.7
E2SS	0.1	0
E2FO	0	0
Tidal Wetland Total	**1.5**	**0.7**
TOTAL*	**5.6**	**0.7**

**Due to rounding, totals may not equal the sum of all individual wetland impacts.*

8.5.4.2 Mitigation

A Joint Permit Application (JPA) will be submitted to MDE and the USACE Baltimore District during the project's final design phase and will detail avoidance, minimization, and proposed mitigation. The JPA will request authorization under Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Maryland's Nontidal Wetlands Protection Act and Tidal Wetlands Act. In addition, the MDTA will obtain USCG bridge permit(s) under the General Bridge Act of 1946 and Section 9 of the Rivers and Harbors Act of 1899, and will maintain the USCG determined navigational clearances through the Bay Bridge.

Preliminary designs have avoided or reduced impacts to WOTUS, including wetlands, where practicable, using steeper slopes, retaining walls, and other measures to reduce the LOD of the Preferred Alternative. The MDTA will continue to avoid and minimize impacts as more detailed designs are developed in later phases of the project and will work with the regulatory agencies to incorporate appropriate BMPs for resources that cannot be avoided.

During final design, existing U.S. 50/301 roadway culverts will be evaluated in accordance with SHA's Highway Drainage Manual (MD SHA, September 2023) to determine if culverts are to be augmented with additional flow capacity or replaced.

Nontidal Waterway and Tidal and Nontidal Wetland Mitigation

Federal and state agencies will require compensatory mitigation for unavoidable adverse impacts to wetlands and waterways resulting from the Selected Alternative. The MDTA will mitigate all unavoidable adverse impacts to wetlands and waterways in accordance with Federal and state regulations.

The Maryland Stream Mitigation Framework (MSMF) Stream Calculator was used to determine mitigation requirements for the 670 linear feet (LF) of nontidal stream impact. Based on the stream calculator, 324 functional feet of nontidal stream mitigation will be required. The optional SUP would impact an additional 30 linear feet of nontidal stream, requiring an additional eight (8) functional feet of mitigation. **Table 8-4** summarizes the compensatory mitigation requirements for nontidal and tidal wetlands associated with the Preferred Alternative. Impacts associated with

the optional SUP would result in an additional mitigation requirement of 1.4 acres (60,200 square feet) of E2EM wetland.

Table 8-4: Tidal and Nontidal Wetland Mitigation Requirements (Acres)

Resource Classification	Impact	Mitigation Ratio	Mitigation Requirement
PEM	0.9	1:1	0.9
PSS	<0.1	2:1	<0.1
PFO	3.3	2:1	6.6
PUB	0	--	0
Nontidal Wetland Total	**4.2**	**--**	**7.5**
E2EM	1.4	2:1	2.8
E2SS	0.1	2:1	0.1
E2FO	0	2:1	0
Tidal Wetland Total	**1.5**	**--**	**2.9**
TOTAL*	**5.6**	**--**	**10.3**

**Due to rounding, totals may not equal the sum of all individual wetland impacts.*

The USACE and EPA 2008 Federal Mitigation Rule (33 CFR 332 and 40 CFR 230, subpart J) prioritizes the use of approved mitigation banks whenever possible. According to the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), there are currently no approved wetland or stream banks within the project service area. The MDTA, in coordination with SHA, issued a Request for Information (RFI) on February 9, 2026, to solicit information on mitigation bank credit availability on or about calendar year 2030 that would satisfy mitigation requirements for the Bay Crossing Study and SHA projects in the same or adjacent watersheds. Two mitigation bank sites, Patapsco River (Barrow) and Patuxent Wetland and Stream, were identified by respondents as being close to the area needed by the project, but without Severn River (HUC 02060004) as secondary service areas. Based on the five responses received, there is industry interest in creating mitigation banks that would meet the Preferred Alternative's needs. However, the general recommendation of the respondents is that PRM is the most likely approach for success due to:

- Credit release schedules for banks would lead bankers to create much larger banks than needed for the Preferred Alternative. The excess credits would not be marketable in the project's primary or secondary service area. [10]

- The regulatory framework for tidal mitigation banks is under development and may not be in place to serve the Preferred Alternative's needs.

Wetland and stream mitigation site searches were completed to identify potential PRM sites that will be further investigated in design if mitigation bank credits are not available at final design. **Table 8-5** summarizes the results of the mitigation site search. For more information on the site searches and the MSMF Stream Calculator, see the Natural Resources Mitigation Search Memorandum in **Appendix B**.

[10] The primary service area is the 8-digit HUC where the impacts occur and the secondary service area is an adjacent 8-digit HUC where mitigation could occur when environmentally justified.

Table 8-5: Wetland and Stream Mitigation Site Search Results

Site Type	Number of Sites	Amount of Potential Mitigation
Nontidal stream	27	46,300 LF
Nontidal wetlands only	46	1,321.3 AC
Tidal and nontidal wetlands	33	1,707.2 AC

Tidal Waterway Mitigation

There are currently no established tidal waterway mitigation banks in Maryland. If banking options were to become available in Maryland before final design and permitting, the MDTA would prioritize consideration of banking opportunities in coordination with the agencies.

The MDTA investigated potential permittee-responsible tidal compensatory mitigation opportunities to determine those with the most potential to compensate for unavoidable adverse tidal open water impacts associated with the Preferred Alternative. A list of various types of potential compensatory tidal waterway mitigation was developed and coordinated with relevant regulatory and resource agencies. A desktop-level investigation was completed for each mitigation type, and a windshield assessment was also completed for potential fish passage restoration and coastal marsh restoration sites. The following types of tidal mitigation are listed in general order of priority based on agency coordination:

- Oyster Seeding and Substrate Expansion
- SAV Planting
- Fish Passage Restoration
- Coastal Marsh Restoration
    - Tidal Fill Removal
    - *Phragmites* Removal
- Derelict Crab Pot Removal
- Fish or Oyster Hatchery Funding
- Artificial Reef Creation

Table 8-6 summarizes the identified potential mitigation area and number of sites for the first five types of tidal mitigation listed above based on the desktop review or windshield assessment. If derelict crab pot removal, fish/oyster hatchery funding, or artificial reef creation are included in the tidal waterway mitigation package to be developed during final design, the following would occur:

- The mouths of the Magothy, Severn, and Chester Rivers would be targeted for derelict crab pot removal;
- A lump sum donation to be determined through coordination with the agencies would be made to the Horn Point Oyster Hatchery or Unicorn Lake Hatchery as either out-of-kind tidal waterway mitigation or to offset potential fish kills during construction; and
- The MDTA would coordinate with MDNR to either contribute bridge decking material from the existing spans to an existing artificial reef or determine a location to create a new reef or deploy artificial reef balls.

Table 8-6: Tidal Waterway Mitigation

Mitigation Type	Number of Sites	Amount of Potential Mitigation (acres)
Oyster Seeding	42	1,651.7
Oyster Substrate Expansion	8	948.0
SAV Planting	22	138.4
Fish Passage Restoration	15	212.4 miles*
Coastal Marsh Restoration/Tidal Fill Removal	16	31.5
Coastal Marsh Restoration/*Phragmites* Removal	71	179.4

**Potential mitigation for fish passage restoration is measured in miles of upstream network*

For more information on the potential mitigation opportunities for tidal waterways, see Section 2.3 of the Natural Resources Mitigation Memorandum in **Appendix B**.

8.5.5 Chesapeake Bay Critical Area

8.5.5.1 Impacts

Approximate impacts within the 1,000-foot Chesapeake Bay Critical Area (CBCA) boundary that will result from the Preferred Alternative and the optional SUP if it is advanced are listed by Critical Area land use category or resource in **Table 8-7**.

Table 8-7: Impacts to Critical Area by Land Use (Acres)

Critical Area Land Use Classification	Impacts	Additional Optional SUP Impacts
Intensely Developed Area	59.3	0.5
Resource Conservation Area	66.1	2.0
Limited Development Area	37.2	0
Total*	**162.5**	**2.5**
Critical Area 100-foot Buffer	17.7	1.0
Critical Area Expanded Buffer**	29.1	1.5
FIDS Habitat	9.8	0
SSPRA	45.8	2.1

**Due to rounding, totals may not equal the sum of all individual classification impacts.*
*** These numbers include the Critical Area 100-foot buffer plus expansions for wetlands, highly erodible soils, hydric soils, etc.*

The Preferred Alternative will add new impervious surfaces within the Critical Area, which are regulated by the Critical Area Commission based on the designated Critical Area land use classification. Construction activity could also result in pollutant spills and the displacement of FIDS and habitats within SSPRA.

Table 8-8 identifies the total impacts to forests and woody clusters (areas of woody vegetation that do not meet the definition of a forest) within the Critical Area associated with the Preferred Alternative and optional SUP.

Table 8-8: Impacts to Forests and Woody Clusters within the Critical Area (Acres)

Critical Area Classification	Impacts	Additional Optional SUP Impacts
Critical Area (outside of Expanded Buffer)	39.2	0.7
Critical Area Expanded Buffer**	8.2	0.6
Total*	**47.4**	**1.3**

**Due to rounding, totals may not equal the sum of all individual classification impacts.*
*** These numbers include the Critical Area 100-foot buffer plus expansions for wetlands, highly erodible soils, hydric soils, etc.*

8.5.5.2 Mitigation

The MDTA will coordinate with the Chesapeake Bay Critical Area Commission and adhere to any requirements provided under COMAR 27.01. The MDTA will prioritize impact minimization by reducing the roadway footprint on Critical Area habitats and natural shorelines through the use of 2:1 slopes and other Environmental Site Design (ESD) measures where practicable. Mitigation ratios for impacts to Critical Area forest and woody clusters range from 1:1 to 3:1 depending on forest and woody cluster acreage cleared, designated land use, and whether impacts fall within the identified Critical Area Expanded Buffer.

Final mitigation ratios will be coordinated with the Critical Area Commission during final design. However, for the purposes of estimating mitigation needs, it is assumed that the mitigation ratio for impacts within the Critical Area (outside the Expanded Buffer) is 2:1 and the ratio for impacts within the Expanded Buffer is 3:1. **Table 8-9** summarizes the estimated forest and woody cluster mitigation needs associated with the Preferred Alternative and optional SUP.

Table 8-9: Estimated Forest and Woody Cluster Mitigation Needs (Acres)

Critical Area Land Use Classification	Preferred Alternative			Additional Optional SUP Impacts		
	Impact	Mitigation Ratio	Estimated Mitigation	Impact	Mitigation Ratio	Estimated Mitigation
Critical Area (outside Expanded Buffer)	39.2	2:1	78.4	0.7	2:1	1.4
Critical Area Expanded Buffer*	8.2	3:1	24.6	0.6	3:1	1.8
Total	**47.4**	**--**	**103.0**	**1.3**	**--**	**3.2**

** These numbers include the Critical Area 100-foot buffer plus expansions for wetlands, highly erodible soils, hydric soils, etc.*

The MDTA will replace impacted trees and forests within the LOD where practicable; however, it is expected that all required reforestation and/or afforestation would not be feasible on-site. A desktop search and windshield assessment was completed to identify potential off-site compensatory mitigation opportunities within the Critical Area. Fifty-six (56) potential sites totaling 1,790.7 acres fell entirely or partially within the Critical Area. On-site investigations and coordination with the Critical Area Commission will be completed during final design to select a mitigation site for off-site reforestation/afforestation.

The MDTA will work with MDE to develop ESC/SWM plans to further protect Critical Area resources in accordance with Critical Area regulations. The Selected Alternative will be required

to reduce pollution from stormwater runoff by at least 10 percent below that of existing land use within impact areas associated with the Intensely Developed Area of the Critical Area.

8.5.6 Terrestrial Habitat and Wildlife

8.5.6.1 Impacts

The Preferred Alternative will impact approximately 57.7 acres of forested terrestrial habitat, and if advanced, the optional SUP would impact an estimated additional 1.4 acres of forest. Impacts to terrestrial wildlife will occur through the loss of these forests and other habitats as well as possible direct mortality or disturbance from construction activities. Avoidance and minimization efforts will continue through final design.

Forest impacts outside the Critical Area will adhere to the requirements of the Maryland Reforestation Law, while impacts within the Critical Area will adhere to the Critical Area Law. Approximately 10.4 acres of the total 57.7 acres of forest impacts for the Preferred Alternative will occur outside the Critical Area and are discussed below. Forest impacts within the Critical Area are discussed in **Section 8.5.5**.

Additional terrestrial habitat includes tidal (including shorelines) and nontidal wetlands. Wetland impacts are discussed in **Section 8.5.4.1**.

8.5.6.2 Mitigation

Impacts to terrestrial habitat and the wildlife species that inhabit them have been minimized during development of the Preferred Alternative by proposing steeper slopes or retaining walls, where feasible, to minimize or avoid impacting natural areas such as forests and floodplains that provide wildlife habitat. Specific measures included removing a potential SWM feature from the Preferred Alternative to avoid a forested area within Sandy Point State Park and avoiding forest edge impacts to Holly Beach Farm. The MDTA has also committed to a time-of-year restriction for tree clearing from April 1 to September 30 to avoid and minimize potential direct effects to state and federally listed and proposed bat species, which will also benefit many migratory birds and other terrestrial wildlife species during their nesting and primary reproductive seasons. Avoidance and minimization efforts will continue through final design.

A field survey to characterize forests and verify forest boundaries was completed during refinement of the Preferred Alternative. The impacts provided in this document reflect the verified boundaries. During final design, an updated Forest Stand Delineation may be required, depending on time elapsed since the survey was completed, and a specimen tree survey will be completed to identify, evaluate, and locate any specimen trees. The Maryland Reforestation Law requires mitigation at a 1:1 ratio for impacts to forests and woody clusters (areas of woody vegetation that do not meet the definition of a forest). The Preferred Alternative will impact 10.4 acres of forest and woody clusters; therefore, 10.4 acres of forest mitigation is required.

The MDTA will prioritize on-site restoration; however, it is expected that all required reforestation/afforestation would not be feasible on-site. A forest mitigation site search was completed (See **Appendix B**) to identify potential compensatory reforestation sites on public land to offset impacts from the Preferred Alternative. Fifteen (15) sites totaling 162 acres of potential mitigation for forest and woody cluster impacts subject to the Reforestation Law were identified and assessed during a windshield assessment. These sites will be further investigated to identify

the most suitable sites for mitigation and coordination with the public landowners will occur in final design for impacts that cannot be mitigated on-site.

The Reforestation Law authorization will require impact minimization and mitigation measures, which include:

- Tree Protection Zones (TPZ) – Establishment of clearly marked boundaries around forested areas to prevent encroachment during construction; protective fencing at the edge of individual tree critical root zones (1.5 times diameter at breast height); no heavy equipment storage or soil compaction within the TPZ.
- Erosion and Sediment Controls (ESC) – Installation of silt fence or other erosion control measures to prevent excess sediment from damaging tree roots.
- Root Protection – Minimization of excavation and trenching near root zone.
- Monitoring and Maintenance – Perform regular inspections of tree protection measures throughout the construction period.

In accordance with Executive Order 13112, the MDTA will minimize the spread of existing invasive species, or the introduction of additional invasive species, through use of BMPs; and will restore affected areas with native vegetation if impacts occur.

Mitigation measures for tidal and nontidal wetland habitat is included in **Section 8.5.4.2.**

8.5.7 Aquatic Habitat and Biota

8.5.7.1 Impacts

Aquatic habitat impacts that will result from construction of the Preferred Alternative and would result from the optional SUP, if advanced, are included in **Table 8-10**. Construction of the Preferred Alternative will not directly impact or remove SAV.

Table 8-10: Aquatic Habitat Impacts

Habitat	Impacts	Additional Optional SUP Impacts
Nontidal and Tidal Wetlands* (Acres)	5.6	0.7
Nontidal and Tidal Waterways* (Acres)	1.1	<0.1
Natural Oyster Bars (Acres)	10.2	0.6
Historic Oyster Bottom (Acres)	24.1	0.6
Oyster Sanctuaries (Acres)	0.6	0
Public Shellfisheries (Acres)	6.1	0.4
Essential Fish Habitat** (Acres)	136.0	2.4
Waterfowl Staging and Concentration Areas (Acres)	2.5	0
Colonial Waterbird Nesting Areas (Location)	Mezick Pond, Bay Bridge Pier Islands	N/A
Marine Mammal Habitat (Location)	Chesapeake Bay	N/A

** Nontidal and Tidal wetland and waterway Impacts do not include habitat within the Chesapeake Bay. See **Section 8.5.4** for discussion of these impacts.*

***Impacts within the Chesapeake Bay and other tidal waters reported in **Section 8.5.4** do not equal the EFH impact areas reported here, since the EFH impact estimate does not take into account engineering details such as pier/pier protection area.*

8.5.7.2 Mitigation

Time-of-year restrictions for in-water construction activities that will affect aquatic species could be implemented to avoid important life stages (e.g., migration, spawning). The MDTA will observe time-of-year restrictions for aquatic biota to the extent practicable. It is anticipated that some time-of-year restrictions will not be feasible to implement due to schedule constraints and potentially conflicting time-of-year restrictions. The MDTA will work with the resource and regulatory agencies to develop a construction plan and BMPs that provide protection for sensitive resources in compliance with all statutory requirements.

In accordance with the Marine Mammal Protection Act (MMPA), the MDTA will coordinate with NOAA Permits and Conservation Division to secure an Incidental Harassment Authorization (IHA) during final design for the Selected Alternative's impact on bottlenose dolphins. Once issued, the IHA will be valid for one year and will include appropriate BMPs to minimize harassment to the extent practicable. The IHA will be secured for subsequent years of construction as needed.

Specialized protection measures based on best available technology will be implemented during construction to reduce impacts to Essential Fish Habitat (EFH) and aquatic species. The MDTA will implement a Zone of Safe Fish Passage (ZSFP) within the Chesapeake Bay during construction to allow fish to move safely to their spawning grounds in the spring season. Potential fish habitat and water quality impacts due to demolition, construction, and the increase in impervious surfaces related to the project will be managed through the implementation of ESC BMPs along with implementation of water quality monitoring plans, which will ensure that construction activities comply with state water quality standards.

The MDTA will implement the following avoidance and minimization measures for the Preferred Alternative related to aquatic species and habitats, such as marine mammals, federally listed aquatic species, EFH, and Habitat Areas of Particular Concern (HAPCs):

Underwater Noise/Hydroacoustic Energy

1) Develop an Underwater Noise Monitoring Plan to describe the underwater noise generated by project activities and adaptive management measures planned to address the underwater noise.
2) Include methods to document fish stuns/kills in the Underwater Noise Monitoring Plan and coordinate these methods with NOAA Fisheries Habitat and Ecosystem Services Division and Protected Resources Division.
3) Use noise attenuation and minimization measures during pile driving, including:
    a) Use a bubble curtain system that achieves 10 dB or greater attenuation for bridge piles and 5 dB or greater attenuation for dolphin pier protection piles. The effectiveness of the bubble curtain attenuation shall be demonstrated with a test pile and underwater noise program prior to initiating production pile driving activities.
    b) Use a "soft start" or "ramping up" pile driving technique (i.e., driving does not begin at 100% energy). This soft start technique will involve a low-energy start-up (i.e., the hammer operated at 50% capacity) over a period of up to 20 minutes to allow fish to leave the area.
    c) Initially driving steel piles with a vibratory hammer through softer, sandy soils prior to using an impact hammer through stiffer material, as practicable and as appropriate.
    d) Use cushion blocks to drive concrete piles with an impact hammer, as practicable and as appropriate.
4) Implement an effective quiet time of no pile driving for 12 continuous hours per day.

5) Develop a detailed Demolition Plan in coordination with NOAA Fisheries and submit to NOAA Fisheries for review and approval, in advance of any detonation activity. The Demolition Plan will evaluate the following measures:
   a) Detonation of bore hole stemming, capping, or filling;
   b) Firing all charges in a single firing circuit with a delayed detonation between each charge;
   c) Focusing blast energy towards a solid substrate rather than towards the water column;
   d) Employing noise attenuating devices such as bubble curtains;
   e) Conducting the blasting during periods of low water or low tide;
   f) Using rubber blasting mats to reduce debris and acoustic signature;
   g) Employing scare charges;
   h) Installing appropriate monitoring devices to confirm the impact distance to adaptively manage the Demolition Plan;
   i) Using explosive weights that result in injury/mortality thresholds remaining within 100 feet of the blasting source; and
   j) Using adaptive management actions between blast events to minimize fish mortality.
6) Continue to coordinate to minimize the use of blasting.
7) Employ scare charges and fish deterrent boats, and monitor for the presence of tagged sturgeon, ahead of blasting activities. Use low weight/energy repellent charges that startle fish from the area prior to blasting, and minimize the time between repellent activities and blasting, such that fish are not allowed a recovery period to re-enter the blasting danger zone.
8) Employ species spotters to scan the work area for fish and sea turtles prior to blasting to minimize impacts to these species.
9) Ensure monitoring boats scan the area for marine mammals prior to blasting. Blasting will not occur when marine mammals are present.

Turbidity and Sedimentation

1) Only use mechanical dredging.
2) Prevent sediment and debris from entering the water using geo-textile fabric, hay bales, or other methods. Use nets, tarps, and pans when demolishing bridge superstructures; remove demolition debris that falls into the water.
3) Limit the amount and extent of turbidity and sedimentation by using appropriate sedimentation and turbidity controls such as turbidity curtains, silt curtains, settling basins, bridge netting, and cofferdams. The MDTA will specify the measures to be used in the construction plans:
   a) Install ESC measures prior to ground disturbance;
   b) Inspect daily and maintain continuously in an effective operating condition all ESC measures until such time as they are removed with prior permission from the MDE inspector;
   c) Upon project completion, remove and stabilize all temporary construction materials with sediment and erosion control measures to prevent reentry into waterways.
4) Minimize the suspension of sediments and disturbance of the substrate when removing piles by implementing the applicable techniques:
   a) Remove piles with a vibratory hammer, rather than by direct pull, jetting, or clamshell;
   b) Remove piles slowly to reduce sediment sloughing off in the water column;
   c) Strike or vibrate the pile to break the bond between the sediment and pile to minimize the pile breakage, and reduce the amount of sediment sloughing off the pile during removal;
   d) Place piles on a barge equipped with a basin to contain all attached sediment and runoff water after removal.

Reduced Water Quality

1) Only use clean fill.
2) Evaluate dredge material to determine the appropriate disposal method and location.
3) Remove cofferdams, turbidity curtains, silt curtains, or other diversion structures only after water quality is consistent with ambient levels outside the structure.
4) Avoid, to the greatest extent practicable, the use of creosote piles or other in-water structures, and coordinate with NOAA Fisheries if there is an essential use identified by the contractor.
5) Minimize raw concrete or grout contact with the water to the maximum extent practicable.
6) Remove contaminants and sediments from water discharge prior to entering aquatic habitats.
7) Manage concrete wash water and cooling water effluent from concrete saw operations to ensure they do not enter the Bay untreated.

Habitat Alteration

1) Employ an Independent Environmental Monitor (IEM).
2) Coordinate with NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) and MDNR on specific recommended time-of-year restriction dates, based on the proposed activities and location.
3) Coordinate with NOAA Fisheries and MDNR during final design to determine if SAV surveys would be informative of permit conditions. If so, conduct SAV surveys during the growing season, prior to construction, within nearshore areas of the Action Area to determine the presence and extent of SAV beds.
4) Incorporate necessary measures to avoid, minimize, or otherwise offset impacts to SAV, as appropriate. Impacts to SAV shall be mitigated at a ratio of at least 3:1, depending on the nature/scale of the impacts.
5) Remove temporary structures and fills including monitoring devices in their entirety. Return aquatic habitats impacted by temporary activities, fills, or structures to pre-construction or better condition, including contours, elevations, substrate, and vegetation.
6) Staging of activities to reduce intensity of disturbance.
7) Avoid areas where protected species congregate for spawning/foraging or overwintering.

Fish Passage and Migration Habitat

1) From January 15 through May 15 (the anadromous fish migratory period), ensure a minimum contiguous ZSFP equivalent to approximately one-third the waterway width (approximately 7,000 linear feet). The ZSFP will allow federally-managed fish species, including migratory fish, to safely navigate to their spawning grounds around undesirable noise (i.e., above the 150 dB RMS behavioral threshold) and turbidity levels. The ZSFP will encompass the channel edges. To maintain the ZSFP, 96” steel pipe piles will not be driven from January 15 through May 15, unless underwater noise monitoring results demonstrate 96” piles can be driven while ensuring a minimum contiguous 7,000-foot-wide ZSFP. The contractor shall use pile driving underwater noise monitoring results to determine an acceptable pile driving sequence of construction that ensures the ZSFP is achieved from January 15 through May 15. The project team will work with NOAA Fisheries and MDNR to refine and approve ZSFP locations and the migratory focal period during final design and permitting.

Vessel Interaction

1) Do not operate or moor vessels in, or immediately adjacent to, SAV in such a way that could shade or otherwise impact SAV.
2) Enforcement of reduced construction vessel speeds (e.g., below 10 knots)
3) Employing species spotters to reduce species/vessel collisions; and keeping appropriate distance from protected species if spotted.

Impingement and Entrainment

1) Use construction equipment that reduces potential for impingement and entrainment such as using intake screens and environmental buckets on mechanical dredges.

Additional Avoidance and Minimization Measures

The MDTA will also evaluate a wide range of additional avoidance and minimization measures when design details are available and construction methods are being developed during final design. These potential measures are detailed in the *BCST2 EFH Assessment* and *BCST2 Atlantic Sturgeon, Shortnose Sturgeon, and Sea Turtles Biological Assessment*. Measures will be coordinated with NOAA Fisheries and efforts to reduce the potential for impacts to resources under NOAA Fisheries jurisdiction will continue through project construction.

The MDTA will also construct and extend culverts and place associated riprap to ensure aquatic species passage is not obstructed, with the consideration of open-bottom culverts, where practicable. If existing culverts do not meet current aquatic life passage standards and are being extended rather than replaced, then opportunities for improving aquatic life passage would be limited.

The MDTA will coordinate with MDNR in later phases of the project to confirm and locate active waterbird nesting colonies and to coordinate avoidance and minimization such as colony disturbance buffers and time-of-year restrictions.

SAV coverage will be re-evaluated during final design based on the five-year composite coverage from Virginia Institute of Marine Science (VIMS) and any recent surveys. The MDTA will coordinate with resource agencies to determine additional SAV survey requirements in later project phases. Physical impacts to currently mapped SAV beds have been avoided with the preliminary design of the Preferred Alternative and the MDTA will continue to incorporate necessary measures to avoid, minimize, or otherwise offset impacts to SAV, as appropriate.

Oyster seeding and substrate expansion will be used as in-kind compensatory mitigation for direct impacts to natural oyster bars (NOBs) and potentially as out-of-kind mitigation for impacts to tidal open water. Forty-two potential oyster seeding areas, totaling approximately 1,651 acres, were identified through coordination with MDNR Shellfish Division as opportunities for tidal open water mitigation. In addition to oyster seeding opportunities, eight areas, totaling approximately 948 acres, were identified within the Eastern Bay MDE 8-digit watershed as potential oyster substrate expansion opportunities for tidal open water and NOB mitigation. For more information on oyster mitigation opportunities see the Natural Resources Mitigation Search Memorandum in **Appendix B**.

8.5.8 Rare, Threatened and Endangered Species

8.5.8.1 Impacts

Several Federally listed and proposed species are known to occur in the EIS resource review area, including: northern long-eared bat (*Myotis septentrionalis,* endangered), tri-colored bat (*Perimyotis subflavus*, proposed endangered), monarch butterfly (*Danaus plexippus*, proposed threatened), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*, endangered), shortnose sturgeon (*Acipenser brevirostrum*, endangered), loggerhead sea turtle (*Caretta caretta*, endangered), Kemp's ridley sea turtle (*Lepidochelys kempii*, endangered), green sea turtle (*Cholnia mydas*, endangered), and leatherback sea turtle (*Dermochelys coriacea*, endangered).

State listed and rare species are also known to occur in the vicinity of the Preferred Alternative, including Least Tern (*Stemula antillarum*, threatened) and Sora Rail (*Porzana Carolina*, rare).

Anticipated adverse impacts to rare, threatened, or endangered species include removal or degradation of habitat, physical injury, or altered behavior resulting from demolition, construction, and operational activities. Construction of the optional SUP would not result in additional adverse effects to any listed species.

8.5.8.2 Minimization and Mitigation

The MDTA will continue to coordinate with USFWS, NOAA Fisheries, and MDNR to mitigate potential impacts on Federal and state listed and proposed species, if they become listed, through final design and construction. The MDTA will continue to coordinate with USFWS and MDNR regarding state-listed bird and migratory bird species such as Peregrine Falcon (*Falco peregrinus*) to determine if time of year restrictions or other measures are needed to avoid impacts during nesting. The MDTA has committed to measures discussed below to minimize effects to listed and proposed bats that may benefit migratory birds during nesting.

The MDTA and FHWA prepared Biological Assessments (BAs) for federally listed bats and sturgeon and sea turtle species and are working with the USFWS and NOAA Fisheries to complete consultation under Section 7 of the Endangered Species Act. Section 7 consultation is scheduled to conclude prior to publication of the Final EIS/ROD.

In coordination with USFWS and NOAA Fisheries, the MDTA has committed to a range of avoidance and minimization measures to reduce potential impacts to Federally listed species and will consider additional measures during final design to be implemented during construction. Commitments related to Federally listed aquatic species are listed in **Section 8.5.7.2**.

The MDTA has committed to replacing impacted forests on-site and prioritizing off-site planting areas that expand existing forest habitats where practicable. Tree clearing will be prohibited during the bat active season (April 1 to September 30) to avoid and minimize potential direct effects to northern long-eared bats and tricolored bats in the project area. In addition, minimization and mitigation measures for terrestrial habitat and wildlife species would also benefit many bat species and is discussed in **Section 8.5.6.2**. Mitigation commitments as well as further minimization to be considered during design will be included in the Final EIS as part of the approved Bat Biological Assessment and Biological Opinion for Sturgeon and Sea Turtles.

8.6 Noise

8.6.1 Impacts

The Preferred Alternative will result in traffic noise impacts to 28 noise sensitive areas (NSAs). Per the SHA Highway Noise Abatement Planning and Engineering Guidelines, further consideration of noise abatement was required within 11 of the impacted NSAs. Construction activities will also result in temporary noise disturbance. Construction of the optional SUP would have minimal to no additional noise impact due to the proximity of the existing highway and the construction noise generated from the Preferred Alternative.

8.6.2 Minimization and Mitigation

FHWA regulations (23 CFR 772) and the SHA Highway Noise Abatement Planning and Engineering Guidelines require that noise abatement be investigated at all NSAs where the build traffic noise levels approach or exceed the FHWA noise abatement criteria (NAC) for the defined land use category. At the 11 NSAs where noise abatement was found to be warranted for consideration, additional criteria were examined to determine if the abatement is feasible and reasonable. Three preliminary barrier systems were subsequently identified as feasible and reasonable based on the preliminary noise analysis for the Preferred Alternative. Details regarding the preliminary barrier systems identified as feasible and reasonable are included in **Table 8-11** and are discussed in more detail in the Draft EIS. The three preliminary barrier systems will provide noise abatement for seven of the impacted NSAs. Determination of potential barrier locations and dimensions will be made during final design of the Selected Alternative.

Table 8-11: Summary of Preliminary Barrier Systems Considered Feasible and Reasonable

NSA	Preliminary Barrier System	Preliminary Barrier Dimensions (ft)		Cost-Reasonableness*
		Length	Height	Square Footage per Benefitted Residences (SF-p-r)
2-12-B & 2-13-B	WEST-4	3,312	14.3	**1,246**
2-17-B	WEST-5	1,216	15.7	**636**
3-09-B, 3-10-B, 3-12-B & 3-13-B	EAST-1	3,390	12.1	**894**

** Cost-Reasonableness threshold for all preliminary barrier systems is 2,700 SF-p-r (square feet of barrier per benefited residence).*

Construction equipment will be regularly and thoroughly maintained to minimize temporary noise disturbance. Additional mitigation procedures to minimize public exposure to temporary construction noise will be considered during final design.

8.7 Air Quality

8.7.1 Impacts

Mobile Source Air Toxics (MSAT) emissions for the Preferred Alternative are expected to remain the same or increase slightly when compared to 2045 No-Build conditions. Construction-related temporary air quality impacts will be localized to the project site and surrounding area. The optional SUP could slightly increase temporary air quality impacts during construction.

The MDTA will coordinate with the Baltimore Regional Transportation Board (BRTB) to ensure the Preferred Alternative is included in the current Transportation Improvement Program (TIP) and Long-Range Transportation Plan (LRTP) and accompanying air quality conformity determination (40 CFR 93.109), which will involve conducting a new regional emissions analysis. The results of this coordination will be presented in the Final EIS/ROD.

8.7.2 Minimization and Mitigation

The MDTA will obtain all construction-related permits from MDE prior to construction. The MDTA will coordinate with the contractor to implement measures to minimize and mitigate temporary construction impacts to air quality.

8.8 Hazardous Materials

8.8.1 Impacts

The Preferred Alternative will potentially impact 46 identified hazardous/contaminated material sites of concern, including 25 sites with a high potential for impact (rank 1), zero listed sites (rank 2), eight sites with a medium/high potential for impact (rank 3), three sites with a medium potential for impact (rank 4), and 10 sites with a low potential for impact (rank 5). Construction of the optional SUP would not impact additional sites of concern. Impacts could primarily occur at greater depth due to releases associated with underground storage tanks (USTs), gasoline stations, and various commercial properties. However, surficial impacts may be associated with releases or spills from dry-cleaning facilities, laydown areas, or other activities resulting in surface spills (e.g., fueling aboveground storage tanks (ASTs), leaking ASTs, improper handling of petroleum products, etc.) at properties located along U.S. 50/301.

8.8.2 Mitigation

The MDTA will complete a full American Society for Testing and Materials (ASTM)-compliant Phase I Environmental Site Assessment prior to any property acquisition required for the Preferred Alternative. To determine the extent of potential impacts based on ground disturbance activities, additional environmental investigations will be conducted for sites that have a high potential to need mitigation for contaminated materials exposed during construction. A project-specific materials management plan will be developed during the final design phase and implemented during the construction phase to establish procedures for identifying, handling, transporting, and disposing of contaminated materials, soils, or groundwater discovered, or construction materials generated, during construction. Detailed site analyses will be conducted during the design phase. Mitigation, if needed, will comply with applicable Federal and state regulations and will be determined in the materials management plan including any specific handling and disposal requirements. The materials management plan will ensure that contaminated and/or hazardous materials encountered during construction are managed in a manner that protects human health and the environment.

8.9 Section 4(f) and 6(f) Properties

8.9.1 Impacts

Roadway improvements for the Preferred Alternative will result in temporary and/or permanent impacts to five recreational properties protected by Section 4(f). The MDTA anticipates requesting a *de minimis* impact determination from FHWA for all five recreational Section 4(f) properties prior to the Final EIS. Additionally, proposed replacement of the NRHP-eligible

Chesapeake Bay Bridge will result in a permanent Section 4(f) use of the historic site as described in the Section 4(f) Evaluation. As shown in **Table 8-12**, it is anticipated that the optional SUP would result in *de minimis* impacts to the two recreational and one historic properties. **Table 8-12** outlines the Section 4(f) impacts for each property.

Table 8-12: Section 4(f) Use and Impacts

Property	Roadway Improvement Use & Impacts	Optional SUP Improvement Use & Impacts
Broadneck Peninsula Trail	*De minimis* 3,070 linear feet	No Use 0 linear feet
Sandy Point State Park (Public Park)*	No Use 0 acres	*De minimis* 0.6 acre
Kent Island Water Trails	*De minimis* 920 linear feet	No Use 0 linear feet
Terrapin Nature Park	*De minimis* 0.7 acre	*De minimis* 0.6 acre
Eisinger Property	*De minimis* <0.1 acre	No Use 0 acre
Stevensville Middle School	*De minimis* 0.2 acre	No Use 0 acres
Sandy Point State Park (Historic Site)	No Use 0 acres	*De minimis* 0.6 acre
Chesapeake Bay Bridge (William Preston Lane Jr. Memorial Bridge)	Permanent Incorporation Removal of both historic bridge spans	N/A

*Section 6(f) property

Construction of the optional SUP would impact Sandy Point State Park, which is protected under Section 6(f) because it was developed with funds from the Land and Water Conservation Fund (LWCF) Act of 1965. However, this impact is not anticipated to result in a Section 6(f) land conversion, as the land would remain in public outdoor recreational use and could potentially remain under MDNR ownership. If the optional SUP is advanced, the extent of this potential impact and any associated Section 6(f) requirements would be determined and coordinated with MDNR and NPS following issuance of the Final EIS/ROD.

8.9.2 Mitigation

The Preferred Alternative includes measures to avoid and minimize impacts to Section 4(f) recreational properties such that impacts are anticipated to be *de minimis*; therefore, additional mitigation is not required for those properties. Prior to making a final determination, the official(s) with jurisdiction (OWJs) must concur that the Preferred Alternative will not adversely affect the property per 23 CFR 774.5(b). During development of the Final EIS, all relevant public comments received during the Draft EIS comment period will be shared with FHWA and the OWJs to inform their concurrence or determinations, as appropriate. Trails that are impacted by construction of the Selected Alternative, including the Broadneck Peninsula Trail, will be restored after construction, to maintain trail continuity through the project area.

FHWA and the MDTA prepared a draft Section 106 Programmatic Agreement to resolve adverse effects to historic properties, which FHWA and the MDTA anticipate executing in September 2026. The mitigation measures in this agreement concurrently address Section 4(f) requirements to minimize harm to the Chesapeake Bay Bridge, based on coordination with MHT and other Section 106 consulting parties. See **Section 8.4.2** for more information on historic properties mitigation.

Appendix A: Cooperating and Participating Agency Comments

Appendix A – Draft EIS Agency Comments

Agency	Page No.	Date	Subject
Anne Arundel County (AACO)	1	3/9/2026	AACO's Formal Comment Letter on the DEIS
	2	3/9/2026	AACO's Email Confirmation Letter is Participating Agency Comments on the DEIS
Critical Area Commission (CAC)	4	3/9/2026	CAC's Statement of No Comments on the DEIS
Maryland (MD) State Clearinghouse	5	1/26/2026	MD State Clearinghouse Acceptance Letter for Intergovernmental Review
	8	3/11/2026	MD State Clearinghouse Email Transmittal of Review and Recommendation Letter
	9	3/11/2026	MD State Clearinghouse Review and Recommendation Letter with Attachments
Maryland Department of the Environment (MDE)	17	3/9/2026	MDE's Comments on the DEIS
Maryland Department of Natural Resources (MDNR)	19	3/9/2026	MDNR's Comments on the DEIS
Maryland Department of Planning (MDP)	26	3/9/2026	MDP's Comments on the DEIS
National Oceanic and Atmospheric Administration (NOAA) Fisheries	29	3/9/2026	NOAA Fisheries' Comments on the DEIS
Queen Anne's County (QACO)	33	3/9/2026	QACO's Comments on the DEIS
United States Army Corps of Engineers (USACE)	42	3/9/2026	USACE's Comments on the DEIS
United States Department of the Interior (USDOI)	58	3/9/2026	USDOI's Comments on the DEIS
United States Environmental Protection Agency (USEPA)	64	3/9/2026	USEPA's Comments on the DEIS

ANNE ARUNDEL COUNTY
MARYLAND

Office of the County Executive
STEUART PITTMAN

February 19, 2026

The Honorable Katie Thomson
Acting Secretary of the Maryland Department of Transportation
7201 Corporate Center Drive
Hanover, MD 21076 - 0548

Dear Secretary Thomson:

As you and the other Board members of the Maryland Transportation Authority (MDTA) prepare to approve funding for the construction of the Chesapeake Bay Bridge, I wish to express our sincere support for protected shared use bike/pedestrian path and multimodal transit funding. I realize the monumental challenge of funding such an integral component but also want to emphasize the generational impact of the project. With supportive infrastructure for multimodal transportation on both the Western and Eastern Shore of the bridge there would be ample connectivity for non-motorists to commute as well as for recreational use. This linkage as well as an investment in bus transit infrastructure would also alleviate barriers which presently result in inequitable access for those who presently do not own a vehicle as there is limited transit available.

The Chesapeake Bay Bridge is vital to the economy of the State of Maryland, and having protected bike/pedestrian access is a goal of members of the Anne Arundel County Bicycle/Pedestrian Advisory Commission. By including a protected bike/pedestrian path into the design of the bridge, the MDTA would be supporting the removal of barriers for alternative modes of transportation as well as additional recreational tourism in the Central Maryland region for generations.

I encourage you and the MDTA Board to include a protected bicycle and pedestrian lane in the design of the future Chesapeake Bay Bridge facility.

Sincerely,



Steuart Pittman
County Executive

From: Samuel Snead <trsnea19@aacounty.org>
Sent: Tuesday, March 10, 2026 11:35 AM
To: Sarah Williamson <sarahw@cri.biz>
Cc: Brian Ulrich <trulri44@aacounty.org>; info@baycrossingstudy.com; Karen Henry <pwhenr00@aacounty.org>; Heather Lowe <hlowe@mdta.state.md.us>
Subject: Re: Anne Arundel County Comments on Bay Crossing Study Draft EIS and Preferred Alternative

Yes, that is our intent.

On Tue, Mar 10, 2026 at 11:33 AM Sarah Williamson <sarahw@cri.biz> wrote:

> Hi Brian,
> The BCST2 did not receive any other participating agency comments from AA County during the DEIS comment period that we are aware of beyond this letter you sent last month. We are planning on considering this letter as AA County's comments on the DEIS. Based on the subject of your email, I am thinking this was indeed your intent. Please confirm you are OK with that approach.
> Thank you,
>
> **Sarah Williamson** | *Bay Crossing Study Team*
> Coastal Resources, Inc. | Facebook | LinkedIn | Instagram
> 25 Old Solomons Island Road, Annapolis, MD 21401
> Main 410-956-9000 (ext. 113) | Direct 443-837-2155 | Cell 443-995-4131
>
> 
>
>
> *WE'RE HIRING! – CLICK HERE*

> **From:** Brian Ulrich <trulri44@aacounty.org>
> **Sent:** Thursday, February 19, 2026 10:05 AM
> **To:** info@baycrossingstudy.com
> **Cc:** Samuel Snead <trsnea19@aacounty.org>; Karen Henry <pwhenr00@aacounty.org>; Sarah Williamson <sarahw@cri.biz>; Heather Lowe <hlowe@mdta.state.md.us>
> **Subject:** Anne Arundel County Comments on Bay Crossing Study Draft EIS and Preferred Alternative

Please see the attached formal comment letter from Anne Arundel County on the Bay Crossing Study Draft EIS and Preferred Alternative.

--

Brian Ulrich
Office of Transportation
Planning Administrator
2664 Riva Road
Annapolis, MD 21140

Office number: (410) 222-7711
www.aacounty.org

From: Kathryn Durant <kathryn.durant@maryland.gov>
Sent: Monday, March 9, 2026 4:29 PM
To: hlowe@mdta.state.md.us
Cc: Sarah Williamson <sarahw@cri.biz>; Jennifer M Esposito -DNR- <jennifer.esposito@maryland.gov>
Subject: BCST 2 - DEIS Comments

Hi Heather and Sarah,

Our office has reviewed the BCST DEIS and does not have any comments at this time. We understand that there will be impacts to the Critical Area that will need to be mitigated, and we will comment on the specific impacts and mitigation plans after they are finalized and submitted to our office for review.

