Bill Number HB 942 "Wetlands and Waterways Program - Authorizations for Stream Restoration Projects"

ENT Committee Hearing on 3/3/2023

Corrections to Industry (and Other) Misinformation

Installment #1

3/8/2023

NOTE: because of the vast amount of misinformation, half-truths, and greenwashing put forth in both written and oral testimony, this document will be sent out in installments so as to provide Delegates at least some information before the ENT voting.

By

Kenneth Bawer

Contents

COMMENTS ON "FISCAL AND POLICY NOTE"

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COMMENTS ON ORAL TESTIMONY

THIS SECTION NOT COMPLETE

Oral testimony recording link from March 3

https://mgaleg.maryland.gov/mgawebsite/Committees/Media/false?cmte=ent&clip=ENV_3_3_2023_meeting_1&ys=2023rs from 1:43:50 to 3:43:00

Oral testimony in response to Del. Stewart's question about Hilderbrand's research

Below corrects an outright falsehood perpetrated by the industry during the 3/3/2023 ENT hearing. I reached out to Dr. Robert Hilderbrand for his comments on industry statements about his research.

Per Del. Stewart's question about Robert Hilderbrand's research, I contacted Bob (I do know him on a first name basis) and asked him to comment on the industry employees' criticism that his study only looked at one type of stream restoration (which they mischaracterized as a specific type of "stream armoring", and which is not even an MDE-recognized stream restoration technique) which, they said, did not represent the whole universe of practices that are used in stream restoration. In fact, the universe of stream restorations techniques is a very small universe, consisting of only 3 different techniques: Prevented Sediment (Natural Channel Design (NCD)), Hyporheic Exchange (wet channel Regenerative Stormwater Conveyance (RSC)), and Floodplain Reconnection. In his response (see his note below), Bob states that he looked at both NCD and RSC which encompasses 66% of the "universe" of stream restoration techniques - hardly a tiny subset of techniques as was stated by the industry person. Furthermore, NCD is the most common technique used for stream restorations.

Bob refuted their assertion saying, "…many of the projects I looked at were not what I would consider armoring projects. However, they did armor specific areas of channel banks in order to prevent erosion," which is done in virtually all projects. His paper (Hilderbrand, Robert H., et. al., "Quantifying the ecological uplift and effectiveness of differing stream restoration approaches in Maryland," Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, 2020 (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf) says, "There simply were few ecological differences between restored and unrestored sites. In fact, the unrestored sections upstream were often ecologically better than the restored sections or those downstream of restorations."

Bob says that his more recent paper found "that restorations usually end up with no better, and often worse, benthic macroinvertebrate responses [which is an industry-standard for measuring in-stream biology] than were the stream left alone." This paper looks at mostly, but not exclusively, NCD-type projects.

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My note to Robert Hilderbrand on 3/5/2023: "At about 3:09:45, Delegate Stewart referred to the Chesapeake Bay Journal from 2020 in which you are quoted about your research showing the lack of biological uplift. He asked the industry reps for their comments. The industry panelist was dismissive of your study as being specifically applicable only to a type of stream armoring where you have not reduced the level of flow [their words, and I'm not sure what that means], and that you were only looking at a subset of very specific practices that do not represent the whole universe of practices that are used in stream restoration. Would you be able to comment on that? They seem to be saying, for example, that you only looked at projects using e.g., Natural Channel Design, but not Regenerative Stormwater Conveyance or Floodplain Reconnection, or vice versa, whatever the case may be. Is that a valid criticism of that study. As I recall, the article and your comments were based on your paper, Hilderbrand, Robert H., et. al., "Quantifying the ecological uplift and effectiveness of differing stream restoration approaches in Maryland," Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, 2020."

Robert Hilderbrand's response on 3/6/2023:

"Hi Ken,

Feel free to pass this along to anyone.

My study looked at 2 types of restorations: natural channel design (NCD) in piedmont streams and both Regenerative Stormwater Conveyance (RSC) and NCD in the coastal plain. Technically, they are correct that I did not explore the entire universe of techniques, but RSC and NCD approaches represent the vast majority of restorations in the area to my knowledge. I'm not fluent in restoration engineer/practitioner speak so there may be differences in opinion here, but many of the projects I looked at were not what I would consider armoring projects. However, they did armor specific areas of channel banks in order to prevent erosion. I would like to know how their approach substantively differs from those that I and others have studied. I would also like to see strong evidence, and not just anecdotes, that their proposed method works in most of their restoration projects.

