

APPENDIX D2: Stream Buffer Quality Assessment (SBQA) Instructions

For Maryland Stream Mitigation Framework Version 1 Final

SEPTEMBER 2023

I. Summary

Through the Maryland Stream Mitigation Framework Version 1 (MSMF V.1.), stream mitigation credits (functional feet) may be awarded for improvements to stream buffer areas within 200 feet of perennial or intermittent stream channels measured from the edge of water during baseflow conditions. The process of identifying assessment areas and performing the Stream Buffer Quality Assessment are described below. Note that existing score values apply to initial conditions before mitigation work is performed, and proposed conditions should apply estimated conditions at the end of the monitoring period (10 years) after work is completed. Monitoring will occur throughout the monitoring period to ensure a site is tracking towards proposed values at year 10, and adjustments will be made to final crediting regarding deviations from the proposed values. The SBQA determines Buffer Quality for MSMF V.1. Calculator **Tab 4 Stream Mitigation Buffers**.

These instructions apply to both **Appendix D1: Stream Buffer Quality Assessment** and **Appendix D3: Stream Buffer Quality Assessment (for Post-Construction Monitoring Sheet)**

Note: Throughout this document, the phrase "conservation easement boundaries" as this is the preferred site protection approach. For the purpose of this instructional document, the phrase is used broadly referring to the project boundaries, areas in a (proposed) deed restriction or conservation easement, or areas on public lands that are within the project work area. The phrase refers to areas that must be protected after work is performed.

II. Materials

To perform the stream buffer quality assessment, the following materials are needed: Known area of work or proposed conservation easement boundary, mapped utility easements and infrastructure, vegetation identification books, a DBH tape, historic and current satellite imagery, notebooks, measuring tape, a copy of the MSMF V.1. Stream Buffer Quality Assessment Instructions (this document), and copies of the MSMF V.1. Stream Buffer Quality Assessment sheet and veg data sheets. A detailed map of site terrain may also be helpful.

Useful links (See References):

Maryland Watershed Resources Registry

Maryland State List of Invasive Plants

III. Items required when submitting data sheets

- 1) Map of all Credited Stream Buffer Areas including onsite utility corridors and infrastructure, existing aquatic resources, and a scale bar.
- 2) A Stream Buffer Quality Assessment (SBQA) for each Credited Stream Buffer Area (CSBA)
- 3) Vegetation data sheets for each SBQA. At least one SBQA must be provided for each 2 acres of a given CSBA. For example, a 10 Acre CSBA would require 5 vegetation data sheets. The vegetation data sheets then inform the SBQA.
- 4) Photos of each vegetation plot and of the larger CSBA.

IV. Process

- 1) Top Section of MSMF V.1. Stream Buffer Quality Assessment
 - a. Background Info
 - i. Project Name
 - ii. Credited Stream Buffer Area (CSBA) Name: CSBA name (*Example: "Bottomland Pasture", See Step 2 for CSBA definition*)
 - iii. Assessors: Name of those who completed the Assessment
 - iv. Date: Date assessment was performed
 - v. Lat/Long: Coordinates in decimal degrees
 - vi. Corps application/permit number: *if known*
 - vii. CSBA (Acres): After identifying the Credited Stream Buffer Area (CSBA) boundaries (*see Step 2*), list the acreage of the CSBA.
 - b. Fill out upon assessment completion:
 - i. Existing Buffer Quality (%): Tally all Existing Condition scores for Metrics 1-7 to determine the Existing Condition Score.
Existing Buffer Quality (%) = Existing Condition Score / 28 X 100.
 - ii. Proposed Buffer Quality (%): Tally all Proposed Condition scores for Metrics 1-7 to determine the Proposed Condition Score.
Proposed Buffer Quality (%) = Proposed Condition Score / 28 X 100
 - c. Include in Submittal with Stream Buffer Quality Assessment
 - i. Mapping: Maps of the project area including all utilities, delineated wetlands, proposed easement boundary, locations of CSBA's, and existing and proposed locations of streams.
 - ii. Representative photographs of each CSBA and additional photos for each vegetation sample location.

2) Identifying Credited Stream Buffer Areas (CSBA's)

The Credited Stream Buffer Area ('CSBA') is the riparian area beyond the stream channel which will be/has been restored, enhanced, or preserved as a result of the mitigation proposal. With responsible stewardship and legal protections, a CSBA may provide protection to the stream and habitat for riparian species. Multiple CSBA's may be identified on a stream mitigation site, and assessors must identify new CSBA's where vegetation differs substantially (plant community

changes). At a minimum, new CSBA's should be identified for wetlands, upland areas of the valley bottom, and hillsides if those three topographic areas occur on a site. The CSBA may not extend beyond 200 feet from the baseflow channel edge (without approval), and utility corridors and credited wetlands must be removed from the CSBA area (Acres) and these areas may not be included in the assessment. In each metric, circle the most applicable number for your assessed area.