Thank you for your time.
Best,
Kate

Critical Area Commission Chesapeake & Atlantic Coastal Bays dnr.maryland.gov/criticalarea	Kate Durant Critical Area Commission for the Chesapeake & Atlantic Coastal Bays 1804 West Street, Suite 100 Annapolis, MD 21401 410.260.3477 (office) 443.454.8064 (cell) kathryn.durant@maryland.gov

January 26, 2026

Ms. Sarah Williamson
Bay Crossing Study Team,
Coastal Resources Inc.
25 Old Solomons Island Road
Annapolis, MD 21401

STATE CLEARINGHOUSE REVIEW PROCESS

State Application Identifier: **MD20260126-0019**
Reply Due Date: 03/02/2026
Project Description: Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor
Project Location: Anne Arundel and Queen Anne's Counties
Clearinghouse Contact: Rita Pritchett

Dear Ms. Williamson:

Thank you for submitting your project for intergovernmental review. Your participation in the Maryland Intergovernmental Review and Coordination (MIRC) process helps to ensure that your project will be consistent with the plans, programs, and objectives of State agencies and local governments.

We have forwarded your project to the following agencies and/or jurisdictions for their review and comments: the Maryland Departments of Transportation, Natural Resources, and the Environment; Anne Arundel and Queen Anne's Counties; and the Maryland Department of Planning including the Maryland Historical Trust. A composite review and recommendation letter will be sent to you by the reply due date. Your project has been assigned a unique State Application Identifier that you should use on all documents and correspondence.

Please be assured that we will expeditiously process your project. The issues resolved through the MIRC process enhance the opportunities for project funding and minimize delays during project implementation.

If you need assistance or have questions, contact the State Clearinghouse staff noted above at 410-767-4490 or through e-mail at rita.pritchett@maryland.gov. Thank you for your cooperation with the MIRC process.

Sincerely,

Jason Dubow, Director
Research, Review and Policy Division

JD:RP
cc: Bihui Xu - MDP
26-0019_NRR.NEW.docx

MD20260126-0019 FINANCIAL ASSISTANCE

Coastal Resources Inc.

Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor

Bihui Xu - MDP

Ms. Sarah Williamson
Bay Crossing Study Team,
Coastal Resources Inc.
25 Old Solomons Island Road
Annapolis, MD 21401

From: rita.pritchett@maryland.gov <rita.pritchett@maryland.gov>
Sent: Wednesday, March 11, 2026 8:26 AM
To: Sarah Williamson <sarahw@cri.biz>
Cc: rita.pritchett@maryland.gov
Subject: Review and Recommendation of Clearinghouse Project: MD20260126-0019

Hello Ms. Sarah Williamson,

The following link below includes the State Clearinghouse Review and Recommendation letter for your project, Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor.

Click this link to view the letter,
https://apps.planning.maryland.gov/EMIRC_Files/MD20260126-0019.zip . This is a file.

Thank you.

Rita Pritchett,
rita.pritchett@maryland.gov

Jason Dubow, Unit Manager
jason.dubow@maryland.gov
410-767-3370
Please take our customer service survey.

March 9, 2026

Ms. Sarah Williamson
Bay Crossing Study Team,
Coastal Resources Inc.
25 Old Solomons Island Road
Annapolis, MD 21401

STATE CLEARINGHOUSE RECOMMENDATION

State Application Identifier: MD20260126-0019
Applicant: Coastal Resources Inc.
Project Description: Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor
Project Location: Anne Arundel and Queen Anne's Counties
Approving Authority: U.S. Department of Transportation DOT/FHWA
Recommendation: **Consistent with Qualifying Comments**

Dear Ms. Williamson:

In accordance with Presidential Executive Order 12372 and Code of Maryland Regulation 34.02.01.04-.06, the State Clearinghouse has coordinated the intergovernmental review of the referenced project. This letter constitutes the State process review and recommendation. This recommendation is valid for a period of three years from the date of this letter.

Review comments were requested from the Maryland Departments of Natural Resources, Transportation, and the Environment; Anne Arundel and Queen Anne's Counties; and the Maryland Department of Planning including the Maryland Historical Trust. **The Maryland Department of Transportation had a statement.**

MDOT/ The Secretary's Office (TSO) stated that it will share comments with Maryland Transportation Authority (MDTA) directly. Please see MDOT's comments enclosed in the zipped file.

Queen Anne's County (QAC) found this project to be consistent with its plans, programs, and objectives.

QAC comments are summarized and included in the zipped file.

MDP found this project to be generally consistent with its plans, programs, and objectives. MDP commented that the project is generally consistent with the Sustainable Growth Policy and Planning Principle for Transportation to prioritize transportation networks that create reliable access to jobs, housing, and services.

The Maryland Departments of Environment (MDE), and Natural Resources (DNR); Anne Arundel County and the Maryland Historical Trust (MHT) found this project to be generally consistent with their plans, programs, and objectives, but included certain qualifying comments summarized below.

MDE comments are summarized in the zipped file. **Please be advised that MDE has identified Tier II anti-degradation waterbodies and/or flood zones in the project area and additional caution and/or requirements apply.**

DNR commented that it is reviewing the Tier 2 Chesapeake Bay Crossing Study and providing comments directly to the Maryland Transporation Authority (MDTA) Study Team and will provide copies of the comments if requested.

The Anne Arundel County Department of Recreation and Parks (DRP) commented that the State has now elected to proceed with Alternative C (a 6-8-6 plan which shifts access to the south side of US50/301 and the existing bridge approaches). That said, this alternative will essentially reconstruct everything from the Bridge west to nearly the Bay Head Park spur of the Broadneck Peninsula Trail (BPT). The northern alternatives considered had even greater (farther west) impact to the Trail. Note the specific reference to DRP's Trail in the Impact to Community Facilities attachment, which calls for "partial acquisition" of the BPT. The County would end up with revised/reconstructed portions of East College Parkway and Broadneck Trail Phases 1B and 5. The State previously indicated that it would be responsible for any involved portions of the Trail as part of the bridge project. **The County's "feedback" to this Clearinghouse request should affirm the State's commitment to full restoration of DRP's new trail.**

MHT had determined that the proposed undertaking will result in adverse effects to historic properties under Section 106 of the National Historic Preservation Act. Accordingly, MHT is consulting with the Federal Highway Administration (FHWA), Maryland Transporation Authority (MDTA), and other consulting parties to develop and execute a Programmatic Agreement to resolve the undertaking's adverse effects prior to issuance of the combined Final EIS/Record of Decision.

Any statement of consideration given to the comments should be submitted to the approving authority, with a copy to the State Clearinghouse.

The State Application Identifier Number must be placed on any correspondence pertaining to this project. The State Clearinghouse must be kept informed if the approving authority cannot accommodate the recommendation.

Please remember, you must comply with all applicable state and local laws and regulations. If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at rita.pritchett@maryland.gov.

Also please complete the attached form and return it to the State Clearinghouse as soon as the status of the project is known. ***Any substitutions of this form must include the State Application Identifier Number.*** **This will ensure that our files are complete.**

Thank you for your cooperation with the MIRC process.

Sincerely,

Jason Dubow, Director
Research, Review and Policy Division

JD:RP
Enclosure(s)
cc: Bihui Xu - MDP
Brittany Brothers - MDOT
Patrick Felch - DNR
Nicole Eisenstein - MDE
Stephen Walker - ANAR
Amy Moredock - QANN
David Dahlstrom - MDPLU
Carter Reitman - MDPLS
Dixie Henry - MHT

26-0019_CRR.CLS.docx

Note: Agencies that provided the same comments directly to the MDTA and through the MD State Clearinghouse are not included under the MD State Clearinghouse comments. Those agencies are MDNR and QACO.

PROJECT STATUS FORM

Please complete this form and return it to the State Clearinghouse at mdp.clearinghouse@maryland.gov upon receipt of notification that the project has been approved or not approved by the approving authority.

TO: **Maryland State Clearinghouse**
Maryland Department of Planning

DATE: _____
(Please fill in the date form completed)

FROM: _____
(Name of person completing this form.)

PHONE: _____-____-_____
(Area Code & Phone number)

RE: **State Application Identifier:** **MD20260126-0019**
Project Description: Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor

PROJECT APPROVAL			
This project/plan was:	☐ **Approved**	☐ **Approved with Modification**	☐ **Disapproved**
Name of Approving Authority: _____		**Date Approved:** _____	

FUNDING APPROVAL			
The funding (if applicable) has been approved for the period of: _____, 202____ **to** _____, 202____ **as follows:**			
Federal $: _____	**Local $:** _____	**State $:** _____	**Other $:** _____

OTHER
☐ *Further comment or explanation is attached*

Ms. Sarah Williamson
Bay Crossing Study Team,
Coastal Resources Inc.
25 Old Solomons Island Road Annapolis, MD 21401

Bihui Xu - MDP

Chesapeake Bay Crossing Study Tier 2 National Environmental Policy Act (NEPA), Draft Environmental Impact Statement (DEIS): Addressing Existing and Future Transportation Capacity Needs and Access Along the U.S. 50/301 Corridor

Maryland Department of the Environment – WSA/WPRPP

REVIEW FINDING: **R1 Consistent with Qualifying Comments (MD20260126-0019)**

Please be advised, the property or properties in MD20260126-0019 is/are in close proximity to Flood Zone AE (100-year Floodplain) and X (500-year Floodplain). The project coordinator(s) should follow local floodplain ordinances and Federal Emergency Management Agency's guidelines and standards.

It is advised that the coordinator(s) consider climate resiliency, which could include but not limited to the following steps (https://toolkit.climate.gov/):

- Explore Hazards: Identify climate and non-climate stressors, threats, and hazards and how they could affect assets (people and infrastructure).
- Assess vulnerability and risks: Evaluate assets vulnerability and estimate the risk to each asset.
- Investigate options: Consider possible solutions for your highest risks, check how others have responded to similar issues, and reduce your list to feasible actions.
- Prioritize and plan: Evaluate costs, benefits, and capacity to accomplish each action integrating the highest value actions into a stepwise plan.
- Take action: Move forward with your plan and check to see if your actions are increasing your resilience with monitoring.

The coordinator(s) is advised to State National Flood Insurance Program Coordinator, in MDE's Stormwater, Dam Safety, and Flood Management Program, at flood.maps@maryland.gov for additional information regarding the regulatory requirements for Floodplains and Storm Surges.

The coordinator(s) is advised to contact Matthew C. Rowe, CC-P, Deputy Director of MDE's Water and Science Administration, at (410) 537-3578 for additional information regarding Climate Change and Resiliency.

1800 Washington Boulevard | Baltimore, MD 21230 | 1-800-633-6101 | 410-537-3000 | TTY Users 1-800-735-2258
www.mde.maryland.gov


Cape St. Claire
Sandy Point State Park
Love Point
Eastern Neck National Wildlife Refuge
William Preston Lane Jr. Memorial Brg
Stevensville
Chester
Kangaroo Beach
Queenstown
Hickory Ridge
Grasonville
Dominion
Kent Island
Cox Creek Acres
Queen Annes Acres
Skipping Creek Plantation
Wye Island

MDE Comments for Clearinghouse Project Review: MD20260126-0019

Response Code: R-1 AND C-1

1. Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Resource Management Program at (410) 537-3314 for additional information regarding recycling activities.
2. The Solid Waste Program should be contacted directly at (410) 537-3315 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.
3. The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please Land Restoration Program at (410) 537-3437.
4. Borrow areas used to provide clean earth back fill material may require a surface mine permit. Disposal of excess cut material at a surface mine may requires site approval. Contact the Mining Program at (410) 537-3557 for further details.

March 9, 2026

Maryland Transportation Authority
Division of Planning and Program Development
Attention: Heather Lowe
2310 Broening Highway
Baltimore, MD 21224
Via email: hlowe@mdta.state.md.us

Re: Comments on Draft Environmental Impact Statement for Chesapeake Bay Crossing Tier 2 NEPA Study

Dear Heather Lowe,

The Maryland Department of the Environment (MDE) has reviewed the *Draft Environmental Impact Statement* (DEIS) published by the Maryland Transportation Authority (MDTA) on January 23, 2026. MDE previously reviewed and provided comments on the Administrative Draft of the DEIS on September 8, 2025, and appreciates that most of these comments were incorporated into the published DEIS.

A comprehensive impact avoidance and minimization analysis will be required for the preferred alignment at the time of permit application submission. In the DEIS, MDTA identified Alternative C as the Recommended Preferred Alternative. This alternative would replace the existing bridge spans with two new spans within the existing corridor, south of the existing bridge. The DEIS indicates that Alternative C would result in fewer impacts to natural resources, community resources, and historic resources as compared to all other build alternatives evaluated. MDE supports the recommendation of Alternative C as the selection which would result in the lowest overall impacts to wetlands and other regulated resources based on the study information to date. This commitment to avoidance and minimization should continue throughout the remainder of project planning as well as project design and construction, with the incorporation of appropriate design modifications, construction methods, and best management practices intended to further reduce all regulated impacts where possible.

Compensatory mitigation will be required for all permanent impacts to nontidal and tidal wetlands. The applicant will be required to develop and submit a mitigation plan that adequately compensates

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for permanent wetland losses in accordance with applicable regulatory requirements and established mitigation standards; MDE notes that a Preferred Alternative Compensatory Mitigation submission is forthcoming and will provide detailed mitigation comments after review.

Thank you for the opportunity to review and comment on the Chesapeake Bay Crossing Study DEIS. If you have any questions or if we can assist you in any way, please do not hesitate to contact me by telephone at 410-537-4023 or by email at danielle.spendiff1@maryland.gov.

Sincerely,



Danielle Spendiff, Chief
Regulatory and Customer Service Division
Wetlands and Waterways Protection Program

Cc: Sarah Williamson, Bay Crossing Team

March 09, 2026

Heather Lowe
Planning & Community Relations Manager
Maryland Transportation Authority
Division of Planning and Program Development
2310 Broening Highway
Baltimore, MD 21224

RE: Maryland Department of Natural Resources Comments to the Chesapeake Bay Crossing Study, Tier 2 NEPA, Draft Environmental Impact Statement Comments

Dear Ms. Lowe:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Chesapeake Bay Crossing Study Tier 2 NEPA. Please find Maryland Department of Natural Resources comments to the DEIS and supporting technical reports attached.

Please contact me if you have questions or comments related to this review at MelissaC.Day1@maryland.gov**.**

Sincerely,

Roland Limpert
Acting Director,
Environmental Review Program
Maryland Department of Natural Resources
580 Taylor Avenue, B-3
Annapolis, MD 21401

Cc: Richard Ortt, Director, Resource Assessment Service
Bob Sadzinski, Director, Power Plant Research Program

Attachments

Note: MDNR also provided *Acceptable Management Practices for Bat Species Inhabiting Transportation Infrastructure: A Product of the White-Nose Syndrome National Plan* (White-Nose Syndrome Conservation and Working Group, 2018) which is not included in this appendix.

Attachment 1: Maryland Department of Natural Resources comments to Chesapeake Bay Crossing Study Tier 2 NEPA Draft Environmental Impact Statement, January 2026

Page	Page # in .pdf	Section	Section Header	Comment
0	0		General comment	General comment for the whole DEIS: This document should reference the associated documents more and add more summaries in DEIS for the referenced sections. This would help incorporate more information to items that are priorities for DNR- such as blue crabs and non-federal fish species.
0	0		General	The Wildlife and Heritage Service Natural Heritage Program has reviewed the DEIS for the Bay Crossing Study and it appears that our previous comments have been incorporated. These included concerns for a great blue heron colony near Sandy Point, a habitat protection area at Sandy Point for breeding marsh birds including the Black Rail, mixed heron colonies on the man made islands under the bridge towers, peregrine falcon nest sites under the catwalk of the bridge, waterfowl concentration and staging areas along shorelines to the east and west of the bridge, and Delmarva fox squirrel and potential FIDS habitat in the forested areas of the study area. For further technical assistance regarding all avian concerns except waterfowl, Dave Brinker of our staff would be the contact at dave.brinker@maryland.gov. For waterfowl concerns, Kayla Harvey would be our contact at Kaylam.harvey@maryland.gov.
0	0		General comment	DNR MPS requests a communications plan during construction regarding how operations may affect Sandy Point State Park and its users. A primary concern is how a fifteen year construction window will affect day to day management of the Sandy Point State Park and Mezick Pond. With construction anticipated to begin around 2032 and major components such as dredging to nine feet and possible pier blasting, DNR needs to better understand how access will be maintained. During peak season the Park is moving a very high volume of boaters and beach goers, and DNR cannot have extended periods where access is effectively cut off. Construction staging appears to be primarily off site, but that remains a concern given Park visitation levels and the potential for conflicts.
0	0		General comment	DNR appreciates that the preferred western shore connection has shifted to Oceanic Drive. Our earlier concern was that terminating the path inside the park would create parking pressure and congestion from users who are not utilizing the beach or marina. Keeping that connection parallel to the westbound lanes is a much more workable approach for us and positions park use as an option rather than a requirement for those using the path.
0	0		General comment	Please make it clear that the recommended southern alignment avoids new permanent structures or height limitations over Mezick Pond and its inlet, which would create significant operational issues for one of the busiest marinas in the region. Earlier drafts showed limits of disturbance at the pond entrance, so please confirm any construction at Mezick Pond and its inlet are only temporary measures such as sediment control rather than a change in bridge footprint.
0	0		General Comment	Forest Mitigation that adds trees to gaps identified in the Habitat Connectivity Network is preferred.
2-9	9	2.2.5.3	Future Shipping Traffic	It would be helpful to understand the approximate depth required by the Panamax III Max vessels to understand how it relates to the navigation channel depth and how it may influence future federal dredging needs.
2-9	9	2.2.5.3	Future Shipping Traffic	The final paragraph on page 2-9 discusses the pier protection project. However, a little more discussion of the project would be applicable here. Could pier placement impact the Shipping Operations discussion in Section 2.2.5.1 because the placement of the pier protection structures are along the sides of the channel?
3-11, 3-22	50/61	3.2.1/3.3.1.2	Design Considerations	The entry into Mezick Pond was not addressed in the main study document. The Natural Environment Technical Report does a better job looking at potential impacts (especially natural), it is still believed that any preferred path may have direct impacts on larger sailboats' ability to utilize this boat launch. As one of the most popular launches in this region, the Maryland Park Service would like to minimize impacts, or preferably, have no impact or changes to the sizes/heights of boats utilizing this boat ramp. DNR would like the text to clarify that there will be no height restrictions to Mezick Pond with the new bridge design. Please state this in the text.
3-24/ 4-62/ 4-92	63/165 / 195	3.3.5.1, 4.5.4.2/ 4.5.7.1	Methodology and Assumptions/ Water Quality/ Environmental Consequences	Would there be any potential for stormwater discharge treatment off the new bridge before it goes into the Bay?
3-25	64	3.3.5.1	Methodology and Assumptions	The text at the top of the page references the 2000 Maryland Stormwater Design Manual, but the 2009 version is referenced on pdf page 165 (page 4-62) in section 4.5.4.2 under heading Minimization and Mitigation update. Update first stormwater manual reference to be consistent instead of sometimes referring to out-of-date manual.
4-18	121	4.2.1.5	Environmental Consequences	It was reported in a recent meeting that there would be no DNR land impacted by Alternative C. Will the discussion in this section and the impact numbers in Table 4-10 be updated for Alt C and the other alternatives?
4-68	171	4.5.5.1	Regulated Wetlands and Waterways	The project should be designed to maintain or enhance fish passage through the project area, particularly during low flow periods.
4-69	172	4.5.5.2	Chesapeake Bay	The bottom paragraph on page 4-69 and text on 4-73 discusses hydrodynamics modelling.
4-73	176	4.5.5.2	Chesapeake Bay	The last paragraph on page 4-73 lists some temporary impacts that will be of longer duration. Will demolition activities potentially have a long enough duration to be part of this list?
4-74 to 4-75	177	4.5.5.2	Chesapeake Bay	The statement that the final design will have similar flow characteristics to the existing structures based on the hydrodynamic modeling is not supported by the Hydrodynamic Modeling Report (Appendix F) which estimates an increase in tidal velocities in the area of the shipping channel for the final design. The Hydrodynamic Model also did not model the to-be-built bridge protection measures which, if they remain in place, would be expected to further constrict tidal flow increasing tidal velocities. Will modelling be performed with consideration to the pier protection structures that will be installed? Additional information on how these structures will influence post-construction conditions seems to be needed.

4-75	178	4.5.5.2	Chesapeake Bay	Please note that there are resources available to locate beneficial use opportunities for dredged material in local restoration projects. Please reference Beneficial Use of Dredged Material resources BUILD tool at: https://dnr.maryland.gov/ccs/Pages/beneficial-use.aspx or contact Maggie Cavey at maggie.cavey1@maryland.gov
4-76	179	4.5.5.3	Maintained Navigational Channels and Civil Works Projects, Affected Environment	There are also channels that are not Federally maintained, and serve local communities, marinas, parks, and provide water access for small recreation and commercial vessels, including channels on Mill Creek, Whitehall Creek, Hackson Creek, at the Chesapeake Bay Bridge Marina, Mezick Pond access channel, and the Sandy Point Channel.
4-78	181	4.5.5.3	Table 4-40	This table shows that Alternative C will cross the Mezick Pond waterway. Is this a temporary impact for construction or permanent? If so, please indicate the difference in the table. This is related to the previous Mezick pond comment.
4-92	195	4.5.7.1	Table 4-44	The conversion of shallow water habitat to deep water habitat should be included in this table. It may lead to a change in species composition in those areas as noted in bulleted list on page 4-96, and the concept of converting the shallow to deep habitat should be addressed in the other parts of the section where appropriate.
4-92/4-107	196/210	4.5.7.1/4.5.7.2	Environmental Consequences/ Blue Crabs and Horseshoe Crabs	Retention of as many sand beaches at the bases of the bridges as is practical would be beneficial to the Horseshoe crabs for spawning purposes.
4-96	199	4.5.7.1	Aquatic Habitat	The top paragraph on this page notes that the dredged areas will be restored to their benthic contours. Will similar substrate be used for the restoration?
4-96	199	4.5.7.1	Aquatic Habitat	DNR feels the report does not adequately describe impacts to commercial and recreational fishing and loss of income as it does for land-based businesses. We can expect significant impacts to both as the area of behavior disturbance associated with the construction encompasses a significant portion of the middle bay. Commercial impacts include blue crab pot fishery, commercial hook and line fishery for striped bass, oysters, winter drift net gill fishery (striped bass), charter fishing for striped bass. There may be others. We can use much more information on the blue crab fishery in Section 4- pages 4-97 through 4-99. The NETR Section 13.7 does a better job of describing this, and this text needs to be referenced.
4-99 to 4-107	208-210	4.5.7.2	Aquatic Biota, Blue Crab sections	Similar to the comment above, the blue crab and associated fishery is not emphasized enough in this section. The NETR provides applicable information in Section 13.7 that should be summarized and referenced. Additionally the text on pages 4-99 and 4-107 that describe the blue crab habitat does not clearly state that they can be found in most shallow waters during the warm months. The wording used makes it seem like they would mostly be found in SAV areas, but they are common on shallow edges that don't have SAV as well. This section should also include overwintering habitat for crabs. The area around the bridge is important for commercial crabbing and this area will be impacted by dredging (page 4-74) and bridge construction.
4-103 to 4-105	207-208	4.5.7.2	Aquatic Biota, Fish	Although the text on the bottom of page 4-103 does mention that noise impacts would affect all fish and not just Federally managed species, this section should be written in a manner that correlates noise effects to all the fish species in the area, not just EFH. The EFH designation doesn't cover other important species that heavily utilize the area, such as striped bass. It would also help if the figure noted what size piles each isopleth was designated for.
4-113	216	4.5.7.3	Minimization and Mitigation	The second paragraph on the page states "The MDTA will determine in coordination with NOAA Fisheries whether is practicable to implement of ZSFP within the Chesapeake Bay during construction..." Please note that MDNR expects to be involved in this coordination.
4-113-4-114	216-217	4.5.7.3	Minimization and Mitigation	Reword the sentence beginning with "The MDTA will commit..." on page 4-113 and the text on the bottom of page 4-114 to include a reference to all aquatic species so that its understood that the avoidance and minimization measures on these pages apply more broadly. The "Reduced water Quality" list should include managing temperatures and velocity of intake/ and discharge waters to maintain ambient water temperature and not to entrain fish.
3-22	61	3.3.1.2	Adjacent to a Northern/Westbound Span	Western Shore, Connection #1 (not preferred) describes a short bridge over to the inlet to Mezick Pond prior to the switchback and Path users using Sandy Point SP to access the trail connections. It would be nice if a draft schematic of the permanent LOD were referenced to visualize the resources impacted. DNR is focusing here on Sandy Point SP and Mezick Pond impacts, and as previously stated DNR is strongly opposed to an SUP design that would impact SPSP or Mezick Pond in any way.
3-22	61	3.3.1.3	Preferred SUP Location	In the final paragraph, the sentence "The connection into Sandy Point State Park was not preferred because it would bring all path users through the heart of the park and near the beach." Consider rephrasing this to include more facts, the suggest language would be something like, "The possible connection into Sandy Point State Park was not preferred because it would bring all path users through the heart of the park which requires the state park staff to manage those extra visitors outside of park hours, and it would impact the very popular beach and picnic areas, as well as restrict use of Mezick Pond including emergency boats and ice breaker boats if the new SUP not preferred design is built". Also, Sandy Point periodically reaches capacity and has periods of closure to new guests during peak summer weekends. Therefore using the Park to access a SUP would likely not be the best solution.
4-38	141	4.5.1.1/ 4.5.7.2/ 4.5.7.3	Affected Environment	Injury and mortality associated with pile driving activities is the most concerning environmental impact to fisheries. The document states that intermittent pile driving is expected to occur for a total of 9 years with a 3 year gap between the east and westbound bridges. As with the most recent MDTA proposal to install Pier Protections around the current Bay Bridge span, DNR Fisheries will likely want a TOY restriction to allow migratory fish to pass by the Bay Bridge to reach spawning areas in the Upper Bay since anticipated behavioral impacts reach beyond the entire width of the bay at this location. Zone(s) of safe passage may also be warranted during non-migratory times of year. Further coordination regarding the appropriate time of year restriction for this work would be ongoing as the project design progresses.
4-66	169	4.5.5.1	Environmental Consequences	Text states "For a more in-depth discussion of impacts to waterways, including impacts to culverted waterways and waterway crossings, see the Natural Environment Technical Report." Please provide a citation of the location in the in-depth discussion in the NETR.

4-89	192	4.5.7.2	Aquatic Biota	The report specifically identifies a number of different fish species, including alewife and blueback herring - but fails to list hickory shad or American shad. These should be added, as both species follow similar migratory patterns as herring as they migrate past the bay bridge to reach upstream spawning areas.
4-101	204		Figure 4-27	DNR's Horseshoe crab habitat data (referenced in multiple locations) is incomplete and is being revised. Observations of horseshoe crab spawning are available on the Horseshoe Crab Sightings web map which can be found on the DNR Fishing and Boating Services Volunteer Angler Survey page, https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=391606d4a962405db2429779ff47e5d8 (index main page: https://dnr.maryland.gov/fisheries/Pages/survey/index.aspx)
4-112	215	4.5.7.3	Minimization and Mitigation	Fish most likely to need a TOY restriction include American shad, hickory shad, alewife herring, blueback herring, striped bass, white perch, yellow perch, Atlantic sturgeon and shortnosed sturgeon. Further coordination regarding the appropriate time of year restriction for this work would be ongoing as the project design progresses.
4-112	215	4.5.7.3	Minimization and Mitigation	Telemetry tagging of affected fish prior to construction could help bolster the population of detectable fish. Acoustic receivers could then be used to understand when these fish are in the construction area and determine when these populations are most vulnerable. Collecting this data could help guide time of year restrictions assigned to this long-term project.
4-112		4.5.7.3	Minimization and Mitigation	Page 4-112 incorrectly lists the TOY restriction for anadromous fish. It's listed as February 15 through July 15, it should read June 15. However, data collected for the current Bay Bridge Pier Protection application shows high numbers of spawning aged striped bass in the vicinity of the Bay Bridge as early in the migration period as December. This is collaborated by the commercial winter gill-net fisher which spans December through February and accounts for roughly half of the commercial striped bass harvest by weight. The deep channel habitats south of the Bay Bridge are popular for this fishery. As a result, it may be necessary to modify the TOY restriction from January to May. The "standard" TOY restriction is better suited to protect fish while spawning in tidal rivers, but these fish often stage in deep water habitats in the bay much earlier. Further coordination regarding the appropriate time of year restriction for this work would be ongoing as the project design progresses.
4-112	215	4.5.7.3	Minimization and Mitigation	There is also a concern for young of year fish staging and migrating out of the bay from summer through fall. These juvenile fish may be more susceptible to noise impacts, injury, and mortality than adult fish. Please contact DNR to obtain this data.
4-112	215	4.5.7.3	Minimization and Mitigation	Shallow water dredging should not be performed during the period from 15 April through 15 October to minimize impacts to submerged aquatic vegetation, horseshoe crabs and oysters.
4-119	222	4.5.8.1	Environmental Consequences	"Review of imagery reveals that much of this area would not meet the regulatory definition of forest; however, it would still function as terrestrial habitat". Please Provide the definition of forest being used.
4-12	115	4.2.1.3	Protected Lands	The proposal mentions impacts to current Forest Conservation Act easements. The final alignment for the new bridge should provide a map for these areas. The proposal indicated that all alternatives will impact 0.1 acres of conserved easements. These easements can be moved, but need approval from the Maryland BPW. Alternative FCA easements should be identified and redesignated as needed. DNR must have a copy of the final FCA easement location. The project must verify the plan to move easements with the DNR Forestry's Urban and Community Forestry Section.
4-129	232	4.5.9.1	Federally Listed Species	Northern Long-eared Bat (NLEB) refers to *Myotis septentrionalis*, state and federally listed as Endangered; Indiana Bat (IBAT) is *Myotis sodalis*, state and federally listed as Endangered; Tricolored Bat (TCB) is *Perimyotis subflavus*, federal proposed as Endangered, Maryland status S1 critically imperiled; Eastern Small-footed Bat (ESFB) is *Myotis leibii*, state listed as Endangered; and Little Brown Bat (LBB) is *Myotis lucifugu*s, Maryland status S1 critically imperiled. These species have all been documented within their ranges to use bridges, culverts, trees, or buildings as roosts.
4-129	232	4.5.9.1	Federally Listed Species	DNR WHS supports the survey work for bats that has been done so far, although the timing of the surveys was not the best for assessing presence. As stated in the DEIS, these surveys have a two-year shelf life, so this still allows for a second round of surveys to be completed before the project begins during more suitable time periods (see further information below under Natural Heritage Program recommendations). Note that page 4-129 of the DEIS states, "Due to a lack of evidence of bat roosting in both the Bay Bridge and Cox Creek bridge, it is probable that bats are not actively roosting in these bridges." Given the time of year that bat surveys were conducted, it is premature to draw this conclusion.
4-129	232	4.5.9.1	Federally Listed Species	Please reference and see attached the Acceptable Management Practices for Bat Species Inhabiting Transportation Infrastructure (Attachment 3). For further questions regarding bat concerns, please contact Dana Limpert of our program at danal.limpert@maryland.gov.
4-136	239	4.5.10	Unique and Sensitive Areas	The section 4.5.10 Unique and Sensitive Areas It isn't clear if the design proposals have considered the updated 2024 Habitat Connectivity Network (HCN) update. The HCN replaced the Green Infrastructure Assessment. The 2024 update leverages the Chesapeake Bay Program's cutting-edge, high-resolution 2017/2018 land use/land cover mapping and provides several additional enhancements, including differentiation of hub and corridor types (forest, wetland, or aquatic), a breakdown of land cover types within corridors, and identification of potentially restorable gaps within corridors. The updated Habitat Connectivity Network map layer can be viewed on the Maryland Green Print web map (https://mdgeodata.md.gov/greenprint/). The data layer can be downloaded from the Maryland iMap Data Catalog.

4-136	239	4.5.9.2	Minimization and Mitigation	Recent Information to Guide Future Survey Work for Bats • States in the Eastern US have found populations of NLEB (federally and state listed as Endangered) to be active year-round in the Coastal Plain bordering the Gulf of Mexico and along the Atlantic seaboard, including NC, VA, and NJ. • NLEB in these areas do not exhibit hibernation but torpor during the winter and will awaken to feed on insects and drink water when temperature and weather conditions are conducive for insect activity. • Coastal populations of NLEB select non-traditional roosts that include bridges, culverts, buildings, and trees. NLEBs and IBATs have been found using bridges and/or culverts throughout their ranges, as well as other species of conservation concern, such as TCB, LBB, and ESFB. • DNR WHS and Blackwater NWR staff are currently monitoring NLEB recorded on the Blackwater Wildlife Refuge year-round to document activity. The Coastal Plain of Maryland has not been well-surveyed for bats, and there is currently no data on active coastal populations outside of Blackwater. Future surveys for the Bay Crossing project should take this new information under consideration since this project occurs in the Coastal Plain and to avoid misconceptions of where bats could be during vulnerable periods.
4-136	239	4.5.9.2	Minimization and Mitigation	Survey Site Selection Guidance A very useful document written by the White-nose Syndrome Conservation and Recovery Working Group is entitled Acceptable Management Practices for Bat Species Inhabiting Transportation Infrastructure. The document is a product of the White-nose Syndrome National Plan (www.whitenose.org). Section 2 of the document addresses misconceptions about bat use of transportation structures. • Misconception 1 | Bats require at least 3 m of vertical measurement to take flight. Therefore, the structure must be equal to or exceed 3 m to be suitable for bats. • Misconception 2 | Culverts are unsuitable due to the absence of crevices or perching substrate. • Misconception 3 | Culverts must be between 1.5 and 3 meters in height and ≥ 100 m in length. • Misconception 4 | Bats exhibit obvious signs of occupancy (e.g., bat vocalizations, guano and/or urine stains). • Misconception 5 | Bats require vertical crevices 12.7 to 31.75 mm wide and ≥ 304.8 mm in depth. • Misconception 6 | Bats only roost within bridges over water. • Misconception 7 | DOTs can safely conduct operations after October 1, when bats are absent. This interval coincides with autumnal migration and movements to local hibernacula. • Misconception 8 | Roosts must receive full sun exposure. • Misconception 9 | Bats will not roost over busy roadways (Erickson et al. 2002) • Misconception 10 | Bats do not occupy transportation structures within northern states because “few are warm enough to meet bat needs”. Please contact DNR for this document and full citations.
4-136	239	4.5.9.2	Minimization and Mitigation	The DNR WHS recommends the following: • Please consult USFWS and WHS in preparing survey plans and submit survey plans to both agencies in advance of survey work. • Please submit the results of all surveys, including surveys with negative results, to DNR WHS as well as USFWS. • WHS recommends that the next round of surveys be conducted when bats are the most vulnerable as presence would indicate the appropriate TOY to avoid take. The periods when bats are most vulnerable to disturbance that could result in take include during winter torpor, December 15-February 15, when winter mean temperatures fall below 40 degrees F, and during the maternity pup season, May 15 to July 31, when flightless young would be present. Surveys should include all structures with potential bat roosts. The Draft Biological Assessment (Appendix Q page 7-1) states that tree clearing will not occur during the active period, April 1 – September 30; therefore, acoustic surveys of forest habitat will not be necessary. • If signs of roosting bats are found, then a time of year restriction (TOY) would be applied to these vulnerable time periods. Excluding bats from using the structure while work is conducted in a particular section may be necessary under certain circumstances outside of the sensitive TOY periods. Further coordination regarding the appropriate time of year restriction for this work would be ongoing as the project design progresses.
4-136	239	4.5.9.2	Minimization and Mitigation	After project completion, placing bat roosting structures under the bridge is optional as bats roosting in bridges and culverts indicate the lack of natural roosts. Endangered gray bats returned after bridge construction conducted outside of maternity pup season to roost under the bridge https://www.fws.gov/story/2022-06/roosting-structures-endangered-bats-installed-french-broad-river-bridges . Bridges can also be designed to create roosting crevices; that has been done in several states.
8-1	282	8.1	Alternative C: Recommended Preferred Alternative	East College Parkway backs up during the summer months, although recent procedural adjustments by SHA and MDOT have helped keep drivers on Route 50. DNR MPS wants to be sure that the transition to eight lanes near Oceanic Drive actually improves that condition and does not shift additional congestion toward the entrance of Sandy Point State Park.
8-5	286	8.1.2	Environmental Impacts	Based on updates about the project impacts presented in recent meetings and even more up to date design communicated by email, does the *de minimus* impact discussion in the second paragraph on this page need to be updated?
9-36, 9-37/ 4-77	130, 131/ 181	9.3.3.2/4.5.5.3	Table 9-19/ Table 4-40	Same comment for NETR/DEIS: An X is marked denoting the waterway will be crossed for Mezick Pond Channel. DNR has communicated that no limits to Mezick Pond will be accepted. In the text below the table, the Local Channels subheading states the entrance of Mezick Pond would be directly impacted by the northern alignment build alternatives but there is an X in the table denoting all build alternatives would affect the navigation channels.

Attachment 2: Maryland DNR comments to Technical Reports, as attached to Chesapeake Bay Crossing Study Tier 2 NEPA Draft Environmental Impact Statement, January 2026

Technical report	Page #	Page # in .pdf	Section	Section Header	Comment
ARDS Concurrence Package	4-1	8, 9	4.1	Structure Location	DNR has concerns that the new Bay Bridge pier protection design won't be coordinated with the new bridge design. Please make sure the 2 project teams work together.
Hydrodynamic Report (Appendix F)					The response regarding the Hydrodynamic Report (Appendix F) was " The hydrodynamics report models the alternatives relative to the existing conditions. The hydrodynamics modeling focuses on long-term effects of the alternatives." Since the existing conditions will now include some form of Pier Protection measures at the current bridges, the effect of the protection structures to be built must be modeled because there will be a change to the "existing conditions" and conditions during construction. The hydrodynamic modeling showed a approximate doubling of tidal velocities from current conditions. It could be assumed that during construction of the new eastbound bridge the new bridge piers, the existing bridge piers and the bridge protection measures to be constructed will all combine to further restrict water movement through the bridge area which is also the narrowest part of the Bay. The presence of all these structures, at least until unneeded structures and old bridge piers are demolished, would be expected to increase tidal velocities above the values presented in the hydrodynamic modeling report. The final EIS should address the Pier Protection measures that will be constructed and their potential fate when the replacement bridges are constructed.
Navigation Impact Report	2& 24	9& 30		2. & Conclusion	As per other comment for NETR/DEIS: An X is marked denoting the waterway will be crossed for Mezick Pond Channel. DNR has communicated that no limits to Mezick Pond will be accepted. Please revise if this impact was revised.
NETR	8-4	72	8.1.2	Table 8-1	Many of the impervious surface estimates provided in Table 8-1 on page 8-4 of the Natural Environment Technical Report are low based on the calculation methodology used by the Fishing and Boating Service's Fisheries Ecosystem Assessment Division. Our estimates for the year 2024 in order of Table 8-1 are 30%, 31%, -, -, -, 13%,11%, 7%, 5%, 8%. Impervious surface estimates are available on the interactive Nontidal Anadromous Fish Spawning Sitemap: https://experience.arcgis.com/template/8b13df5918be4e288fb3439a2afc3153/ [Methodology is available in Uphoff, J. H., Jr., A. Park, C. Hoover, T. Fowler, S. Moorhead, M. Ponte, J.Horne, and M. Topolski. 2024. Marine and estuarine finfish ecological and habitat investigations. Performance Report for Federal Aid Grant F-63-R, Segment 14, 2023 Activities. Maryland Department of Natural Resources, Fishing and Boating Services, Annapolis, Maryland.]
NETR	8-8	76			Page 8-8 paragraph one of the Natural Environment Technical Report states that MDTA will "ensure that all SWM and ESC requirements are met or exceeded to limit the potential for additional contaminants to be introduced to waterways." Requirements under COMAR 26.17.02 should be scrutinized to identify and incorporate the most effective techniques and scenarios where they should be exceeded.
NETR	8-23	91	8.2.3.2	Environmental Consequences, Build Alternatives	Paragraph starting with "Winter maintenance materials..." and ending with "Because of inherently higher salinity, conductivity, and chloride levels of the tidal waterways in the resource review area, additional impacts from de-icing chemicals would be less severe." Suggest finishing that final sentence with, "than if building in a freshwater zone." BUT this area is of low salinity and there are biota adapted to lower salinity and life cycles in lower salinity that would die in higher salinity. Salinity regimes can literally determine which species are present. SAV species and oyster spat come to mind, and mentioned in NETR page 13-33 is male blue crabs prefer fresher waters and female crabs prefer saltier waters. Higher salinity can also change the chances of viruses that kill off oysters. Adding salt, a conservative element, will cause it to stay in the system unless physically removed.
NETR	8-23	91	8.2.3.3	Environmental Consequences, Build Alternatives	Higher salinity and higher temperature waters caused by expanding roadway lowers the ability of oxygen to dissolve in water, even when excepting eutrophication, this can cause larger volume of dead zone and less habitable ecosystems.
NETR	8-25	93	8.3.3.2	Wild and Scenic Rivers, Environmental Consequences, Build Alternatives	Mention the term "viewshed" in the introduction section 8.3.1.

NETR	9-16	110	9.1.3.2	Build Alternatives	Alternatives B and C seem to only impact three main waterways, Meredith Creek, Thompson Creek, and Cox Creek, and the Mezick Pond connection to the Chesapeake Bay. This seems like 4 waterways, because of the Mezick Pond's connection to the Chesapeake Bay. DNR has previously communicated that the Mezick Pond and inlet to the C. Bay cannot be impacted by the bridges or SUP.
NETR	9-16	110	9.1.3.2	Build Alternatives	The text states that "The addition of a SUP option with any of the build alternatives would result in less than 0.1 acres of nontidal and tidal waterway impacts across all build alternatives". This is confusing to say <0.1 acres of impact when the report seems to state as different impact in other places.
NETR	9-17	111		Table 9-13	The table shows that Alt C crosses or overlaps Mezick Pond 1 time. DNR has previously communicated that the Mezick Pond and inlet to the C. Bay cannot be impacted by the bridges or SUP.
NETR	9-36	130	9.2.1	Local Channels	To state that Mezick Pond "currently provides local boating and access for recreation," seems like an understatement. The importance of this channel to public boating access should be stated.
NETR	13-7	158		Figure 13-7	The preferred Alternative C reduces the land impacts within the watersheds and would likely have limited impact on areas of anadromous spawning due to road expansion. Among the greatest impacts overall will be subsurface noise during the installation of pilings, piers, supports, etc. on anadromous fish during their migratory run which passes through the project site and disturbance envelopes (Figure 13-7 in Natural Environment Technical Report).
NETR	13-32	183			The impact of impervious surface on tidal and nontidal fishes, page 13-32 second paragraph of Natural Environment Technical Report, requires further analysis. Impervious surface, which encompasses many types of impact, is negatively related to successful reproduction of anadromous fishes and reduced species diversity. For example, increased road surfaces result in additional cold weather salt application and elevated conductivity in fresh water streams as well as an increase in automobile derived contaminants such as tire crumb and associated 6PPD-quinone; while this contaminant has not been studied in anadromous species that spawn in Chesapeake Bay, it does cause acute toxicity and mortality in some salmonid species. Spawning distribution of anadromous fishes can be viewed on the interactive Nontidal Anadromous Fish Spawning Site Map: https://experience.arcgis.com/template/8b13df5918be4e288fb3439a2afc3153/
NETR & DEIS	9-36, 9-37/ 4-77	130-131/181	9.3.3.2/4.5.5.3	Table 9-19/ Table 4-40	Same comment for NETR/DEIS: An X is marked denoting the waterway will be crossed for Mezick Pond Channel. DNR has communicated that no restrictions or encroachment to Mezick Pond will be accepted. In the text below the table, the Local Channels subheading states the entrance of Mezick Pond would be directly impacted by the northern alignment build alternatives but there is an X in the table denoting all build alternatives would affect the navigation channels.
NETR	9-37, 9-38	131, 132	9.3.3.2	Local Channels	Where is the Sandy Point Channel compared to the Mezick Pond Channel? I see Table 9-18 has a latitude & longitude mentioned for Sandy Point Channel, but please reference that in this text at a minimum because even we thought they were the same thing. The entrance of Mezick Pond is discussed as being temporarily impacted during construction and directly impacted by northern alignment build alternatives, which is confusing because Table 9-19 marks that each Build Alternative will be crossing Mezick Pond. Please clarify these 2 points and be consistent with wording. When someone cross-references with the Navigation Impact Report it also mentions Northern alignment Build Alternatives may impact vessel access (but not mentioning Southern alignment Build Alternatives). The Navigation Impact Report does not mention Sandy Point Channel.
Socioeconomic and Land Use Technical Report & Cultural Resources Technical Report					Impact of bridge replacement on the commercial and recreational fishing sectors is not addressed in the Socioeconomic and Land Use Technical Report and should be emphasized in the NETR. These resources are a primary concern for DNR as it relates to the proposed project.