My more recent work (see attached final report) examined what we can realistically expect from a stream restoration given the landscape setting of each specific project. That is, we need to be realistic and cannot expect a restoration to produce a really high quality biotic response if it is in a highly urbanized watershed. My research corrected for the watershed impervious surface cover (ISC) to forecast what we can realistically expect given the ISC levels. It turns out that most (not all, but most of them) restored streams achieved lower benthic invertebrate scores than unrestored streams having similar levels of ISC in their upstream catchment. It's a pretty technical research project, but the gist is that restorations usually end up with no better, and often worse, benthic macroinvertebrate responses than were the stream left alone. The projects were almost exclusively in Montgomery County and were mostly NCD-type projects for which the county had monitoring data. I looked at all restorations that had monitoring data in the county."

COMMENTS ON WRITTEN TESTIMONY

American Council of Engineering Companies/MD (ACEC/MD)

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Chesapeake Watershed Restoration Professionals (CWRP), by Liam O'Meara

NOTE: CWRP is essentially a lobbying arm of the stream restoration industry including construction companies and mitigation bankers. Their web site does not list its members.

CWRP: "This bill is unnecessary in that the issues raised are already adequately addressed in current requirements."

FACT: This is a demonstrably false statement given the documentation in the West Montgomery County Citizens Association's (WMCCA) written testimony[1] and the Chesapeake Bay Program's Expert Panel Report[2], Figure 1) that stream restorations are being blown-out by rainstorms due to uncontrolled or inadequately controlled out-of-stream runoff and 2) the scientific reports that stream restorations do not result in biological uplift. (See the comments below on MDE's written testimony).

CWRP: "Furthermore, there is already a study underway as directed by HB896 [sic] of the 2022 legislative session to study how MDE reviews and permits ecological restoration projects."

FACT: Unfortunately, the HB 869 study is flawed from the start and will not result in an unbiased report. Any results, conclusions, and recommendations from the HB 869 2022 study will be potentially biased by MDE's current mindset in favor of stream restorations[3] and will be tightly controlled by MDE. Study participants were told during the 12/13/2022 meeting that participants will not be able to vote on any aspects of the final report and that the final

[1] Not yet posted to the Maryland General Assembly site at https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/hb0942

[2] "Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed," Approved by the Urban Stormwater Work Group of the Chesapeake Bay Program Date: June 18, 2019 (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf)

[3] For example, Director Lee Currey of MDE's WSA touted the benefits of the flood plain reconnection type of stream restoration (during a 2/21/2023 meeting with Delegate Boyce, Ken Bawer, Blue Water Baltimore, and Chesapeake Bay Foundation) while ignoring their obvious destructive nature. In addition, MDE ignored the common-sense recommendations of the Choose Clean Water Coalition that MS4 permits require a greater emphasis on out-of-stream stormwater control by "…requiring some minimum amount of green infrastructure to be undertaken by jurisdictions to comply with these newest permits," that "…MDE cap the amount of credits a single jurisdiction can generate toward compliance with their [stream] restoration[s]…," and that stream restorations "…demonstrate biological uplift as proposed by the Expert Panel Report," per CCWC's Jan. 20, 2021 letter to Mr. Raymond Bahr, MDE, WSA.

report will be authored solely by MDE (per Kenneth Bawer, a participant in the study representing West Montgomery County Citizens Association). While MDE says that it may consider input from across the regulated community, MDE has stated that they are not bound to accept any recommendations from the study group members. Thus, MDE is free to "listen and ignore." Another problem is that since MDE is apparently satisfied with current stream restoration construction techniques and MS4 permit crediting schemes, this study is being controlled by a group arguably with a predisposition to maintain the status quo. The study is therefore flawed from its inception due to this conflict of interest. The only way to ensure that the results of a study are based solely on science would be to have a truly independent panel of scientist in fields such as fluvial geomorphology, ecology, botany, etc. who conduct a study based on the science, not based on considerations of the for-profit, engineering-based stream restoration industry or entrenched MDE thinking.

CWRP: "On changing restoration criteria: The Chesapeake Bay Program has utilized expert scientific panels composed of the leading scientists and practitioners that study, collect data, and model current stream restoration and techniques. Through the work of these dedicated professionals, the credit generation practices for stream restoration have been refined several times through exhaustive research and the utilization of the most modern data available. This process is rigorously scientific and objective in nature, and it should be kept that way."