3) *Wetlands and infrastructure within the CSBA, and Credit Bundling:*

- a. *Wetlands/infrastructure:* The stream buffer quality assessment for existing conditions may include existing wetlands in the CSBA if they are not being credited for wetland mitigation (or other programs). We recommend they are identified as their own CSBA(s) as vegetation will differ here from upland areas of a valley bottom. The SBQA may not be applied to infrastructure easement areas. Such areas must be mapped and may not be included in the CSBA Area (Acres) shown at the top of the data sheet.
- b. *Credit Bundling:* For mitigation banks, an applicant may elect to “bundle” stream buffer and wetland credits. This is where two resource types overlap and may be sold as either stream credits (for buffers) or wetland credits. More details on this topic can be found in the MSMF V.1. Final Manual.

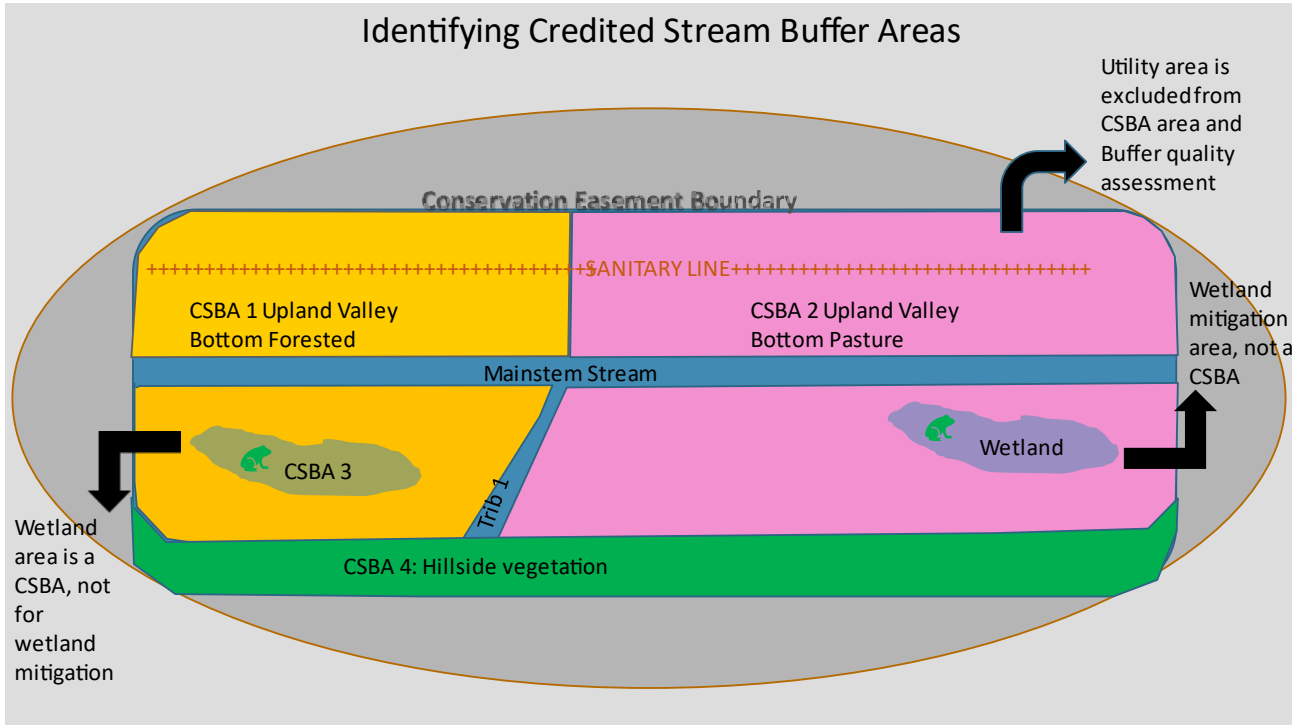


Figure 1. Proposed conditions, example showing the Credited Stream Buffer Areas of an example site. Note that credited wetlands and infrastructure areas are not included in the CSBA acreage.

V. Stream Buffer Quality Assessment Metric Narratives

The SBQA include a Rating Sheet, a Vegetation Data Sheet(s), and a Weighted Average Sheet. The Vegetation Data sheet and Weighted Average Sheet only apply to metrics 1, 3, and 4 below. The remaining metrics are determined by examining the entire CSBA.