March 9, 2026

Heather Lowe, Manager, Planning & Community Relations
Division of Planning and Program Development
Maryland Transportation Authority
Point Breeze
2310 Broening Highway
Baltimore, MD 21224

Re: Bay Crossing Study Tier 2 – DEIS Review- January 2026

Dear Ms. Lowe:

Maryland Department of Planning (MDP) has reviewed the Draft Environmental Impact Statement (DEIS) for the Bay Crossing Study (BCS)-Tier 2 NEPA, released in January 2026. We appreciate that this version of the DEIS incorporated most of our comments from earlier September 2025 version. The following comments focus on the Maryland Transportation Authority (MDTA) Recommended Preferred Alternative (RPA) - Alternative C.

PFA Law

In January 2026, in coordination with the Maryland State Highway Administration (SHA), MDP noted that since MDTA recommended Alternative C (6-8-6 South) as the Preferred Alternative for the BCS-Tier 2 Project, MDTA intends to use MDTA funding for the entire future project construction and no other state funding, e.g., funding from the SHA, will be used on the project. Since the RPA – Alternative C (6-8-6 South) would be within the MDTA's right-of-way and only use MDTA funding for future construction and maintenance, the RPA would be exempted from the Priority Funding Area (PFA) law as defined in §5–7B–01. (c.) (1) (i) of the State Finance and Procurement Article. MDP suggests that MDTA prepare a summary document on how the project complies with the PFA law and include that information in the Final Environmental Impact Statement (FEIS).

The MDTA Recommended Preferred Alternative (RPA)

MDP noted that the MDTA recommended Alternative C (6-8-6 South) as the Preferred Alternative, which would replace the two existing Bay Bridge spans with two new spans, totaling eight travel lanes with four lanes on each span. And the two new bridge spans would extend along U.S. 50/301 from west of Oceanic Drive in Anne Arundel County to east of Cox Creek in Queen Anne's County, providing sufficient room to transition into the existing U.S. 50/301, which would not be changed. MDP recognizes that, overall, Alternative C (6-8-6 South) would have fewer environmental impacts, including a lower likelihood of induced adverse growth within the project's influence area, as compared to other built alternatives that would entail more highway expansion.

Heather Lowe, MDTA
Re: BCST2-DEIS – January 2026

MDP also recognizes that the RPA – Alternative C would not resolve traffic queuing and travel time delays in the project corridor and beyond, especially during summer weekends. Since increasing the bridge capacity would not resolve future traffic challenges resulting from vehicle travel demands, MDP encourages the MDTA to continue working with the Maryland Department of Transportation (MDOT), local agencies, and Metropolitan Planning Organizations (MPOs) to consider robust and innovative Transportation Demand Management (TDM)/Transportation System Management (TSM) and transit measures to manage and reduce single-occupancy vehicle (SOV) travel demand, and maximize the efficiency of available bridge and highway capacity.

The RPA-Alternative C would include a transit investment commitment from the MDTA to support future transit improvements (page 8-2). Through the transit investment, it is expected that the MDTA would work with MDOT and local jurisdictions to help develop and implement transit strategies that would help address Bay crossing transportation needs. Chapter 8 (MDTA Recommended Preferred Alternative) should indicate that, in addition to making the financial commitment, the MDTA would work with appropriate state and local partners to help develop and implement appropriate transit improvements as part of the PRA.

Regarding TDM and TSM, Chapter 8 should clarify which TDM/TSM measures the RPA-Alternative C would include (page 8-2). Please clarify whether the RPA-Alternative C continues to include Congestion Pricing, Park-and-Ride, and Part-Time Shoulder Use (PTSU) as recommended during the Alternative Retained for Detailed Study stage (pages 3-10). In addition to addressing these TDM/TSM measures, MDP suggests that Chapter 8 indicate that the MDTA will continue coordinating with the MDOT/SHA on MDOT/SHA's studies and improvements along U.S. 50/301 that would affect travel conditions on the Bay Bridge, because improvements on U.S. 50/301 affect the TDM/TSM component of the RPA-Alternative C.

It appears that the SHA is studying and implementing the "Rural Opportunities to Use Traffic Technology Enhancements (ROUTE)" project (a TSM project) on the U.S. 50 corridor on Maryland's Eastern Shore. Are there any proposed TSM improvements from the "ROUTE" project in the BCS-Tier 2 project area? If so, the information can be included in the No-Build Alternative.
MDP noted the RPA-Alternative C would include an optional pedestrian and bicycle shared-use path (SUP), and the MDTA would further coordinate with other state, local, and federal agencies to determine whether an SUP would be implemented (page 8-2). MDP suggests that on page 8-2, the paragraph discussing the SUP include the information that the MDTA would continue coordinating with local, state, and regional planning agencies in considering the consistency of the SUP with local pedestrian and bicycle plans, the proposed regional bike network in the Baltimore region, the 2025 Maryland State Transportation Trails Strategic Plan, and the Maryland's Complete Streets Policy.

Other Comments
TSM measures, e.g., robust and comprehensive traffic incident management, installing speed cameras to deter vehicle speeding and weaving in and out of lanes, encouraging local roadway improvements for local traffic, and other strategies, should be evaluated for current and future traffic congestion mitigation and safety improvement. MDP staff are aware that, likely due to limited incident management resources, it sometimes takes a long time to clear a traffic accident in the project corridor. Speeding/aggressive driving are also problems in the project corridor. Proactive traffic management to deter aggressive driving could improve overall travel efficiency and safety. It is unclear whether the MDTA has considered and addressed these TSM measures. If so, the information can be included in the

Heather Lowe, MDTA
Re: BCST2-DEIS – January 2026

No-Build Alternative for clarification.

On page 4-12, in the 4.2.1.4 paragraph, please change "……State-certified Priority Funding Areas (PFAs)……" to "……State-**concurred** Priority Funding Areas (PFAs)……" because local jurisdictions certify their designated PFAs, and MDP only reviews against the defined PFA criteria and makes a determination of whether to concur or not with the locally designated PFA. If a locally designated PFA doesn't meet the PFA criteria, MDP will indicate the area as a PFA Comment Area.

Refer to Table 4-9 (page 4-17): Please make a footnote for "Other Land" to explain the other land as: The remaining land not covered under another category. Examples include but are not limited to rural or agricultural lands, single-family residential parcels greater than or equal to 20 acres in size, and undeveloped portions of large parcels containing urban uses (See MDP's Statewide Classification Definitions. Visit the Statewide Land Use ArcGIS Story Map).

If you have any questions or wish to discuss the above comments further, please contact me at jason.dubow@maryland.gov and Bihui Xu at bihui.xu@maryland.gov.

Sincerely,



Jason Dubow, CC-P
Director, Research, Review, and Policy Division (RRP)

Maryland Department of Planning
(410) 767-3370; Jason.dubow@maryland.gov

CC: Sarah Williamson, Sr. Environmental Scientist & Owner, Coastal Resources, Inc.
Bihui Xu, Principal Transportation Planner, RRP, MDP
Chuck Boyd, Assistant Secretary of Planning Services, MDP

From:	Jonathan Watson - NOAA Federal
To:	Heather Lowe
Cc:	Brian D Hopper - NOAA Federal; Sarah Williamson; Emma Beck; Karen Greene - NOAA Federal; Bienko, Alexander (FHWA)
Subject:	Re: BCST2 DEIS Notice of Availability
Date:	Monday, March 9, 2026 3:44:08 PM
Attachments:	image001.png

Hi Heather,

We (NMFS-HESD) have reviewed the DEIS and NETR and have three very minor comments for your consideration:

(1) The Multi-species pile driving calculator is described as the "NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) Multi-Species Pile Driving Calculator (NMFS 2024)." While a calculator specific to GARFO existed several years ago, the current iteration of the tool was developed and is managed by our Office of Protected Resources in NOAA Fisheries' headquarters office. In that sense, it would be more accurate to describe it as "NOAA Fisheries Multi-Species Pile Driving Calculator (NMFS 2024)." This could be changed in both the DEIS and the NETR for accuracy.

(2) DEIS Pg 4-105 - The following statement is misleading: "Chesapeake Bay fish stock assessments for bluefish and summer flounder could be conducted by a fisheries stock assessment biologist based on this recent ChesMMAP data; however, current stock assessments are not publicly available." It would be more accurate to state that these species are managed as a coastwide stock; therefore, no stock assessment specific to the Chesapeake Bay exists. The stock assessments for the coastwide stocks are publicly available through the Mid-Atlantic Fishery Management Council (MAFMC).

(3) NETR pg 13-31 - Similar to comment 2 above, there is a misleading statement here about the availability of stock assessment information, which reads: "...bluefish and summer flounder, and stock assessment data for these species are not publicly available." The stock assessments, which are completed on the coast wide stock, are public documents available through MAFMC.

Overall, this is a very thorough document. Thank you for working with us over the past several years on its development. We appreciate your efforts to address our comments on the draft EFH Assessment and draft Biological Assessment.

Jonathan

On Fri, Jan 23, 2026 at 4:43 PM Sarah Williamson <sarahw@cri.biz> wrote:

> Good Afternoon,
>
> It was brought to our attention that there was a typo in the letter sent out earlier today. The attached letter has been revised to correctly identify the RPA as Alternative C (6-8-6).
>
> Have a good weekend.

Regards,

Sarah Williamson | *Bay Crossing Study Team*

Coastal Resources, Inc. | Facebook | LinkedIn | Instagram

25 Old Solomons Island Road, Annapolis, MD 21401

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WE'RE HIRING! – CLICK HERE

From: Sarah Williamson
Sent: Friday, January 23, 2026 1:04 PM
To: Blair.jones@dot.gov; alexander.bienko@dot.gov; chris.millington@dot.gov; lourdes.castaneda@dot.gov; joseph.davia@usace.army.mil; april.e.sparkman@usace.army.mil; hal.r.pitts@uscg.mil; Charles.d.bullock@uscg.mil; witman.timothy@epa.gov; glyn.rebecca@epa.gov; fitzgerald.megan@epa.gov; boos.patrick@epa.gov; french.emily@epa.gov; mazzarella.christine@epa.gov; blair.aaronM@epa.gov; mark_eberle@nps.gov; Wendy_O'Sullivan@nps.gov; Christine_Yott@nps.gov; Jacob_Ross@nps.gov; abbi_huntzinger@nps.gov; Ray_li@fws.gov; trevor_clark@fws.gov; karen.greene@noaa.gov; brian.d.hopper@noaa.gov; Jonathan.Watson@noaa.gov; tammy.roberson@maryland.gov; Amanda.sigillito@maryland.gov; Danielle.spendiff1@maryland.gov; jon.stewart@maryland.gov; William.seiger@maryland.gov; dbuscemi@mdot.state.md.us; TPenders@mdot.maryland.gov; Jlombardo.consultant@mdot.maryland.gov; abrun3@mdot.maryland.gov; DAtkins@sha.state.md.us; rmoravec@mdot.maryland.gov; harriet.levine@jacobs.com; sburnett@wtbco.com; Gwendolyn.gibson@maryland.gov; roland.limpert@maryland.gov; Rachel.temby@maryland.gov; melissac.day1@maryland.gov; kmiller@achp.gov; april.cummings@fema.dhs.gov; tessa.nolan@fema.dhs.gov; Jamie.carpenter@fema.dhs.gov; Katherine.charbonneau@maryland.gov; nick.kelly@maryland.gov; charlotte.shearin@maryland.gov; Kathryn.durant@maryland.gov; lmolesworth@mta.maryland.gov; lbarcena@mdot.maryland.gov; bihui.xu@maryland.gov; brooks.phelps@maryland.gov; Russell.strickland@maryland.gov; marcia.deppen@maryland.gov; chas.eby@maryland.gov; dscurti@marylandports.com; jlemke@marylandports.com;

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Cc: hlowe@mdta.state.md.us; cgreenhawk1@mdta.state.md.us; ealmquist@rkk.com; Emma Beck <emmab@cri.biz>; robert.shreeve@aecom.com; mwilliams9@mdta.state.md.us; karen@blackwaterenvironmentalgroup.com; mfox@rkk.com; timothy.a.ryan@aecom.com; sgroesbeck.consultant@mdot.maryland.gov; kgibson@rkk.com; mbogdan@mdta.state.md.us; mlotz@wtbco.com; sburnett@wtbco.com; Megan Bolcar <meganb@cri.biz>
Subject: BCST2 DEIS Notice of Availability

Dear BCST2 Interagency Team,

Please see the attached letter announcing the availability of the BCST2 DEIS. We are very excited to have reached this milestone, and your participation has been key!

All documents are available for viewing and download on the Study website at https://www.baycrossingstudy.com

More specifically, you can access the DEIS and supporting technical documents here: https://www.baycrossingstudy.com/study-process/tier-2-study/draft-environmental-statement-eis

and the additional State Documents MDTA prepared here: https://www.baycrossingstudy.com/study-process/tier-2-study/draft-environmental-statement-eis/state-analyses/

MDTA welcomes your comments on the DEIS.

MDTA will hold public hearings on the following dates:

- Virtual hearing - February 9th
- In-person hearings:
  - February 10th at Broadneck High School in Anne Arundel County; and
  - February 12th at Kent Island High School in Queen Anne's County.

Comments from the public and Cooperating and Participating agencies will be accepted through March 9th, 2026.

Regards,

Sarah Williamson | *Bay Crossing Study Team*

Coastal Resources, Inc. | Facebook | LinkedIn | Instagram

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Queen Anne's County

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County Commissioners:
James J. Moran, At Large
Jack N. Wilson, Jr., District 1
J. Patrick McLaughlin, District 2
Philip L. Dumenil, District 3
Christopher M. Corchiarino, District 4

MEMORANDUM

Date: March 9, 2026
To: Heather Lowe, Planning & Community Relations Manager
Maryland Transportation Authority

From: Steve Cohoon, Public Facilities Planner

Re: Bay Crossing Study Draft Environmental Impact Statement (DEIS)
Tier 2 National Environmental Policy Act (NEPA)

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Bay Crossing Study.

Queen Anne's County offers the following comments.

1. The County Commissioners have documented their support for adding capacity to the Bay Crossing to relieve congestion and improve mobility in and through Queen Anne's County.
2. The proposed alternatives evaluated in the DEIS, except for the no build alternative, are generally consistent with the goals and objectives of the 2022 Queen Annes County Comprehensive Plan.
3. The preferred alternative proposes widening of 2.25 miles of the US 50/301 corridor in Queen Anne's County and not the entire 10 miles in the study area. Planning should continue for future widening of US 50/301 from Cox Creek to Queenstown.
4. The preferred alternative proposes a new merge condition near Cox Creek (eastbound) and Oceanic Drive (westbound).
    a. Please provide information on the potential for new congestion at the new merger locations as traffic volumes increase.
    b. Please provide information on the anticipated trip diversion onto local roads as a result of this new merge condition.
5. Queen Annes County appreciates the continued opportunity to review and comment on the proposed property impacts, road improvements and multimodal improvements as additional detailed information becomes available during engineering and design.

Additional information elaborating on each of these points is listed below.

The County Commissioners have documented their support for adding capacity to the Bay Crossing to relieve congestion and improve mobility in and through Queen Anne's County.

For many years the Annual MDOT Priority letter from the Queen Annes County Commissioners to the Secretary of Transportation has identified the top transportation priority for the County is to address congestion at the Bay Bridge and in the Bay Bridge Corridor. The priority letter fully supports construction of two new replacement bridges to add the needed capacity to reduce congestion and improve mobility. The May 13, 2025 priority letter encourages quick completion of the National Environmental Protection Act (NEPA) Tier 2 study process so design, engineering and construction of replacement bridges can begin. The letter also asks that locally planned improvements be incorporated into the project as it moves forward. The May 13, 2025 letter states:

> *"It is vital to the safety and mobility of Queen Anne's County Citizens that continued steps be taken to quickly complete the Bay Crossing Study Tier II NEPA process and move directly into design and engineering for the corridor improvements. It is essential to establish funding and a schedule for the design and engineering of the preferred alternative to begin immediately following the NEPA process."*
>
> *"As the Tier II NEPA study moves towards selecting a preferred alternative for corridor improvements please continue to review and include transportation improvements identified in the locally adopted public policy documents such as the Queen Anne's County Comprehensive Plan, Kent Island Transportation Plan and the Queen Anne's County Pedestrian and Bicycle Master Plan."*

The DEIS is an essential first step in selecting a preferred alternative and establishing the limits of disturbance. A significant amount of information related to appearance, design, engineering, construction and impacts to property will be forthcoming as the project moves forward. Queen Anne's County would like to participate in the review, comment and where appropriate, decision making as the information becomes available to ensure continued consistency with local plans.

The proposed alternatives evaluated in the DEIS, except for the no build alternative, are generally consistent with the goals and objectives of the 2022 Queen Annes County Comprehensive Plan.

The DEIS evaluates alternatives for a new bay crossing to add capacity and to relieve congestion at the Chesapeake Bay Bridge consistent with the requirements of NEPA. The purpose and need identifies that the NEPA Tier 2 study is to evaluate viable alternatives that will address and improve:

- Adequate capacity and reliable travel times,
- Mobility,
- Roadway Deficiencies,
- Existing and future maintenance needs, and
- Navigation

While considering

- Environmental Responsibility, and
- Cost and Financial Responsibility

In general, the thousands of pages of documentation that make up the DEIS (chapters, appendix and supporting technical reports) provide an extensive study that has gathered and fully evaluates all aspects of potential impacts related to a new bay crossing and included a significant public process. The DEIS provides for a comprehensive inventory of environmental, cultural, land use, noise, socioeconomic and transportation related factors in the 2 mile wide, 20 mile long study area in Anne Arundel and Queen Anne's County.

The purpose and need identified in the DEIS as well as the supporting information related to alternatives works to move forward goals and objectives in the Queen Anne's County Comprehensive Plan.

In general, all options evaluated in the DEIS other than the "no build alternative" are generally consistent with the Comprehensive Plan because they work to:

- Improve safety, mobility, accessibility, and resiliency in the transportation network (Chapter 6, Goal 6-1)
- Strongly support resolutions to traffic problems caused by through traffic that impedes local traffic and citizen movements. (Chapter 6, Goal 6-1, Strategy 1)
- Support implementation of priority transportation improvement projects through partnerships with the State, adjacent counties, and key stakeholders. (Chapter 6, Goal 6-1, Strategy 1.2)
- Create safe and adequate infrastructure available to all modes of travel, in part by Working with MDOT SHA to reduce crashes, and improve local traffic mobility. (Chapter 6, Goal 1-2, Strategy 2.2)
- Protect neighborhood streets from through traffic and decrease congestion delays (Chapter 6, Goal 6-1, Strategy 4)
- Develop transportation studies that identify capital projects consistent with PlanQAC and its Future Land Use Plan. (Chapter 6, Goal 6-1, Strategy 5)
- Identify capital projects that are consistent with PlanQAC and annually prioritize projects in the County Transportation Priority Letter to MDOT SHA. (Chapter 6, Goal 6-1, Strategy 5)
- Continue to provide opportunities for public involvement in the planning, design, and construction of transportation improvements. (Chapter 6, Goal 6-1, Strategy 5)
- Enhance the transportation network for all users. (Chapter 6, Goal 6-2)
- Plan, design, improve, manage, maintain, and expand transportation infrastructure to meet the needs of residents and businesses. (Chapter 6, Goal 6-1, Strategy 1)
- Provide commuters a reliable route to other metropolitan areas while ensuring delivery access to the Eastern Shore, major airports, and warehouse facilities and other markets. (Chapter 6, Goal 6-1, Strategy 1.7)
- Promote safe and convenient bicycle and pedestrian access throughout the transportation system and programs. (Applicable to the SUP Option) (Chapter 6, Goal 6-1, Strategy 2)
  Minimize the loss of historic and archeological sites. (Chapter 7, Goal 7-4)
- Enhance County information maintained on historic sites, landmarks, cemeteries, archaeological sites, and scenic byways. (Chapter 7, Goal 7-4 Strategy 1)

The preferred alternative proposes widening of 2.25 miles of the US 50/301 corridor in Queen Anne's County and not the entire 10 miles in the study area. Planning should continue for future widening of US 50/301 from Cox Creek to Queenstown.

The alternatives that propose more improvements, relieve congestion for longer periods of time and accommodate higher traffic volumes resulting in less diversion trips onto local roads, go farther to comply and implement the goals of the comprehensive plan.

When considering the 3 alternatives,

> The **6-8-6 alternative** proposes widening bridge capacity from 5 lanes to 8 lanes and widening approximately 2.25 miles of US 50/301 in Queen Anne's County
>
> The **8-8-8 alternative** proposes widening bridge capacity from 5 lanes to 8 lanes and widening approximately 10 miles of US 50/301 in Queen Anne's County
>
> The **8-10-8 alternative** proposes widening bridge capacity from 5 lanes to 10 lanes and widening approximately 10 miles of US 50/301 in Queen Anne's County

Building two new bridges for the replacement of the aging structures and comprehensive widening a 20 mile long corridor is a monumental undertaking as proposed in the 8-8-8 and 8-10-8 alternatives. Selection of the 6-8-6 alternative has the least amount of environmental impact and cost because it results in the least amount of construction in the near term. It is also understood that the study shows that the 6-8-6 option significantly reduces congestion at the Bay Bridge in the target year of 2045, when the bridges are just opening. However, it is important to consider that with the construction of new bridges with an anticipated life cycle of 100 years or more, additional highway widening will be needed to support this corridor in the future. Planning improvements based on projected traffic in the year 2045 only considers conditions at the very beginning of the life cycle of the new bridges. If widening is not considered or at least planned as part of this process, then State Highway Administration will need to take years to begin and complete another planning process for highway widening, interchange replacement and exit ramp improvements. Please consider how MDTA and SHA can plan to implement the widening of the US 50/301 corridor as part of this project or as a companion project that coincides with construction of the Bay Bridges. Planning the entire 10-mile corridor now for potential highway widening and related improvements would help avoid the need for additional studies in the future. By addressing the needs of the full corridor upfront, MDOT, the State Highway Administration, the County, and residents could significantly streamline and accelerate the later planning, design, funding, and implementation of any required improvements. This is consistent with Comp Plan Goal 6-1, Strategy 4.3 "Work with MDOT SHA and the MDTA to develop a US 50/301 Corridor Plan to help move traffic through the County."

Widening of US 50/301 not addressed by MDTA as part of the Bay Crossing Study should be included in all appropriate Federal and State Transportation Planning Documents such as the Long Range

Transportation Plan(LRTP), Maryland Transportation Plan, Highway Needs Inventory and Consolidated Transportation Plan.

The preferred alternative proposes a new merge condition near Cox Creek (eastbound) and Oceanic Drive (westbound).

> **Please provide information on the potential for new congestion at the new merger locations as traffic volumes increase.**
>
> **Please provide information on the anticipated trip diversion onto local roads as a result of this new merge condition.**

For many years we have seen how the existing merge condition going from six highway lanes to five lanes on the bridge has operated as a bottleneck slowing traffic and creating backups. The proposed 6-8-6 alternative removes this condition and improves traffic flow onto the bridges. However, it creates new merge conditions as the highway will transition from 4 lanes in each direction to 3 lanes near Oceanic Drive (westbound) and Cox Creek (eastbound). We are concerned that the merger from 4 lanes to 3 lanes will become a future bottleneck as traffic volumes increase.

Because this new merge point would be located in central Kent Island, Queen Anne's County is concerned that as eastbound traffic on the US 50/301 corridor slows due to the merge, drivers may divert onto local roads to bypass the congestion. This could create new traffic and congestion problems in areas that do not currently experience them, such as Postal Road and Maryland 18, neither of which have the capacity to manage diversion trips coming off the US 50/301. Even short backups at this location could impact local roads by trip diversion onto MD 8 to access MD 18 in an effort to avoid congestion on US50/301. Likewise, the westbound merger could result in diversion trips onto local side roads. Has this future condition been evaluated? Is there a projection on when (what year) this merge condition may begin slowing traffic and generating congestion? Will future mitigating improvements be implemented on MD 18 as proposed in the MDOT MD 18 Planning and Environmental Linkages (PEL)? The County would like to fully understand the potential and anticipated timing of this congestion in relation to the comprehensive plan goals below.

- Improve safety, mobility, accessibility, and resiliency in the transportation network (Chapter 6, Goal 6-1)
- Strongly support resolutions to traffic problems caused by through traffic that impedes local traffic and citizen movements. (Chapter 6, Goal 6-1, Strategy 1)

Widening and improvements to MD 18 to address anticipated diversion trips should be included in all appropriate Federal and State Transportation Planning Documents such as the Long Range Transportation Plan(LRTP), Maryland Transportation Plan, Highway Needs Inventory and Consolidated Transportation Plan.

Queen Annes County appreciates the continued opportunity to review and comment on the proposed property impacts, road improvements and multimodal improvements as additional detailed information becomes available during engineering and design.

MD 8 Interchange

Comprehensive Plan Goal 6-1, Strategy 5, identifies that the County should "With assistance from the State, implement improvements to MD 8 and its interchange with US 50/301."

The MD 8 overpass, that is within the Limit of Disturbance (LOD) of the preferred alternative, is aging and has limited capacity for northbound left turns onto US 50/301. As more information becomes available on the condition of the existing overpass and any proposed new traffic pattern (at time of construction of the 1st and 2nd bridges) Queen Anne's County would like the opportunity to review and provide input on any proposed improvements.

Improvements could consider adding a double left turn onto US 50/301 to improve traffic flow. Also, if the aging overpass is in need of replacement, then could a divergent diamond configuration be considered as recommended in the Kent Island Transportation Plan?

Continued Support and Implementation of US 50/301 Summer Ramp Management

The summer weekend ramp management project has been successful in reducing diversion trips from US 50/301 onto MD 8. Acknowledging that the proposed preferred alternative does not eliminate westbound congestion in the corridor on summer weekends it will be necessary to continue to implement the Summer Ramp Management Partnership between MDOT and Queen Anne's County. As design for highway improvements continues, please consider including alternative ways to implement ramp management including gates, signage and markings.

The continuation of the ramp management partnership implements the Comprehensive Plan goal to "Protect neighborhood streets from through traffic and decrease congestion delays" by "Work with MDOT SHA and the MDTA to develop a US 50/301 Corridor Plan to help move traffic through the County." (Comprehensive Plan Goal 6-1, Strategy 4 & 4.3)

Bicycle and Pedestrian Improvements

If the Shared Use Path (SUP) proposed as an option in the preferred alternative continues to move forward, please review Comprehensive Plan Goal 6-2, Strategy 2 that "Promotes safe and convenient bicycle and pedestrian access throughout the transportation system and programs".

If the SUP advances to design, it should connect to the existing Cross Island Trail and/or South Island Trail for continuity of the users. Also, information will need to be provided on the anticipated number of users so supporting infrastructure such as parking and restroom facilities can be planned. MDOT and the County will need to coordinate on the planning of operations and maintenance as well.

US 50/301 Pedestrian Overpass

Queen Anne's County will be working directly with MDOT to plan and design a pedestrian overpass west of MD 8 connecting Pier One Road to Terrapin Park over US 50/301. Highway widening is proposed in this area, therefore, continued coordination will be essential to ensure that design and engineering of each project fully consider the impacts and progress of both projects.

Consider Complete Streets Implementation on Service Roads & MD 8 in the LOD

Complete streets policies to improve multimodal transportation on the service roads within the LOD (Thompson Creek, Sherman Drive, Shopping Center Drive) should be addressed as the project moves forward. Specifically, the consideration of improvements for multimodal users.

This supports Comprehensive Plan Goal 6-3, Strategy 1.1. "Apply a complete streets philosophy to identify multimodal transportation solutions for both rural roads and those in Growth Areas and making connections to and from residential neighborhoods to employment and commercial centers"

Public Property Impacts

A number of public properties (parks, schools, pump station, utilities, county roads) are impacted by the LOD for the preferred alternative. The LOD shown does not provide information on the nature of the impact and if it is temporary or permanent. Queen Anne's County will work with MDOT to fully review, discuss and comment on any impact to public property as information becomes available and the project continues.

Thank you for the opportunity to offer comments on the DEIS. Queen Anne's County appreciates the involvement in the planning process for the new bay crossing. We look forward to continuing to work with MDOT as the project moves forward.

Any comments or questions related to the comment above can be directed to:

Steve Cohoon - scohoon@qac.org
Public Facilities Planner
Department of Public Works
312 Safety Drive
Centreville, MD 21617
410-758-0920 Ext. 4131

Queen Anne's County

County Commissioners:
James J. Moran, At Large
Jack N. Wilson, Jr., District 1
J. Patrick McLaughlin, District 2
Philip L. Dumenil, District 3
Christopher M. Corchiarino, District 4

THE COUNTY COMMISSIONERS OF QUEEN ANNE'S COUNTY
The Liberty Building
107 North Liberty Street
Centreville, MD 21617

e-mail: QACCommissioners&Administrator@qac.org

County Administrator: Todd R. Mohn, PE
Executive Assistant to County Commissioners: Stephanie Jarrell
County Attorney: Patrick Thompson, Esquire

Public Hearing Comments Presented by County Commissioner Jim Moran

During Tier 2 NEPA HEARING on February 12, 2026 at Kent Island High School

Thank you for the opportunity to Speak.

It is great to see the Tier 2 NEPA process get to this point of selecting a preferred alternative with the hope of quickly moving forward to design and construction.

For many years the top transportation priority for Queen Annes County has been addressing congestion at the Bay Bridge and in the Bay Bridge corridor. The replacement bridges studied in the NEPA process will help remove the congestion and delays we experience every day and improve summer weekend traffic.

The replacement bridges are needed now and we ask that MDTA move quickly to complete the NEPA process and begin design and construction of the two new replacement bridges as quickly as possible.

The start of the NEPA process was announced on August 30, 2016. For almost 10 years MDTA has studied corridors to locate a new crossing and construction alternatives to relieve congestion. Throughout that process, the NEPA study considered a 20 mile long corridor (Corridor 7) that went from the Severn River to Queenstown. The Tier 2 NEPA studied multiple options for bridge and highway improvements throughout that 20 mile long corridor.

The selected preferred alternative is focused on only widening 8.5 miles of the 20 mile corridor.

While the preferred alternative addresses congestion at the Bay Bridge by going from 5 lanes to 8 lanes crossing the bay, it does not address the long term needed improvements in the corridor to manage traffic moving through Queen Anne's County.

After the new bridges open in the 2030's or 2040's they are anticipated to last for the next 100 years. Therefore, we ought to consider at least some of the needed highway improvements over the life of the bridge as part of this project. If widening the highway is not addressed as part of this project, then it will need to be addressed by SHA shortly after the first bridge opens.

The exhibits show traffic conditions projected in 2045 which is just the beginning of the life of the new bridges. We know based on the historical trends that traffic will continue to increase past 2045. We need to consider traffic conditions in 2065, 2085, 2100. It is highly likely that 8 lanes from Queenstown to Kent Island will be needed to address the future traffic volumes.

We believe that planning for additional highway improvement in the corridor is needed as part of this project. Other alternatives propose widening US 50/301 to 8 lanes which appear to better address the long term needs of the corridor. If alternatives D, E, F & G are not being advanced, can additional highway widening and improvements be added to alternative C?

Almost 10 years has been spent on the NEPA process. Everyone has been very patient throughout this process year after year as we endure the ongoing congestion at the bridge. We need a new Bridge Now. We need to move quickly to construction so Queen Anne's County Residents can get some relief.

Queen Anne's County strongly supports the replacement of the two existing bridges with 2 new bridges totaling at least 8 lanes.

Queen Anne's County strongly supports MDTA quickly moving to design and construction of the bridges.

Queen Anne's County believes additional highway improvements will be needed to support the new bridges and should be considered as part of this project.

Thank you for your time and consideration.

Respectfully,

County Commissioner Jim Moran

DEPARTMENT OF THE ARMY
U. S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
ATTN: REGULATORY DIVISION
2 HOPKINS PLAZA
BALTIMORE, MARYLAND 21201-2930

March 9, 2026

Regulatory Division

Ms. Heather Lowe
Maryland Transportation Authority
Division of Planning & Program Development
2310 Broening Highway
Baltimore, Maryland 21224

Dear Ms. Lowe:

This is in response to the Federal Highway Administration (FHWA), U.S. Department of Transportation (USDOT) Draft Environmental Impact Statement (DEIS) for Tier 2 of the Bay Crossing Study that has been completed, with the Notice of Availability published in the Federal Register on January 23, 2026. The DEIS has been prepared to address existing and future transportation issues at the William Preston Lane, Jr. Memorial (Bay) Bridge and its approaches along U.S. 50/301, from Anne Arundel County on the Western Shore to Queen Anne's County on the Eastern Shore, in Maryland. FHWA, in coordination with the Maryland Transportation Authority (MDTA) is requesting comments from all interested parties and agencies to ensure that all potential alternatives; including MDTA’s Recommended Preferred Alternative (RPA) (8-6-8 South); important issues, or significant environmental effects and analyses relevant to the proposed action are considered in preparation of the Final EIS.

The Corps has been designated as a Cooperating agency in the preparation of the EIS for the Chesapeake Bay Crossing Study: Tier 2 NEPA. In this regard, we look forward to working with your agency as the NEPA document is further developed to ensure that the information presented is adequate to fulfill Corps requirements. In general, the EIS should thoroughly evaluate project alternatives, permanent and temporary impacts to waters of the U.S., including jurisdictional streams and wetlands, impacts to Corps Civil Works projects, and the Corps public interest factors described below. This includes an analysis of impacts resulting from all project elements such as: in-water piers or structures, pier protection measures (e.g., riprap, island fills, dolphins, etc.), road crossings and/or filling of streams and wetlands, dredging, grading, permanent and temporary access roads, construction matting, staging areas, building pads, storm water management, stream diversions, disposal of any excess fill or dredged material, utility line impacts and/or relocations, mitigation proposals, demolition of existing bridge spans, and all other construction/operation related impacts.

We understand that the project will result in discharges of dredged or fill material into waters of the U.S., including jurisdictional wetlands; and work is expected to occur in navigable waters of the U.S., therefore, the project will require Department of the Army authorization under Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 189, and Section 14 of the Rivers and Harbors Act (Section 408). The alternatives analysis and methods to avoid/minimize impacts to waters of the U.S. are the centerpieces of the Corps-permit review process. Accordingly, to ensure that the information presented in the EIS is adequate to fulfill the requirements of the Corps regulations, the Clean Water Act Section 404(b)(1) Guidelines, and the Corps public interest review process, we request that the following topics be scoped and comprehensively evaluated in the EIS:

1. Alternatives Analysis/Avoidance and minimization: A fundamental precept of the Clean Water Act Section 404 Regulatory Program is that impacts to wetlands and other waters of the United States will be avoided and minimized, where it is practicable to do so. An evaluation of alternatives is required under the Section 404(b)(1) Guidelines for projects that include the discharge of dredged or fill material to waters of the United States. NEPA requires discussion of a reasonable range of alternatives, including the no action alternative, and the effects of those alternatives. Under the Section 404(b)(1) Guidelines, practicability of alternatives is taken into consideration, and no alternative may be permitted if there is a less environmentally damaging practicable alternative. Note that an alternative is practicable if it is available and capable of being done after taking into consideration cost, logistics, and existing technology in light of the overall project purpose. The MDTA has identified seven alternatives for the proposed action, including the no-build alternative and six build alternatives. The DEIS also identifies a RPA (8-6-8 South).

   The Corps would like to commend MDTA and FHWA for the level of rigor and detail that has been provided in the alternatives analysis.

   At a minimum, the NEPA document must evaluate the practicability of the identified bridge alternatives, while considering the following avoidance and minimization techniques:

   a. Evaluation of alternative alignments within the study corridor and shifts in alignment to avoid impacts to waters of the U.S., including jurisdictional wetlands.
   b. Longer Bay Bridge span lengths to minimize in-water piers
   c. Bridges to span stream/wetland crossings
   d. Alternative measures for bridge pier protection (e.g., rock island fill, dolphins, fender system, etc.)
   e. Retaining walls along additional approach lanes
   f. Steep side slopes
   g. Stormwater management alternatives, i.e. placing stormwater in uplands

h. Stream relocation as opposed to filling and/or piping streams,
i. Implementation of best management practices
j. Use of timber mats in wetland/stream areas for temporary equipment access.
k. Use of temporary construction road access bridges to span streams and wetlands.
l. Construction material/equipment staging areas should be located outside of stream and wetland boundaries,
m. Shorten and/or narrow construction widths through waters of the U.S., including jurisdictional wetlands.
n. Adherence to time of year restrictions in waters of the U.S.
o. Impacts and alternatives for placement of any dredged material or excess fill material (e.g., uplands, existing dredge material containment facilities, beneficial/innovative reuse, etc.)

2. Collision Protection System/Pier Protection: The Corps understands that the main piers near the navigation channels would have a collision protection system and recommends that you evaluate alternatives for pier protection. The Corps is currently reviewing a MDTA permit application which proposes pier protection at the existing Bay Bridge spans and that these structures may need to be removed when the old bridge spans are demolished. Therefore, the Corps recommends that demolition of these pier protection structures be included as an element of the LOD and that you quantify impacts to Waters of the U.S. associated with demolition and restoration. However, to the extent practicable, to minimize aquatic impacts and reduce project cost, MDTA should evaluate whether any or all of the proposed pier protection structures at the existing spans can be incorporated into the pier protection for the new Chesapeake Bay bridge spans. This information/analysis should be included in the Final EIS.

3. Jurisdiction and Delineation: The Corps recommends that MDTA and FHWA closely monitor any potential changes to the definition of waters of the U.S. Further, the final jurisdictional status of resources will be determined during permitting. All waters of the U.S., including jurisdictional wetlands, must be delineated within the project area in accordance with the 1987 Corps Wetland Delineation Manual and appropriate Regional Supplement.

4. Impacts: Temporary and permanent impacts to all waters of the U.S, including jurisdictional wetlands, shall be quantified for each project alternative. For streams and rivers (both temporary and permanent), include the stream classification (e.g., perennial, intermittent; rivers, lakes, ponds, etc.) and both the linear feet of the stream/river impacts (as measured along the centerline of the stream/river channel) and square feet of impact. For jurisdictional wetland impacts (both temporary and permanent), identify the wetland classification (e.g., palustrine or lacustrine system; forested, scrub-shrub, or emergent wetlands) to

be impacted, quantify each classification of wetlands to be impacted in square feet, differentiate between temporary or permanent impacts, and quantify any change in wetland classification in square feet (e.g., palustrine forested to palustrine emergent, etc.). Impacts associated with dredging shall also be quantified.

5. Cumulative Impacts: Cumulative, secondary, and indirect impacts resulting from the project along with historical impacts and existing land use must be analyzed with the watershed that contains the project.

6. Dredging and Dredge Material Disposal Sites: Describe the anticipated dredging for the project, methods (e.g., mechanical, hydraulic), cubic yards, physical/chemical analysis, dredge material disposal options, and proposed locations for any excess fill and/or dredged material resulting from project construction. Describe impacts and alternatives for placement of any dredged material or excess fill material (e.g., uplands, existing dredge material containment facilities, beneficial/innovative reuse, etc.).

7. Compensatory Mitigation: The Corps will require compensatory mitigation for all unavoidable adverse impacts to Waters of the U.S. A comprehensive compensatory mitigation plan must be described to offset the loss of waters of the U.S. The plan must describe the final mitigation amount required to offset loss of waters of the United States and must provide supporting information regarding the identification and quantification of those amounts. Information should also be provided regarding the ratio or function, or condition assessment or other suitable mitigation metric used to make this determination, if applicable. The mitigation plan shall be developed in accordance with the 2008 mitigation rule at 33 CFR 332.3. The Corps recognizes that there are no approved wetland or stream mitigation banks and/or ILF programs that have a service area within the resource review area; however, mitigation banks may become available during final design and/or permitting. The following additional mitigation opportunities have been identified in the DEIS: nature-based shoreline stabilization; SAV restoration/enhancement, oyster reef seeding, funding, and/or oyster reef creation; fish reef enhancement and/or creation; common reed eradication; fish passage restoration; and/or stream restoration. The Corps recommends that MDTA continue to coordinate with the Corps and the Maryland Department of Environment to evaluate potential compensatory mitigation options. The Corps cannot issue a permit for the proposed work until a final compensatory mitigation plan has been submitted and approved.

8. Effects on Corps Civil Works Projects (33 USC 408): The EIS should comprehensively evaluate the potential for effects on Corps Civil Works project (Section 408) and the project should be designed to avoid and minimize these effects to the maximum extent practicable. Please be advised that the project will require the submittal of a Section 408 request in accordance with Engineer

Circular 1165-2-220, Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects pursuant to Section 14 of the Rivers and Harbors Act 33 U.S.C. 408, dated September 10, 2018, for any proposed work that could impact the federal navigation channel. Information on the Section 408 process can be found at this link: https://www.nab.usace.army.mil/Missions/Regulatory/Section-408-Requests/. A Section 408 Request Form has also been provided as an enclosure with this letter (Enclosure 1).

9. A comprehensive description of anticipated impacts, avoidance/minimization measures, and construction means and methods for removing the two existing Chesapeake Bay bridge spans.

10. Optional Shared Use Path (SUP): The Corps attended two public hearings that were held for the Chesapeake Bay Crossing Study and was provided an opportunity to listen to those that offered testimony. During the public hearings the Corps heard extensive comments related and/or in favor of the optional SUP. The Corps strongly recommends that MDTA and FHWA take these comments under advisement during your evaluation of the optional SUP and in light of your project purpose. The project purpose and need focuses on five identified needs, one of which is mobility. The DEIS further identifies that there is lack of mobility and connectivity at the Bay Bridge for bicycle and pedestrian users.

Again, thank you for inviting the Corps participation as a Cooperating agency in the NEPA process and the opportunity to provide comments on the DEIS. We look forward to working with your agency as the Final EIS is prepared and the review of the project proceeds. If you have any questions concerning this letter, please contact me at (410) 962-0148 or April.E.Sparkman@usace.army.mil.

Sincerely,

April E. Sparkman
Biologist, Maryland North Branch

Enclosure

To identify how we can better serve you, we need your help. Please take the time to fill out our customer service survey at: https://regulatory.ops.usace.army.mil/customer-service-survey/

INFORMATION REQUIRED TO PROCESS SECTION 408 REQUESTS
by private, public, tribal, or other federal entities to make alterations to, or temporarily or permanently occupy or use, any US Army Corps of Engineers federally authorized civil works projects pursuant to 33 USC 408

1. Purpose. The purpose of this document is to provide guidance for private, public, tribal, or other federal entities regarding the information the US Army Corps of Engineers (USACE) Baltimore District needs to complete a review pursuant to 33 USC 408 (Section 408). This review is necessary to obtain permission from the USACE Baltimore District for proposed alterations to any USACE federally authorized civil works project, referred to as a "USACE project" within this document.

2. Applicability. This guidance applies to alterations proposed within the lands and real property interests identified and acquired for the USACE project and to lands available for USACE projects under the navigational servitude. In the Baltimore District, USACE projects typically include: local protection projects consisting of levees, floodwalls, channel improvement, and interior drainage features; Federal navigation channels; and flood risk management projects consisting of earthen or concrete dams, outlet works, spillways, abutments, support facilities, and reservoir pool. Routine operations and maintenance activities specified in the O&M manual and performed by the non-federal sponsor or USACE do not require permission from USACE under Section 408.