FACT: This is a false and misleading statement. First, HB 942 does not the credit generation practices for stream restoration. Second, the CBP's approval process is neither "rigorously scientific" nor objective: it was not created by an independent panel of scientists with no financial conflicts of interest. The CBP Expert Panel included employees of the for-profit, engineering-based stream restoration industry who are primarily engineers, not scientist, and who had a vested interest in ensuring that the crediting calculations maximized their profits. This was a blatant conflict of interest. As such, the use of these Expert Panel reports is arguably a corrupt process.

Furthermore, the panel members as a whole did not have expertise in all the disciplines required to evaluate the total impact of stream restorations including, but not limited to, fluvial geomorphology, geology, hydrology, riparian ecology, wetland ecology, stream ecology, population ecology and dynamics, botany, ornithology, herpetology, ichthyology, habitat ecology, total environmental impact analysis, and ecosystem services analysis.

CWRP: "On disincentivizing stream restoration as a BMP: Any impervious acre credit to any BMPs must be scientifically defensible and be determined through the currently accepted process for determining pollution reduction. Current crediting of BMP's has undergone extensive research and peer review."

FACT: This is a misunderstanding of HB 942 since it does not require disincentivizing steam restoration via changes to impervious acre credits. Plus, as noted above, current crediting of BMPs was based on input from industry employees having a conflict of interest. In addition, the current impervious acre credits are not scientifically defensible. As explained more fully in the comments on MDE's written testimony (below), the Expert Panel is so unsure of the results of their estimation calculations that they take what falls out of the bottom and

randomly cut it by 50% "…to account for the presumed efficiency of stream restoration practices."[4] So much for being scientifically defensible. As far as we know, there is no peer reviewed scientific literature to support using the Expert Panel recommendations.

CWRP: "No BMP practice can simply be incentivized over others if they do not result in greater pollutant load reductions."

FACT: This is a misunderstanding of HB 942 since it is not prescriptive about how MDE should incentivize out-of-stream (upland) alternative BMPs (project types). There are many ways to incentivize BMPs besides pollutant load reductions. The provision of additional incentives for upland stormwater control may require some out-of-the-box thinking. For example, DEP could award bonus credit for the rainfall depth treated for structural practices to greater than the current one inch maximum. Or, MDE could put an MS4 permit cap on the percentage of credits that can be achieved via stream restorations and a minimum percentage for out-of-stream stormwater control credits. MDE could incentive upland stormwater control by combining certain MS4 Permits, such as Montgomery County and Montgomery Parks. Currently, Montgomery Parks has no ability to do upland stormwater control at its source when the stormwater comes from outside their parks in the county itself. Combining MS4 permits for the county and parks would eliminate that finger pointing. Another idea: MDE could recommend laws requiring existing buildings to meet new-build stormwater control requirements upon property transfer (i.e., at the time of sale) which would be eligible for MS4 permit credits.

This bill does not require, nor suggest, that credits for efficiencies be changed, but it should be noted that the current credits for stream restoration are numbers developed with the help of industry employees with a conflict of interest as described above.

CWRP: "On defining geographic limits for restoration: The Maryland Department of the Environment (MDE) and the US Army Corp of Engineers (USACE) currently require resource impacts to be mitigated within an 8-digit Hydrologic Unit Code (HUC) Watershed. This is consistent with how resource impacts and associated mitigation are managed across the entire US."

FACT: Per the written testimony of the Stormwater Partners Network, "This clause [of HB 942] is clearly meant to apply to mitigation banks…. These types of mitigation banks are permitted by the U.S. Army Corps of Engineers, in partnership with MDE. Under the Mitigation Rule,3 the Army Corps is already directed to prioritize mitigation within the same watershed where impacts occur, but has great latitude to define the scale of watershed to be used as well as to use their best judgment if they find in-watershed mitigation to be impractical. … The bill's sponsors could consider requiring that the Department and the Army Corps require that the applicant mitigate their impacts in the same HUC-12 or, at largest, HUC-10 sub-watersheds where the impacts occur."

[4] 2019 Protocol 1 Guidance: "Consensus Recommendations for Improving the Application of the Prevented Sediment Protocol for Urban Stream Restoration Projects Built for Pollutant Removal Credit," p. 8; https://chesapeakestormwater.net/wp-content/uploads/2022/07/9928-1.pdf

CWRP: “On requiring biological uplift: Currently, the MDE and USACE require that stream restoration projects result in ecological uplift through use of the Stream Functions Pyramid. Biological improvement is Step 5 of the Pyramid.”