Metric 1: Plant Species Richness in the CSBA (derived from MDWAM 2022)

Ranges	11+	9-10	6-8	2-5	2 or less
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

When using the "Vegetation Data Sheet", count only species with >5% absolute cover for each strata. After completing all vegetative data sheets for all vegetation plots in the CSBA, complete the "Weighted Avg_Metrics 1,3,4" Sheet. Use the "Metric # 1 Weighted Avg" at the bottom of that sheet to complete the rating below. Additional species located outside of vegetative data sampling plots should be added if they comprise ≥5% of the entire CSBA. You may observe these while walking between plots. Stream mitigation projects which result in an increase in native species richness

appropriate for the location will produce higher increases comparing existing vs. proposed values.

Metric 2: Percent Canopy Cover in the CSBA (Derived from Unified Stream Methodology 2008)

Ranges	>60%	30-59%	10%-29%	1-9%	0%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

Examine the. Apply the percent canopy cover to the table above. If more than one data sheet was used, apply the sheet most representative of the CBSA.

Metric 3: Number of Strata in the CSBA (derived from MDWAM 2022)

Ranges	4+	3	2	1	0
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

Indicate the number of strata observed in the CSBA. Add one point for mosses covering >5% of plot. When using the "Vegetation Data Sheet," a stratum must be present in at least 5% of the plot to be counted. After completing all vegetation data sheets for all vegetation plots in the CSBA, complete the "Weighted Avg_Metrics 1,3,4" Sheet. Use the "Metric # 3 Weighted Avg" at the bottom of that sheet to complete the rating below, rounding to the nearest whole number if needed.

Metric 4: Non-Native/Invasive Infestation (Total Relative % Cover) in CSBA(MDWAM 2022)

Ranges	<1%	1-10%	11-25%	26-50%	51-100%
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

Using the "Vegetation Data Sheet" tally the absolute cover of all species (all strata) and then add the absolute cover of all non-native/invasive species. Divide the total % cover non-native/invasive species cover by the total absolute cover. See bottom of veg data sheet. User should include information from vegetative data sheets and additional observations outside data sheets to get a representative estimate of non-native/invasive cover in the CSBA. After completing all vegetative data sheets for all vegetation plots in the CSBA, complete the "Weighted Avg_Metrics 1,3,4" Sheet. Use the "Metric # 4 Weighted Avg" at the bottom of that sheet to complete the rating below.

Metric 5: Life Forms (MDWAM 2022, CRAM)

Ranges	6 or greater	4-5	3	<2	0
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

At least >5% cover in entire CSBA for any of the following life-forms: Bryophytes (mosses), coniferous trees, deciduous broadleaf trees, evergreen broadleaf trees, ferns, grasses, herbs, lichens or fungi, sedges/rushes, shrubs, vines, floating/SAV.

Metric 6: Age of Plant Community (derived from MDWAM 2022)

Ranges	50 years + (Approaching maturity). For forest, DBH>20"	20-49 years (Mid successional) For forest, DBH 8-19.9"	10-19 years (Early-mid successional). For forest, DBH 4-7.9"	5-9 years (Early successional). For forest, DBH 2-3.9"	<5 years (pioneer) or pasture/ag. For forest, DBH <2"
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

Using satellite imagery and a DBH tape, estimate the age of the existing natural plant community for the entire CSBA. When applying DBH, ignore outliers, and instead look for an age class (largest 20% of trees). For restored/enhanced areas with vastly different age classes (e.g., due to planting mortality), either split into separate CSBAs or calculate weighted average of age class. Omit stands consisting of only a few trees. Consult with Corps/MDE reviewers if you suspect historic plant community was not forested or age of plant community is difficult to estimate. In rare instances this metric may be omitted when reviewers recommend a non-forested plant community for the CSBA.

Metric 7: Woody Debris in CSBA (derived from MDWAM 2022, CRAM)

Ranges	Woody debris widespread, covering >20% of the CSBA.	Woody debris common, covering 15-19 %of CSBA.	Occasional woody debris present (Covering 10-14% of CSBA).	Woody debris scarce (<10% CSBA coverage).	Woody debris very scarce or not present
Existing	4	3	2	1	0
Proposed	4	3	2	1	0

Walk the entire CSBA noting % cover of woody debris. Woody debris must be at least six inches in diameter and six feet long. Add one point if multiple snags observed which have cavities or trees with sloughing bark suitable for use by bird or bat species. For sloughing bark, include conditions typical of shagbark hickory but not those typical of river birch. Multiple live trees with cavities or sloughing bark as described above may also be counted for the one point increase for this metric.

REFERENCES

- California Wetland Monitoring Workgroup (CWMW). 2019. Using the California Rapid Assessment Method (CRAM) for Project Assessment as an Element of Regulatory, Grant, and other Management Programs. Technical Bulletin – Version 2.0, 85 pp
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- Maryland Department of the Environment. 2021. Guidance for Stream Restoration Based on Key Wildlife Habits: Upper Coastal Plain Stream-Associated Wetlands. Pilot Method to Apply Rapid Ecological Integrity Assessments in Wetlands of Riparian Areas in Maryland.
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