3. References. Engineering Circular 1165-2-216, *Policy and Procedural Guidance for Processing Requests to Alter USACE Civil Works Projects pursuant to 33 USC 408*

4. Authority. The authority for the US Army Corps of Engineers to grant permission for temporary or permanent alterations to federally authorized civil works projects is contained in Section 14 of the Rivers and Harbors Act of 1899 and codified in 33 USC 408, which states that *"the Secretary [of the Army] may, on the recommendation of the Chief of Engineers, grant permission for the alteration or permanent occupation or use of any [work built by the United States] when in the judgment of the Secretary such occupation or use will not be injurious to the public interest and will not impair the usefulness of such work."* It is otherwise unlawful for any person or persons to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, obstruct, or in any manner whatever impair the usefulness of any work built by the United States.

5. Exclusions. Per Engineering Circular 1165-2-216, the following activities do not require permission from USACE under Section 408:
    a. Routine operations and maintenance activities specified in the O&M manual and performed by the non-federal sponsor or USACE
    b. Activities contained in 36 CFR 327, including the implementation of an approved USACE Project Master Plan, Shoreline Management Plan, or Operational Management Plan

6. Requester. A request for Section 408 permission can originate from a non-federal sponsor or an independent requester. For USACE projects with a non-federal sponsor, the requester must either be the non-federal sponsor or have the endorsement of the non-federal sponsor prior to a written request being submitted to USACE.

7. Request. The Requester must submit the information that follows for all requests to alter USACE projects within the Baltimore District. Requests must be in writing, signed, and submitted to the USACE Baltimore District Regulatory Point of Contact. Requests may be sent by regular mail or electronic mail for attachments under 10MB. Attachment A contains a comprehensive list of additional information that may be requested to facilitate the Section 408 review process. Attachment B provides an example of the local sponsor statement of no objection.

Points of Contact:

GOVERNMENT:

Name: Michael Danko
Organization: USACE Baltimore District
Title: Regulatory Point of Contact
Address: 401 East Louther Street, Suite 205
Carlisle, Pennsylvania 17013
Phone: (717) 249-8730
E-mail: mike.danko@usace.army.mil

REQUESTER:

Name: _____

Organization: _____

Title: _____

Address: _____

Phone: _____

E-mail: _____

LOCAL SPONSOR: (if not the Requester)

Name: _____

Organization: _____

Title: _____

Address: _____

Phone: _____

E-mail: _____

Project Description

USACE Project being altered, used or impacted:_____

City and State: _____

Stream, River or Water Body: _____

Proposed Project Name: _____

Latitude, Longitude: _____

USACE Project Type

_____ Local Protection Project** _____ Navigation _____ Flood Risk Management

****Have you obtained a Statement of No Objection from the Non-Federal Local Sponsor of the Local Protection Project? If no, please explain.**

_____

Note: Requests will not accepted as complete without this statement. See Attachment B for an example.

Brief description of the proposed work and how the USACE project will be altered
Note: Indicate if the proposed alteration is to a previously-modified feature (e.g., re-aligning a pipe through the embankment that had been installed as a modification to the project).

_____

_____

_____

Description of project alternatives (if any) that avoid impacts to the USACE project

_____

_____

_____

List of all real property interests
Note: Include maps clearly depicting both existing real estate rights and additional real estate required.

_____

_____

_____

_____

Approximate schedule for work (list activities by Month/Year)

_____

_____

_____

Describe operations and maintenance that will be required as a result of this alteration
Note: Requester is responsible for performing all operations and maintenance required as a result of the alteration, as well as for all associated costs. For local protection projects, the non-federal local sponsor is required to ensure that all required operations and maintenance associated with the alteration are adequately performed.

_____

_____

_____

Documents included with the alteration request
Note: USACE may request additional information as part of the review process.

General Project: Report _____ Plans _____ Specs _____ Drawings _____

Hydrology & Hydraulics: Report _____ Models _____

Geotechnical: Report _____ Drilling Plan _____

Other (describe): _____

Questions: **(Yes/No)**

1. Will the proposed project require the use of federal property? _____
2. Will the proposed project require the use of property owned by the non-federal sponsor? _____
3. Have any Environmental Reports been completed for this Project? If yes list below. _____
4. Are you required to pursue authorization pursuant to Sections 10/404/103? If yes, list date or anticipated date of application/pre-construction notification submittal. _____
5. Is this proposed project identified as a priority project in an established in-place funding agreement? If yes, provide documentation of the funding agreement and point of contact. _____
6. Are you seeking credit under Section 221 of the Flood Control Act of 1970 or other laws such as approval under Section 204 (f) of WRDA 1986? _____

Signature Block

Request is hereby made for permission to alter the USACE project as described in this form and supporting documentation. I certify that the information provided in this request is complete and accurate to the best of my knowledge. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the requesting organization and/or non-federal local sponsor.

REQUESTER:

_____
Name

_____
Organization

_____
Title

_____
Signature

_____
Date

LOCAL SPONSOR: (If not the requester, for local protection projects)

_____
Name

_____
Organization

_____
Title

_____
Signature

_____
Date

TO BE COMPLETED BY USACE

Date Received: _____
USACE Project Name: _____
Resource Manager or Local Sponsor: _____
Regulatory Permit Number: _____

8. USACE Review Criteria. USACE will review the alteration request for potential adverse impacts to the project based on the following criteria (as applicable):
   a. Reliability of the project to function as designed.
   b. Local sponsor and/or USACE ability to adequately inspect the project during normal conditions.
   c. Local sponsor and/or USACE ability to adequately inspect the project during potential or actual emergency conditions.
   d. Local sponsor and/or Requester ability to adequately operate and maintain the project.
   e. Local sponsor and/or Requester legal rights to enter and/or have contractors enter all properties affected, either through fee deed(s) or easement deed(s), which should be attached to this request.
   f. Local sponsor ability to conduct flood fighting operations and temporary repairs during an emergency.
   g. Alteration impacts to the structural or geotechnical integrity of project components (including embankment, floodwall, or retaining wall strength; slope stability; stone protection; crest elevation; miscellaneous structures, etc.).
   h. Alteration impacts on the hydraulic functioning of the project.
   i. Alteration impacts to a floodplain or floodway (flood risk management projects only).
   j. Alteration impacts on the interior drainage system or drainage facilities (i.e. outfalls, gate wells, storm sewer lines, pump stations, drainage ditches, etc.).
   k. Alteration impacts on environmental aspects of the project, including compliance with National Environment Policy Act (NEPA) requirements.
   l. Alteration impacts on safety aspects of the project.
   m. Alteration impacts to the real estate easement requirements, including project access.
   n. USACE Section 10/404 Regulatory permit requirements.
   o. Impacts to the public and other stakeholders.
   p. Other criteria as available.

9. USACE Review and Decision. Work or usage shall not begin until written approval from the USACE Baltimore District Commander, or his designee, is obtained. Upon completion of review of the request, the Baltimore District will send a letter from the District Commander, or his designee, either granting or denying the request for permission to alter the USACE project. If granted, the Requester's signature may be required on an Alteration Conditions Form to confirm acceptance of any special conditions required. If denied, reasons for not granting permission will be provided.

   If applicable, an Emergency Action Plan (EAP) must also be provided as a prerequisite to approval. Requestor must provide information about emergency response in the event of a flood during construction. This should include at a minimum: notification tree, stockpiled materials, how flooding will be anticipated, and specific activities at each phase of construction to restore flood risk reduction.

   USACE reserves the right to require construction inspections or meetings with the Local Sponsor, Requester, and other interested parties.

10. Special Conditions. The following are examples of special conditions, which may be included in the permission to alter, use, or impact a USACE project. Additional special conditions may be included depending on the nature of the work:
    a. Requester shall obtain all appropriate local, state, and Federal permits (or waivers from these permits) before performing the proposed alteration. USACE approval of the proposed alteration does not negate the need to obtain the aforementioned permits.
    b. Requester must notify the USACE Baltimore District at least fifteen (15) days before work/usage is started and receive approval to proceed from the designated Baltimore District point of contact. Time may vary depending on project.
    c. Requester shall provide copies of pertinent design, construction, and/or usage submittals/documents. Photographic documentation of the alteration work and the impacted project area may be requested to be taken before, during, and after construction.
    d. Requester must develop a safety plan prior to commencing the alteration and ensure that all officers, agents, employees, or others who may be present on the premises at their invitation are thoroughly familiar with the plan and follow it.
    e. No equipment or materials may be stored or stockpiled within 15 feet of the levee toe, floodwall, or any other flood protection project features without prior consent from the Corps.
    f. The Requester may be required to perform an inspection of the USACE project with the Baltimore District prior to the Requester's use of the project to document existing conditions.
    g. Alterations approved in this request shall be progressed in such a manner to avoid interference with the inspection, operation, and maintenance of the USACE project.
    h. Requester must schedule a final inspection with the Baltimore District within fifteen (15) days after completion of the alteration. Time may vary depending on project.
    i. Requester shall submit a copy of as-built drawings within 30 days of completion of work showing the new work as it relates to identifiable features of the USACE project.
    j. Requester shall remove all structures constructed on or within the USACE project upon completion of usefulness of such structures, if they no longer serve the purposes originally intended, or upon expiration of the agreement with USACE Baltimore District. The Requester shall restore the USACE project to its original condition after removal of these structures. Permanent alterations approved by USACE are excluded from this requirement, however must be maintained in good condition.
    k. Field work shall be coordinated with the designated USACE Baltimore District point of contact, to be determined prior to the start of work.
    l. Underground utility lines of any type that cross the levee shall have markers placed on the surface to indicate location, type, and usage of the line.

ATTACHMENT A
Section 408 Request Supplemental Information

The following list is designed to assist you in providing a complete review package when submitting a Section 408 request to the USACE Baltimore District. The intent is to provide a comprehensive list of information our technical staff may need to complete the review process. The list below is not all inclusive and may not apply to every situation; our technical staff may request additional documentation. Please provide the information in this list to the extent possible and submit with your request.

A. General Documentation. Please provide at minimum the following items:
    1) Project Location Map (at least 8.5"x11") including:
        a) Aerial image with proposed project features
        b) City, county, and state
        c) Latitude and longitude
        d) Name of Stream, River or Body of Water
        e) River mile (if applicable)
    2) Project Description. Please provide a detailed and complete project description, including all areas of disturbance to the USACE project. Include areas to be used for ingress, egress, or staging of materials or equipment. Fully describe construction techniques to be used on the USACE project alteration. Include quantities and types of materials used as fill or removed from the site. Accurately describe any ground disturbing activity that will occur and provide acreage or lineal area of impact. Include maps, pictures, and figures as necessary to fully explain the proposed work.
    3) Right-of-Way Maps from agency responsible for operating and maintaining the facility
    4) Pre-final project plans and specifications
    5) Project schedule
    6) Photographs of current conditions at the site
    7) Written Statement of No Objection by the Local Sponsor

B. Real Estate
    1) List of all real property interests required to support the proposed alteration, including those in federally managed lands and those owned by the Requester.
    2) Maps clearly depicting both existing real estate rights and the additional real estate required.
    3) GIS shapefiles of the full project extents.
    4) Deed or other real estate instruments
    5) Agreements between the United States of America and Proponent
    6) Office of the Assessor Property Information Report
    7) Assessor's Parcel Number (APN)

C. Environmental Compliance
    1) List of any State or Federal Threatened or Endangered Species
    2) List of any noise sensitive receptors and provide description of the receptor and its distance from the source
    3) List and describe all Hazardous Toxic and Radioactive waste (HTRW) present at the site

4) List all recreation amenities that would be impacted due to this alteration
5) List all public services that would be disrupted due to this alteration
6) Indicate whether public transportation will be impacted due to this alteration
7) Section 401 Certification
8) Air Quality Analysis
9) All cultural surveys conducted in the last five years
10) Tribal Contact List

D. Technical Analysis

1) Civil. Each submittal should clearly identify the existing condition of the dam and/or appurtenant structures to include plan, profile and design details of the proposed alteration in relation to the existing USACE project. Below are examples of information necessary to understand the existing and proposed conditions.
    a) Alteration location (Vicinity map and specific alteration location)
    b) Applicable datum
    c) Real estate interests, existing and to be acquired, needed for the proposed alteration
    d) Grading plans
    e) Layout plan, profiles, and cross-sections of the proposed alternation
    f) Previous inspection reports to assist in identifying existing deficiencies and their proximity to the proposed alteration
    g) Sections and details
    h) Temporary measures required during construction (bypasses, cofferdams, etc.)
2) Geotechnical. The following is a list of analyses or information that may be necessary to consider in evaluating geotechnical impacts if proposed alterations alter the dam embankment or penetrate the natural blanket or foundation.
    a) Erosion control (changes in erosive forces on a slope)
    b) Liquefaction susceptibility
    c) Material usage/borrow/waste/transport/hauling
    d) Placement of stockpiles, heavy equipment, or other surcharges
    e) Drilling plan
    f) Results of subsurface investigation – boring logs, test pit logs, laboratory test results, etc.
    g) Seepage analysis
    h) Settlement analysis
    i) Stability analysis
    j) Vegetation
3) Structural. The following is a list of analysis or information that may be necessary to evaluate the impacts of proposed alterations to concrete, sheet-piling, or drainage structures.
    a) Bridges and related abutments
    b) Design analysis for retaining walls and excavation support system
    c) Design of shallow or deep foundations, including bearing capacity and settlement analysis if the construction is located within the line of protection or right-of-way and creates potential seepage problems

d) Design recommendations for foundations on expansive soils
e) Diaphragm walls
f) Gates or other operable features
g) Other structural components integral to the project
h) Pier penetrations of levee embankments
i) Stability analysis including sliding, overturning, bearing, flotation, uplift and any seismic load effects for any alteration to the channel walls and/or flood walls
j) Structural drainage control methods
k) Water stops and contraction/expansion joints

4) Hydrology and Hydraulics. The following factors may be considered when evaluating the hydrologic and hydraulic (H&H) impacts to a USACE project. Please provide an Executive Summary detailing how each of the below items is addressed and how your project impacts the USACE project. H&H models may be requested for review.
    a) Changes in inflow
    b) Changes in velocity
    c) Changes in water surface profiles and flow distribution
    d) Consideration of impacts to energy dissipation measures; hydropower generation; sedimentation; or navigation
    e) Scour Analysis
    f) Sediment transport analysis
    g) Upstream and downstream impacts of the proposed alterations
5) Operations, Maintenance and Flood Fighting. Alterations may change operation, maintenance or require special flood fighting procedures.
    a) Effects on existing maintenance access
    b) Effects on maintenance practices
    c) Flood contingency plan during construction, measures proposed to protect area under construction, monitoring of river level, river stage at which plan will be activated, materials and equipment to be used to activate plan, and personnel contact and telephone number to activate plan.
    d) Flood fighting requirements and practices
    e) Special inspection requirements
6) Potential Failure Mode Analysis. Depending on the proposed alteration, the requester may be required by the district to provide a potential failure mode analysis with the proposed alteration in place.
7) Review Plan. If the alteration will either 1) temporarily impair the purpose and function of the existing Federally-constructed project or 2) be a major repair, rehabilitation, relocation, replacement or modification of the existing Federally-constructed project, please provide the following:
    a) Independent External Peer Review (IEPR) Plan (Reference EC 1165-2-217)
    b) Design Quality Control Plan

ATTACHMENT B
Local Sponsor Statement of No Objection

SUBJECT: Request to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408

TO: USACE Baltimore District Regulatory 408 POC

The **<*Name of Non-Federal Local Sponsor*>** (Sponsor) is the Non-Federal Local Sponsor to the U.S. Army Corps of Engineers Baltimore District for the **<*Name of USACE Project*>** Local Protection Project (USACE Project).

The Sponsor is aware of the Section 408 Request by **<*Name of Requester*>** to alter the USACE Project in order to complete the proposed **<*Description of work to be performed and impacts to the local protection project*>**.

The Sponsor does not object to the Section 408 Request nor its review by the U.S. Army Corps of Engineers. The Sponsor acknowledges continued responsibility for the operation and maintenance of the USACE Project at no cost to the government and will hold and save the government free from all damages arising from the construction, operation, maintenance, repair, rehabilitation, and replacement of the project.

_____
Printed Name

_____ _____
Signed Name Date

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1234 Market Street. 20th Floor
Philadelphia, Pennsylvania 19107

March 9, 2026

4111
ER26/0047

Alexander Bienko

RE: DEIS, Chesapeake Bay Crossing Study Tier 2, Anne Arundel and Queen Anne's Counties, MD, DOT-FHWA

The U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Chesapeake Bay Crossing Study Tier 2 in Anne Arundel and Queen Anne's Counties, Maryland.

The DEIS evaluates current and future transportation issues for the Chesapeake Bay Bridge. The proposed project covers a two-mile-wide and 22-mile-long area that includes the bridge and approaches along U.S. 50/301. As Maryland's only crossing of the Chesapeake Bay, the Bay Bridge plays a vital role in facilitating transportation, commerce, and tourism in the region. A no-action alternative and six build alternatives are evaluated in the DEIS. Each build alternative would replace the two existing bridge spans with two new, higher-clearance spans. The National Park Service served as a cooperating agency on this project.

The NPS supports the selection of Alternative C (6-8-6 South) as Maryland Transportation Authority's (MDTA) recommended preferred alternative, and the reduced environmental footprint of that alternative over the larger lane alternatives.

Upon reviewing the DEIS, the Department offers the following comments and recommendations:

Natural Resources

As displayed in Table 4-47, the preferred alternative is expected to impact approximately 27. 4 acres of forested land; however, the mitigation discussion on these impacts on page 4-120 only references mitigation for this loss in generalized terms such as: "For unavoidable impacts, mitigation strategies would focus on controlling the spread of invasive species and restoring the affected areas. These include removing invasive species mechanically or chemically prior to the start of construction activities and replanting with native vegetation. The native vegetation would help to restore biodiversity." Additional details on specifics of replanting plans and the type of native vegetation being replanted should be included in the Final Environmental Impact Statement (FEIS). As the designs for the bridge become further developed, we recommend that tree clearing be avoided to the extent practicable, and any trees impacted be quantified, and replanting sites be identified.

Noise

The Federal Highway Administration's (FHWA) Noise Abatement Criteria (NAC) [Hourly A-Weighted Sound Level in Decibels dB(A)] for Category A, and its narrow interpretation of lands that should be included in that criteria is very limited and the NPS finds that by lumping parks, trails, open space areas, and campgrounds with active sport areas, amphitheaters, daycare centers, hospitals, playgrounds, schools, and other uses, this does not properly evaluate noise impacts in the human environment. By using this criteria level, NPS believes the project's potential noise impacts are underestimated by at least a factor of two since the impact threshold level criteria will be set at 67 dBA (Category C) instead of 57 dBA (Category A).

a. Holly Beach Farm was preserved by a grant from the NPS in 2001 with the intent to be "maintained in the public trust for preservation/recreational use in perpetuity." In addition, the most important aspect of the property is the concept of increasing its quiet park-like accessibility to others while avoiding adverse impacts of crowding, traffic, or neighborhood disruption. This further supports the rationale that Holly Beach Farm would be a better fit in Category A.
b. As applicable to NPS lands, the Department prefers that the project use the relevant standard ASA/ANSI SC1.100-2014, "Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas". As stated in the standard, "the main purpose... is to develop procedures to estimate the residual sound levels in an area where these levels are used to evaluate the effects of a noise source, with two examples being wind turbine noise in quiet rural areas and transportation noise in U.S. National Parks". Use of the standard would offer the credibility of scientific consensus from a broadly representative group of stakeholders, including the U.S. Department of Transportation.
c. The Department recommends that Holly Beach Farm be included in the noise study for this project. As discussed at previous meetings coordination meetings with NPS, the 500'-1000' noise analysis limits for the area of potential effect are not large enough for a project of this scale to adequately capture noise impacts. The preferred alternative with the southern alignment and increase in bridge height will have further reaching noise impacts to areas to the south than that of the original bridge. The Department recommends that the noise analysis consider all resources within 1.5 miles of the bridge since this distance would allow for the inclusion of Holly Beach Farm in the project area.
d. Since Holly Beach Farm and other important resources are located across the water from the preferred bridge alternative (Alternative C), we recommend that the noise analysis discuss how sound will travel across wetlands and water, as well as across land. This new south alignment will be closer to Holly Beach Farm and have an increased level of noise impact on that property. There is no discussion of these types of impacts in the DEIS, and we recommend that analysis be added to the FEIS.

e. Noise impacts on wildlife are very well documented in published research; however, there is no specific discussion in the DEIS of noise impacts to wildlife that is found in the open space areas found in the project area. We recommend that analysis also be added to the FEIS.
f. Page 4-149, Sandy Point State Park, - Impact Determination is that noise abatement is not reasonable. The justification for not using noise abatement here is based on residential use: "based on highway noise guidelines, the linear frontage of the usage area and the applied use-time percentage adjustment, the equivalent residences that are impacted at this location (2.8) is fewer than three; therefore, noise abatement is not reasonable, and further analysis is not required." With this analysis and comparison to residential areas, open space areas are being prematurely dismissed, and not appropriately assessed and mitigated for noise impacts. Open spaces such as Sandy Point State Park should also receive appropriate noise abatement for recreational users of the park and fauna that use the park. Recommend contacting Sandy Point State Park Officials to determine appropriate noise abatement here.
g. Page 4-151, Terrapin Nature Park, - Impact Determination is that noise abatement is not reasonable. The justification for not using noise abatement discussed in the DEIS is based on residential use: "based on highway noise guidelines, the linear frontage of the usage area and the applied use-time percentage adjustment, the equivalent residences that are impacted at this location (2.8) is fewer than three; therefore, noise abatement is not reasonable, and further analysis is not required." With this analysis and comparison to residential areas, open space areas are being prematurely dismissed, and not appropriately assessed and mitigated for noise impacts. Open spaces such as Terrapin Nature Park should also receive appropriate noise abatement for recreational users of the Park and fauna that use the Park. Recommend contacting Terrapin Nature Park Managers to determine appropriate noise abatement here.
h. Section 4.8.2 – the noise impact analysis focuses only on the approach roads, and does not discuss impacts from vehicles traveling across the main span of the bridges. We recommend adding a discussion on that type of noise impact and potential associated mitigation (i.e., quiet pavement, expansion joint, noise barriers) for those; or, further explain how those issues may be addressed during the design phase of the bridges.

<u>Lighting</u>

a. On page 4-31, the MDTA commits to developing a lighting plan for a new bridge during final design. Final elements related to the lighting plan would depend on structure type of the new bridge and whether the optional SUP is included in the project.
b. The Department recommends that the bridge and its approaches use shielded, Dark Sky-compliant lighting fixtures that incorporate LED

fixtures with a color warmth of no more than 2200 Kelvin (a "warm" color that may be less intrusive than bright white lighting).

c. The NPS maintains a Night Skies website with night sky lighting best practices to mitigate impacts to the night sky and demonstrate the benefits of sustainable outdoor lighting. It is recommended that the Bay Crossing study team use these resources to address potential indirect impacts to the night skies to the surrounding communities and adjacent Section 4(f) resources. Please see the links: Sustainable Outdoor Lighting Principles - Night Skies (U.S.National Park Service) (nps.gov) for more information.
d. We also recommend that FHWA use the ANSI/IES RP-43-25 standard guide (https://webstore.ansi.org/standards/iesna/ANSIIESRP4723) when designing lighting associated with any SUP. There are numerous recommendations in the guide on the best ways to light pedestrian areas for safety and to also minimize unnecessary light trespass on night skies.
e. We also recommend considering the height of the light pole and using only the highest pole needed to accommodate large vehicles. Standard light poles are approximately 30 feet, and the MDTA regulates vehicle height to ensure safety on the roads. The height limits are as follows:
    i. General Height Limit: 13 feet 6 inches for most vehicles.
    ii. Extended Height Limit: 16 feet for vehicle combinations transporting farm equipment.
        1. Consider having light poles on the bridge that are lower in height (i.e., 25 ft) to provide proper safety clearance and ensuring that the spill of light from the fixtures more directly falls onto the surface below.

Signage

If a Shared Use Path (SUP) is included in any new bridge, the NPS would like to work closely with MDTA/Federal Highway Administration (FHWA) to discuss the option of installing interpretive signage for visitors who will have a wide view of the Chesapeake Bay from the vantage point afforded by the SUP. This view would include a Captain John Smith voyage stop, and the location of multiple 17th century Native American town sites.

Groundwell Water

The U.S. Geological Survey (USGS) operates groundwater wells throughout the U.S. to collect water quantity and quality data for a variety of purposes. These wells are permanent infrastructure and are vulnerable to disruption from nearby construction activities and/or surface/subsurface contamination. In addition, the data they provide may be affected. The USGS maintains the following active wells within the area affected by the proposed project.

Station Number	Station Name	Site Type	Data Collected
385852076195202	QA Eb 157	well	water level, water quality

385852076195201	QA Eb 156	well	water level, water quality
385756076105301	QA Ec 1	well	water level
390121076253301	AA Cf 152	well	water level

The Maryland-Delaware-DC Water Science Center operates these USGS stations and should be contacted and given sufficient advance notice before construction occurs near them. Efforts should be made to both preserve these stations and minimize impacts to data collected at them.

Section 4(f) and Section 6(f) Properties - Page 5-4, Table 5-1

a. We recommend that MDTA and FHWA continue to coordinate with the NPS as the bridge design moves forward on potential impacts to Section 4(f) and 6(f) properties.
b. Impacts to Sandy Beach State Park and Holly Beach Farm could result in a conversion under Section 6(f), and, if they do, as a reminder Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (now codified at 54 U.S.C. §200305(f)(3)) provides, in part, that:
…no property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as they deem necessary to assure the substitution of other recreation properties of at least equal fair market value and reasonable equivalent usefulness and location.
c. The Section 6(f) review process is in the preliminary stages, and we recommend that the Bay Crossing Study team continue coordination with the Maryland Department of Natural Resources, Land Acquisition and Planning Unit, and NPS on this issue.
d. We recommend a baseline study of current noise levels at Holly Beach Farm, Sandy Point State Park, and Terrapin Nature Park be completed, and then compared to expected noise levels after project completion. This will also assist FHWA to determine the difference between the existing and as-built conditions, and determine if, and what noise mitigation efforts may be needed for the project. Table 4-2, of the Appendix E – Section 4(f) Evaluation summarizes potential uses to Section 4(f) properties. As per 23 CFR 774.17, a *de minimis* impact determination subsumes the requirement for all possible planning to minimize harm because impacts have already been reduced to a *de minimis* level. In the case of noise impacts for Holly Beach Farm, Sandy Point State Park, and Terrapin Nature Park, the Department encourages additional planning to be undertaken to minimize harm to these properties.
e. When evaluating and mitigating noise impacts on Section 4(f) and 6(f) properties, keep in mind that noise impacts, if not properly mitigated,

could result in a constructive use of a resource. The types of impacts that may qualify as constructive use, such as increased noise levels that would substantially interfere with the use of a noise sensitive feature are addressed in 23 CFR 774.15: *The Administration has reviewed the following situations and determined that a constructive use occurs when:*

f. (1) The projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f), such as:

(i) Hearing the performances at an outdoor amphitheater;
(ii) Sleeping in the sleeping area of a campground;
(iii) Enjoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance;
(iv) Enjoyment of an urban park where serenity and quiet are significant attributes; or
(v) Viewing wildlife in an area of a wildlife and waterfowl refuge intended for such viewing.

2. Mitigation
    a. If mitigation is needed to offset impacts to Section 4(f) or 6(f) resources, the NPS recommends that FHWA consider Weedon Farm (1741 Holly Beach Farm Rd) as a potential property acquisition. It is an important historic property that is privately owned at the north end of Holly Beach Farm directly on the Bay with a protected cove and dock. It was for sale earlier in early 2026, and is a critical missing piece to open the site to appropriate public access.

Thank you for the opportunity to review and comment on this proposed project. If you have any questions concerning our comments on groundwell water, please contact Alison Gordon (agordon@usgs.gov) and Frederick Spitz (fspitz@usgs.gov); for questions on lighting, noise, signage, and 4(f) and 6(f) resources, please contact Mark Eberle (Mark_Eberle@nps.gov).

Sincerely,

John Nelson
Regional Environmental Officer

March 9, 2026

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RE: EPA Comments on the Draft Environmental Impact Statement for the Chesapeake Bay Crossing Study: Tier 2 NEPA, Anne Arundel and Queen Anne's County, Maryland, CEQ No. 20250190

Dear Mr. Bienko and Ms. Lowe:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced Tier 2 Study Draft Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) and our NEPA review authority under Section 309 of the Clean Air Act (CAA). The CAA Section 309 role is unique to EPA. It requires the EPA to review and comment on the environmental impact of proposed federal actions subject to NEPA's EIS requirements and to make its comments public.

The Tier 2 Study Draft EIS evaluates measures to address transportation capacity needs and access across the Chesapeake Bay at the William Preston Lane, Jr. Memorial Bridge and its approaches within the U.S. 50/301 corridor. Based on the Tier 2 Study Draft EIS analysis of six build alternatives, the Study's lead agencies, the Federal Highway Administration (FHWA) and Maryland Transportation Authority (MDTA), have determined that Alternative C is the Recommended Preferred Alternative.

The EPA has served as a Cooperating Agency since December 2017 for the Tier 1 Study and since June 2023 for the Tier 2 Study. (23 U.S.C. 139(d); 42 U.S.C. 4336a(a)(3)). The EPA attended numerous interagency meetings and site visits and reviewed draft documents to support the project's efficient environmental review under 23 U.S.C 139(d)(9) (Efficient Environmental Reviews for Project Decision Making and One Federal Decision) and 42 U.S.C. 4336a (NEPA). Recent participation includes the agency's review of the Draft EIS Notice of Intent (January 2025), Draft Analysis Methodologies and Technical Reports (July 2023 through July 2025), and the Administrative Draft EIS (September 2025). We thank the FHWA and MDTA for addressing many of our comments and appreciate this opportunity to review and comment on the Draft EIS.

We provide the following recommendations on the Draft EIS.

Water Resources

In accordance with 23 U.S.C. 139 and 42 U.S.C. 4336a, the combined Final EIS and Record of Decision (ROD) should serve as a single environmental document that provides sufficient information and analysis to inform concurrent agency reviews and timely project authorizations. The EPA recommends the combined Final EIS and ROD include the most current information to assist the EPA in the review of the U.S. Army Corps of Engineers' authorization for the project under the Clean Water Act Section 404 and Rivers and Harbors Act Section 10. The combined Final EIS and ROD would benefit from information to support a determination on whether the Preferred Alternative is the least environmentally damaging practicable alternative and the mitigation necessary to compensate for its unavoidable impacts, per the Clean Water Act Section 404(b)(1) Guidelines (40 C.F.R. 230).

We recommend information about the proposed type and water resource impacts of pier protections for the Tier 2 Study should be documented consistently throughout the combined Final EIS and ROD. We also recommend the combined Final EIS and ROD clarify, as appropriate, how MDTA's recently initiated pier protection project at the existing bridge will be coordinated with the Tier 2 Study Preferred Alternative, with respect to the discharge of dredged and fill material requiring Section 404/Section 10 permit authorization and 401 Water Quality Certification.

The EPA appreciates this opportunity to review the Draft EIS and continue supporting the Tier 2 Study's efficient environmental review. Looking ahead, we will ensure our timely response to MDTA's upcoming request for Cooperating Agency concurrence on Alternative C as the Preferred Alternative, as well as timely review of the combined Final EIS and ROD in November 2026.

If you have any questions or would like to discuss these recommendations, please contact me at witman.timothy@epa.gov or (215) 814-2775 or Rebecca Souto-Glyn at glyn.rebecca@epa.gov or (215) 814-2795.

Sincerely,

Timothy Witman
Manager, NEPA and Technical Assistance Branch
U.S. EPA Mid-Atlantic Region 3

Appendix B: Natural Resources Mitigation Search Memorandum

Chesapeake BAY CROSSING STUDY
TIER 2 NEPA

NATURAL RESOURCES MITIGATION SEARCH MEMORANDUM

Maryland Transportation Authority
MDTA

May 2026

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ABBREVIATIONS AND ACRONYMS

AC	Acres
BCS	Bay Crossing Study
CBCA	Chesapeake Bay Critical Area
CFPP	Chesapeake Fish Passage Prioritization
CM	Conceptual Mitigation
E2EM	Estuarine Intertidal Emergent
E2SS	Estuarine Intertidal Scrub-Shrub
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FF	Functional Feet
FIDS	Forest Interior Dwelling Species
GIS	Geospatial Information System
LF	Linear Feet
LOD	Limits of Disturbance
LULC	Land Use Land Cover
MALPF	Maryland Agricultural Land Preservation Foundation
MARI	Maryland Artificial Reef Initiative

AC	Acres
BCS	Bay Crossing Study
CBCA	Chesapeake Bay Critical Area
CFPP	Chesapeake Fish Passage Prioritization
CM	Conceptual Mitigation
E2EM	Estuarine Intertidal Emergent
E2SS	Estuarine Intertidal Scrub-Shrub
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FF	Functional Feet
FIDS	Forest Interior Dwelling Species
GIS	Geospatial Information System
LF	Linear Feet
LOD	Limits of Disturbance
LULC	Land Use Land Cover
MALPF	Maryland Agricultural Land Preservation Foundation
MARI	Maryland Artificial Reef Initiative
MDE	Maryland Department of the Environment
MD iMAP	Maryland Information Mapping
MDNR	Maryland Department of Natural Resources
MDP	Maryland Department of Planning
MDTA	Maryland Transportation Authority
MSMF	Maryland Stream Mitigation Framework
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
ORP	Oyster Recovery Partnership
PEM	Palustrine Emergent
Perm	Permanent
PFO	Palustrine Forested
PSS	Palustrine Scrub-Shrub
RFI	Request for Information
RIBITS	Regulatory In-lieu Fee and Bank Information Tracking System
ROD	Record of Decision

SAV	Submerged Aquatic Vegetation
SF	Square Feet
TNC	The Nature Conservancy
USACE	United States Army Corps of Engineers
VIMS	Virginia Institute of Marine Science
WRR	Watershed Resources Registry
WSSC	Wetland of Special State Concern

1 INTRODUCTION

The Chesapeake Bay Crossing Study (Bay Crossing Study) is a two-tiered engineering and environmental study being advanced by the Maryland Transportation Authority (MDTA) in coordination with the Federal Highway Administration (FHWA). The Bay Crossing Study is addressing existing and future transportation issues at the William Preston Lane, Jr. Memorial Bridge (Bay Bridge) and its approaches along U.S. 50/301. Each tier of the Bay Crossing Study involves development of an Environmental Impact Statement (EIS), in compliance with the National Environmental Policy Act (NEPA), to describe potential significant environmental effects and inform the evaluation of alternatives. Tier 1 of the Bay Crossing Study (Tier 1 Study) was completed in April 2022. At that time, the FHWA issued a Final EIS/Record of Decision (FEIS/ROD) identifying Corridor 7, the corridor that includes the Bay Bridge and its approaches, as the Selected Corridor Alternative for further evaluation. Tier 2 of the Bay Crossing Study (Tier 2 Study) was launched in June 2022 to focus on a project-level (site-specific) analysis within the Tier 1 Selected Corridor Alternative (Corridor 7). The Tier 2 NEPA process was initiated formally with publication of a Notice of Intent (NOI) to prepare an EIS in the Federal Register on November 15, 2024, and the Notice of Availability (NOA) for the DEIS was published on January 23, 2026.

The purpose of this memorandum is to summarize potential mitigation options for impacts to natural resources associated with the Tier 2 Study Preferred Alternative. Each resource section below includes a discussion of the methodology for determining proposed mitigation and the search results. A summary of proposed impacts of the Preferred Alternative is included along with the anticipated mitigation needs for impacted resources. Additional information on the Preferred Alternative including details on the impacts is included in the Preferred Alternative and Conceptual Mitigation (PACM) report. Mitigation requirements are based on conceptual design for the Preferred Alternative and may evolve as the design progresses and impacts to resources are refined, avoided, and/or minimized.

2 NATURAL RESOURCES

Table 2-1 summarizes the natural resource impacts, mitigation needs, and potential mitigation activities. Natural resource impacts would occur within the Severn River (02131002), Lower Chesapeake Bay (02139998), Kent Island Bay (02130511), and Eastern Bay (02130501) MDE 8-digit watersheds. Potential mitigation activities are listed from highest to lowest priority based on the rules and regulations of each resource and coordination with resource and regulatory agencies. **Table 2-2** summarizes the impacts and mitigation needs associated with the optional shared-use path (SUP). All mitigation needs being considered for mainline impacts would also be considered for optional SUP impacts if the optional SUP is constructed.

Table 2-1: Natural Resource Impacts and Mitigation Needs

Resource		Impact	Mitigation Ratio	Mitigation Need	Potential Mitigation Activities
Nontidal Palustrine Emergent (PEM) Wetland		0.9 AC[1]	1:1	0.9 AC	Mitigation Bank(s) Permittee-Responsible Mitigation
Nontidal Palustrine Scrub-Shrub (PSS)		<0.1 AC	2:1	<0.1 AC	
Nontidal Palustrine Forested (PFO) Wetland		3.3 AC	2:1	6.6 AC	
Nontidal Stream**		670 LF[1]	1.5:1	324 FF[1]	
Estuarine Intertidal Emergent (E2EM)		1.4 AC	2:1	2.8 AC	
Estuarine Intertidal Scrub-Shrub (E2SS) Wetland		0.1 AC	2:1	0.2 AC	
Tidal Open Water		132.9 AC	2:1	265.8 AC	Oyster Seeding and Substrate Expansion Submerged Aquatic Vegetation (SAV) Planting Fish Passage Restoration Coastal Marsh Restoration Derelict Crab Pot Removal Fish Hatchery Funding Artificial Reef Creation/Expansion
Natural Oyster Bars (NOBs)		10.2 AC	3:1	30.6 AC	Oyster seeding Oyster reef substrate expansion
Forests/Trees	Reforestation Law	10.4 AC	1:1	10.4 AC	Reforestation on public lands
Forests/Trees (Critical Area)	Expanded Buffer	8.2 AC	3:1	24.6 AC	Reforestation within the Chesapeake Bay Critical Area Fee In-Lieu
	Outside Expanded Buffer	39.2 AC	2:1	78.4 AC	

[1]AC = acres; LF = linear feet; FF = functional feet

*[2]The nontidal stream mitigation ratio and corresponding functional feet of mitigation need are determined using the Maryland Stream Mitigation Framework Stream Calculator. The Stream Calculator results can be found in **Appendix B**.*

Table 2-2: Optional SUP Natural Resource Impacts and Mitigation Needs

Resource		Impact	Mitigation Ratio	Mitigation Need
Nontidal PEM Wetland		0 AC	1:1	0 AC
Nontidal PSS Wetland		0 AC	2:1	0 AC
Nontidal PFO Wetland		0 AC	2:1	0 AC
Nontidal Stream		30 LF	1.5:1	8 FF
E2EM Wetland		0.7 AC	2:1	1.4 AC
E2SS Wetland		0 AC	2:1	0 AC
Tidal Open Water		1.9 AC	2:1	3.8 AC
Natural Oyster Bars		0.6 AC	3:1	1.8 AC
Forests/Trees (Reforestation Law)	Outside Critical Area	0.2 AC	1:1	0.2 AC
Forests/Trees (Critical Area)	Expanded Buffer	0.6 AC	3:1	1.8 AC
	Outside Expanded Buffer	0.7 AC	2:1	1.4 AC

2.1 Nontidal and Tidal Wetlands

Table 2-3 presents a summary of the impacts and anticipated mitigation needs for nontidal and tidal wetlands associated with the Preferred Alternative. **Table 2-4** summarizes nontidal and tidal wetland impacts and mitigation needs associated with the optional SUP. Nontidal and tidal wetland impacts occur within the Severn River (02131002), Kent Island Bay (02130511) and Eastern Bay (02130501) MDE 8-digit watersheds.

Impacts to nontidal wetlands from the Preferred Alternative include 3.3 acres of palustrine forested (PFO) wetlands, less than 0.1 acre of palustrine scrub-shrub (PSS) wetlands, and 0.9 acre of palustrine emergent (PEM) wetlands resulting in a total nontidal wetland mitigation need of 7.5 acres. There are no impacts to nontidal wetlands associated with the optional SUP.

Impacts to tidal wetlands from the Preferred Alternative include 0.1 acre of estuarine intertidal scrub-shrub (E2SS) wetlands and 1.4 acres of estuarine intertidal emergent (E2EM) wetlands resulting in a total tidal wetland mitigation need of 2.9 acres. Impacts to tidal wetlands from the optional SUP include 0.7 acre of E2EM wetland, resulting in an additional 1.4 acres of tidal wetland mitigation need. Impacted wetlands have low functions and value because they were historically altered to a considerable degree by various projects along U.S. 50/301 on both shores of the Chesapeake Bay.

Table 2-3: Wetland Impacts and Mitigation Needs

Cowardin Classification	Severn River (02131002)			Kent Island Bay (02130511)			Eastern Bay (02130501)		
	Impact	Mitigation Ratio	Mitigation Need	Impact	Mitigation Ratio	Mitigation Need	Impact	Mitigation Ratio	Mitigation Need
Nontidal Wetlands									
PFO	3.0 AC	2:1	6.0 AC	0	2:1	0	0.3 AC	2:1	0.6 AC
PSS	<0.1 AC	2:1	<0.1 AC	0	2:1	0	0	2:1	0
PEM	0.4 AC	1:1	0.4 AC	0.5 AC	1:1	0.5 AC	< 0.1 AC	1:1	< 0.1 AC
Total*	**3.4 AC**	**--**	**6.4 AC**	**0.5 AC**	**--**	**0.5 AC**	**0.3 AC**	**--**	**0.6 AC**
Total Nontidal Wetlands Mitigation Need[1]: 7.5 AC									
Tidal Wetlands									
E2SS	0.1 AC	2:1	0.2 AC	0	2:1	0	0	2:1	0
E2EM	0.2 AC	2:1	0.4 AC	1.2 AC	2:1	2.4 AC	<0.1 AC	2:1	0.2 AC
Total*	**0.3 AC**	**2:1**	**0.6 AC**	**1.2 AC**	**--**	**2.4 AC**	**<0.1 AC**	**--**	**0.2 AC**
Total Tidal Wetlands Mitigation Need[1]: 2.9 AC									

[1]Due to rounding, totals may not equal the sum of all individual classification impacts.

Table 2-4: Optional SUP Wetland Impacts and Mitigation Needs

Cowardin Classification	Severn River (02131002)			Kent Island Bay (02130511)			Eastern Bay (02130501)		
	Impact	Mitigation Ratio	Mitigation Need	Impact	Mitigation Ratio	Mitigation Need	Impact	Mitigation Ratio	Mitigation Need
Nontidal Wetlands									
PFO	0	--	0	0	--	0	0	--	0
PSS	0	--	0	0	--	0	0	--	0
PEM	0	--	0	0	--	0	0	--	0
Total*	**0**	**--**	**0**	**0**	**--**	**0**	**0**	**--**	**0**
Total Optional SUP Nontidal Wetlands Mitigation Need[1]: 0 AC									
Tidal Wetlands									
E2SS	0	--	0	0	--	0	0	--	0
E2EM	0.7 AC	2:1	1.4 AC	0.1 AC	2:1	0.1 AC	0	--	0
Total*	**0.7 AC**	**--**	**1.4 AC**	**0.1 AC**	**--**	**0.1 AC**	**0**	**--**	**0**
Total Optional SUP Tidal Wetlands Mitigation Need[1]: 1.4 AC									

[1]Due to rounding, totals may not equal the sum of all individual classification impacts.

2.1.1 Site Search

The MDTA used a watershed approach to identify suitable wetland mitigation sites within the MDE 8-digit watersheds (Severn River (02131002), Kent Island Bay (02130511) and Eastern Bay (02130501)), with a focus on opportunities within close proximity to the project area. However, due to a lack of potential mitigation sites in the Severn River watershed, and a limited number in the Eastern Shore watersheds, the site search was expanded to adjacent MDE 8-digit watersheds (Little Patuxent River (02131105), West River (02131004), Lower Chester River (02130505), Kent Narrows (02130504), and West Chesapeake Bay (02131005)). A windshield assessment was conducted to assess areas with sufficient potential that were identified during the desktop review.

2.1.1.1 Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS)

The U.S. Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA) 2008 Federal Mitigation Rule (33 CFR 332 and 40 CFR 230, Subpart J) prioritizes using approved mitigation banks whenever possible. Therefore, a search of the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) was conducted to determine if approved banks with credits are available within the project service area. According to RIBITS, there are currently no approved wetland mitigation banks within the project service area. Due to the lack of available banks, the MDTA issued a Request for Information (RFI) to gather information on the potential for future banks within the project service area.

2.1.1.2 Desktop and GIS-Based Search

Watershed Resources Registry

The Watershed Resources Registry (WRR) is a GIS-based targeting tool that was created by the EPA and other partners as part of a Green Highways Partnership project to integrate the Clean Water Act (CWA) with multiple state programs. Potential wetland restoration sites listed in the WRR database are identified as areas that have somewhat, poorly, or very poorly drained soils, and do not consist of existing wetlands or forest. The database scores the potential wetland restoration sites using an array of ecological factors. This web-based application was used to locate potential wetland mitigation sites within the target watersheds. The WRR was also used to investigate possible stream mitigation sites in the target watersheds (see **Section 2.2 Nontidal Streams** for a discussion of the nontidal streams site search). The WRR riparian restoration layer targets non-forested and non-developed areas in the vicinity of a waterbody to identify areas that would benefit from riparian woody plantings. Both the stream and wetland sites were further evaluated in a desktop GIS-based search to ensure they are free from obvious constraints such as public utilities or forest cover.

Nontidal Wetlands

In addition to the sites identified from the WRR, potential wetland mitigation sites in the target watersheds were identified using aerial photographs (MD iMAP, 2020) and GIS data layers for soils (NRCS, 2019), National Wetlands Inventory (NWI) data (USFWS, 2022), hydro line data (MD iMAP, 2019), and Federal Emergency Management Agency (FEMA) 100-year floodplains (FEMA, 2017). Open land areas adjacent to mapped wetlands, streams, and floodplains were prioritized due to the presence of existing sources of hydrology. Additionally, the Natural Resources Conservation Service (NRCS) mapped hydric soils and topographic maps were referenced to target areas where soils and elevation are desirable for wetland restoration. These sites were further investigated using aerial photographs, including bird's eye views and street

views, to eliminate sites with obvious constraints such as public utilities and forest cover, or sites unable to provide the minimum necessary mitigation acreage. Areas where multiple desirable resource layers overlapped were given the highest priority and were included in the database. Sites located within forested canopy cover and areas overlapping historical preservation, forest conservation easements, and agricultural land preservation were noted and given a lower priority. Other key factors in the site selection process included restoration feasibility and likelihood for success, site connectivity, site accessibility, potential for "in-kind" (emergent, scrub-shrub, or forested habitat) replacement of lost functions, potential impacts to other resources, existing easements and encumbrances, potential for traditional development, landscape position, land use/land cover, and ecological uplift potential.

Tidal Wetlands

All tidal shorelines within the target watersheds were assessed at a desktop level for their potential to create or enhance tidal wetlands. Riparian land use within the region is primarily comprised of residential with some forest and agriculture on the Western Shore and residential and agriculture with some forest on the Eastern Shore. Open areas along shorelines were considered for the suitability of their topography and any potential site constraints.

2.1.1.3 Windshield Site Assessments

A windshield assessment of each tidal and nontidal site was completed, where feasible, from public rights-of-way to further assess each site's potential for mitigation and determine whether a site should be kept for future, more detailed field investigations. Where visible, data collected during the windshield assessment included hydrologic connectivity to existing wetlands or waterways; composition of adjacent vegetation including areas dominated by *Phragmites australis* that could invade the site; current land use; geomorphic position; access to the site; and the presence of overhead utilities. This data was used to determine a priority rating of high, moderate, or low for any future field investigations. High priority sites include those that met most of the criteria considered during the windshield assessment and appeared, based on professional judgement, to have significant potential for wetland creation. Moderate priority sites include those that met some of the criteria and appeared to have one or more potential challenges for wetland creation (e.g., requires some tree removal, pockets of *Phragmites* observed, site access challenges, etc.). Low priority sites include those that met few criteria and appeared to have several potential challenges for wetland creation. Any sites that were not visible from a public road were not given a priority ranking but will be retained and assessed during future field investigations as needed.

Nontidal Wetland Sites

A total of 46 potential nontidal wetland mitigation sites were assessed during the windshield assessment. Three sites were considered high priority, 13 sites were considered moderate priority, and seven sites were considered low priority. Twenty (20) sites were not visible from a public road, and three sites were dropped from consideration due to the parcels being enrolled in a Maryland Agricultural Land Preservation Foundation (MALPF) easement. High priority sites ranged from 21.8 to 23.7 acres; moderate priority sites ranged from 8.9 to 128.7 acres; and low priority sites ranged from 10.2 to 53.2 acres. Based on desktop and windshield assessments, a total of 1,319.0 acres across 46 sites have the potential to mitigate for nontidal wetland impacts from the Preferred Alternative.

The number and size of potential nontidal wetland mitigation sites demonstrates that nontidal wetland creation is a viable mitigation activity. The specific size of the area suitable for potential nontidal wetland creation/restoration within each of the identified sites cannot be determined based on desktop and windshield investigations and would require a field investigation. A table summarizing the results of the nontidal wetland mitigation windshield assessment is included in **Appendix A**.

Tidal Wetland Sites

A total of 33 potential tidal wetland mitigation sites were assessed during the windshield assessment. Three sites were considered moderate priority; 10 sites were considered low priority; and 20 sites were not visible from a public road. No sites were considered high priority. Moderate priority sites ranged from 14.2 to 33.1 acres and low priority sites ranged from 10.6 to 193.4 acres. Based on desktop and windshield assessments, a total of 1,705.4 acres across 33 sites have the potential to mitigate for tidal wetland impacts from the Preferred Alternative.

The specific size of potential tidal wetland creation/restoration within each site cannot be determined based on desktop and windshield investigations and would require a field investigation. A table summarizing the results of the tidal wetland mitigation windshield assessment is included in **Appendix A**.

2.2 Nontidal Streams

Construction of the Preferred Alternative would impact seven nontidal streams totaling approximately 670 linear feet, all occurring within the Severn River MDE 8-digit watershed. Of that, 290 linear feet were delineated as perennial and 380 linear feet were delineated as intermittent. The MDTA assessed the existing conditions of the impacted streams and compared them to proposed stream conditions to determine the functional feet of stream loss using the Maryland Stream Mitigation Framework (MSMF) Stream Calculator. Based on the MSMF Stream Calculator, the Preferred Alternative would result in 324 functional feet of stream loss. **Table 2-5** below lists each individual stream reach impacted, the linear feet of impact, and the assessed functional stream loss resulting from those impacts.

In order to estimate maximum mitigation needs, it is assumed that all stream impacts within the limits of disturbance (LOD) are permanent and all streams would be filled, piped, or culverted. It is anticipated that the project will either acquire stream mitigation credits from an appropriate mitigation bank or develop permittee-responsible mitigation to compensate for the loss in functional feet of stream. Certain Temporal Loss factor assumptions were made to use the MSMF Stream Calculator, which will be updated as needed once more detailed engineering is available. For additional information on how functional feet of stream loss was determined, see the *Maryland Stream Mitigation Framework Stream Calculator Memorandum for Chesapeake Bay Crossing Study* in **Appendix B**.

Table 2-5: Nontidal Stream Impacts[1]

Site Name	Impact Type	Stream Class	Proposed Condition	Reach Length (LF)	Stream Loss (Functional Feet)
MeC_WUS1	Permanent	Intermittent	Piping/Culvert	51	-43
MeC_WUS2	Permanent	Perennial	Piping/Culvert	33	-19
MeC_WUS5	Permanent	Perennial	Piping/Culvert	250	-128
MeC_WUS6	Permanent	Intermittent	Piping/Culvert	181	-79
MeC_WUS7	Permanent	Intermittent	Piping/Culvert	23	-11
MeC_WUS10	Permanent	Intermittent	Piping/Culvert	71	-26
MeC_WUS14	Permanent	Intermittent	Piping/Culvert	46	-19
Total[2]				**670**	**-324**
Optional SUP Nontidal Stream Impacts					
MeC_WUS13	Permanent	Intermittent	Piping/Culvert	30	-8

[1]*All impacts to streams occur in the Severn River MDE 8-digit watershed.*
[2]*Due to rounding, totals may not equal the sum of all individual classification impacts.*

2.2.1 Site Search

The desktop stream mitigation site search focused within the MDE 8-digit watersheds (Severn River (02131002), Kent Island Bay (02130511) and Eastern Bay (02130501)) with an emphasis on streams in close proximity to the project area. However, due to the limited potential stream mitigation sites identified within the Severn River watershed, the site search was expanded to adjacent MDE 8-digit watersheds: Little Patuxent River (02131105), West River (02131004), South River (02131003), Lower Chester River (02130505), Kent Narrows (02130504), and West Chesapeake Bay (02131005).

2.2.1.1 Desktop and GIS-Based Search

The GIS data compiled and used in the site search included the Suitability Analysis for Riparian Restoration data from the WRR, the MSMF layers for Site Sensitivity Analysis for Stream Mitigation, as well as Fish Passage Connectivity. Additionally, CWA 303(d) impaired waters, existing contour data, protected lands, forested areas, and parcel boundaries were utilized. Stream segments less than 500 linear feet were excluded from the site search because they would likely not provide enough functional feet of mitigation credit.

Potential mitigation sites were clipped to the parcel boundary and placed on a created GIS layer for further screening using aerial imagery and street view to assess evidence of stream degradation. Sites with substantial site constraints were noted as such and removed from the site list. All remaining sites were assigned a site ID, the approximate length of stream was calculated, and site characteristics and opportunities for stream condition improvements based on the desktop data were noted. Characteristics included current land use, floodplain condition, existing riparian buffer condition, ease of access to the site, visible erosion or planform concerns, evidence of stream manipulation, and obvious site constraints. Sites that showed multiple indicators for improvement and restoration potential were ranked as high priority and included in the windshield assessment. High priority sites also generally had minimal or no forest canopy coverage within the riparian buffer. Sites with a well-defined improvement opportunity were considered moderate priority and included in the windshield assessment. Due to the limited site

opportunities in some watersheds, sites showing some potential for improvement with at least one criterion being considered were ranked as low priority and included in the windshield assessment.

2.2.1.2 Nontidal Stream Windshield Assessment

The MDTA conducted a windshield assessment of the desktop sites identified as high, moderate, and low priority. All windshield observations were made from public rights-of-way, and not all sites were visible or fully visible from the road. Where visible, the following primary site parameters were assessed: bank and bed erosion, floodplain characteristics, riparian vegetation, uplift opportunities, and site constraints. Other conditions noted included any stream disturbance or manipulation by human action which could include evidence of historic or recent grading, dredging, dumping, livestock access, piped segments, culverts, or other infrastructure. Adjacent land use observations were also recorded. Surrounding development, agriculture, and industrial activities are important factors influencing both restoration outcomes and constructability. The assessment parameters are discussed in more detail below.

2.2.1.3 Streambank Erosion

A central component of the windshield assessment is evaluating visible erosion and incision within the observed reach. An estimated degree of bank erosion, areas of active instability, and approximate bank heights above the water surface were documented to infer the level of channel incision or disconnection from the floodplain. The stream's planform, whether straightened, moderately sinuous, or showing tight meanders, was documented and noted if there was potential for re-establishing a functional stream pattern.

2.2.1.4 Floodplain

Floodplain interaction was assessed by noting whether the stream appeared to access its floodplain under typical high-flow conditions. This included noting the presence of benches, depositional features, low banks, or conversely, deeply incised channels. Any constraints limiting future floodplain reconnection such as mature wooded areas, structures, or utilities, were described.

2.2.1.5 Vegetation

The general type and coverage of riparian vegetation present along the observed reach was characterized. This included describing whether the riparian buffer is forested, scattered trees, or primarily open. If the riparian width was limited from development, that was also noted.

2.2.1.6 Ecological Uplift

Throughout the assessment, additional potential ecological uplift that could be achieved through restoration was considered. Opportunities may include improving floodplain connectivity, reducing sediment loads, enhancing in-stream or riparian habitat, promoting fish passage, or integrating wetland enhancement where appropriate. Any additional uplift opportunities were recorded for future consideration. Observed constraints, such as topographic limitations or nearby infrastructure were documented using mapped points or polygons to ensure they are considered during subsequent project screening.

2.2.1.7 Ease of Access & Utilities

Site access was observed and the closest potential access road was recorded. Additional considerations included existing slopes leading to the road, guard rails, existing fencing, and impacts to natural resources to reach the site. Additionally, visible utilities were noted, which included overhead power lines and utility pole locations.

2.2.2 Nontidal Stream Sites

The windshield assessment provided a qualitative evaluation of each stream reach identified during the desktop review. In total, 27 sites were visited during the windshield assessment. Of those sites, a priority ranking was given based on field observed conditions. Sites that could not be viewed during the windshield assessment were not given a prioritization ranking. These sites will be retained and assessed as necessary during future field investigations. Seven sites were ranked as high priority based on poor geomorphic conditions, such as unstable planform, altered channel morphology, eroded banks, or disconnected floodplains. Eleven sites were ranked as moderate priority since they met some, but not all criteria. Nine sites were ranked low priority due to the stream reaches either displaying stable conditions or because the site was discovered to be a graded swale during the windshield assessment. Characteristics unfavorable for restoration included fully forested corridors, limited access, a stable stream, minimal bank erosion, and multiple property owners. A table summarizing the results of the nontidal stream mitigation windshield assessment is included in **Appendix C**.

2.3 Tidal Open Water and Natural Oyster Bars

Table 2-6 presents a summary of the impacts and anticipated mitigation needs for tidal open water and natural oyster bars (NOBs) associated with the Preferred Alternative. **Table 2-7** presents a summary of the impacts and anticipated mitigation needs for tidal open water and NOBs associated with the optional SUP. Tidal open water impacts occur within the Severn River (02131002), Kent Island Bay (02130511), Eastern Bay (02130501), and Lower Chesapeake Bay (02139998) MDE 8-digit watersheds.

Construction of the Preferred Alternative would impact 132.9 acres of tidal open water, including 131.9 acres of impact within the Lower Chesapeake Bay watershed for construction of the new bridge spans. The remaining 1.1 acres of tidal open water impacts occur within tidal systems that are adjacent to or cross U.S. 50/301 on the Eastern or Western Shore approaches. Construction of the Preferred Alternative would impact 10.2 acres of NOBs, including 9.6 acres of impact within the Lower Chesapeake Bay watershed from construction of the new bridge spans. The optional SUP would impact an additional 1.9 acres of tidal open water and 0.6 acres of NOBs.

Table 2-6: Tidal Open Water and NOB Impacts and Mitigation Needs (acres)

MDE 8-digit Watershed	Tidal Open Water			Natural Oyster Bars		
	Impact	Mitigation Ratio	Mitigation Need	Impact	Mitigation Ratio	Mitigation Need
Severn River	0.2	2:1[1]	0.3	0	3:1	0
Kent Island Bay	0		0	0		0
Eastern Bay	0.9		1.7	0.6		1.8
Lower Chesapeake Bay	131.9		263.8	9.6		28.8
Total[2]	**132.9**		**265.7**	**10.2**		**30.6**

[1]Out-of-kind mitigation is assumed for compensation of tidal open water impacts.
[2]Due to rounding, totals may not equal the sum of all individual classification impacts.

Table 2-7: Optional SUP Tidal Open Water and NOB Impacts and Mitigation Needs (acres)

MDE 8-digit Watershed	Tidal Open Water			Natural Oyster Bars		
	Impact (AC)	Mitigation Ratio	Mitigation Need (AC)	Impact (AC)	Mitigation Ratio	Mitigation Need (AC)
Severn River	<0.1	2:1[1]	<0.1	0	3:1	0
Kent Island Bay	0		0	0		0
Eastern Bay	0		0	0		0
Lower Chesapeake Bay	1.9		3.8	0.6		1.6
Total[2]	**1.9**		**3.8**	**0.6**		**1.6**

[1]Out-of-kind mitigation is assumed for compensation of tidal open water impacts.
[2]Due to rounding, totals may not equal the sum of all individual classification impacts.

There are currently no established tidal waterway mitigation banks in Maryland. If banking options were to become available in Maryland by final design and permitting, the MDTA would prioritize consideration of banking opportunities in coordination with the agencies.

The MDTA investigated potential permittee-responsible tidal compensatory mitigation opportunities to determine those with the potential to compensate for unavoidable adverse tidal open water impacts associated with the Preferred Alternative. A list of various types of potential compensatory tidal waterway mitigation was developed and coordinated with relevant regulatory and resource agencies. A desktop-level investigation was completed for each mitigation type, and a windshield assessment was also completed for potential fish passage restoration and coastal marsh restoration sites. The following types of tidal mitigation are listed in order of priority based on agency coordination:

- Oyster Seeding and Substrate Expansion
- Submerged Aquatic Vegetation (SAV) Planting
- Fish Passage Restoration
- Coastal Marsh Restoration
    - Tidal Fill Removal
    - *Phragmites* Removal
- Derelict Crab Pot Removal
- Fish or Oyster Hatchery Funding
- Artificial Reef Creation

2.3.1 Oyster Seeding and Substrate Expansion

Oyster seeding and substrate expansion will be used as in-kind mitigation for direct impacts to NOBs by physically replacing the impacted oyster habitat through the creation of new, suitable substrate and/or replacing the impacted oyster population through seeding newly created reefs and/or existing oyster sanctuaries. In addition to mitigating for NOB impacts, oyster seeding and substrate expansion could potentially be used as out-of-kind mitigation for impacts to tidal open water. Oyster reefs provide important habitat for forage fish, invertebrates, and other shellfish as well as provide a safe nursery for tidal species such as anchovies, blue crab, croaker, herring, menhaden, silver perch, mackerel, spot, and striped bass; all of which have been documented within five miles of the Bay Bridge (NOAA, 2026). In addition to providing important habitat within the Chesapeake Bay, oysters function as a natural filter and improve water quality.

Through coordination with MDNR Shellfish Division, forty-two potential oyster seeding areas, totaling approximately 1,651 acres, were identified as opportunities for tidal open water and NOB mitigation within the Severn River (02131002), Eastern Bay (02130501), Lower Chesapeake Bay (02139998), Lower Chester River (02130505), and Middle Chesapeake Bay (02139997) MDE 8-digit watersheds. In addition to oyster seeding opportunities, eight areas, totaling approximately 948 acres, were identified within the Eastern Bay MDE 8-digit watershed as potential oyster substrate expansion opportunities for tidal open water and NOB mitigation. MDNR noted that the areas identified would need to be further verified, as appropriate, if chosen as part of a mitigation package.

If oyster seeding is selected as a tidal open water, the MDTA would prioritize the Severn River, Lower Chesapeake Bay, and Eastern Bay watersheds where project impacts are anticipated to occur. For NOB mitigation, the MDTA will prioritize the impacted Lower Chesapeake Bay and Eastern Bay watersheds. The abutting Middle Chesapeake Bay and Lower Chester River watersheds would also be considered for potential oyster seeding for both tidal open water and NOB mitigation due to their proximity to the project area. MDNR noted that the Severn River oyster sanctuaries have recently been targeted for seeding from local watershed groups; therefore, while there are still opportunities for oyster seeding in the Severn River watershed, it is not considered a priority for additional seeding. In addition, MDNR allocates $1 million each year for spat-on-shell in the entire Eastern Bay regional sanctuaries. The Eastern Bay sanctuaries have had significant ground-truthing and have areas identified for seeding or where new reefs could be built. MDNR also noted that the Lower Chester River sanctuary, which is not within an impacted watershed but is in close proximity to the project area, has been identified as a watershed where oyster populations are under-performing. MDNR is currently determining potential approaches to address this issue, and mitigation may fit into their approach for this area.

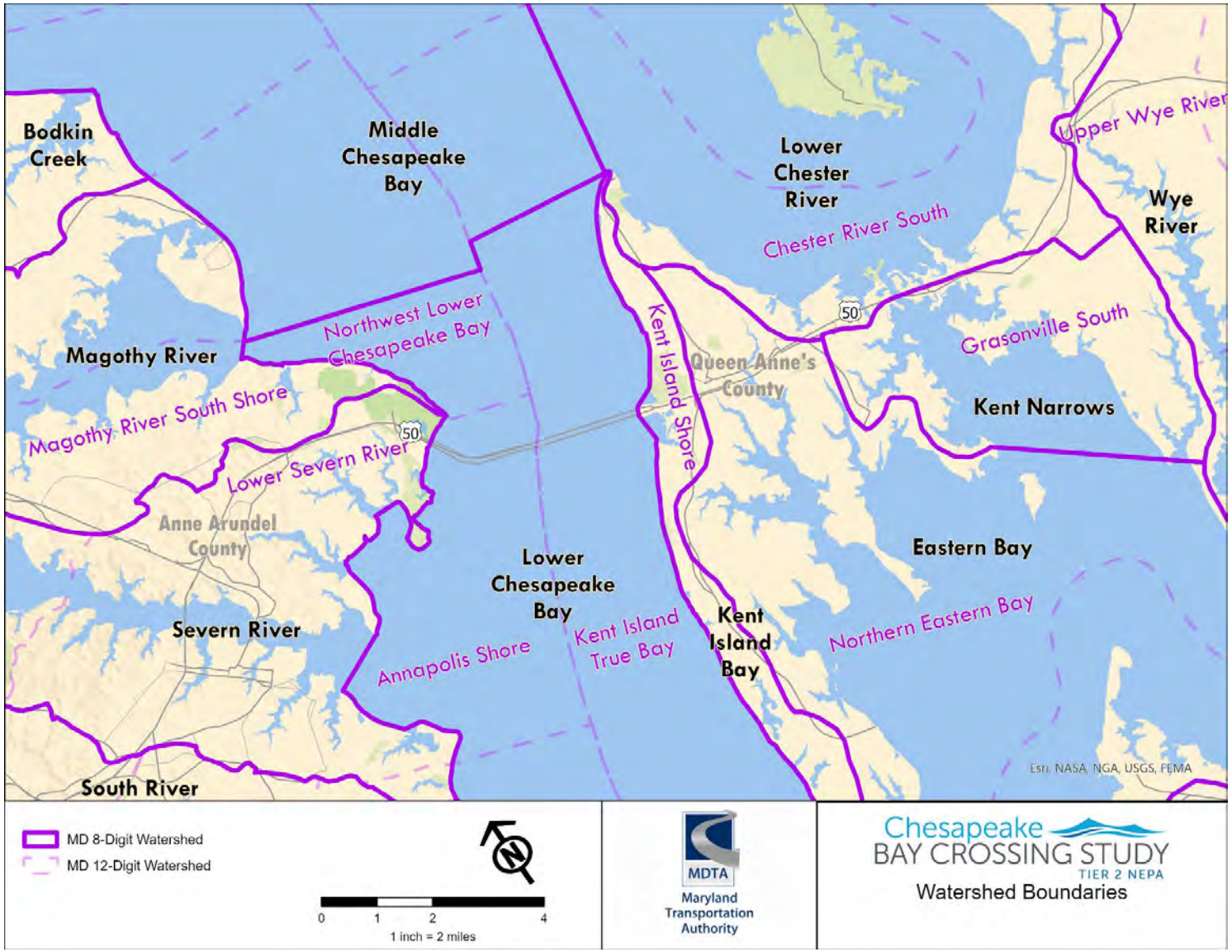
Target locations for seeding and/or substrate expansion, substrate size, and seeding rates would be determined through further coordination with MDNR and NOAA Fisheries. **Table 2-8** summarizes the potential mitigation sites by MDE 8-digit watershed for seeding and substrate expansion. The MDE 8-digit watersheds are shown in **Figure 2-1**.

Table 2-8: Oyster Mitigation Opportunities by Watershed

MDE 8-digit Watershed	Seeding		Substrate Expansion	
	Number of Sites	Total Acres	Number of Sites	Total Acres
Severn River (02131002)	10	53.9	--	--
Eastern Bay (02130501)	20	247.4	8	948.0
Lower Chesapeake Bay (02139998	4	46.9	--	--
Lower Chester River (02130505)	6	972.4	--	--
Middle Chesapeake Bay (02139997)	2	331.2	--	--
Total[1]	**42**	**1,651.7**	**8**	**948.0**

[1]Due to rounding, totals may not equal the sum of all individual classification impacts.

Figure 2-1: Watersheds



2.3.2 SAV Planting

Although there are no direct impacts to SAV associated with the Preferred Alternative, SAV plantings could be used as out-of-kind mitigation for impacts to tidal open waters. SAV is an important and sensitive resource within the Chesapeake Bay ecosystem, providing critical food and habitat for aquatic biota. In addition, SAV improves water quality by releasing oxygen into the water column through photosynthesis, reducing wave action and erosional forces near shorelines, capturing and anchoring suspended sediment, and absorbing excess nutrients like phosphorus and nitrogen from the water column (MDNR, 2023).

2.3.2.1 Desktop Search

A desktop search was conducted for areas that were historically vegetated with SAV but have not been vegetated within the past five years. Virginia Institute of Marine Science (VIMS) SAV survey data was used to compare mapped SAV beds over multiple years within the region. Using MDNR bathymetry data, areas between zero- and one-meter depth where SAV was present over five years ago were selected as potential sites. Areas with residential riparian land uses or water access were avoided. Areas less than 0.5 acres without potential for expansion were also eliminated.

2.3.2.2 SAV Planting Sites

A total of 22 potential SAV planting sites were identified at the desktop level. These sites range from 0.5 acres to 57.7 acres in size and total 138.41 acres of potential plantings. Site selection and final boundaries of SAV planting sites would be finalized through coordination with MDNR and would require field investigations to confirm the water depth, water clarity, salinity, water velocity, and wave action meet the criteria established in *Small-scale SAV Restoration in Chesapeake Bay: A Guide to the Restoration for Submerged Aquatic Vegetation (SAV) in Chesapeake Bay and its Tidal Tributaries* (Jasinski et al., 2021). The methods and process of SAV restoration would be completed in accordance with Jasinski et al. (2021) and through coordination with MDNR and other regulatory agencies. The process would include the selection of suitable sites for SAV collection, harvesting, and transplant of SAV plants, or harvesting and germination of seeds for dispersal. **Table 2-9** provides a summary of potential SAV planting sites by MDE 8-digit watershed.

Table 2-9: SAV Planting Opportunities by Watershed

MDE 8-digit Watershed	Number of Sites	Total Acres
Severn River (02131002)	1	4.4
Eastern Bay (02130501)	21	134.0
Kent Island Bay (02130511)	0	0
Total	**22**	**138.4**

2.3.3 Fish Passage Restoration

Fragmentation of aquatic habitats via dams, culverts, and other infrastructure is a primary threat to aquatic species in the U.S. (Martin, 2023). The removal of dams and other aquatic barriers located along free-flowing rivers can have numerous ecological benefits including re-establishing migratory routes and habitat access for diadromous fish, which spend part of their lives in freshwater and part in saltwater and have been documented within five miles of the Bay Bridge.

A mitigation site search was conducted to identify potential fish passage restoration sites near the Preferred Alternative's tidal open water impact area. The search included a GIS-based desktop review, primarily using the Chesapeake Fish Passage Prioritization (CFPP) database of known blockages, followed by a windshield assessment to evaluate each site in the field. No original desktop searches were completed to identify new, undocumented fish blockages, as high-priority barriers for removal have been extensively cataloged across Maryland.

2.3.3.1 Desktop Search

The desktop site investigation involved gathering potential fish passage mitigation sites from the following sources:

- CFPP database
- Coordination with MDNR

The CFPP database is maintained by The Nature Conservancy (TNC) and is a collaborative effort between federal and state agencies, non-governmental organizations, and academia that has been used since 2013 to help prioritize potential fish passage projects in the Chesapeake Bay watershed (Martin, 2023). The CFPP database utilizes several metrics to prioritize documented fish blockages within the Chesapeake Bay watershed for removal by prioritizing blockage removals for diadromous fish, resident fish, and brook trout. The database uses a "tier" ranking system, where blockages are categorized from tier 1 (highest priority) to tier 20 (lowest priority). The diadromous tier was considered during desktop review, but sites were not excluded from the search due to their tier designation. For the desktop site identification, an emphasis was placed on identifying sites with a large upstream functional network length[1].

As part of the desktop site evaluation process, the MDTA coordinated with MDNR about potential fish passage restoration projects. MDNR's Fish Passage Coordinator provided candidate sites relevant to the Tier 2 Study.

The initial desktop search focused on the impacted MDE-8-digit watersheds which include Eastern Bay (02130501), Kent Island Bay (02130511), Severn River (02131002), and Lower Chesapeake Bay (02139998). The Severn River watershed is the only watershed containing known fish blockages. All blockages with at least one mile of upstream network (stream length upstream of the documented blockage that would be made accessible by blockage removal) were retained for windshield surveys. In addition, barriers located immediately upstream of a candidate blockage removal location, as well as nearby barriers that had slightly less than one mile of upstream network, were retained.

Since most of the retained sites in the initial desktop search area had minimal upstream network, the search area was expanded to include the entire MDE 6-digit watersheds containing the original 8-digit watersheds: Chesapeake Bay Proper (021399), West Chesapeake Bay (021310), and Chester River (021305). All blockages within the greater 6-digit watershed were reviewed, and sites were retained if they had at least three miles of upstream network. Once again, barriers located upstream of a candidate blockage, or any cluster of nearby barriers, were also included

[1] Function network length refers to the linear extent of connected stream/river, including tributaries.

in the review. Across the three MDE 6-digit watersheds, 28 potential sites were retained from the desktop search for windshield assessments.

2.3.3.2 Windshield Site Assessments

The MDTA visited or attempted to visit all 28 structures identified during the desktop review during the windshield assessment. These visits were conducted to get a better understanding of each site's physical characteristics and potential constraints, such as utilities or steep banks or slopes. Sites were accessed using coordinates determined by the desktop review and sites were observed from nearby or adjacent public rights-of-way. When sites were located on public land, multiple vantage points were used.

Field notes and photographs were recorded directly on an online map for later review. Observations related to feasibility such as blockage severity, upstream network length, presence of downstream or upstream barriers, land use, and access limitations were documented. Some sites were not directly visible from the road. In these cases, the team visited a nearby upstream or downstream road-stream crossing, if appropriate, to assess stream size and general suitability for diadromous fish. Each site was given a summary rating for overall site potential, rated as unsuitable, unlikely, low, moderate, or high. Sites rated as unsuitable were removed from consideration for future field investigations. Sites rated as unlikely are generally larger impoundments used for recreation or by communities and would require notable and unlikely buy-in from landowners, stakeholders, etc.

2.3.3.3 Fish Passage Sites

Many sites were not directly visible from the road during the windshield assessment. For these sites, suitability was assessed based on functional upstream network length, stream size and quality at the nearest accessible crossing (if available), and CFPP tier ranking. Site suitability was also influenced by the type of waterbody upstream of the barrier. Several barriers formed lakes, ponds, or other waterbodies used for recreation, which introduces additional considerations for mitigation feasibility. Any sites that were not visible from a public road were retained and will be assessed as needed during future field investigations

During the windshield assessments, one additional fish passage site was observed and added to the site list in the Severn River watershed, site FP-01. Of the 29 sites reviewed, 15 sites were rated as potential candidates. This list includes nine sites with low potential, four sites with moderate potential, and two sites with high potential. Five of the 29 sites were located on recreational or community lakes and were deemed unlikely for site potential. A table summarizing the results of the fish passage windshield assessment is included in **Appendix D**.

2.3.4 Coastal Marsh Restoration

Coastal marsh restoration could be used as out-of-kind mitigation for impacts to tidal open waters. Coastal marshes are a critical part of the Chesapeake Bay ecosystem, as they provide essential habitat for wildlife; improve water quality by filtering harmful pollutants; sequester carbon; protect shorelines from storm surges and flooding; and slow shoreline erosion by trapping sediments. Two types of coastal marsh restoration were considered: fill removal from historic tidal marshes and *Phragmites australis* removal in existing tidal marshes. Removing fill from historic coastal marshes can provide significant ecological uplift by reintroducing natural tidal flow, restoring tidal marsh habitat and nutrient/carbon sequestration, enhancing productivity, providing coastal resilience, and reducing invasive species cover. *Phragmites* removal can provide ecological uplift

in existing coastal marshes by removing invasive monocultures of *Phragmites australis,* which allows native marsh species to recolonize, improve marsh habitat quality for wildlife, and increase nutrient cycling through tidal flushing. *Phragmites* removal would include assessing the site potential for beneficial tidal regime alterations to prohibit *Phragmites* recolonization and improve the tidal exchange.

A mitigation site search was conducted to identify potential tidal fill removal opportunities and *Phragmites* removal areas within the watersheds where tidal open water impacts are proposed. The site search included a GIS-based desktop review and windshield assessments of sites identified during desktop review that were visible from the public rights-of-way.

2.3.4.1 Desktop Search

Historic Fill in Tidal Areas

A desktop search was conducted to identify potential tidal wetland restoration sites where historic fill may have eliminated tidal wetlands and waters or disrupted natural tidal hydrology. The desktop search included the Severn River (02131002), Kent Island Bay (02130511), and Eastern Bay (02130501) MDE 8-digit watersheds. Multiple spatial datasets were incorporated into this assessment, including:

- Historic and modern National Land Cover Database (NLCD) raster datasets (1985, 1994, and 2024);
- USFWS NWI estuarine/tidal wetlands;
- MD iMAP layers (FinFish Tidal Habitat, 1972 Wetland Maps, Waterfowl Areas, Rivers and Streams, Wetlands of Special State Concern);
- Maryland Geological Survey (MDGS) Coastal & Estuarine Geology Program Historical shoreline datasets (1844-1994);
- Nearmap Aerial Imagery, Friday October 10, 2025;
- Historical Aerials Aerial Imagery Viewer (1957-2023); and
- United States Agricultural Stabilization and Conservation Service (ASCS) aerial photography (1937-1938 and 1951-1952).

NLCD land cover data from 1985 and 2024 were compared, and areas that appeared as wetlands in 1985 but not in 2024 were identified as areas of possible wetland loss. These areas were then compared to the current NWI tidal wetland layer, last updated November 24, 2025. Locations that were identified as wetlands in 1985 but did not appear as tidal wetlands in the NWI dataset were considered areas of potential filled tidal wetlands.

In addition, historical shoreline datasets from MDGS (1844–1847) were compared to identify areas where the shoreline expanded channelward over time. Areas where historic shoreline intersects present day uplands or developed land were considered potential filled tidal wetlands. A similar comparison of more recent MDGS historical shoreline datasets spanning from the 1840s through the 1990s identified additional areas of potential historic fill.

Areas identified as filled tidal wetlands were evaluated using high-resolution NearMap aerial imagery, and historical aerial imagery from 1952 and 1972, to validate wetland loss patterns,

assess the presence of fill, hydrologic barriers, and/or shoreline modifications. Imagery analyses were also used to eliminate areas that could not be converted to tidal wetlands due to residential development, infrastructure, or upland forest cover. After validation, a refined list of potential tidal wetland restoration sites was compiled.

Potential sites were assigned high, medium or low priority values based on site size, accessibility, property type (public or private), construction feasibility, utility presence, and a visual evaluation of the site using aerial imagery.

A total of 16 potential tidal fill removal sites were identified in the desktop search. These sites range in size from 0.1 to 6.2 acres, are located on 22 individual properties, and total 31.5 acres.

Phragmites Removal in Tidal Areas

A desktop search was conducted to identify tidal areas on public and non-profit owned land dominated by *Phragmites australis*. The desktop search included the Severn River (02131002), Kent Island Bay (02130511), and Eastern Bay (02130501) MDE 8-digit watersheds. Multiple spatial datasets were incorporated into this assessment, including:

- MD Department of Planning (MDP) Parcels for Anne Arundel County, Queen Anne's County and Talbot County;
- MD iMAP Maryland Tidal Waters;
- NearMap Aerial Imagery (various dates); and
- USFWS NWI estuarine/tidal wetlands.

Federal, state, county, and non-profit owned parcels were selected from MDP parcel datasets. MD iMAP Tidal Waters and NWI data were then used to identify parcels adjacent to tidal waters, and these parcels were examined using high-resolution NearMap imagery from multiple seasons and years to visually delineate *Phragmites* removal areas. Multiple small *Phragmites* areas on the same parcel were often combined into a single site.

Potential removal areas were assigned high, medium or low priority values based on size and accessibility. Low priority removal areas are difficult to access or are less than 0.1 acre in size. Medium priority removal areas have relatively straightforward access and range from 0.1 to 0.5 acre in size. High priority removal areas are easily accessible by land, boat, drone, helicopter or amphibious vehicle for *Phragmites* removal and are greater than 0.5 acre in size.

A total of 71 potential *Phragmites australis* removal sites were identified in the desktop search. These sites range from 0.1 to 30.3 acres in size, are located on 50 individual properties, and total 179.4 acres.

2.3.4.2 Windshield Site Assessment

A windshield assessment of each potential tidal fill and *Phragmites* removal site identified in the desktop site search was completed, where feasible, from public rights-of-way to further assess each site's potential for tidal wetland restoration and determine whether a site should be retained for future, more detailed field investigations. Sites were assessed holistically for their potential as tidal wetland restoration sites, with special attention given to the potential to create or increase wetland function and increase tidal flushing at each site. Where visible, data collected during the

windshield assessment included hydrologic connectivity to existing wetlands or waterways; composition of adjacent vegetation and current land use; geomorphic position; accessibility of the site by aquatic fauna; potential to increase tidal flushing and/or remove *Phragmites* from the site; access to the site; proximity to other areas of *Phragmites* not included in the identified sites; and the presence of overhead and underground utilities. This data was used to determine a priority rating of high, moderate, or low for any future field investigations. High priority sites include those that met most of the criteria considered during the windshield assessment and appeared, based on professional judgement, to have significant potential for tidal wetland restoration and functional uplift including *Phragmites* removal and/or tidal fill removal. Moderate priority sites include those that met some of the criteria and appeared to have one or more potential challenges for wetland restoration (e.g., requires some tree removal, site access challenges, etc.). Low priority sites include those that met few criteria and appeared to have several potential challenges for wetland creation/restoration. Any sites that were not visible from a public road were not given a priority ranking but will be retained and assessed during future field investigations as needed.

Tidal Fill Removal Sites

Of the 16 sites identified in the desktop search, eight were visible from a public right-of-way and were able to be assessed during the windshield assessment. Based on desktop and windshield assessments, a total of 20 acres across eight tidal fill removal sites have the potential to mitigate for tidal open water impacts from the Preferred Alternative. Sites that could not be assessed during the windshield assessment may provide approximately 11.5 acres of additional mitigation opportunity, but evaluating these sites will require landowner permission and more detailed field assessments. A summary of potential tidal fill removal sites by MDE 8-digit watershed is included below in **Table 2-10**.

Table 2-10: Tidal Fill Removal Sites by Watershed

MDE 8-digit Watershed	Desktop Sites	Windshield Sites	Low Priority Sites & Acreages	Moderate Priority Sites & Acreages	Total Acres Assessed	Total Acres Not Assessed
Severn River (02131002)	6	2	1 (0.3 ac)	1 (0.8 ac)	1.1	8.4
Eastern Bay (02130501)	2	1	0	1 (0.1 ac)	0.1	1.2
Kent Island Bay (02130511)	8	5	5 (0.9 - 6.2 ac)	0	18.8	2.1
Total[1]	**16**	**8**	**19.1**	**0.9**	**20.0**	**11.5**

[1]Due to rounding, totals may not equal the sum of all individual classification impacts.

The exact extent of tidal fill removal within each site cannot be determined based on desktop and windshield investigations and would require an on-site field investigation. A detailed table of the tidal fill removal sites that were investigated during the desktop and windshield assessments is included in **Appendix G**.

Phragmites Removal Sites

Of the 77 sites identified during the desktop search, 32 were visible from a public right-of-way and were able to be assessed during the windshield assessment. Several sites delineated as separate sites during the desktop assessment were observed to share a hydrologic connection during the

windshield survey and were therefore combined into single sites. These include sites PT-01 and PT-02 which were combined under site PT-01; sites PT-05a, PT-05b, PT-06a and PT-06b, which were combined under site PT-05a; sites PT-08a and PT-08b, which were combined under site PT-08a; sites PT-09a and PT-09b, which were combined under site PT-09a; and sites PT-10a and PT-10b, which were combined under site PT-10a. Based on desktop and windshield assessments, a total of 137.45 acres across 32 *Phragmites australis* removal sites have the potential to mitigate for tidal open water impacts from the Preferred Alternative. Sites that could not be assessed during the windshield assessment may provide approximately 36.83 acres of additional mitigation opportunity, but evaluating these sites will require landowner permission and more detailed field assessments. In addition, other areas of *Phragmites* located on private properties adjacent to windshield sites would be assessed during future on-site investigations to determine if these areas should be included in the restoration effort for identified sites, or if left alone would become a *Phragmites* seed source and recolonize the identified sites. A summary of potential *Phragmites* removal sites by MDE 8-digit watershed is included below in **Table 2-11**.

Table 2-11: Phragmites Removal Sites by Watershed

MDE 8-digit Watershed	Desktop Sites	Windshield Sites	Low Priority Sites & Acreages	Medium Priority Sites & Acreages	High Priority Sites & Acreages	Total Acres Assessed	Total Acres Not Assessed
Severn River (02131002)	58	22	11 (0.1- 2.8 ac)	3 (0.4 -4.0 ac)	8 (1.3 – 18.4 ac)	54.6	28.2
Eastern Bay (02130501)	7	4	4 (0.1-18.7 ac)	0	0	19.5	8.7
Kent Island Bay (02130511)	6	6	3 (0.3-4.6 ac)	2 (1.0-30.4 ac)	1 (26.9)	63.5	0
Total[1]	**71**	**32**	**35.6**	**36.2**	**65.7**	**137.5**	**36.9**

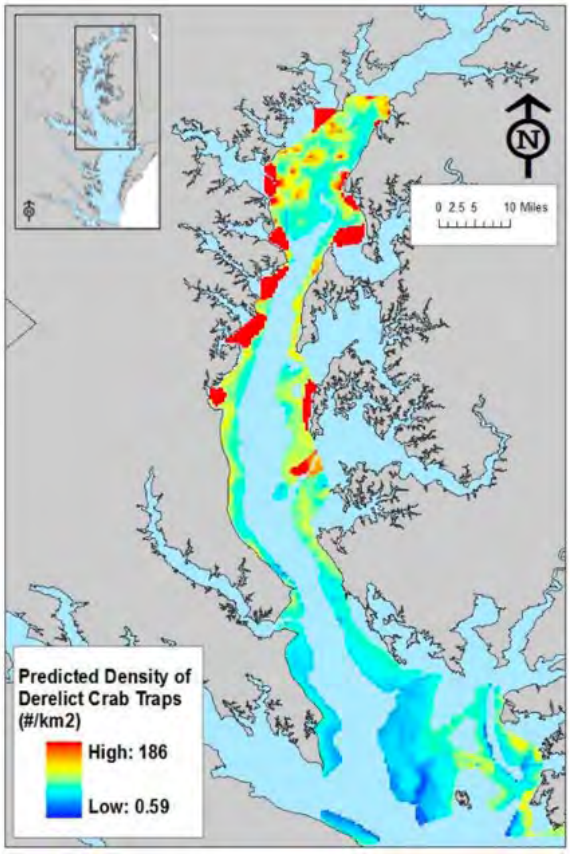
[1]*Due to rounding, totals may not equal the sum of all individual classification impacts.*

The specific size of potential *Phragmites australis* removal areas within each site cannot be determined based on desktop and windshield investigations and would require a walkthrough field investigation. A detailed table of the *Phragmites* removal sites that were investigated during the desktop and windshield assessments is included in **Appendix H**.

2.3.5 Derelict Crab Pot Removal

Derelict crab pots are the predominant derelict fishing gear found in the Chesapeake Bay because of the large number deployed and the long fishing season (April to November). According to a 2016 study by VIMS, derelict crab pots passively trap approximately 3.3 million crabs per year in the Chesapeake Bay. In addition to blue crabs, over forty other aquatic species have been documented in abandoned crab pots in the Chesapeake Bay, including the diamondback terrapin, a state listed species of special concern (Scheld, et al., 2016). Derelict pots are typically lost during storms or accidentally cut loose by boat propellers. Scheld et al. (2016) found that an estimated 12-20% of deployed crab pots are lost each year. The pots stay on the bay bottom and continue to trap crabs, finfish, turtles, and other aquatic species. A derelict crab pot can persist for months or even several years, depending on the construction of the pot. For instance, in the Chesapeake Bay, crab pots were estimated to persist for 1-7 years (Scheld, et al., 2016). Derelict pots are concerning due to their impact on sensitive habitats, by trapping and killing non-target species, as well as their economic impact caused from the loss of recreational and commercial harvest of valuable species. Lastly, they pose a safety threat to human navigation. Derelict crab pot removal efforts would provide functional uplift by reducing bycatch and mortality rates of blue crabs and finfish as well as aid in the recovery and conservation of a variety of benthic habitats, SAV, marshes, turtle nesting beaches, and oyster reefs.

Figure 2-2: Predicted Density of Derelict Crab Pots (ORP 2024)



Oyster Recovery Partnership (ORP) created a hotspot graphic showing the predicted density of derelict crab pots in the Upper Chesapeake Bay (**Figure 2-2**). Based on ORP's prediction model, derelict crab pots are concentrated near the confluences of most rivers and the Bay. Derelict crab pot removal mitigation efforts would focus on the mouths of the Severn, Magothy, South, and Chester Rivers.

2.3.6 Hatchery Funding

Two types of hatcheries, a warm water fish hatchery and an oyster hatchery, would be considered for lump sum donations. MDNR manages the Unicorn Lake Hatchery, a warm water fish hatchery located near Millington, Maryland in the Upper Chester River MDE 8-digit watershed. The MDNR Fishing and Boating Services Hatcheries Division is responsible for production of nearly two dozen species for fish stock enhancement, education and outreach, shellfish production, cooperative fish culture projects, and restoration of anadromous species in Maryland waters of the Chesapeake Bay (MDNR, 2025b). The Horn Point Oyster Hatchery located in Cambridge,

Maryland in the Lower Choptank (02130403) MDE 8-digit watershed is one of the largest oyster hatcheries on the East Coast and produces a variety of oyster larvae for use in oyster research, oyster restoration, and educational projects. A lump sum donation to one or both hatcheries would be made as either out-of-kind mitigation or to offset potential fish kills during construction. The donation amount would be determined during permitting through coordination with regulatory agencies.

2.3.7 Artificial Reef Creation

Artificial reef creation would offset impacts to tidal open water by providing new rough bottom habitat for reef-associated species found in the Chesapeake Bay and its tidal tributaries (Loftus et al., 2007). The Maryland Artificial Reef Initiative (MARI) includes over 60 private, state, and Federal partners, and acts as a funding mechanism (using private and corporate donations) for reef development in Maryland. MARI is dedicated to preserving, restoring, and creating fish habitat in tidewater Maryland (MDNR, 2025a). Through coordination with MDNR's Artificial Reef Coordinator, three existing reef sites currently accepting materials were identified: Hollicutt's Noose in the Eastern Bay MDE 8-digit watershed, Hackett Point/Dolly's Lump in the Lower Chesapeake Bay watershed, and Love Point in the Middle Chesapeake Bay watershed but within close proximity to the Kent Island Bay watershed and the Bay Crossing Study project. The MDTA would coordinate with MDNR to either contribute bridge decking material from the existing spans to an existing artificial reef or determine a location to create a new reef or deploy artificial reef balls. The size of a new reef or number of reef balls to be deployed would also be determined through coordination with MDNR.

2.4 Reforestation Law

Table 2-12 presents a summary of the impacts and anticipated mitigation needs for forest and woody cluster impacts associated with the Preferred Alternative subject to Maryland Reforestation Law. Reforestation Law impacts occur within the Severn River (02131002), Kent Island Bay (02130511), and Eastern Bay (02130501) MDE 8-digit watersheds. **Table 2-13** presents a summary of the impacts and anticipated mitigation needs for forest and woody cluster impacts associated with the optional SUP subject to Maryland Reforestation Law. The optional SUP would impact an additional 0.2 acres of forests and woody clusters subject to Reforestation Law.

Reforestation Law impacts include impacts to forests and woody clusters (areas of woody vegetation that do not meet the definition of a forest) outside of the Chesapeake Bay Critical Area and total 10.4 acres. The mitigation ratio for Reforestation Law impacts is assumed to be 1:1 resulting in a total mitigation need of 10.4 acres.

Table 2-12: Reforestation Law Impacts and Mitigation Needs

MDE 8-digit Watershed	Impact (AC)	Mitigation Ratio	Mitigation Need (AC)
Severn River (02131002)	5.2	1:1	5.2
Kent Island Bay (02130511)	3.2		3.2
Eastern Bay (02130501)	2.0		2.0
Total	**10.4**		**10.4**

Table 2-13: Reforestation Law Optional SUP Impacts and Mitigation Needs

MDE 8-digit Watershed	Impact (AC)	Mitigation Ratio	Mitigation Need (AC)
Severn River (02131002)	<0.1	1:1	<0.1
Kent Island Bay (02130511)	0.2		0.2
Eastern Bay (02130501)	0		0
Total	**0.2**		**0.2**

2.4.1 Desktop Search

The MDTA will prioritize on-site reforestation within the project right-of-way where feasible. However, the extent of available on-site reforestation cannot be determined until final design. To ensure that opportunities exist for off-site mitigation, if needed, a search for potential Reforestation Law mitigation opportunities on public lands within the affected counties and watersheds was completed by conducting a desktop GIS search to identify potential reforestation opportunities on public lands. Planting sites were identified by evaluating where open land, public land, and protected land intersect. A definition of these land uses is outlined below.

- Open land is defined as areas of "natural succession, turf grass, harvested forest, cropland, and pasture/hay" in the Chesapeake Conservancy 2018 Land Use Land Cover (LULC) layer with areas identified as "medium-density residential" and "high-density residential" in the Maryland Department of Planning (MDP) 2018 LULC layer removed. NWI-mapped wetlands were also removed.
- Public land is defined as non-military Federal land, MDNR owned land, and County-owned land.
- Protected land is defined as areas within conservation easements, MDNR-owned land, and local parks as shown in the Maryland Local Protected Land GIS layer.

Other desktop resources that were considered while assessing the results included NWI and MDNR wetlands and waterways, Wetlands of Special State Concern (WSSC), potential Forest Interior Dwelling Species (FIDS) habitat, CBCA, and contiguous forest. A total of 14 potential off-site Reforestation Law mitigation sites were identified and carried forward to the windshield assessment.

2.4.2 Windshield Site Assessment

A windshield assessment of each potential off-site Reforestation Law mitigation site was completed to further assess each site's potential for mitigation and determine whether a site should be retained for future field investigations. Data collected during the windshield assessment included composition of adjacent vegetation including areas dominated by non-native, invasive species; current land use; geomorphic position, access to the site; and the presence of overhead utilities. This data was used to determine a priority rating of high, moderate, or low for any future field investigations. High priority sites were those that met most of the criteria considered during the windshield assessment. Moderate priority sites were those that met some criteria and appeared to have one or more potential challenges for reforestation. Low priority sites are those that met few criteria or are currently a regenerating forest. Any sites that were not visible from a

public road were not given a priority ranking but will be retained and assessed during future field investigations as needed.

2.4.3 Reforestation Law Mitigation Sites

Out of the 14 potential Reforestation Law mitigation sites identified during the windshield assessment, three sites were considered high priority, four sites were considered moderate priority, four sites were considered low priority, three sites were dropped from consideration, and one site was not visible from the road right-of-way. Site size ranged from 14.2 to 33.1 acres. Based on these findings, there appears to be ample off-site opportunity on public lands to meet the Reforestation Law requirement if impacts to forests outside the CBCA cannot be compensated by on-site plantings. A table summarizing the results of the forest mitigation windshield assessment is included in **Appendix E**.

2.5 Chesapeake Bay Critical Area

Table 2-14 presents a summary of the impacts and anticipated mitigation needs for forest and woody cluster impacts within the Critical Area Expanded Buffer and the remainder of the Critical Area associated with the Preferred Alternative. **Table 2-15** presents impacts and anticipated mitigation needs for forest and woody cluster impacts within the Critical Area Expanded Buffer and the remainder of the Critical Area associated with the optional SUP. Critical Area impacts occur within the Severn River (02131002), Kent Island Bay (02130511), and Eastern Bay (02130501) MDE 8-digit watersheds.

Critical Area impacts include impacts to forests and woody clusters (areas of woody vegetation that do not meet the definition of a forest). Impacts associated with the Preferred Alternative total 8.2 acres within the Expanded Buffer and 39.2 acres within the 1,000-foot buffer. The mitigation ratios for these impacts will need to be coordinated with the Critical Area Commission. However, it is assumed for the purposes of this document, that the mitigation ratio for Preferred Alternative impacts to forest and woody clusters within the Expanded Buffer are 3:1 and the ratio for impacts within the Critical Area outside the Expanded Buffer is 2:1, resulting in total estimated mitigation needs of 24.9 acres within the Expanded Buffer and 78.6 acres within the Critical Area outside the Expanded Buffer. Impacts associated with the optional SUP total 0.6 acres within the Expanded Buffer and 0.7 acres within the Critical Area outside the Expanded Buffer resulting in mitigation needs of 1.8 and 1.2 acres, respectively.

Table 2-14: Forest and Woody Cluster Impacts and Mitigation Needs (AC)

MDE 8-digit Watershed	Critical Area Expanded Buffer			Critical Area outside Expanded Buffer[1]		
	Impact	Mitigation Ratio	Estimated Mitigation[2]	Impact	Mitigation Ratio	Estimated Mitigation[2]
Severn River (02131002)	3.3	3:1	9.9	33.7	2:1	67.4
Kent Island Bay (02130511)	2.8		8.4	2.0		4.0
Eastern Bay (02130501)	2.2		6.6	3.6		7.2
Total[3]	**8.2**		**24.9**	**39.2**		**78.6**

[1]Critical Area outside Expanded Buffer equates to the area between the Expanded Buffer and the landward edge of the Critical Area boundary.

[2]Specific mitigation need cannot be determined until final design.
[3]Due to rounding, totals may not equal the sum of all individual classification impacts.

Table 2-15: Optional SUP Forest and Woody Cluster Impacts and Mitigation Needs (AC)

MDE 8-digit Watershed	Critical Area Expanded Buffer			Critical Area outside Expanded Buffer[1]		
	Impact	Mitigation Ratio	Estimated Mitigation[2]	Impact	Mitigation Ratio	Estimated Mitigation[2]
Severn River (02131002)	0.6	3:1	1.8	0.3	2:1	0.6
Kent Island Bay (02130511)	<0.1		0.1	0.4		0.8
Eastern Bay (02130501)	0		0	0		0
Total	**0.6**		**1.8**	**0.7**		**1.4**

[1]Critical Area outside Expanded Buffer equates to the area between the Expanded Buffer and the landward edge of the Critical Area boundary.
[2]Specific mitigation need cannot be determined until final design.

2.5.1 Desktop Search

Potential Critical Area forest and woody cluster mitigation sites were identified using the results from the wetland mitigation desktop analysis and windshield assessment (see **Section 2.1**) by determining where potential wetland mitigation sites overlapped the CBCA in GIS. Potential wetland mitigation sites within the CBCA were targeted for Critical Area reforestation to identify sites where mitigation credit for both resources could be achieved. These areas were then further refined to eliminate all existing forest or other reforestation constraints such as ponds or other open water. Sites that were smaller than ten acres were also eliminated.

2.5.2 CBCA Mitigation Sites

A total of 56 potential sites fell entirely or partially within the CBCA. Ten sites were considered moderate priority as the sites were easily accessible, did not show signs of current forest regeneration, and had no or low invasive species presence. Twelve sites were considered low priority as the sites had some forest regeneration occurring, were adjacent to or included overhead utilities, and included invasive species such as *Phragmites*. Thirty-two sites were not visible from the road but will be carried forward for any future field investigations, and two sites were dropped from consideration due to the parcels being enrolled in a MALPF easement. These sites range from 10.2 to 144.3 acres of potential mitigation. Based on these findings, there appears to be ample off-site opportunity to meet the CBCA reforestation requirement if impacts to forests and woody clusters within the CBCA cannot be compensated by on-site plantings. A summary of these sites can be found in **Appendix F**.

3 CONCLUSION

Overall, the range of potential mitigation opportunities identified and evaluated demonstrates that there are ample potential opportunities to offset the proposed natural resource impacts of the Bay Crossing Tier 2 Study Preferred Alternative. The opportunities listed are practicable based on the current level of information available.

Final selection of specific mitigation activities and sites would require additional field investigations, including field verification and feasibility assessments, as well as continued coordination with applicable permitting and resource agencies. This additional evaluation would be necessary to confirm suitability, refine mitigation design, and ensure regulatory acceptance of the proposed mitigation approach. The MDTA anticipates that mitigation will be further evaluated in final design and a comprehensive and detailed final mitigation package would be determined in coordination with the relevant regulatory agencies during project permitting.

4 REFERENCES

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Appendix A:
Wetland Mitigation Site Tables

May 2026

Appendix A: Nontidal Wetland Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
NTW-01	Kent Island Bay (02130511); Eastern Bay (02130501)	28.7	None	Hydric soils, abuts tidal gut, drainage ditches	Flat open field that is planted and mowed. Some small depressions/swales observed, but no significant drainage features or streams were visible. Area of low topography is visible to the northwest. Looks like a ditch may be present that drains off-site. Some Phragmites is visible in spots along the tree line.	Low
NTW-02	Kent Island Bay (02130511); Eastern Bay (02130501)	21.5	None	Hydric soils, includes potential existing wetland	A mostly flat open corn field. Drainage ditch observed along the southern side within the tree line. No drainage patterns or streams visible within the field. A depression/swale is present in the center of the field that appears to be planted with corn. No wetland vegetation is visible. Overhead utilities are present and trees are planted on a portion of the site.	Low
NTW-03	Lower Chester River (02130505)	23.1	None	Hydric soils, saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-04	Lower Chester River (02130505)	72.4	None	Hydric soils, existing pond, abuts tidal gut, stream, some forest	Not visible from the road.	N/A
NTW-05	Lower Chester River (02130505)	17.1	None	Hydric soils, includes created basins	Not visible from the road.	N/A
NTW-06	Lower Chester River (02130505)	41.9	None	Hydric soils, includes created catchments, NWI wetlands	Not visible from the road.	N/A
NTW-07	Lower Chester River (02130505)	53.2	None	Hydric soils, pond, stream/drainage ditches	Site is flat but does not sit low in landscape, and slopes down towards trees. Currently used for corn.	Low
NTW-08	Lower Chester River (02130505)	58.3	None	Hydric soils, dammed portion of Reed Creek, drainage ditches, other small catchments	Not visible from the road.	N/A
NTW-09	Kent Narrows (02130504)	13.1	None	Hydric soils, NWI wetland, saturation visible on aerial imagery	Tree plantings present along roadway. Some existing wetlands and Phragmites observed within the site. The remainder of site appears flat & lies low in the landscape. Forest conservation sign noted, overhead utilities along road, and ditch along road could impact access.	Low
NTW-10	Kent Narrows (02130504); Eastern Bay (02130501)	22.5	Maryland Environmental Trust	Hydric soils, existing wetlands, pond	Not visible from the road.	N/A
NTW-11	Kent Narrows (02130504); Eastern Bay (02130501)	24.9	Maryland Environmental Trust	Hydric soils, existing pond	Not visible from the road.	N/A
NTW-12	Eastern Bay (02130501)	19.3	None	Hydric soils, saturation visible on aerial imagery, drainage ditches	Visible areas were flat & low-lying, access from road and driveway.	Moderate

Appendix A: Nontidal Wetland Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
NTW-13	Eastern Bay (02130501)	21.5	Federal land	Hydric soils, saturation visible on aerial imagery, active irrigation	Not visible from the road.	N/A
NTW-14	Eastern Bay (02130501)	16.6	None	Hydric soils, abuts NWI wetland, stream/drainage ditches	Not visible from the road.	N/A
NTW-15	Eastern Bay (02130501)	35.3	Transfer Development Rights	Saturation visible on aerial imagery, inundated drainage ditches	Not visible from the road.	N/A
NTW-16	Eastern Bay (02130501)	12.6	Transfer Development Rights	Hydric soils, drainage ditches	Open field that has been mowed. Roadside ditch present, likely for stormwater conveyance. Drainage observed within the field to a large patch of Phragmites along the tree line at the eastern end of the site. Potential wetland/stream present at the eastern edge of the site. Utility line along road but does not cut through the field.	Moderate
NTW-17	Eastern Bay (02130501)	9.0	None	Hydric soils, drainage ditches	Flat, open (possibly hay) field that has been mowed. No streams or ditches visible from the road. Break in the tree line along the driveway may provide easy access.	Moderate
NTW-18	Eastern Bay (02130501)	9.9	None	Hydric soils, existing pond, saturation visible on aerial imagery	A pond is present at the eastern end of the site and is bordered by Phragmites and Phalaris. A flat grass/herbaceous field is present adjacent to the pond that does not appear to be mowed. The pond outlets south of major waterways. Site is accessible from the road and driveway.	Moderate
NTW-19	Eastern Bay (02130501)	6.5	None	Hydric soils, existing/partially dried out pond, saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-20	Eastern Bay (02130501)	39.8	None	Hydric soils, drainage ditches, saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-21	Eastern Bay (02130501)	21.9	Maryland Environmental Trust The Nature Conservancy	Hydric soils, saturation and inundation visible on aerial imagery	Planted with corn, flat landscape, with good access and trees lining edges of field. Landscape position is equal to the road.	High
NTW-22	Kent Narrows (02130504)	34.4	None	Hydric soils, several small ponds, adjacent to NWI wetlands	Flat agricultural field, with good access from adjacent parcel. Curious about hydrology at different times of the year.	Moderate
NTW-23	Kent Narrows (02130504)	13.4	None	Hydric soils, saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-24	Kent Narrows (02130504)	58.8	None	Hydric soils, created basin with ditch	Low lying field currently planted in soybeans with elevation only a few feet above adjacent large wetland system. Site is forested between wetland and field. Some portions of field may be a bit too high of elevation. Good access from road. Overhead utilities along road.	Moderate
NTW-25	Kent Narrows (02130504)	128.7	None	Hydric soils, NWI wetlands, drainage ditches, some saturation visible on aerial imagery	Wetland ditch observed along road is approximately two feet below elevation of field with good access from the road. Overhead utilities observed. Central portion of field appears higher in elevation.	Moderate

Appendix A: Nontidal Wetland Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
NTW-26	Lower Chester River (02130505)	36.9	None	Hydric soils, NWI wetlands, drainage ditches	Flat field planted with soybeans. Adjacent ditch does not appear to be wet. Further assessment needed to determine potential.	Moderate
NTW-27	Lower Chester River (02130505)	16.2	None	Hydric soils, stream, pond, drainage ditches	Not visible from the road.	N/A
NTW-28	Lower Chester River (02130505)	49.6	None	Hydric soils, dammed portion of Church Creek	Flat field currently planted with corn. Ditches that appear on aerial imagery are very shallow and dry. No obvious source of hydrology. Phragmites seen in the distance.	Low
NTW-29	Lower Chester River (02130505)	39.9	None	Hydric soils, pond, aerial saturation, abuts NWI WLs	Flat field with some berms. Some areas sit higher in the landscape and would likely require several feet of cut to reach hydrology.	Moderate
NTW-30	Lower Chester River (02130505)	37.7	None	Hydric soils, saturation and inundation visible on aerial imagery, NWI wetlands	Some sparse woody regeneration observed. Site sits low in the landscape. Phragmites observed in the distance. Northern half has good potential. Unable to see portion of the site from the road.	High
NTW-31	Lower Chester River (02130505)	22.5	None	Some hydric soils, NWI mapped wetlands	Site planted with soy. Field slopes up on sides, but center is lower in the landscape. A potential riser structure observed in the center of the field.	Moderate
NTW-32	Lower Chester River (02130505)	10.2	None	Property for sale, partially paved, remainder is forested with NWI wetlands	South side of the site is a paved lot. Underground utilities are likely present and associated with the building. A wetland swale (likely constructed) is present between the highway and the paved lot. The site is forested to the north and west of the business. Mostly mature trees are present (sweet gum, maple, pine). Stream and possible floodplain wetland is present at the western end of the site. A few small debris (building materials) piles are present on the edge of the woods.	Low
NTW-33	West River (02131004)	30.0	Federal land	Watershed Registry Resources site, some hydric soils, near shoreline, could potentially include tidal creation depending on how many trees would need to be cleared	Not visible from the road.	N/A
NTW-34	West River (02131004)	24.0	None	Abuts NWI, Watershed Resources Registry site, sits low in the landscape	Not visible from the road.	N/A
NTW-35	West River (02131004)	28.3	Maryland Agricultural Land Preservation Foundation	May have potential for tidal creation, Watershed Resources Registry site, abuts river, flat, some hydric soils	Dropped from consideration due to MALPF easement.	N/A
NTW-36	West River (02131004)	11.7	Maryland Agricultural Land Preservation Foundation	Abuts Tenthouse creek and Cove, WRR, adjacent hydric soils	Dropped from consideration due to MALPF easement.	N/A

Appendix A: Nontidal Wetland Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
NTW-37	West Chesapeake Bay (02131005)	66.1	Purchase of Development Rights	Watershed Resources Registry site, several streams, some small areas of hydric soils	Flat field planted with corn. Drainage swale within the field outlets to a stream channel. Channel has some incision/exposed roots on the bank but is not sinuous. Drainage swale parallels the farm road within the site. No utilities are visible. Easily accessible. Some areas without corn appear saturated. No streams or ditches are visible within the site.	Moderate
NTW-38	West Chesapeake Bay (02131005)	24.2	Maryland Agricultural Land Preservation Foundation	Hydric soils, Watershed Resources Registry Site, stream, abuts NWI wetland	Dropped from consideration due to MALPF easement.	N/A
NTW-39	West River (02131004)	26.3	Local Protected Land - Protected Open Spaces	Watershed Resources Registry site, some hydric soils, many areas of saturation visible on aerial imagery	Flat field planted with soybeans and grasses. Surrounding area is flat pasture and has a forested buffer. No distinctive features visible from the roadway.	Moderate
NTW-40	West River (02131004)	12.5	None	Hydric soils, stream, Watershed Resources Registry site, faint saturation visible on aerial imagery	Flat, open field with portions planted with soybeans. Some wetland vegetation is present in areas. The site slopes toward the tree line to the north. A drainage swale is present within the field, but no streams or ditches are visible. A lot of used and unused farm equipment is present near buildings at the western end of the site.	Moderate
NTW-41	West River (02131004)	8.2	None	Hydric soils, Watershed Resources Registry site, abuts South Creek, saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-42	West River (02131004)	7.1	None	Watershed Resources Registry site, hydric soils, pockets of saturation visible on aerial imagery	Not visible from the road.	N/A
NTW-43	West River (02131004)	5.9	None	Abuts stream, hydric soils, Watershed Resources Registry site	Not visible from the road.	N/A
NTW-44	South River (02131003)	23.8	None	Abuts pond and stream, hydric soils, Watershed Resources Registry site, pockets of saturation visible on aerial imagery near pond	The buffer around the pond appears to have wetland vegetation and saturation. A stormwater basin at the toe-of-slope drains within a channel towards the pond. The surrounding field is also sloping towards the pond. Some wetland vegetation is visible in lower spots within the field. Access would likely be from the farm property.	High
NTW-45	Little Patuxent River (02131105)	12.3	Local Protected Land - Fee Simple	Hydric soils, flat, abuts stream, trees scattered throughout site	Not visible from the road.	N/A
NTW-46	West Chesapeake Bay (02131005)	23.5	None	Hydric soils, Watershed Resources Registry site, adjacent NWI	A palustrine forested wetland is present in one portion of the site. Open meadows are present throughout the rest of the site. The meadows are mostly flat/convex with large patches of Phragmites. A sign is present stating “Meadow Restoration Project.” One intermittent/ephemeral stream channel is present slightly northeast of the first parking area. The area between the existing NWI wetland and the meadow is forested with sweetgum, maple, oak, pine, and cedar.	Low

Appendix A: Nontidal and Tidal Wetland Combination Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
TW-01	Lower Chester River (02130505)	96.7	Maryland Environmental Trust	Tidal gut, streams/drainage ditches, hydric soils	Site is flat with a strip of trees. Phragmites observed.	Low
TW-02	Lower Chester River (02130505)	193.5	Maryland Environmental Trust	Tidal gut, stream, herbaceous shoreline, hydric soils	Some portions of the site appear higher than road. Partially planted with corn, scattered trees and regeneration observed in areas. Far side of inlet is not visible from the road.	Low
TW-03	Lower Chester River (02130505)	100.5	None	Tidal gut, existing wetlands/POWs, hydric soils	South side of site is high in landscape. Potential berm observed as well as pockets of Phragmites.	Low
TW-04	Lower Chester River (02130505)	6.7	None	Tidal gut separated from stream by dam	Not visible from road.	N/A
TW-05	Lower Chester River (02130505)	64.4	Maryland Environmental Trust	Abuts hydric soils, herbaceous shorelines, existing wetlands	Not visible from road.	N/A
TW-06	Kent Narrows (02130504)	18.0	None	Hydric soils, tidal gut separated from pond by dam, saturation visible on aerial imagery, emergent shoreline	Not visible from road.	N/A
TW-07	Kent Narrows (02130504)	20.8	None	Hydric soils, tidal gut, saturation visible on aerial imagery	Relatively flat, low-lying field planted with soybean. Phragmites dominate the adjacent wetland	Low
TW-08	Kent Narrows (02130504)	50.8	Maryland Environmental Trust	Hydric soils, saturation visible on aerial imagery, tidal gut, shoreline is mostly forest/scrub shrub	Not visible from road.	N/A
TW-09	Eastern Bay (02130501)	35.4	None	Hydric soils, emergent/scrub-shrub shoreline, tidal gut	Not visible from road.	N/A
TW-10	Eastern Bay (02130501)	33.2	None	Hydric soils, abuts tidal gut, NWI wetlands, saturation visible on aerial imagery	Wetlands are likely in the low topography. Cattails and Phragmites visible. A forested buffer of saplings and some mature trees (sweetgum and oak) at the northern end of the site drains to an area of low topography through the field and eventually to the tidal gut. Soybean field is present immediately adjacent to the forested buffer. Site is flat and accessible.	Moderate
TW-11	Eastern Bay (02130501)	23.4	None	Abuts tidal gut, existing pond, saturation visible on aerial imagery, drainage ditches	Not visible from road.	N/A
TW-12	Eastern Bay (02130501)	45.7	None	Overlaps two parcels, tidal gut, hydric soils, drainage ditches, saturation visible on aerial imagery, emergent shoreline	Not visible from road.	N/A
TW-13	Eastern Bay (02130501)	42.0	None	Tidal guts, pond, drainage ditches, saturation visible on aerial imagery	Not visible from road.	N/A
TW-14	Eastern Bay (02130501)	14.3	None	Abuts NWI wetland, hydric soils	Flat field is present with some depressions/swales visible. Access is possible through a gap in the forested buffer. Area is sloped towards the existing tidal wetlands which appear to be a monoculture of Phragmites. A cluster of mature trees is present in the center of the site. The surrounding area to the east is forested and undeveloped.	Moderate
TW-15	Eastern Bay (02130501)	20.8	None	Appears to be dammed tidal gut, emergent shoreline	Not visible from road.	N/A

Appendix A: Nontidal and Tidal Wetland Combination Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
TW-16	Eastern Bay (02130501)	13.2	None	Tidal gut with potential to expand	The portion of the site visible from the road is a mowed field with some rolling topography. No drainage ditches or streams are visible. A tree line is present between the roadway and the site.	Low
TW-17	Eastern Bay (02130501)	22.2	None	Multiple parcels, potential to expand existing tidal wetlands, hydric soils	Not visible from road.	N/A
TW-18	Eastern Bay (02130501)	26.6	None	Hydric soils, potential to expand tidal wetlands	Flat, slightly convex, mowed field that eventually slopes toward a break in the trees toward the east. Phragmites is visible along the tree line. A portion of the site is fenced along the road and there is an overhead utility line along the south end of the site. A dense tree line is present along the tidal wetland at the northeast end of the site.	Low
TW-19	Kent Island Bay (02130511)	25.0	None	Hydric soils, ditches, abuts tidal gut	A concave cornfield sloping toward a stream feature which drains into a mature tree line (stream is outside of view). Hydrology for stream is stormwater runoff via a pipe from an agricultural field on the east side of the road and roadway. Some Phragmites at the pipe outlet and Phalaris within the incised stream channel. Overhead utilities are present adjacent to the roadway. A steep swale is present between the site and road.	Low
TW-20	Eastern Bay (02130501)	17.2	None	Hydric soils, drainage ditches, saturation visible on aerial imagery, abuts existing tidal wetlands	Flat field planted with soybeans and appears to sit low in landscape. Adjacent overhead utilities present.	Moderate
TW-21	Eastern Bay (02130501)	10.6	None	Hydric soils, potentially expand existing tidal wetland	Flat field planted with soybeans, moderate position in the landscape. Trees along edge of field. Public landing and Phragmites along shoreline.	Low
TW-22	Eastern Bay (02130501)	15.5	None	Hydric soils, emergent shoreline, overlaps multiple parcels	Not visible from road.	N/A
TW-23	Eastern Bay (02130501)	103.8	Maryland Environmental Trust and The Nature Conservancy lands	Hydric soils, emergent shorelines, existing tidal wetlands	Not visible from road.	N/A
TW-24	Kent Narrows (02130504)	54.2	None	Hydric soils, drainage ditches, mostly emergent shoreline	Not visible from road.	N/A
TW-25	Lower Chester River (02130505)	168.5	Rural Legacy and DNR owned land	Hydric soils, existing tidal wetlands, drainage ditches	Not visible from road.	N/A
TW-26	Lower Chester River (02130505)	183.1	DNR owned land	Hydric soils, existing tidal wetlands, POWs	Open field, partially pasture. Phragmites and many strips of trees and regeneration observed. Equestrian trails throughout the site. Trees are a major constraint. Could potentially create tidal wetland around trees or consider site for nontidal wetlands only.	Low
TW-27	Lower Chester River (02130505)	32.0	None	Existing wetlands, emergent shoreline	Not visible from road.	N/A
TW-28	Lower Chester River (02130505)	38.6	None	Existing tidal wetlands, hydric soils, pond	Not visible from road.	N/A
TW-29	Lower Chester River (02130505)	76.3	None	Hydric soils, existing tidal and nontidal wetlands, ponds	Not visible from road.	N/A

Appendix A: Nontidal and Tidal Wetland Combination Mitigation Sites

Site ID	MDE 8-digit Watershed	Acres	Easements / Protected Lands	Desktop Resources	Windshield Notes	Priority
TW-30	Lower Chester River (02130505)	55.6	Chesapeake Bay Foundation owned land	Ponds, drainage ditches, abuts tidal wetlands	Not visible from road.	N/A
TW-31	Lower Chester River (02130505)	67.5	Chesapeake Bay Foundation owned land	Ponds, existing tidal/NT wetlands	Not visible from road.	N/A
TW-32	Lower Chester River (02130505)	12.9	None	Abuts existing tidal wetland, saturation visible on aerial imagery	Site is relatively high in the landscape but slopes toward the shoreline. Significant grading necessary in northern portion. Southern portion is lower in the landscape with more creation potential. Phragmites in adjacent wetland. Some tree impacts would incur.	Low
TW-33	Lower Chester River (02130505)	18.2	None	Abuts existing tidal wetland, pond	Not visible from road.	N/A

Appendix B:
Maryland Stream Mitigation Framework Memorandum

May 2026

Chesapeake BAY CROSSING STUDY
TIER 2 NEPA

MARYLAND STREAM MITIGATION FRAMEWORK STREAM CALCULATOR MEMORANDUM

Maryland Transportation Authority
MDTA

APRIL 2026

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APPENDICES

Appendix A RBP Assessments
Appendix B Calculator Results

ABBREVIATIONS AND ACRONYMS

AGOL	ArcGIS Online
BCST2	Chesapeake Bay Crossing Study
CMP	Corrugated Metal Pipe
FCAM	Functional or Conditional Assessment Methodology
LOD	Limit of Disturbance
MSMF	Maryland Stream Mitigation Framework
MDTA	Maryland Transportation Authority
MeC	Meredith Creek Watershed
RPA	Recommended Preferred Alternative
RBP	Rapid Bioassessment Protocol
ROW	Right of Way
SUP	Shared Use Path

1 INTRODUCTION

The Chesapeake Bay Crossing Study (BCST2) is a two-tiered engineering and environmental study being advanced by the Maryland Transportation Authority (MDTA) in coordination with the Federal Highway Administration (FHWA). The Bay Crossing Study is addressing existing and future transportation issues at the William Preston Lane, Jr. Memorial Bridge (Bay Bridge) and its approaches along U.S. 50/301.

As part of the environmental review process, eight streams were identified to be permanently impacted by the Bay Crossing Study. The identified streams were assessed to determine the existing conditions and functional health of the stream, which can then be compared and evaluated against the proposed conditions anticipated after the project is complete to determine functional feet of impacts anticipated from the project. This memorandum summarizes the assessment methods used and the results of the functional analysis performed.

2 BACKGROUND INFORMATION

MDTA has selected Alternative C as the MDTA Recommended Preferred Alternative (RPA) which would replace the existing Bay Bridge spans with two new bridge spans and would consist of six lanes along U.S. 50/301 on the Western Shore (three per direction), eight lanes on a new bridge (four per direction), and six lanes along U.S. 50/301 on the Eastern Shore (three per direction). The two new bridge spans would include one span to the south and one span in between the location of the existing bridge spans. The approach roadways would remain on the existing roadway alignment, except where necessary to connect to the new bridge spans.

The study area is predominately located within MDTA right-of-way (ROW) but does encompass some private property. All nontidal streams identified within the MDTA RPA are located along the western shore. The impacted streams along the western shore are located within the Severn River basin (HUC 8: 02131002).

2.1 Existing Natural Resources

The MDTA RPA limit of disturbance (LOD) and optional shared-use path (SUP) LOD were reviewed for stream impacts to perennial and intermittent channels. A total of seven nontidal stream reaches were identified within the MDTA RPA LOD and one additional nontidal stream reach was identified within the optional SUP LOD that has the potential to be impacted. Approximately 655 linear feet of non-piped waters of the U.S. were identified within the MDTA RPA. Of this, approximately 283 linear feet of the identified waters were perennial and 372 linear feet were intermittent. The optional SUP LOD includes 30 linear feet of intermittent channel. **Figure 2-1** shows the locations of each nontidal reach identified within the LODs. Table 2-1 lists the individual streams identified within the LOD and optional SUP LOD. The “MeC” abbreviation added to the delineated stream number indicates the stream is part of the Merideth Creek Watershed. At this early phase of design, impacts were assumed to be permanent to provide a conservative impact estimate for this analysis. Impacts will be refined in later phases of design to identify permanent versus temporary impacts when more detailed engineering is available.

Figure 2-1: Study Area Map

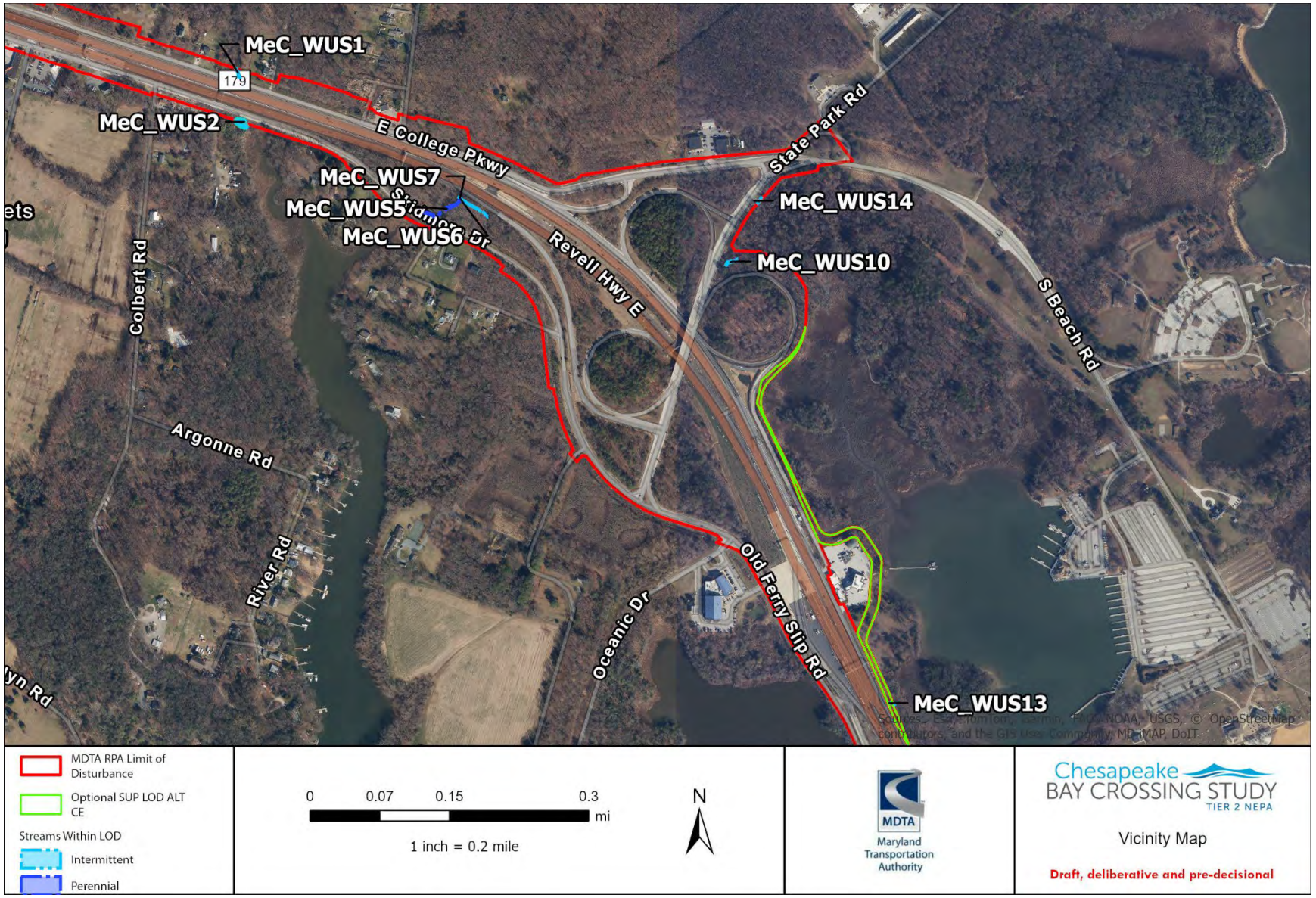


Table 2-1: Stream Impacts

Site Name	Classification	Linear Feet in LOD
MeC_WUS1	Intermittent	51
MeC_WUS2	Perennial	33
MeC_WUS5	Perennial	250
MeC_WUS6	Intermittent	181
MeC_WUS7	Intermittent	23
MeC_WUS10	Intermittent	71
MeC_WUS14	Intermittent	46
Total		**655**
Optional SUP Impacts		
MeC_WUS13	Intermittent	30

3 SITE ASSESSMENTS

3.1 Methodology

CRI used the US Army Corps of Engineers' instructions for the *Maryland Stream Mitigation Framework Version 1 Final Manual for Stream Impact and Stream Mitigation Calculator* (MSMF Calculator; September 2023) as guidance to determine the appropriate approved Functional or Conditional Assessment Methodology (FCAM) for each impacted stream reach. All reaches identified within the LOD were less than 300 LF and were not considered to be high quality streams. The perennial reaches within the study area were assessed using the US Environmental Protection Agency's Rapid Bioassessment Protocol (RBP) Habitat Forms for low gradient streams to evaluate the channels. The intermittent reaches were evaluated using the Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Intermittent Streams).

3.2 Pre-Assessment

Prior to field assessments, specific site information was gathered in an ArcGIS online (AGOL) map to accurately navigate and assess the site. Mapped data included a centerline of each stream reach identified for evaluation and the project study area. Drainage areas were delineated for all impacted streams. Following the MSMF calculator guidance, drainage areas were collected from the midpoint of the impacted reach. For some reaches, a Stream Stats drainage area could not be calculated or did not well represent available stormwater data; therefore, drainage areas were manually delineated using 2-ft contours and available SHA stormwater/storm drain data.

3.3 Site-Assessment

While on-site, the entire study reach was walked by the field crew to determine if the study reach maintained the same Rosgen Stream Classification type. The field crew identified any significant changes in channel dimensions and valley widths that would change the stream classification and require the reach to be split into separate study reaches. Additionally, the field crew determined if there were any major tributaries entering the stream that contributed more than 10% of stream

flow to the system. During the site walk, photos were collected at the upstream and downstream extents of each reach as well as any notable features within the reach.

3.4 RBP Habitat

The two types of RBP Habitat Forms were used during the site assessments based on the stream type and slope. After traversing the entire reach, the team assigned scores to each category of the RBP form while closely examining site conditions. The low gradient slope determination was made by the field crews using best professional judgement and only considering the conditions within the evaluation reach. The functions assessed for each stream and gradient type are outlined in **Table 3-1.**

Table 3-1: RBP Functions Assessed

Habitat Parameter	Low Gradient Perennial	Low Gradient Intermittent
Epifaunal Substrate/Available Cover	X	X
Pool Substrate Characterization	X	X
Pool Variability	X	
Sediment Deposition	X	X
Channel Flow Status	X	
Channel Sinuosity	X	X
Channel Alteration	X	X
Bank Vegetative Protection (Left Bank/Right Bank)	X	X
Riparian Vegetative Zone Width (Left Bank/Right Bank)	X	X

4 RESULTS AND DISCUSSION

4.1 RBP Habitat

Table 4-1, below, shows the sites evaluated using the RBP Habitat Forms. All delineated streams within the LOD are considered permanently impacted. Individual habitat metric scores based on RBP habitat scoring are presented in **Table 4-2** for perennial streams and **Table 4-3** for intermittent streams.

Table 4-1: Streams Evaluated Using RBP Habitat Forms

Site Name	Classification	Linear Feet in LOD
MeC_WUS1	Intermittent	51
MeC_WUS2	Perennial	33
MeC_WUS5	Perennial	250
MeC_WUS6	Intermittent	181
MeC_WUS7	Intermittent	23
MeC_WUS10	Intermittent	71
MeC_WUS14	Intermittent	46
Optional SUP Impacts		
MeC_WUS13	Intermittent	30

4.1.1 MeC_WUS2

MeC_WUS2 is a perennial stream located off Skidmore Drive, which is itself adjacent to U.S 50/301. The stream segment within the LOD is fed by a damaged CMP (Corrugated Metal Pipe) with an approximate 0.5 ft drop into a plunge pool containing a large amount of bamboo debris. A live stand of bamboo was present along the stream bank opposite the culvert. MeC_WUS2 contained 10-30% stable habitat less than desirable for colonization. The stream segment overall appeared stable with the exception of the broken pipe.

4.1.2 MeC_WUS5

MeC_WUS5 is a perennial stream culverted on both ends between Skidmore Drive and U.S 50/301. The stream segment within the LOD had erosion noted upstream and deposition noted downstream. MeC_WUS5 contained 10-30% stable habitat less than desirable for colonization. The stream banks were heavily shaded by canopy but were not well vegetated. Despite this, the width of the sparse riparian zone was optimal on either side of the stream. Otherwise, scores for MeC_WUS5 fell largely within the “Marginal” category.

Table 4-2: Perennial RBP Results

RPB Category	MeC_WUS2	MEC_WUS5
Slope	<2%	<2%
1. ES/AC	6	6
2. PSC	11	6
3. PV	8	6
4. SD	12	14
5. CFS	6	8
6. CA	14	14
7. CS	5	6
8. BLSB	4	4
8. BSRB	4	4
9. VPLB	5	5
9. VPRB	4	5
10. RVZL	1	9
10. RVZR	8	9

4.1.3 MeC_WUS1

MeC_WUS1 is an intermittent channel that was flowing at the time of survey. The channel runs through an herbaceous meadow perpendicular to East College Parkway which is itself parallel to U.S. 50/301. MeC_WUS1 contained a 10-30% mix of stable habitat and scored sub-optimal or marginal in all categories except for lack of channel alteration and sediment deposition that scored optimal. Both banks were well vegetated with sub-optimal riparian zone widths.

4.1.4 MeC_WUS6

MeC_WUS6 is an intermittent channel that was flowing at the time of survey. The channel runs parallel to U.S. 50/301 between U.S. 50/301 and Skidmore Drive. MeC_WUS6 is partially fed by the culvert feeding MeC_WUS5. MeC_WUS6 contained a 10-30% mix of stable cover and scored sub-optimal or marginal in all categories except for optimal scores in channel alteration, sediment deposition, and left bank vegetation zone width. A large amount of organic matter was observed within the channel.

4.1.5 MeC_WUS7

MeC_WUS7 is an intermittent channel that was dry at the time of survey. The channel runs parallel to U.S. 50/301 between U.S 50/301 and Skidmore Drive and feeds into MeC_WUS5. MeC_WUS7 contained a 30-50% mix of stable habitat well suited for full cover potential. Other scores ranged from optimal (channel alteration, sediment deposition, and bank stability) to marginal (vegetative protection) to poor (sinuosity).

4.1.6 MeC_WUS10

MeC_WUS10 is an intermittent channel that was wet but not flowing at the time of survey. The channel runs perpendicular to State Park Road, adjacent to the eastbound U.S. 50/301 entrance ramp. The slope leading to the channel was heavily incised with signs of active erosion. Downstream featured a large amount of deposition, organic matter and debris. MeC_WUS10 contained a 10-30% mix of stable habitat, primarily in the form of leaf packs, and scored sub-

optimal or marginal in all other categories with the exception of channel alteration, which scored optimal.

4.1.7 MeC_WUS13

MeC_WUS13, which would only be impacted by the optional SUP, is an intermittent channel that was not flowing at the time of survey but contained standing water. The reach begins at a concrete culvert, flowing away from U.S. 50/301, fed by roadway drainage from a portion of the grass median of U.S. 50/301. The channel is somewhat vegetated but colonized with *Phragmites australis* (common reed). A moderate amount of sediment deposition was observed just downstream of the culvert. The channel contained less than 10% stable habitat and scored Marginal or Poor in the majority of categories, with the exception of channel alteration, which scored Sub-optimal.

4.1.8 MeC_WUS14

MeC_WUS14 is an intermittent channel that was flowing at the time of survey. The channel runs parallel to State Park Road and is heavily shaded and somewhat blocked by riparian vegetation and woody debris. A fence runs alongside the left bank, and the right bank is constrained by the road. The channel contained a 30-50% mix of stable habitat well suited for colonization. The channel scored sub-optimal for a majority of categories and scored poor in sinuosity as the channel is almost entirely straight.

Table 4-3: Intermittent RBP Results

RPB Category	MeC_WUS1	MEC_WUS6	MeC_WUS7	MeC_WUS10	MeC_WUS13	MeC_WUS14
Slope	<2%	<2%	<2%	<2%	<2%	<2%
1. SD/AC	9	10	14	9	5	11
2. PSC	12	11	11	12	10	11
3. CA	19	17	17	20	15	18
4. SD	18	17	19	9	6	13
5. CS	6	4	5	8	3	5
6. BSLB	7	6	9	3	4	7
6. BSRB	7	6	9	3	4	7
7. BVPL	6	5	3	3	6	6
7. BVPR	6	5	5	3	6	6
8. WUVZL	7	9	4	6	2	6
8. WUVZR	8	3	9	6	1	5
MDP	50cm	25cm	N/A	75cm	5cm	2cm
ACW	2m	0.6m	0.5m	1.5m	0.5	0.5m
AWIRVZL	20m	40m	12m	23m	2m	2m
AWIRVZR	50m	9m	50+m	35m	1.5m	4m
EAF	<5 yrs	5-25 yrs	5-25 yrs	25-50 yrs	5-25 yrs	5-25 yrs
DVT	Deciduous	Deciduous	Deciduous	Deciduous	Deciduous	Deciduous
SSS	0-25%	0-25%	25-50%	50-75%	25-50%	25-50%

5 MARYLAND STREAM MITIGATION FRAMEWORK

5.1 Methodology

5.1.1 Stream Quality Rating

For this project, the “Stream Impact Calculator” was used to determine the functional feet of stream loss due to unavoidable impacts from the proposed interchange improvements. The stream impact calculator tab is broken into two primary sections: “Raw Change in Reach Value” and, to the right of that, “Stream Impact Adjustments” based on spatial and temporal factors. Using the Water Resources Registry online tool, reaches MeC_WUS 1, 2, 5, 6, and 7 received a site sensitivity score of 2, while MeC_WUS 10, 13 and 14 received a 1, which is reflected in the calculator. The results of these scores yield a final value for a reach based on existing vs. proposed conditions, which are captured in the “Stream Losses” column (USACE 2022 and USACE 2023). Because details of the “proposed conditions” are not available at the current level of design, a worst-case assumption of piping/culvert has been used as the proposed condition until additional design efforts allow for refinement of this assumption later in project development. The functional foot determination uses important factors such as drainage area, stream quality, and stream size to adjust the total stream length to better represent the functions and values of the stream that will be lost. The most important piece of data required for the “Raw Change in Reach Value” is the stream quality percentage rating, which uses the site assessment scores to

obtain a percentage rating for each reach. To obtain this score, all evaluated parameters were added and divided by the total score possible and converted to a percentage. The Stream Quality scores are summarized in **Table 5-1**.

5.2 Results and Discussion

5.2.1 Proposed Scores Summary

For the purpose of this early analysis, it is assumed that all stream impacts within the LODs are permanent and that all streams will be piped / culverted and the proposed condition stream quality scores for the assessed watercourses are 0. For this iteration of the calculator, the Proposed Mitigation Type selected was "Permittee Responsible." This approach will provide a "worst-case" estimate of functional linear foot impacts. If an appropriate bank is selected for mitigation, stream losses in functional feet will be reduced.

5.2.2 Stream Quality Score Summary

Based on the data collected from existing assessments and assumptions made from the proposed conditions, a Stream Quality Score has been generated for the existing and proposed conditions for each reach. The results for each reach are summarized in **Table 5-1**. The MSMF Calculator, summarizing the functional feet scores, can be found in **Appendix B**.

Table 5-1: Stream Quality Scores

Site Name	Impact Type	Existing Stream Quality Score Percentage	Proposed Stream Quality Score
MeC_WUS1	Permanent	66%	0%
MeC_WUS2	Permanent	44%	0%
MeC_WUS5	Permanent	48%	0%
MeC_WUS6	Permanent	58%	0%
MeC_WUS7	Permanent	66%	0%
MeC_WUS10	Permanent	52%	0%
MeC_WUS14	Permanent	59%	0%
Optional SUP Impacts			
MeC_WUS13	Permanent	39%	0%

5.2.3 Total Stream Losses

Table 5-2 shows the results of the MSMF Calculator for each of the sites assessed. See **Appendix B** for the complete MSMF Calculator results.

Table 5-2: Stream Losses

Site Name	Impact Type	Proposed Condition	Reach Length (LF)	Stream Loss (Functional Feet)
MeC_WUS1	Permanent	Piping/Culvert	51	-43
MeC_WUS2	Permanent	Piping/Culvert	33	-19
MeC_WUS5	Permanent	Piping/Culvert	250	-128
MeC_WUS6	Permanent	Piping/Culvert	181	-79
MeC_WUS7	Permanent	Piping/Culvert	23	-11
MeC_WUS10	Permanent	Piping/Culvert	71	-26
MeC_WUS14	Permanent	Piping/Culvert	46	-19
		Total	**655**	**-325**
Optional SUP Impacts				
MeC_WUS13	Permanent	Piping/Culvert	30	-8

6 CONCLUSION

Each of the 8 stream reaches were entered into the MSMF Calculator. The MSMF Calculator generated the potential amount of functional stream loss for each stream reach, based on the existing conditions, and assumed alterations from the proposed Bay Crossing Study Tier 2 NEPA project. The MSMF Calculator generated a net total stream loss of 325 functional feet for the MDTA RPA LOD. The additional stream impacts within the optional SUP LOD generated a net total stream loss of 8 functional feet, for a combined total of 333 functional feet of total stream loss. All of the reaches recorded losses in functional feet. This was the result of assumed permanent stream impacts due to piping/culverts. See **Appendix B** for the completed Stream Impact MSMF Calculator output.

Overall, the proposed Bay Crossing Study Tier 2 NEPA project within MDTA RPA would impact 655 LF of stream resulting in the loss of 325 functional feet of stream within the project area. The optional SUP LOD would impact 30 linear feet, resulting in the loss of 8 functional feet. At this time, it is anticipated that the project will either acquire stream mitigation credits from an appropriate mitigation bank or develop permittee-responsible mitigation to mitigate the loss in functional feet of stream. The Temporal Loss factors will be updated as needed once more detailed engineering has been developed for the project.

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Appendix A:
RBP Assessments

April 2026

HABITAT ASSESSMENT FIELD DATA SHEET~~LO~~W GRADIENT STREAMS (FRONT)

STREAM NAME MeC_WUS2	LOCATION Annapolis, MD	
STATION #_____ RIVERMILE_____	STREAM CLASS I	
LAT _39.020827° N LONG -76.418766 °W	RIVER BASIN Severn River	
STORET #	AGENCY	
INVESTIGATORS MB, JSG		
FORM COMPLETED BY KAM	DATE _10/15/2025_____ TIME __11:32 (AM) PM	REASON FOR SURVEY MSMF Impact Calculator

	Habitat Parameter	Condition Category			
		Optimal	**Suboptimal**	**Marginal**	**Poor**
Parameters to be evaluated in sampling reach	**1. Epifaunal Substrate/ Available Cover**	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **(6)**	5 4 3 2 1 0
	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	SCORE 11	20 19 18 17 16	15 14 13 12 **(11)**	10 9 8 7 6	5 4 3 2 1 0
	3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **(8)** 7 6	5 4 3 2 1 0
	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	SCORE 12	20 19 18 17 16	15 14 13 **(12)** 11	10 9 8 7 6	5 4 3 2 1 0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **(6)**	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 14	20 19 18 17 16	15 **[14]** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 5	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	**[5]** 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE _4_ (LB)	Left Bank 10 9	8 7 6	5 **[4]** 3	2 1 0
SCORE 4_ (RB)	Right Bank 10 9	8 7 6	5 **[4]** 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE _5_ (LB)	Left Bank 10 9	8 7 6	**[5]** 4 3	2 1 0
SCORE _4 (RB)	Right Bank 10 9	8 7 6	5 **[4]** 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE _1 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 **[1]** 0
SCORE 8 (RB)	Right Bank 10 9	**[8]** 7 6	5 4 3	2 1 0

Total Score __88___

-Pool under culvert in bamboo forest , mud + organics, some gravel
-Grass shrimp?

Bay Crossing Assessment Photolog – MeC_WUS2



MeC_WUS2 : Looking downstream from the upstream extent



MeC_WUS2: Looking downstream from the upstream extent



MeC_WUS2: Looking upstream from downstream extent

HABITAT ASSESSMENT FIELD DATA SHEET~~LO~~W GRADIENT STREAMS (FRONT)

STREAM NAME MeC_WUS5	LOCATION Annapolis, MD	
STATION #_____ RIVERMILE_____	STREAM CLASS I	
LAT 39.019241°W, LONG -076.414561 °N	RIVER BASIN Severn River	
STORET #	AGENCY	
INVESTIGATORS MB, JSG		
FORM COMPLETED BY JSG	DATE _10/15/2025_____ TIME _10:54 AM_____	REASON FOR SURVEY MSMF Impact Calculator

	Habitat Parameter	Condition Category			
		Optimal	**Suboptimal**	**Marginal**	**Poor**
Parameters to be evaluated in sampling reach	**1. Epifaunal Substrate/ Available Cover**	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **[6]**	5 4 3 2 1 0
	2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **[6]**	5 4 3 2 1 0
	3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
	SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **[6]**	5 4 3 2 1 0
	4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	SCORE 14	20 19 18 17 16	15 **[14]** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
	5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
	SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 **[8]** 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 14	20 19 18 17 16	15 **[14]** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **[6]**	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE __4_ (LB)	Left Bank 10 9	8 7 6	5 **[4]** 3	2 1 0
SCORE _4_ (RB)	Right Bank 10 9	8 7 6	5 **[4]** 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE _5 (LB)	Left Bank 10 9	8 7 6	**[5]** 4 3	2 1 0
SCORE _5_ (RB)	Right Bank 10 9	8 7 6	**[5]** 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE _9_ (LB)	Left Bank 10 **[9]**	8 7 6	5 4 3	2 1 0
SCORE _9_ (RB)	Right Bank 10 **[9]**	8 7 6	5 4 3	2 1 0

Total Score _____96___

Notes:
-Crayfish and mosquito fish
-almost all pool -> some odonata and hemiptera present
-muddy, but hard bottom + lots of organic matter



MeC_WUS5: Looking downstream from the upstream extent



MeC_WUS5: Looking downstream from the upstream extent



MeC_WUS5: Looking upstream from mid point of reach

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Station ID/ Stream Name	MeC_WUS1			**LAT (DD)**	39.0213964 °N
Reach Length (m)	15.54	Date	10/15/25	**LONG (DD)**	-076.4186288 °W

HABITAT PARAMETER	**CATEGORY**			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 9	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 14 13 12 11	10 **[9]** 8 7 6	5 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable**	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present.	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE: 12	20 19 18 17 16	15 14 13 **[12]** 11	10 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 19	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 **[19]** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 18	Little or no enlargement of “islands” or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 **[18]** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 6	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 **[6]**	5 4 3 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>	**Reviewers Initials**	MB/JSG

	Optimal	**Sub-optimal**	**Marginal**	**Poor**
6. BANK STABILITY (score each bank left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
LEFT: 7	**10 9**	**8 [7] 6**	**5 4 3**	**2 1 0**
RIGHT: 7	**10 9**	**8 [7] 6**	**5 4 3**	**2 1 0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.
	If assessed in winter or early spring look for remnants of herbs, and saplings.			
LEFT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
RIGHT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vege-tative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.	Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.	Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.	Width of zone is less than 6 meters; little or no un-disturbed vegetation due to man-induced activities.
LEFT: 7	**10 9**	**8 [7] 6**	**5 4 3**	**2 1 0**
RIGHT: 8	**10 9**	**[8] 7 6**	**5 4 3**	**2 1 0**

TOTAL:105 (max=160)	**Max Pool Depth (if water is present; otherwise "NA")** __**50**__ **cm** **Average Channel Width (Toe of Banks)** **2** **m**	**Total from front 64 + Total from back 41 = 105** **Score Percentage= Total Score /160 X 100 65.6%**

Average Width Intact Rip Vegetative Zone (m)	**Left** 20 **m**		**Right** 50 **m**	
→ **What is the dominant vegetation type in the reach?** ☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**	**Estimated age of forest:** __***>50 yrs*** _***25-50 yrs*** ***5-25 yrs*** _***X***_***<5 yrs*** **Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max) : 2***			
Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless dayin summer at noon. Fill in square that applies.**			
☒ **Fully exposed (0-25%)**	☐ **Partly shaded (25-50%)**		☐ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**
-or- % Canopy (Densiometer)		**Compass Bearing (facing downstream) (0-360°)**		

Notes:
- No bugs? Probably predators
-good amount of organic debris
-lots of veg on banks

Bay Crossing Assessment Photolog – MeC_WUS1



MeC_WUS1: Looking downstream from the upstream extent



MeC_WUS1: Looking upstream from the downstream extent

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Station ID/ Stream Name	MeC_WUS6			**LAT (DD)**	39.0192299°N
Reach Length (m)	55.16	Date	10/15/2025	**LONG (DD)**	076.4137762 °W

HABITAT PARAMETER	CATEGORY			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 10	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 14 13 12 11	**[10]** 9 8 7 6	5 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable** **SCORE:** 11	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present.	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 **[11]**	10 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 17	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 **[17]** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 17	Little or no enlargement of “islands” or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 **[17]** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 4	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 **[4]** 3 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>	**Reviewers Initials**	

	Optimal	**Sub-optimal**	**Marginal**	**Poor**
6. BANK STABILITY (score each bank left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
LEFT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
RIGHT: 5	**10 9**	**8 7 6**	**[5] 4 3**	**2 1 0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.
	If assessed in winter or early spring look for remnants of herbs, and saplings.			
LEFT: 5	**10 9**	**8 7 6**	**[5] 4 3**	**2 1 0**
RIGHT: 5	**10 9**	**8 7 6**	**[5] 4 3**	**2 1 0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vege-tative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.	Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.	Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.	Width of zone is less than 6 meters; little or no un-disturbed vegetation due to man-induced activities.
LEFT: 9	**10 [9]**	**8 7 6**	**5 4 3**	**2 1 0**
RIGHT: 3	**10 9**	**8 7 6**	**5 4 [3]**	**2 1 0**

TOTAL: 92 (max=160)	**Max Pool Depth (if water is present; otherwise "NA") 25 cm** **Average Channel Width (Toe of Banks) 0.6 m**	**Total from front 59 + Total from back 33 = 92** **Score Percentage= Total Score /160 X 100 57.5 %**

Average Width Intact Rip Vegetative Zone (m)	**Left** 40 **m**	**Right** 9 **m**	
→ **What is the dominant vegetation type in the reach?** ☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**	**Estimated age of forest:** ____***>50 yrs*** ____***25-50 yrs*** _***X***_***5-25 yrs*** ____***<5 yrs*** **Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max))*** _____		
Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless day in summer at noon. Fill in square that applies.**		
☒ **Fully exposed (0-25%)**	☐ **Partly shaded (25-50%)**	☐ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**
-or- % Canopy (Densiometer)	**Compass Bearing (facing downstream) (0-360°)**		

Notes:
-mud and org. water bottom
-some fish and crayfish

Bay Crossing Assessment Photolog – MeC_WUS6



MeC_WUS6: Looking downstream from upstream extent



MeC_WUS6: Looking upstream from downstream extent

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Station ID/ Stream Name	MeC_WUS7			**LAT (DD)**	39.0194434 °N
Reach Length (m)	7.01	Date	10/15/2025	**LONG (DD)**	-076.4142163 °W

HABITAT PARAMETER	**CATEGORY**			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 14	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 **[14]** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable** **SCORE:** 11	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present.	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 **[11]**	10 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 17	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 **[17]** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 19	Little or no enlargement of "islands" or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 **[19]** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 5	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	**[5]** 4 3 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	**Reviewers Initials**	

	Optimal	**Sub-optimal**	**Marginal**	**Poor**
6. BANK STABILITY (score each bank left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
LEFT: 9	**10 [9]**	**8 7 6**	**5 4 3**	**2 1 0**
RIGHT: 9	**10 [9]**	**8 7 6**	**5 4 3**	**2 1 0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.
	If assessed in winter or early spring look for remnants of herbs, and saplings.			
LEFT: 3	**10 9**	**8 7 6**	**5 4 [3]**	**2 1 0**
RIGHT: 5	**10 9**	**8 7 6**	**[5] 4 3**	**2 1 0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vege-tative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.	Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.	Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.	Width of zone is less than 6 meters; little or no un-disturbed vegetation due to man-induced activities.
LEFT: 4	**10 9**	**8 7 6**	**5 [4] 3**	**2 1 0**
RIGHT: 9	**10 [9]**	**8 7 6**	**5 4 3**	**2 1 0**

TOTAL: 105 (max=160)	**Max Pool Depth (if water is present; otherwise "NA")** _**NA**_**cm** **Average Channel Width (Toe of Banks)** ___**0.5**__**m**	**Total from front** _**66**_ **+ Total from back**__**39**__ **=**__**105**__ **Score Percentage= Total Score /160 X 100 =** _**65.62**__**%**

Average Width Intact Rip Vegetative Zone (m)	**Left** 12 **m**		**Right** 50+ **m**	
→ **What is the dominant vegetation type in the reach?** ☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**		**Estimated age of forest:** ____***>50 yrs*** ____***25-50 yrs*** __***X***_***5-25 yrs*** __***<5 yrs*** **Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max))***____***3***_		
Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless day in summer at noon. Fill in square that applies.**			
☐ **Fully exposed (0-25%)**	☒ **Partly shaded (25-50%)**		☐ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**
-or- % Canopy (Densiometer)		**Compass Bearing (facing downstream) (0-360°)**		

Notes:
-no water

Bay Crossing Assessment Photolog – MeC_WUS7



MeC_WUS7: Looking downstream from upstream extent



MeC_WUS7: Looking upstream from downstream extent

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>					
Station ID/ Stream Name	MeC_WUS10			**LAT (DD)**	39.081437°N
Reach Length (m)	21.64	Date	10/15/2025	**LONG (DD)**	-076.4088438 °W

HABITAT PARAMETER	**CATEGORY**			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 9	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 14 13 12 11	10 **[9]** 8 7 6	5 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable** **SCORE:** 12	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present.	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 **[12]** 11	10 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 20	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	[20] 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 9	Little or no enlargement of “islands” or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 **[9]** 8 7 6	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 8	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 **[8]** 7 6	5 4 3 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	**Reviewers Initials**											
	Optimal		**Sub-optimal**			**Marginal**			**Poor**		
6. BANK STABILITY (score each bank) Note which bank is left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).		Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.			Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.			Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.		
LEFT: 3	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
RIGHT: 4	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.		70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.			50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.			Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.		
	If assessed in winter or early spring look for remnants of herbs, and saplings.										
LEFT: 3	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
RIGHT: 3	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vege-tative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.		Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.			Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.			Width of zone is less than 6 meters; little or no un-disturbed vegetation due to man-induced activities.		
LEFT: 6	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
RIGHT: 6	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**

TOTAL: 83 (max=160)	**Max Pool Depth (if water is present; otherwise "NA")** _75_ **cm** **Average Channel Width (Toe of Banks)** __1.5__ **m**	**Total from front** _58_ **+ Total from back** _25_ **=** __83_ **Score Percentage= Total Score /160 X 100** _51.87__ **%**

Average Width Intact Rip Vegetative Zone (m)	**Left** 23 **m**		**Right** 35 **m**	
→ **What is the dominant vegetation type in the reach?** ☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**	**Estimated age of forest:** ____***>50 yrs*** __***X***_***25-50 yrs*** ____***5-25 yrs*** __***<5 yrs*** **Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max))*** ___***2***_			
Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless day in summer at noon. Fill in square that applies.**			
☐ **Fully exposed (0-25%)**	☐ **Partly shaded (25-50%)**	☒ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**	
-or- % Canopy (Densiometer)		**Compass Bearing (facing downstream) (0-360°)**		

Notes:
- good pools for predators -> coleoptera hemiptera
-frogs and mosquito fish
-leaf packs at bottom and some gravel
-no flow currently

Bay Crossing Assessment Photolog – MeC_WUS10



MeC_WUS10: Looking downstream from upstream extent



MeC_WUS10: Looking upstream from downstream extent

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Station ID/ Stream Name	MeC_WUS13 (Optional SUP Only)			**LAT (DD)**	76.4056739 W
Reach Length (m)	9	Date	2/25/2026	**LONG (DD)**	39.0115408 N

HABITAT PARAMETER	CATEGORY: Optimal	Sub-optimal	Marginal	Poor
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 5	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	(5 circled) 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable** **SCORE:** 10	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present.	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 11	(10 circled) 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 15	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 17 16	(15 circled) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 6	Little or no enlargement of "islands" or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 (6 circled)	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 3	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 (3 circled) 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>	**Reviewers Initials**	

	Optimal	**Sub-optimal**	**Marginal**	**Poor**
6. BANK STABILITY (score each bank left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
LEFT: 4	**10 9**	**8 7 6**	**5 (4) 3**	**2 1 0**
RIGHT: 4	**10 9**	**8 7 6**	**5 (4) 3**	**2 1 0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.
	If assessed in winter or early spring look for remnants of herbs, and saplings.			
LEFT: 6	**10 9**	**8 7 (6)**	**5 4 3**	**2 1 0**
RIGHT: 6	**10 9**	**8 7 (6)**	**5 4 3**	**2 1 0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vege-tative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.	Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.	Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.	Width of zone is less than 6 meters; little or no un-disturbed vegetation due to man-induced activities.
LEFT: 2	**10 9**	**8 7 6**	**5 4 3**	**(2) 1 0**
RIGHT: 1	**10 9**	**8 7 6**	**5 4 3**	**2 (1) 0**

TOTAL: (max=160)	**Max Pool Depth (if water is present; otherwise "NA")** 5 **cm** **Average Channel Width (Toe of Banks)** 0.5 **m**	**Total from front** 39 **+ Total from back** 23 **=** 62 **Score Percentage= Total Score /160 X 100** 39 **%**

Average Width Intact Rip Vegetative Zone (m)	**Left** 2 **m**	**Right** 1.5 **m**

→ **What is the dominant vegetation type in the reach?**	**Estimated age of forest:** ____***>50 yrs*** ____***25-50 yrs*** ☒***5-25 yrs*** ____***<5 yrs***
☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**	**Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max))*** 2

Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless day in summer at noon. Fill in square that applies.**		
☐ **Fully exposed (0-25%)**	☒ **Partly shaded (25-50%)**	☐ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**
-or- % Canopy (Densiometer)	**Compass Bearing (facing downstream) (0-360°)**	100	

Bay Crossing Assessment Photolog – MeC_WUS13



MeC_WUS13: Looking downstream from upstream extent



MeC_WUS13: Looking upstream from downstream extent

Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP) Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

RAPID HABITAT ASSESSMENT: LOW GRADIENT Ephemeral/Intermittent >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Station ID/ Stream Name	MeC_WUS14			**LAT (DD)**	39.0193809 °N
Reach Length (m)	14.02	Date	10/15/2025	**LONG (DD)**	076.4082085 °W

HABITAT PARAMETER	**CATEGORY**			
	Optimal	**Sub-optimal**	**Marginal**	**Poor**
1. SUBSTRATE/ DIVERSITY **AVAILBLE COVER FOR AMPHIBIANS CRAYFISH** **SCORE:** 11	*Greater than 50% of substrate consisting of mix of snags, tree roots or other stable habitat providing cover for amphibians and aquatic or terrestrial invertebrates. LWD in moderate to advanced stage of decay and within- active channel; Substrate roughness capable of trapping lots of organic matter. If moss covered, rate high.*	*30 to 50% cover and mix of diverse stable habitat; well suited for full cover potential; adequate habitat for maintenance of populations; presence of additional LWD in the form of new fall. Substrate roughness still capable of trapping organic matter.*	*10 to 30% mix of stable cover; habitat availability less than desirable; substrate frequently disturbed or removed. LWD low in density and/or may be new fall or in early decay stage. Some areas suitable for trapping organic matter. If lg. wood is absent, score low.*	*Less than 10% stable cover; lack of habitat is obvious; substrate unstable or lacking. Few areas suitable for trapping organic matter.*
	Rate in Channel and Toe of Banks			
	20 19 18 17 16	15 14 13 12 **(11)**	10 9 8 7 6	5 4 3 2 1 0
2. POOL SUBSTRATE CHARACTER-IZATION **In dry channels, pool areas should still be observable** **SCORE:** 11	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged (or remnant) aquatic vegetation are common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged (or remnant) vegetation are present. some gravel	All mud or clay or sand bottom; little or no root mat; no submerged (or remnant) vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 **(11)**	10 9 8 7 6	5 4 3 2 1 0
3. CHANNEL ALTERATION **SCORE:** 18	Channelization or dredging absent of minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging (>than past 20 years) may be present, but no evidence of recent channelization.	Channelization may be extensive; embankments or shoring structures present on both banks; 40 to 80% of the stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 **(18)** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. SEDIMENT DEPOSITION **SCORE:** 13	Little or no enlargement of “islands” or point bars and less than 20% of the bottom affected by fine sediment deposition. Leaf packs and woody debris with minimal silt covering.	Some new increase in bar formation, mostly from sand, or fine sediment; 20 to 50% of the bottom is affected; slight deposition in pools. Leaf packs with moderate silt covering.	Moderate deposition of new sand, or fine sediment on old and new bars; 50 to 80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. Leaf packs with heavier silt covering.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 **(13)** 12 11	10 9 8 7 6	5 4 3 2 1 0
5. CHANNEL SINUOSITY **SCORE:** 5	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	the bends in the stream increase the stream length up to 2 times longer than if it was in a straight line.	Channel is straight; waterway has been channelized for a long distance.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	**(5)** 4 3 2 1 0

Appendix 1: Modified Environmental Protection Agency Rapid Bioassessment Protocol (EPA RBP)
Habitat Assessment Field Data Sheet (Low Gradient Ephemeral/Intermittent Streams)

***RAPID HABITAT ASSESSMENT*: LOW GRADIENT >>>>>>>>>>>>>>>>>>>>>>>>>>>>**	**Reviewers Initials**	

	Optimal	**Sub-optimal**	**Marginal**	**Poor**
6. BANK STABILITY (score each bank left/ right by facing downstream	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems (<5% of bank affected).	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
LEFT: 7	**10 9**	**8 [7] 6**	**5 4 3**	**2 1 0**
RIGHT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
7. BANK VEGETATIVE PROTECTION **SCORE:**	More than 90% of the streambank surfaces and immediate riparian zones covered by vegetation including trees, understory shrubs, and non-woody plants (herbs, grasses, ferns, mosses); vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces are covered by vegetation, but one class of plants is not well represented; disruption evident, but not affecting plant growth potential to extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces are covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less that one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces are covered by vegetation; disruption of streambank vegetation very high; vegetation has been removed to 2 inches or less in average stubble height.
	If assessed in winter or early spring look for remnants of herbs, and saplings.			
LEFT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
RIGHT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
8. WIDTH OF UNDISTURBED VEG. ZONE (undisturbed veg. Is trees, shrubs, and non-woody macro-phytes)	Width of undisturbed vegetative zone is >18 meters; human activities (parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted this zone.	Zone width is between 12 and 18 meters; human activities have only minimally impacted this zone.	Zone width is between 6 and 12 meters; human activities have impacted the zone a great deal.	Width of zone is less than 6 meters; little or no undisturbed vegetation due to man-induced activities.
LEFT: 6	**10 9**	**8 7 [6]**	**5 4 3**	**2 1 0**
RIGHT: 5	**10 9**	**8 7 6**	**[5] 4 3**	**2 1 0**

TOTAL: 94 (max=160)	**Max Pool Depth (if water is present; otherwise "NA")** __2__**cm** **Average Channel Width (Toe of Banks)** ___0.5__**m**	**Total from front** _58_ **+ Total from back**__36__**=**__94__ **Score Percentage= Total Score /160 X 100**__58.75___**%**

Average Width Intact Rip Vegetative Zone (m)	**Left** 2 **m**	**Right** 4 **m**	
→ **What is the dominant vegetation type in the reach?** ☒ **Deciduous** ☐ **Coniferous (pine/cypress)** ☐ **Mixed (>10%)**	**Estimated age of forest:** ____***>50 yrs*** ____***25-50 yrs*** __***X*** ***5-25 yrs*** ____***<5 yrs*** **Number of strata** ***(e.g, canopy, subcanopy, shrub, herb (4 max))***___1__		

Stream Surface Shading (%) (average of lower, middle, upper reach)	**Indicate % based on cloudless day in summer at noon. Fill in square that applies.**		
☐ **Fully exposed (0-25%)**	☒ **Partly shaded (25-50%)**	☐ **Partly exposed (50-75%)**	☐ **Fully shaded (75-100%)**
-or- % Canopy (Densiometer)	**Compass Bearing (facing downstream) (0-360°)**		

Notes:
-fence on left bank
-road @ right bank
-no bugs, crayfish chimneys present

Bay Crossing Assessment Photolog – MeC_WUS14



MeC_WUS14: Looking downstream from upstream extent



MeC_WUS14: Looking upstream from downstream extent

Appendix B:
MSMF Calculator Results

April 2026

THE MARYLAND STREAM MITIGATION FRAMEWORK VERSION 1 FINAL (MSMF V.1. FINAL) [1,2,6,7]

BACKGROUND-IMPACTS		BACKGROUND-MITIGATION	
Corps Project ID		Corps Project ID	
Project Name:	Chesapeake Bay Crossing Study Tier 2	Project Name:	
County:	Anne Arundel, Queen Anne's	County:	
Corps PM:		Corps PM:	
Sponsor:	MDTA	Sponsor:	
Landowner(s):	MDTA	Landowner(s):	
Collaborators:	CRI, ADM, AECOM, RK&K	Collaborators:	

MITIGATION TYPE — Select From Dropdown Menu

SUMMARY

The Chesapeake Bay Crossing Study (Bay Crossing Study) is a two-tiered engineering and environmental study being advanced by MDTA in coordination with FHWA. BCS is addressing existing and future transportation issues at the bridge and its approaches along U.S. 50/301. MDTA RPA includes permanent impacts to 7 nontidal streams totaling 655 LF. The optional SUP would include permanent impacts to 1 nontidal stream totaling 30 LF.

TALLY OF IMPACTS AND MITIGATION

CALCULATION NAME	FUNCTIONAL FEET (FF)	SUMMARY
STREAM IMPACTS TOTAL	-333	All non-tidal impacts are located along the western shore within the Meredith Creek Watershed, and Severn River Basin.
STREAM MITIGATION TOTAL FOR STREAM CHANNELS	0	
STREAM MITIGATION TOTAL FOR STREAM BUFFERS	0	
STREAM MITIGATION TOTAL FOR FISH PASSAGE[3]	0	
FUNCTIONAL FOOT BALANCE[4]	-333	

TALLY OF BUNDLED MITIGATION (for Mitigation Banks Only) [5]

STREAM MITIGATION TOTAL FOR STREAM CHANNELS (bundled)	#REF!	list ratio and bundled type
STREAM MITIGATION TOTAL FOR STREAM BUFFERS (bundled)	#REF!	list ratio and bundled type

STREAM IMPACT CALCULATOR

BACKGROUND INFORMATION

Corps Project ID #:		Corps PM:	
Project Name:	BCST2	Date:	10-Nov-25
Lat/Long:	76.4082095 W, 39.0193790 N	Sponsor:	MDTA
County:	Anne Arundel	Collaborators:	CRI, ADM, AECOM, RK&K

TOTAL STREAM LOSSES (Functional Feet): -333

Reach Name	Physiographic Region	Evaluation	Activity	Resource Type	Reach Length (feet)	Stream Quality	Channel Thread	Drainage Area (sqmi)	Raw Reach Value (Functional Feet)	Raw Change in Value (Functional Feet)	Site Sensitivity	Mitigation Ratio	Stream Losses (Functional Feet)	REMARKS (Include reach coordinates)
						Raw Change in Reach Value (Functional Feet)					**Stream Impact Adjustments**			
MeC_WUS1	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	51	66%	Primary	0.414	24	-24	2	Proposed Mitigation Type	-43	76.4186332 W, 39.0214221 N
							1	0.72			20%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	51	0%	Primary	0.414	0		-5	1.5		
							1	0.72						
MeC_WUS2	Coastal Plain	Existing	Preliminary Resource Evaluation	Perennial Headwater	33	44%	Primary	0.416	10	-10	2	Proposed Mitigation Type	-19	76.4185860 W, 39.0206332 N
							1	0.72			20%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Perennial Headwater	33	0%	Primary	0.416	0		-2	1.5		
							1	0.72						
MeC_WUS5	Coastal Plain	Existing	Preliminary Resource Evaluation	Perennial Headwater	250	48%	Primary	0.25	71	-71	2	Proposed Mitigation Type	-128	76.4151017 W, 39.0192037 N
							1	0.59			20%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Perennial Headwater	250	0%	Primary	0.25	0		-14	1.5		
							1	0.59						
MeC_WUS6	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	181	58%	Primary	0.03	44	-44	2	Proposed Mitigation Type	-79	76.4139231 W, 39.0193024 N
							1	0.42			20%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	181	0%	Primary	0.03	0		-9	1.5		
							1	0.42						
MeC_WUS7	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	23	66%	Primary	0.003	6	-6	2	Proposed Mitigation Type	-11	76.4142230 W, 39.0194444 N
							1	0.42			20%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	23	0%	Primary	0.003	0		-1	1.5		
							1	0.42						
MeC_WUS10	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	71	52%	Primary	0.022	15	-15	1	Proposed Mitigation Type	-26	76.4087903 W, 39.0184279 N
							1	0.42			10%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	71	0%	Primary	0.022	0		-2	1.5		
							1	0.42						
MeC_WUS14	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	46	59%	Primary	0.004	11	-11	1	Proposed Mitigation Type	-19	76.4082095 W, 39.0193790 N
							1	0.42			10%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	46	0%	Primary	0.004	0		-1	1.5		
							1	0.42						
MeC_WUS13	Coastal Plain	Existing	Preliminary Resource Evaluation	Intermittent	30	39%	Primary	0.00377	5	-5	1	Proposed Mitigation Type	-8	76.4056739 W, 39.0115408 N
							1	0.42			10%	Permittee Responsible		
	Coastal Plain	Proposed	Piping/culvert	Intermittent	0	0%	Primary	0.00377	0		0	1.5		
							1	0.42						

Appendix C:
Nontidal Stream Mitigation Site Table

May 2026

Appendix C: Nontidal Stream Mitigation Sites

Site ID	MDE 8-Digit Watershed	Length (LF)	Desktop Notes	General Field Observations	Estimated Erosion and Degree of Incision	Floodplain	Vegetation	Ecological Uplift	Ease of Access and Utilities	Priority
S-1	Kent Narrows (02130504)	650	Looks like poor visibility from road. Low sinuosity, no riparian buffer, non-forested agricultural floodplain. Outlets to tidal waters. Potential for sediment reduction, riparian buffer, and floodplain reconnection.	Unable to assess, private property. Aerial shows a short reach that outlets to tidal waters. May not be suitable for restoration.	Unable to assess, private property	Agriculture (From aerial)	Agriculture (From aerial)	Riparian buffer, sediment reduction.	Potential access from private property.	Low
S-2	Kent Narrows (02130504)	880	May be tidally influenced, low sinuosity, forested floodplain. Potential for sediment reduction, and floodplain reconnection.	Appears channelized, narrow, grassy ditch, culvert at downstream end	Not very incised (0.5-1' banks). Very straight.	Trees in floodplain. Very flat. 20-30 feet of floodplain then parking lot.	Grass adjacent to stream, with surrounding forest.	Sediment reduction, floodplain reconnection.	Easy access. No overhead utilities.	Low
S-3	Eastern Bay (02130501)	930	Moderate sinuosity, low tree cover in floodplain, potential for wetlands in floodplain. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Culvert at end of reach, pooled water, overgrown. Aerial shows some areas of potential wetlands.	Unable to see stream from road.	Construction in floodplain. Flat and open. Grass/shrubs.	Small cluster of trees at downstream end. Mostly grass upstream.	Sediment reduction, riparian buffer. Possibly wetlands.	Right off road. No overhead utilities.	Moderate
S-4	Eastern Bay (02130501)	1,240	No access, off private drive. Moderate sinuosity, adjacent to agricultural land. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows open agricultural field and moderate sinuosity.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, floodplain reconnection, riparian buffer.	Potential access from private property.	Moderate
S-5	Eastern Bay (02130501)	1,190	No access, off private drive. Low sinuosity, adjacent to agricultural land. Potential for sediment reduction, fish passage, riparian buffer, and floodplain reconnection.	Unable to assess, private property. Aerial shows open agricultural field and moderate sinuosity. Farm pond located upstream allowing for potential fish passage opportunity.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, floodplain reconnection, riparian buffer, fish passage.	Potential access from private property.	High
S-6	Lower Chester River (02130505)	1,470	Site has been previously visited, no views from road, unable to view stream but valley is lower in landscape. Low sinuosity. Potential for sediment reduction, riparian buffer, and floodplain reconnection.	Unable to assess, private property. Aerial shows low sinuosity, with surrounding agricultural land.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, riparian buffer.	Potential access from private property.	Low
S-7	Lower Chester River (02130505)	680	Agricultural drainage ditch. Likely not a good candidate for restoration. Potential for sediment reduction, and riparian buffer.	Excluded from windshield survey. Aerial shows open floodplain with grass and shrubs and low sinuosity. Potentially just an agricultural ditch.	Excluded from windshield survey.	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, riparian buffer.	Potential access from private property.	Low
S-8	Lower Chester River (02130505)	1,030	Site previously visited during wetland site search. No stream potential was observed at stream US extent which was the only portion visible from the road. Potential for sediment reduction, and riparian buffer.	Excluded from windshield survey. Aerial shows open agricultural land. Seems to be a small agricultural ditch.	Excluded from windshield survey.	Excluded from windshield survey.	Excluded from windshield survey.	Excluded from windshield survey.	Excluded from windshield survey.	Low
S-9	Lower Chester River (02130505)	750	Private road, no access. Low sinuosity, short reach, adjacent to agricultural land. Potential for sediment reduction, and riparian buffer.	Unable to assess, private property. From aerial appears to be a small agricultural ditch.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction.	Potential access from private property.	Low
S-10	Lower Chester River (02130505)	1,170	Private road, no access. Low sinuosity, adjacent to agricultural land. Potential for sediment reduction, riparian buffer, and floodplain reconnection.	Unable to assess, private property. Aerial shows open agricultural field and low sinuosity.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, riparian buffer, floodplain reconnection.	Potential access from private property.	Moderate

Appendix C: Nontidal Stream Mitigation Sites

Site ID	MDE 8-Digit Watershed	Length (LF)	Desktop Notes	General Field Observations	Estimated Erosion and Degree of Incision	Floodplain	Vegetation	Ecological Uplift	Ease of Access and Utilities	Priority
S-11	Lower Chester River (02130505)	1,190	No visibility from the road. Low sinuosity, adjacent to agricultural land. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows open agricultural land with low sinuosity. Surrounded by hydric soils from wetland assessment.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, wetland enhancement, floodplain reconnection, riparian buffer.	Potential access from private property.	High
S-12	Kent Island Bay (02130511)	760	Agricultural drainage ditch, and likely not suitable for stream mitigation. Potential for sediment reduction, riparian buffer, and floodplain reconnection.	Excluded from windshield survey. Aerial shows a small agricultural drainage ditch.	Excluded from windshield survey.	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, floodplain reconnection.	Potential access from private property.	Low
S-13	Eastern Bay (02130501)	820	No access off private drive. Good stream potential, adjacent wetland potential. Moderate sinuosity, adjacent to agricultural land. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows open agricultural field and moderate sinuosity. Surrounded by hydric soils identified during wetland assessment.	Unable to assess, private property	Agriculture. (From aerial)	Agriculture. (From aerial)	Sediment reduction, wetland enhancement, floodplain reconnection, riparian buffer.	Potential access from private property.	High
S-14	Severn River (02131002)	720	Adjacent to BGE facility, would need to further vet ability to plant trees etc. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows open floodplain with shrubs and grassland on utility property. Aerial shows potential for wetlands present.	Unable to assess, private property	Open floodplain with grass and shrubs (From aerial)	Grass/shrubs (From aerial).	Floodplain reconnection, riparian buffer, sediment reduction, wetland enhancement.	Potential access from private property.	High
S-15	Severn River (02131002)	1,240	Partially forested but evidence of previous manipulation. One property owner. Potential for floodplain reconnection.	Unable to assess, private property. Aerial shows low sinuosity surrounded by forested area.	Unable to assess, private property	Forested floodplain (From Aerial)	Forested/Shrubs (from aerial)	Floodplain reconnection.	Potential access from private property.	Low
S-16	Severn River (02131002)	930	Small reach, difficult to tell existing conditions, close to road, also could evaluate downstream. Stream contains a 90 degree bend, but stream corridor is all forested. Potential for sediment reduction, and floodplain reconnection.	Gabions on either side of stream. Culvert on upstream and downstream end of reach. Mostly forested.	2-3' banks. Incised.	Forest/grass	Mostly forested with small section of grass at downstream end of reach.	Sediment reduction, floodplain reconnection.	Difficult to access from road.	Moderate
S-17	West Chesapeake Bay (02131005)	6,780	Farmed or recently farmed, at least one buffer lacking, instability, 3 property owners. Potential for sediment reduction, riparian buffer, wetland enhancement, and floodplain reconnection.	Culvert DS, Farmland, overgrown channel. Aerial shows partially forested floodplain surrounded by agricultural land. Very long reach. Aerial shows potential wetlands within floodplain.	2-3' banks. Incised.	Forest, grass, shrubs, flat, agriculture. (From aerial).	Grass, shrubs and some forest. (From aerial).	Floodplain reconnection, wetland enhancement, riparian buffer, sediment reduction.	Easy access from road.	High
S-18	West Chesapeake Bay (02131005)	930	Historically straightened/ditched, farmland directly adjacent with limited buffer downstream lots of wetlands in floodplain potential for one property owner if keep to right bank. Potential for sediment reduction, wetland enhancement, and floodplain reconnection.	Very busy road and heavy vegetation. Unable to assess stream. Aerial shows low sinuosity and partially forested floodplain surrounded by agricultural land.	Unable to assess stream from road. Very vegetated	Agriculture, mostly forested. (From aerial)	Agriculture, mostly forested. (From aerial)	Floodplain reconnection, sediment reduction, wetland enhancement.	Potential access from private property.	Moderate

Appendix C: Nontidal Stream Mitigation Sites

Site ID	MDE 8-Digit Watershed	Length (LF)	Desktop Notes	General Field Observations	Estimated Erosion and Degree of Incision	Floodplain	Vegetation	Ecological Uplift	Ease of Access and Utilities	Priority
S-19	West Chesapeake Bay (02131005)	4,290	Farming adjacent, wet signatures in fields, small riparian buffer, 1-2 property owners. Could cut at end of field depending on stream health in wider forested areas. Potential for sediment reduction, wetland enhancement, and floodplain reconnection.	Culvert upstream. Adjacent to a business parking lot. Unable to view downstream portion of reach. Hydric soils in floodplain identified by wetland assessment. Aerial shows mostly forested floodplain surrounded by agricultural land.	1-2' banks. Incised.	Agriculture, mostly forested. (From aerial)	Agriculture, mostly forested. (From aerial)	Sediment reduction, Wetland enhancement, floodplain reconnection.	Accessible via parking lot.	Moderate
S-20	West River (02131004)	3,720	Access is difficult but may get FP views from Mill Swamp Rd. Dove Farm Road is private and can't access. Upstream has good potential, small stream but farmed/bowed right to edge of stream 3-4 property owners but could reduce to 1-2 if site shortened. Potential for sediment reduction, and floodplain reconnection.	Unable to assess. Very forested. Aerial shows forested floodplain surrounded by agricultural land.	Unable to assess stream from road. Very vegetated	Forest, agriculture.	Forest, agriculture.	Floodplain reconnection, sediment reduction.	Potential access from private property.	Moderate
S-21	West River (02131004)	3,060	Potential for FP views from Hardesty Rd. Farmed to stream bank, potentially stream has been ditched 1-2 property owners, fish blockage at farm pond. Potential for sediment reduction, wetland enhancement, and floodplain reconnection.	Visible from Smiley Lane. Forested. Pond in floodplain.	Incised. 2-3' banks.	Forest, agriculture. (From aerial).	Forest, agriculture. (From aerial).	Sediment reduction, wetland enhancement, floodplain reconnection.	Potential access from private property.	Moderate
S-22	South River (02131003)	990	Short stretch but has limited buffer and farm fields adjacent. Potential for sediment reduction, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows low sinuosity, mostly forested.	Unable to assess, private property	Forest, agriculture. (From aerial)	Forest, agriculture. (From aerial)	Sediment reduction, floodplain reconnection.	Potential access from private property.	Moderate
S-23	South River (02131003)	1,530	3 property owners, farmed to edge of stream, potentially a tributary to add on one of the properties if not two. Potential for sediment reduction, and floodplain reconnection.	Unable to assess, private property. Aerial shows mostly forested with some adjacent agricultural land. Moderate sinuosity.	Unable to assess, private property	Forest, agriculture. (From aerial)	Forest, agriculture. (From aerial)	Sediment reduction, floodplain reconnection.	Potential access from private property.	Moderate
S-24	South River (02131003)	2,180	Downstream of farm pond, one property owner, potentially another tributary and a downstream pond in floodplain that could be removed to create wetlands. Low Sinuosity. Potential for sediment reduction, fish passage, wetland enhancement, and floodplain reconnection.	Unable to assess, private property Aerial shows partially forested floodplain surrounded by agricultural land. Pond at upstream end of reach allowing for potential fish passage and wetland enhancement opportunities.	Unable to assess, private property. Aerial shows upstream pond allowing for potential fish passage opportunity. Some forest with mostly agricultural land.	Forest, agriculture. (From aerial)	Forest, agriculture. (From aerial)	Sediment reduction, fish passage, wetland enhancement, floodplain reconnection.	Potential access from private property.	High
S-25	South River (02131003)	1,580	Small ditched stream on farm, could be wetland potential adjacent. Channelized, low sinuosity, partially forested. Potential for sediment reduction, riparian buffer, and floodplain reconnection.	Farmland, culvert upstream, straightened channel. Longer reach.	Unknown, unable to see (very vegetated).	Agriculture (open floodplain), partially forested.	Shrubs, some trees. Grass in floodplain.	Floodplain reconnection, riparian buffer, sediment reduction.	Easy access from road.	Moderate
S-26	Little Patuxent River (02131105)	1,450	Site located on Fort Meade federal property. Potential to extend project down to Little Patuxent River. Forested with moderate sinuosity. Potential for sediment reduction, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows mostly forested floodplain with some open shrub areas. On federal property.	Unable to assess, private property	Forest. (From aerial)	Forest. (From aerial)	Sediment reduction, floodplain reconnection.	Potential access through adjacent property.	Low

Appendix C: Nontidal Stream Mitigation Sites

Site ID	MDE 8-Digit Watershed	Length (LF)	Desktop Notes	General Field Observations	Estimated Erosion and Degree of Incision	Floodplain	Vegetation	Ecological Uplift	Ease of Access and Utilities	Priority
S-27	Little Patuxent River (02131105)	4,209	Heavy agricultural use, no easements and a large property. Could evaluate all streams on the property. Good stream potential. Potential for sediment reduction, riparian buffer, fish passage, wetland enhancement, and floodplain reconnection.	Unable to assess, private property. Aerial shows mostly agricultural land with some forested portions. Farm pond in the middle of the reach allowing for potential fish passage opportunity. Aerial shows some locations of potential wetlands.	Unable to assess, private property	Shrubs/trees/ agriculture	Mostly forested with scattered open areas with shrubs (From aerial).	Sediment reduction, wetland enhancement, fish passage, riparian buffer floodplain reconnection.	Potential access from private property.	High

Appendix D:
Fish Passage Mitigation Site Table

May 2026

Appendix D: Fish Passage Mitigation Sites

Unique Site ID	MDE 6-Digit Watershed	MDE 8-Digit Watershed	US Functional Network (miles)	Diadromous Tier	Site Potential	Visible from Public Road?	Site Notes
MD_CH134	Chester River (021305)	Langford Creek	0.6	3	Low	Yes	Would have to be paired with MD_CH135. Blockage close to road and has approximately 8 foot dam. Adjacent to graveyard and church. Downstream stream is suitable size for shad/herring. Would require landowner coordination on pond/dam.
MD_CH135	Chester River (021305)	Langford Creek	3.6	11	Low	Yes	Would have to be paired with MD_CH134 since that is the downstream blockage. The two sites combined would open up ~4 miles of upstream network.
MD_12214	Chester River (021305)	Lower Chester	1.4	4	Low	No	Not visible from road. Potential site based on size of steam downstream and proximity to tidal. Would need to coordinate with landowner on pond/dam. Adjacent land use is agriculture with narrow buffer in some areas. Low site potential due to minimal upstream network.
MD_CH007	Chester River (021305)	Lower Chester	1.4	4	Drop	No	Not visible from road, but likely too small based on drainage area and surrounding streams.
MD_CH008	Chester River (021305)	Lower Chester	0.9	20	Drop	No	Not visible from road, but stream network at road crossing downstream very small. Drop due to stream size
MD_CH012	Chester River (021305)	Lower Chester	1.7	4	Low	No	Not visible from road. Agriculture fields with small buffer and blockage appears to be farm pond. Upstream streams very small at road crossings. Drop due to stream size.
MD_CH031	Chester River (021305)	Lower Chester	1.1	18	Drop	No	Not visible from road, but drop due to small stream size at road crossing.
MD_CH050	Chester River (021305)	Lower Chester	2.9	3	Low	No	Not visible from road. Stream at road crossing likely big enough for river herring. Forested buffer along stream.
MD_12051	Chester River (021305)	Middle Chester	12.6	3	Unlikely	Yes	Recreational lake with approximately 12 foot dam . Downstream habitat looks great. Overhead utilities on both sides of road. Would be good site for fish passage, but unlikely due to use of impoundment.
MD_CH025	Chester River (021305)	Middle Chester	3.2	4	Low	No	Not visible from road. Downstream stream at road crossing looks suitable for river herring. Forested buffer within agriculture fields.
sm646602	Chester River (021305)	Middle Chester	3.6	11	Low	No	Not visible from road. Located at railway crossing. Forested buffer within agriculture fields. Diadromous tier 11, but retained due to decent upstream network. Would need to remove blockage at site MD_12051 first, which was deemed unlikely due to recreational lake.
MD_12083	Chester River (021305)	Upper Chester	39.4	2	Unlikely	No	Not visible from road. Recreational lake with approximately 8 foot concrete dam, associated with DNR fish hatchery. Fishway present at dam.
MD_12148	Chester River (021305)	Upper Chester	36.8	2	High	No	Not visible from road. Substantial upstream network, which appears suitable for shad/herring based on upstream road crossing. Forested buffer within agriculture fields. Site appears to be old mill pond.
MD_12189	Chester River (021305)	Upper Chester	118.1	1	High	No	Not visible from road. Substantial upstream network and great downstream habitat. Forested buffer within agriculture fields. Fishway is present at site, but DNR supports full site removal. Would require landowner coordination.
MD_12200	Chester River (021305)	Upper Chester	8.9	3	Moderate	No	Not visible from road. Impounded area located at private road with decent upstream network and close to tidal. Forested buffer within agriculture fields. Would need to coordinate with landowner on dam/pond.
MD_12056	Chester River (021305)	Wye River	18.6	3	Unlikely	Yes	Large, recreational lake with approximately 20 foot concrete dam. Easy access and great downstream habitat network. Would be good site for fish passage, but unlikely due to use of impoundment.
MD_12178	West Chesapeake Bay (021310)	Magothy River	10.0	3	Unlikely	Yes	Recreational lake with fish ladder present. Forested buffer within residential development. Would be good site for fish passage, but unlikely due to use of impoundment.

Appendix D: Fish Passage Mitigation Sites

Unique Site ID	MDE 6-Digit Watershed	MDE 8-Digit Watershed	US Functional Network (miles)	Diadromous Tier	Site Potential	Visible from Public Road?	Site Notes
MD_SE010	West Chesapeake Bay (021310)	Severn	1.2	6	Drop	No	Not visible from road. Drop, as upstream network appears to be entirely piped.
MD_SE019	West Chesapeake Bay (021310)	Severn	3.0	13	Drop	Yes	6-12 inch blockage upstream of road. Appears to be earthen berm with corrugated pipe outfall and backed up flow/wetland area upstream. Likely too far upstream for shad/herring. Overhead utilities and guardrail at road.
MD53937	West Chesapeake Bay (021310)	Severn	2.5	5	Drop	Yes	Several blockages present: SWM berm with culvert, RSC downstream, and blockage at chain link fence upstream. Doesn't seem like suitable habitat for shad/herring and likely too far up network.
sm646680	West Chesapeake Bay (021310)	Severn	1.5	2	Drop	No	Blockage not visible from road, but drop based on small stream size.
xy3907068376665564	West Chesapeake Bay (021310)	Severn	1.4	4	Drop	Yes	Difficult to see from road, but appears to be blockage. Drop due to small stream size. Within forested area. Guardrails and semi steep slopes present.
CFPPP_1043	West Chesapeake Bay (021310)	South River	9.3	1	Moderate	No	Not visible from road but could be good site based on stream size and upstream network. Located in forested wetland. Downstream of road crossing with guardrails.
MD_12170	West Chesapeake Bay (021310)	South River	6.2	2	Unlikely	Yes	Large impoundment with no utilities present at dam structure. Reservoir used for recreation and water supply. Would be good site for fish passage, but unlikely due to use of impoundment.
MD_SO028	West Chesapeake Bay (021310)	South River	7.1	6	Moderate	No	Not visible from road. Good upstream network and stream size, but within densely forested area.
sm646683	West Chesapeake Bay (021310)	South River	5.9	2	Drop	Yes	No blockage at time of visit. Appears to be bottomless culvert. Some sedimentation present that could be an issue at low flows. Guardrails present and forested on both sides. Drop due to lack of blockage.
sm646611	West Chesapeake Bay (021310)	West Chesapeake Bay	6.0	2	Low	Yes	No visible blockage at main culvert. Another culvert just upstream within BGE ROW with no obvious blockage either. Stream looks suitable downstream and OK upstream with some constriction. Overhead utilities at downstream side of road and BGE lines way above. Cannot confirm blockage presence and 6 miles of upstream network might be a high estimate. Could be candidate for partial blockage removal due to moderate US network.
xy3887981976565784	West Chesapeake Bay (021310)	West River	7.9	2	Moderate	Yes	2-3' blockage at box culvert. Suitable size for shad/herring. Guardrails along road and overhead lines at upstream side of road. Forested land use, but culvert right at road. Muddy Creek dries up in some areas in summer, might not be issue for spring migration runs.
NAACC_64522	West Chesapeake Bay (021310)	Severn	Approx. 2.0	N/A	Low	Yes	Site observed in field and added to list. About 1' blockage at box culvert. Forested but immediate access from road. Overhead utilities and guard rails present.

Appendix E:
Reforestation Law Mitigation Site Table

May 2026

Appendix E: Reforestation Law Mitigation Sites

Site ID	MDE 8-Digit Watershed	Acres	Property Owner	Park Name	Desktop Notes	Overlaps Critical Area (Y/N)	Windshield Notes	Priority
FP-1	Severn River (02131002)	17.5	Anne Arundel County	Millersville Park	None	N	County Open Space (old farmstead). Managed as mowed grass field with forested buffer. Three dilapidated (3) buildings standing (old barn/sheds)	High
FP-2	Severn River (02131002)	2.1	Anne Arundel County	Meade Village Park	Abuts FIDS habitat	N	Managed as mowed grass field (appears to be playfield). Utilities noted (thought to be associated with park lighting). Access from parking lots on both sides of the field from Meade Village Circle and Meade Village Road.	Low
FP-3	South River (02131003)	1.2	Anne Arundel County	None	DNR wetland within site, partially overlaps FIDS habitat	N	Currently under construction as stormwater basin. Appears associated with active residential construction in adjacent property and FP-4.	Drop
FP-4	South River (02131003)	23.5	Anne Arundel County	Bacon Ridge	Abuts FIDS habitat and DNR mapped wetland, falls just outside Severn River watershed	N	Eastern section currently under construction (clear/grubbed). Remaining areas appear to be managed as meadow as part of County open space. Natural surface walking trail borders field. Construction is connected with FP-3 stormwater basin construction. Access from Seven Chapel Road. Access road is now a construction access road for FP-3 and FP-4.	Drop
FP-5	Severn River (02131002)	12.7	Maryland Department of Natural Resources	Holly Beach Farm	Abuts FIDS habitat and DNR mapped wetlands, adjacent to NWI wetlands	N	Not accessible for windshield survey (gated access road) limiting access far from site.	Not visible
FP-6	Eastern Bay (02130501)	13.0	Queen Anne's County	None	May already be regenerating based on street view	N	Site is meadow with few trees and saplings. Stand of phragmites noted near the western corner. Adjacent parcel is under active construction.	Moderate
FP-7	Kent Island Bay (02130511)	10.8	Maryland Department of Natural Resources	Love Point State Park	Within Critical Area	Y	Site is already planted with trees/shelters. Currently a developing forest canopy within a meadow.	Drop
FP-8	Eastern Bay (02130501)	1.5	Queen Anne's County	None	Overlaps SSPRAs, adjacent NWI wetland, within Critical Area	Y	Site was a fallow field (tall grasses). Adjacent property is posted for public comment on a planned commercial development (construction of specialty vehicles). Access from Ellendale Farm Lane (dirt road) was closed off for proposed development (chain-link).	High
FP-9	Eastern Bay (02130501)	2.6	Anne Arundel County	Spriggs Farm on the Magothy	Abuts FIDS habitat, close proximity to DNR and NWI wetlands	N	Northern section is maintained as mowed field. Southern section is currently regenerating forest cover (oaks, sweetgum, pines). Walking path and dirt road border entire site. Newly planted/constructed bay access areas noted during site visit.	Moderate
FP-10	Eastern Bay (02130501)	0.4	Queen Anne's County	None	Less than an acre, adjacent to NWI and DNR wetlands	N	Site is maintained as lawn (mowed). Phragmites stand noted in northeast corner.	Drop
FP-11A	Kent Island Bay (02130511)	20.0	Queen Anne's County	Terrapin Nature Park	Abuts mapped wetlands, FIDs habitat, within Critical Area	Y	Site was a fallow field with tall grasses and scrub/shrub. Walking trail surrounds site. Border of site contains mature trees. Few patches of phragmites noted.	High
FP-11B	Kent Island Bay (02130511)	9.1	Queen Anne's County	Terrapin Nature Park	MDNR wetland in NE corner, abuts FIDS, partially in Critical Area	Y	Site is a fallow field with larger stands of phragmites. Site is bordered by large forest track (east) and trails to the north and west.	Moderate
FP-12	Eastern Bay (02130501)	33.8	Queen Anne's County	Old Love Point Nature Area	Abuts FIDS, partially in Critical Area, close to Cox Creek	Y	Limited access due to private property with gated entrance to site. Posted with a "Park Under Construction" sign. Southern section appears mowed (grass), while northern section is unmaintained meadow with saplings developing. Dirt mounds noted.	Moderate
FP-13	Kent Island Bay (02130511)	4.5	Queen Anne's County	Blue Heron Nature Preseve	Partially within Critical Area, adjacent to NWI and MDNR wetlands, open area to south may be planted based on Google street view	Y	Western section already planted with trees in shelters. Eastern section is meadow with saplings that do not appear planted. Adjacent to wetland with active beaver activity and hut. Driving range to the north. Phragmites stand noted in the western end.	Low

Appendix E: Reforestation Law Mitigation Sites

Site ID	MDE 8-Digit Watershed	Acres	Property Owner	Park Name	Desktop Notes	Overlaps Critical Area (Y/N)	Windshield Notes	Priority
FP-14	Eastern Bay (02130501)	10.1	Queen Anne's County	Blue Heron Nature Preserve	Partially within Critical Area, adjacent to NWI and MDNR wetlands	Y	Site contains forested areas with meadows developing a tree canopy. Phragmites stands noted that could be planted if treated	Low

Appendix F:
Critical Area Mitigation Site Table

May 2026

Appendix F: Critical Area Mitigation Sites

Site ID	Acres	MDE 8-digit Watershed	Easements / Protected Lands	Windshield Notes	Priority
NTW-01	13.3	Kent Island Bay; Eastern Bay	None	Flat open field that is planted and mowed. Some small depressions/swales observed, but no significant drainage features or streams visible. Area of low topography is visible to the northwest. Looks like a ditch may be present that drains off-site. Some Phragmites is visible in spots along the tree line.	Low
NTW-03	23.0	Lower Chester River	None	Not visible from the road.	N/A
NTW-04	43.7	Lower Chester River	None	Not visible from the road.	N/A
NTW-05	11.8	Lower Chester River	None	Not visible from the road.	N/A
NTW-06	15.6	Lower Chester River	None	Not visible from the road.	N/A
NTW-09	13.1	Kent Narrows	None	Tree plantings present along roadway. Some existing wetlands and Phragmites observed within the site. The remainder of site appears flat & lies low in the landscape. Forest conservation sign noted, overhead utilities along road, and ditch along road could impact access.	Low
NTW-10	16.2	Kent Narrows; Eastern Bay	Maryland Environmental Trust	Not visible from the road.	N/A
NTW-11	18.1	Kent Narrows; Eastern Bay	Maryland Environmental Trust	Not visible from the road.	N/A
NTW-12	19.2	Eastern Bay	None	Visible areas were flat & low-lying, access from road and driveway.	Moderate
NTW-13	10.2	Eastern Bay	None	Not visible from the road.	N/A
NTW-14	12.5	Eastern Bay	None	Not visible from the road.	N/A
NTW-15	31.0	Eastern Bay	Transfer Development Rights	Not visible from the road.	N/A
NTW-16	12.5	Eastern Bay	Transfer Development Rights	Open field that has been mowed. Roadside ditch present, likely for stormwater conveyance. Drainage observed within the field to a large patch of Phragmites along the treeline at the eastern end of the site. Potential wetland/stream present at the eastern edge of the site. Utility line along road, but does not cut through the field.	Moderate
NTW-20	11.5	Eastern Bay	None	Not visible from the road.	N/A
NTW-22	34.3	Kent Narrows	None	Flat agricultural field, with good access from adjacent parcel. Curious about hydrology at different times of the year.	Moderate
NTW-23	11.3	Kent Narrows	None	Not visible from the road.	N/A
NTW-24	35.2	Kent Narrows	None	Low lying field currently planted in soybeans with elevation only a few feet above adjacent large wetland system. Site is forested between wetland and field. Good access from road. Overhead utilities along road.	Moderate
NTW-28	39.4	Lower Chester River	None	Flat field currently planted with corn. Ditches that appear on aerial imagery are very shallow and dry. No obvious source of hydrology. Phragmites seen in the distance.	Low

Appendix F: Critical Area Mitigation Sites

Site ID	Acres	MDE 8-digit Watershed	Easements / Protected Lands	Windshield Notes	Priority
NTW-29	37.8	Lower Chester River	None	Flat field with some berms. Some areas sit higher in the landscape.	Moderate
NTW-33	29.9	West River	Federal land	Not visible from the road.	N/A
NTW-34	20.1	West River	None	Not visible from the road.	N/A
NTW-35	25.9	West River	Maryland Agricultural Land Preservation Foundation	Not visible from the road.	Dropped from consideration due to MALPF easement.
NTW-36	11.0	West River	Maryland Agricultural Land Preservation Foundation	Not visible from the road.	Dropped from consideration due to MALPF easement.
NTW-37	47.0	West Chesapeake Bay	Purchase of Development Rights	Flat field planted with corn. Drainage swale within the field outlets to a stream channel. Channel has some incision/exposed roots on the bank but is not sinuous. Drainage swale parallels the farm road within the site. No utilities are visible. Easily accessible. Some areas without corn appear saturated. No streams or ditches are visible within the site.	Moderate
NTW-40	12.0	West River	None	Flat, open field with portions planted with soybeans. Some wetland vegetation is present in areas. The site slopes toward the tree line to the north. A drainage swale is present within the field, but no streams or ditches are visible. A lot of used and unused farm equipment is present near buildings at the western end of the site.	Moderate
NTW-46	22.6	West Chesapeake Bay	None	A palustrine forested wetland is present in one portion of the site. Open meadows are present throughout the rest of the site. The meadows are mostly flat/convex with large patches of Phragmites. A sign is present stating “Meadow Restoration Project.” One intermittent/ephemeral stream channel is present slightly northeast of the first parking area. The area between the existing NWI wetland and the meadow is forested with sweetgum, maple, oak, pine, and cedar.	Low
TW-01	67.8	Lower Chester River	Maryland Environmental Trust	Site is flat with a strip of trees. Phragmites observed.	Low
TW-02	144.3	Lower Chester River	Maryland Environmental Trust	Some portions of the site appear higher than road. Partially planted with corn, scattered trees and regeneration observed in areas. Far side of inlet is not visible from the road.	Low
TW-03	37.9	Lower Chester River	None	South side of site is high in landscape. Potential berm observed as well as pockets of Phragmites.	Low
TW-05	64.1	Lower Chester River	Maryland Environmental Trust	Not visible from road.	N/A
TW-06	12.6	Kent Narrows	None	Not visible from road.	N/A
TW-07	20.8	Kent Narrows	None	Relatively flat, low-lying field planted with soybean. Phragmites dominate the adjacent wetland	Low
TW-08	33.3	Kent Narrows	Maryland Environmental Trust	Not visible from road.	N/A
TW-09	33.3	Eastern Bay	None	Not visible from road.	N/A

Appendix F: Critical Area Mitigation Sites

Site ID	Acres	MDE 8-digit Watershed	Easements / Protected Lands	Windshield Notes	Priority
TW-10	27.6	Eastern Bay	None	Wetlands are likely in the low topography. Cattails and Phragmites visible. A forested buffer of saplings and some mature trees (sweetgum and oak) at the northern end of the site drains to an area of low topography through the field and eventually to the tidal gut. Soybean field is present immediately adjacent to the forested buffer. Site is flat and accessible.	Moderate
TW-11	15.9	Eastern Bay	None	Not visible from road.	N/A
TW-12	34.7	Eastern Bay	None	Not visible from road.	N/A
TW-13	31.0	Eastern Bay	None	Not visible from road.	N/A
TW-14	10.0	Eastern Bay	None	Flat field is present with some depressions/swales visible. Access is possible through a gap in the forested buffer. Area is sloped towards the existing tidal wetlands which appear to be a monoculture of Phragmites. A cluster of mature trees is present in the center of the site. The surrounding area to the east is forested and undeveloped.	Moderate
TW-15	15.7	Eastern Bay	None	Not visible from road.	N/A
TW-17	12.0	Eastern Bay	None	Not visible from road.	N/A
TW-18	21.4	Eastern Bay	None	Flat, slightly convex, mowed field that eventually slopes toward a break in the trees toward the east. Phragmites is visible along the tree line. A portion of the site is fenced along the road and there is an overhead utility line along the south end of the site. A dense tree line is present along the tidal wetland at the northeast end of the site.	Low
TW-19	21.4	Kent Island Bay	None	A concave cornfield sloping toward a stream feature which drains into a mature tree line (stream is outside of view). Hydrology for stream is stormwater runoff via a pipe from an agricultural field on the east side of the road and roadway. Some Phragmites at the pipe outlet and Phalaris within the incised stream channel. Overhead utilities are present adjacent to the roadway. A steep swale is present between the site and road.	Low
TW-20	15.7	Eastern Bay	None	Flat field planted with soybeans and appears to sit low in landscape. Adjacent overhead utilities present.	Moderate
TW-22	15.1	Eastern Bay	None	Not visible from road.	N/A
TW-23	86.7	Eastern Bay	Maryland Environmental Trust and The Nature Conservancy lands	Not visible from road.	N/A
TW-24	48.3	Kent Narrows	None	Not visible from road.	N/A
TW-25	83.3	Lower Chester River	Rural Legacy and DNR owned land	Not visible from road.	N/A
TW-26	98.1	Lower Chester River	DNR owned land	Open field, partially pasture. Phragmites and many strips of trees and regeneration observed. Equestrian trails throughout the site.	Low
TW-27	21.8	Lower Chester River	None	Not visible from road.	N/A
TW-28	28.9	Lower Chester River	None	Not visible from road.	N/A
TW-29	58.0	Lower Chester River	None	Not visible from road.	N/A
TW-30	50.0	Lower Chester River	Chesapeake Bay Foundation owned land	Not visible from road.	N/A

Appendix F: Critical Area Mitigation Sites

Site ID	Acres	MDE 8-digit Watershed	Easements / Protected Lands	Windshield Notes	Priority
TW-31	56.3	Lower Chester River	Chesapeake Bay Foundation owned land	Not visible from road.	N/A
TW-32	11.0	Lower Chester River	None	Phragmites in adjacent wetland.	Low
TW-33	10.0	Lower Chester River	None	Not visible from road.	N/A

Appendix G:
Tidal Fill Removal Area Summary Table

May 2026

Appendix G: Tidal Fill Removal Site Desktop & Windshield Assessment Table

Site ID	MDE 8-Digit Watershed	Site Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
SEVERN RIVER/MAGOTHY RIVER MD 8-Digit Watershed (02131002)						
TF-03	02131002	0.8	None	Cleared land abutting tidal waters.	County property. Gravel and dirt path connects site with road. Minimal tree clearing may be required for site access. Site contains scattered Bradford pear and few sweetgums. Site could be converted to tidal wetland with significant grading and minimal tree removal. Site directly abuts Chesapeake Bay but most of the site is upland.	Moderate
TF-01	02131002	0.3	None	Based on historic aerials, shoreline has eroded since 1957.	Poor access to site. Site is on HOA property and would require tree clearing to access. Site appears directly connected to tidal water and is partly dominated by *Phragmites* and partly dominated by native wetland veg.	Low
TF-02	02131002	2.9	None	Potential fill area according to historical shoreline data.	Site not visible from road.	N/A
TF-04	02131002	1.2	None	Potential fill area according to historic shoreline data.	Site not visible from road.	N/A
TF-05	02131002	0.8	None	Potential fill area according to historic shoreline data.	Site not visible from road.	N/A

Appendix G: Tidal Fill Removal Site Desktop & Windshield Assessment Table

Site ID	MDE 8-Digit Watershed	Site Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
TF-06	02131002	3.6	None	Potential fill area according to historic shoreline data.	Site not visible from road.	N/A
Kent Island Bay MD 8-Digit Watershed (02130511)						
TF-07	02130511	0.9	Local Protected Lands	Potential fill area according to historic shoreline data.	Site access is poor, could not be accessed from trail. Site is directly connected to the Chesapeake Bay. Would require substantial tree clearing for access.	Low
TF-08	02130511	4.0	None	Potential fill area according to 1937 aerial comparison.	Potential access from airport, would require crossing airfield. Appears to be *Phragmites* monoculture. Site is unused land owned by airport and directly connects to Chesapeake Bay.	Low
TF-09	02130511	3.3	Local Protected Lands	Historic aerials, and historic shorelines suggest filled area.	County site. Site is a mosaic of natural habitats including narrow beach adjacent to beach grass (*Spartina* spp.) and *Phragmites* areas with scattered small trees, and mid- successional forest. Site access is good, with existing gravel path suitable for heavy machinery. Site directly abuts Chesapeake Bay, is not currently a wetland, however, elevation is too high for strong current tidal connection. Low priority since site appears to be a natural shoreline.	Low

Appendix G: Tidal Fill Removal Site Desktop & Windshield Assessment Table

Site ID	MDE 8-Digit Watershed	Site Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
TF-10	02130511	4.7	Local Protected Lands	Historic aerials, and historic shorelines suggest filled area.	County site. Site is mostly natural beach habitat consisting of a narrow beach adjacent to beach grass (*Spartina* spp.) and *Phragmites* areas with scattered small trees. Site access is good, with existing gravel path suitable for heavy machinery. Site directly abuts Chesapeake Bay, is not currently a wetland, however, elevation is too high for strong tidal connection. Low priority since site appears to be a natural shoreline.	Low
TF-11	02130511	6.2	Local Protected Lands	Historic aerials, and historic shorelines suggest filled area.	County site with direct access via existing gravel path. Majority of site is comprised of mid-successional forest vegetation not suitable for restoration.	Low
TF-12	02130511	1.3	None	Historic aerials, and historic shorelines suggest filled area.	Site not visible from road.	N/A
TF-13	02130511	0.4	None	Historic aerials, and historic shorelines suggest filled area.	Site not visible from road.	N/A

Appendix G: Tidal Fill Removal Site Desktop & Windshield Assessment Table

Site ID	MDE 8-Digit Watershed	Site Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
TF-14	02130511	0.4	None	Historic aerials, and historic shorelines suggest filled area.	Site not visible from road.	N/A
Eastern Bay MD 8-Digit Watershed (02130501)						
TF-15	02130501	0.1	Local Protected Lands	Fill evident due to presence of bulkhead.	County property with small, paved access route. No direct connection to water, site is separated from Chesapeake Bay by a small beach and riprap. Grading could improve tidal connection. Existing vegetation includes *Phragmites*, small trees, and turf grass.	Moderate
TF-16	02130501	1.3	MD Environmental Trust Easement and Private Conservation Lands (The Nature Conservancy)	Potential fill area due to historic shoreline.	Site not visible from road.	N/A

Appendix H:
Phragmites Removal Summary Table

May 2026

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
SEVERN RIVER/MAGOTHY RIVER MD 8-DIGIT WATERSHED (02131002)						
PT-01	2131002	18.4	DNR Owned Land	NearMap Aerial Imagery	Large, concave P*hragmites* monoculture on DNR property that would require minor tree trimming to access from state parking lot or MDTA facility. Directly connected to Chesapeake Bay.	High
PT-02	2131002	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-01, treatment area combined with PT-01	High
PT-04	2131002	1.7	DNR Owned Land	NearMap Aerial Imagery	Large, concave P*hragmites* monoculture on DNR property with minimal tree removal required. Directly connected to Chesapeake Bay. Easy access off of maintenance path to water tower, utilities located along maintenance path.	High
PT-05a	2131002	5.0	DNR Owned Land	NearMap Aerial Imagery	3 separate large, concave *Phragmites* monocultures connected by small channels. Located on DNR property with potential minor tree removal required to connect sites. Physically separated from Chesapeake Bay by existing revetment - existing 24in metal pipe outlet from pond to revetment. Easily accessible from multiple park paths.	High
PT-05b	02131001*	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-05a, area combined with PT-05a	High

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-06a	2131002	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-05a, area combined with PT-05a	High
PT-06b	02131001*	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-05a, area combined with PT-05a	High
PT-07	2131002	2.8	DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with no tree removal required. Directly connected to vegetated area that abuts Chesapeake Bay. Existing storm water inlet draining baseball field leads to site. Easy access off of adjacent parking lot but machinery would need to skirt existing 3 foot berm.	High
PT-08a	2131002	2.4	DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with no tree removal required. Directly connected to Chesapeake Bay. Easy access off of adjacent parking lot.	High
PT-08b	02131001*	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-08a, treatment area combined with PT-08a	High
PT-09a	2131002	5.0	DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with minor tree removal required within site and for access. Directly connected to Chesapeake Bay. Accessible via maintenance road and youth camp.	High

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-09b	02131001*	N/A	DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-09a, treatment area combined with PT-09a	High
PT-10a	2131002	1.2	None	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with minor tree removal required within site. Directly connected to Chesapeake Bay. Apparent access from maintenance road and Anne Arundel County water treatment facility.	High
PT-10b	02131001*	N/A	Partially within DNR Owned Land	NearMap Aerial Imagery	Overland and hydrologic connection with PT-10a, treatment area combined with PT-10a	High
PT-25	2131002	2.7	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* dominated area containing scattered trees on DNR property. Would require tree minor removal within site and to access site. Directly connected to Chesapeake Bay. Easily accessible from gravel park road, utility wire present between site and road.	High
PT-03	2131002	4.0	DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with no tree removal required. Directly connected to Chesapeake Bay. Potential unconfirmed access from highway shoulder. Easy access would increase priority to high.	Medium

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-24	2131002	3.8	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* dominated area containing scattered trees on DNR property. Would require tree removal within site. Weak connection to Chesapeake Bay via culvert and wooden conveyance. Easily accessible from park road.	Medium
PT-52	2131002	0.4	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on county property with potential tree removal required for access. Directly connected to Chesapeake Bay. Access would require tree removal or accessing through existing non-phragmites wetland.	Medium
PT-18	2131002	0.9	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Apparent large, concave *Phragmites* monoculture on DNR property with substantial tree removal required to access. Directly connected to Chesapeake Bay. Poor access due to forest between road and site.	Low
PT-19	2131002	2.6	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Apparent large, concave *Phragmites* monoculture on DNR property with substantial tree removal required to access. Directly connected to Chesapeake Bay. Poor access due to forest between road and site.	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-20	2131002	0.5	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on DNR property with substantial tree clearing required to access. Directly connected to Chesapeake Bay. Poor access due to forest and higher quality wetland between road and site.	Low
PT-21	2131002	2.8	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on DNR property with substantial tree removal required to access. Directly connected to Chesapeake Bay. Poor access due to forest between road and site.	Low
PT-22	2131002	0.5	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on DNR property with substantial tree clearing required to access. Directly connected to Chesapeake Bay. Poor access due to forest and higher quality wetland between road and site.	Low
PT-26	2131002	0.5	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Concave *Phragmites* monoculture on DNR property with minimal tree removal required. Easily accessible from gravel park road. Direct connection to apparently nontidal pond. Site may not be tidal, no obvious signs of tidal influence and frogs were heard in water body. Low priority due to evidence of no tidal connection	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-39	2131002	0.5	None	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on state property with substantial tree removal required to access. Limited connectivity to Chesapeake Bay through culvert. Highly limited and challenging access, would require shutting down highway lanes and entrance through forest.	Low
PT-40	2131002	0.1	Local Protected Land	NearMap Aerial Imagery	Small, river terrace *Phragmites* monoculture on county property with minor tree removal required. Directly connected to Severn River. Easy access with removal of bollards.	Low
PT-43	2131002	1.9	None	NearMap Aerial Imagery	Medium, concave *Phragmites* monoculture on private properties with tree removal required to access. Directly connected to Chesapeake Bay. Poor access from public road and would require tree removal through private properties.	Low
PT-50	2131002	0.7	None	NearMap Aerial Imagery	Small, river terrace *Phragmites* monoculture on City of Annapolis property with tree removal required to access. Directly connected to Severn River. Challenging access through private property or Navy property.	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-51	2131002	0.3	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on state owned property with tree removal required for access. Appears directly connected to Chesapeake Bay. Poor access. Potentially accessible from Church property and would require tree clearing.	Low
PT-11	2131002	0.9	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-12	2131002	0.8	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-13	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-14	2131002	0.4	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-15	2131002	0.2	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-16	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-17	2131002	2.0	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Not visible from road	N/A

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-23	2131002	1.3	Local Protected Land and DNR Owned Land	NearMap Aerial Imagery	Not visible from road	N/A
PT-27	2131002	0.4	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-28	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-29	2131002	0.9	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-30	2131002	2.7	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-31	2131002	0.7	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-32	2131002	1.8	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-33	2131002	1.1	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-34	2131002	1.0	None	NearMap Aerial Imagery	Not visible from road	N/A

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-35	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-36	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-37	2131002	0.5	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-38	2131002	1.1	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-41	2131002	0.4	Local Protected Land	NearMap Aerial Imagery	Not visible from road	N/A
PT-42	2131002	5.3	DNR Owned Land	NearMap Aerial Imagery	Not visible from road	N/A
PT-44	2131002	0.5	MD Environmental Trust Easement and Local Protected Land	NearMap Aerial Imagery	Not visible from road.	N/A
PT-45	2131002	0.4	None	NearMap Aerial Imagery	Not visible from road	N/A

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-46	2131002	0.3	None	NearMap Aerial Imagery	Not visible from road. Patches of *Phragmites* on adjacent properties – unable to access.	N/A
PT-47	2131002	1.5	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-48	2131002	0.6	None	NearMap Aerial Imagery	Not visible from road	N/A
PT-49	2131002	0.3	MD Environmental Trust Easement	NearMap Aerial Imagery	Not visible from road	N/A
PT-53	2131002	3.3	Local Protected Land	NearMap Aerial Imagery	Not visible from road	N/A
KENT ISLAND BAY MD 8-DIGIT WATERSHED (02130511)						
PT-54	2130511	26.9	Local Protected Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on county property with minimal tree removal required. Directly connected to Chesapeake Bay via channel. Good access from gravel trail, several access points would not require tree removal. Patches of *Phragmites* on adjacent properties – unable to access.	High

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-56	2130511	1.0	None	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on unused parcel with no tree removal required. Direct connection to Chesapeake bay through culvert. Easy access from road on either side of site, but portions of *Phragmites* stand are on private property. Power line located between Victoria Rd and site. Patches of *Phragmites* on adjacent properties – unable to access.	Medium
PT-57	2130511	30.4	MD Environmental Trust Easement and Local Protected Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on county property with tree removal required for access. Direct connection to Chesapeake Bay. Access from walking path through forest stand.	Medium
PT-55	2130511	4.6	None	NearMap Aerial Imagery	Appears to be large, concave *Phragmites* monoculture on unused airport property with potential tree removal required. Directly connected to Chesapeake Bay. Access would require crossing airfield. Patches of *Phragmites* on adjacent properties – unable to access.	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-58	2130511	0.3	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on unused parcel with tree removal required. Small portion of a larger phragmites stand on private property. Directly connected to Chesapeake Bay through tidal waterway. Access through forest between site and road, as well as private properties. Power lines exist between road and site. Patches of *Phragmites* on adjacent properties – unable to access.	Low
PT-59	2130511	0.6	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on unused parcel with tree removal required. Small portion of a larger phragmites stand on private property. Directly connected to Chesapeake Bay through tidal waterway. Access through forest between site and road, as well as private properties. Power lines exist between road and site. Patches of *Phragmites* on adjacent properties – unable to access.	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
EASTERN BAY MD 8-DIGIT WATERSHED (02130501)						
PT-60	2130501	0.2	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on unused parcel with tree removal required. Small portion of a larger phragmites stand on private property. Directly connected to Chesapeake Bay through tidal waterway. Access through forest between site and road, as well as private properties. Patches of *Phragmites* on adjacent properties – unable to access.	Low
PT-63	2130501	18.7	Local Protected Land	NearMap Aerial Imagery	Large, concave *Phragmites* monoculture on county property with low to moderate tree removal required. Directly connected to tidal Cox Creek. Area closest to Main Street is accessible from county library, minimal tree clearing would be needed. Large areas may be accessible from cross island trail but more tree clearing would be needed. Areas adjacent to road may have utility conflicts.	Low

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-65	2130501	0.1	None	NearMap Aerial Imagery	Small, concave *Phragmites* monoculture on unused marsh parcel with minimal woody shrub removal required. Direct connection to Chesapeake Bay. Easy access from road, but potion of stand located on private property. Power lines exist between road and site. Patches of *Phragmites* on adjacent properties – unable to access.	Low
PT-66	2130501	0.6	Local Protected Land	NearMap Aerial Imagery	Large, concave/terrace site with small patches of dense *Phragmites*, most of area is *Baccharis halmifolia* and *Spartina patens* with small areas of very sparse *Phragmites*. Located on county property with minor tree removal required to access. Direct connection to Chesapeake Bay. Easy access from road. Site already has a good tidal connection and Phragmites is only present in patches throughout site. Site would be better suited for spot treatment rather than full tidal restoration.	Low
PT-61	2130501	2.0	MD Environmental Trust Easement and Local Protected Land	NearMap Aerial Imagery	Not visible from road	N/A

Appendix H – Phragmites Removal Area Windshield Assessment Summary Table

Feature ID	MDE 8-Digit Watershed	Treatment Area (Acres)	Easements / Protected Lands	Desktop Resources	Windshield Notes	Site Priority
PT-62	2130501	0.6	Local Protected Land	NearMap Aerial Imagery	Not visible from road. Patches of *Phragmites* on adjacent properties – unable to access.	N/A
PT-64	2130501	6.2	None	NearMap Aerial Imagery	Not visible from road	N/A