> **FACT: This is purposely misleading statement that industry employees make repeatedly. While stream restorations done for mitigation projects are required to demonstrate biological improvement, those done for MS4 permits are NOT required to demonstrate biological uplift. MDE should also require biological uplift for stream restorations done for the MS4 permit since a stream restoration is a stream restoration.**

CWRP: “Consequently, the existing process requires that practitioners create the conditions [emphasis added] for biological uplift to occur as regional environmental conditions allow.

> **FACT: This is a misleading statement. Only stream restorations done for mitigation projects are required to show biological uplift. However, the existing MS4 permit process does NOT require that practitioners even create the conditions for biological uplift to occur, nor does it require that biological uplift actually occurs for MS4 permit credit to be granted. Again, if mitigation stream restoration projects require biological uplift, then so should MS4 permit projects as well as other TMDL projects.**

CWRP: “It is not practical to require biological uplift of in-stream biology as there are limiting factors that cannot be controlled on the stream restoration sites. These ubiquitous negative externalities include road salt pollution, offsite barriers to wildlife migration, extreme temperatures, and general poor water quality.”

> **FACT: This is a false statement. The Federal Mitigation Rule already requires that stream restorations done for mitigation projects require biological uplift of in-stream biology. Since there have already been numerous stream restoration mitigation projects, the assertion is demonstrably false.**

CWRP: “It is absolutely the goal of stream practitioners to improve biological function through in-stream habitat creation, but it may take decades, if ever, for recolonization to occur of imperiled populations of aquatic dependent wildlife.”

> **FACT: This is a misleading statement. Currently, per MDE the only goal of stream restorations done for MS4 permits is to prevent stream-bank erosion. The purpose of HB 942 is to add the goal of biological uplift. If mitigation stream restoration projects currently require biological uplift, then so should MS4 permit projects as well as other TMDL projects. In addition, this bill has nothing to do with recolonization of imperiled populations.**

CWRP: “On minimization of tree impacts: A requirement already exists for stream restoration projects to achieve no-net-loss of forest cover and to minimize tree impacts to the extent possible.”

> **FACT: This is a misleading statement. In practice, any no-net-loss requirement currently results in the clear-cutting of mature stream-side forests, as well documented in the WMCCA written testimony, and replacing them with young saplings that will take decades to achieve the pre-construction forest cover. Thus, during the decades it takes for young tree growth to**

reach the no-net loss cover target, we have lost decades worth of mature forest habitat and carbon sequestration which exacerbates global warming. Plus, "no-net-loss of forest cover" only refers to trees and ignores the loss of the forest as an interdependent community of understory shrubs, wildflowers, and animals which will take even longer recover, if ever.

Photographic evidence in the WMCCA written testimony also shows the complete lack of critical root zone protection in many projects which will lead to eventual death of "spared" trees.

CWRP: "The implementation of mulch and mat roads through the woods to gain access to the stream corridor are specifically designed to protect the critical root zones of trees."

FACT: This is a misleading statement. There is ample photographic evidence in the WMCCA testimony that not all projects use mulch and mat roads. Many projects run heavy equipment directly on bare forest floor soil. Plus, photographs of the Solitaire Court project in Gaithersburg show trees with vertical wood scape protectors tied to tree trunks – a clear indication that heavy construction equipment is close enough for someone to be concerned about scraping the tree trunks. The tens of feet of critical root zone protection is non-existent.

CWRP: "Additionally, the forest impacts of restoration are almost always temporary, but the protection of the restored riparian corridor is permanent."

FACT: This is a false statement. It takes decades or hundreds of years for clear-cut forests to recover, if they ever do. Plus, the science shows that biological uplift is rarely, if ever, achieved. It is also demonstrably false that stream restorations are permanent. The WMCCA written testimony provides photographic evidence that stream restorations are being blown out and require expensive repairs due to the lack of out-of-stream stormwater control. The Lower Booze Creek stream restoration in Potomac originally cost $700,000. After its completion, the Montgomery County Department of Environmental Protection web site states, "Storm damage occurred very soon after construction, initiating structural failures." The repair work cost an additional $3.6 million. Since stream restoration companies typically only guarantee their work for one year, when they are destroyed after that it is the taxpayers who pick up the bill.

CWRP: "On delaying credit certifications by 10 years: A full decade of monitoring before any credits are issued would render ecological restoration completely unworkable for the purposes of the Chesapeake Bay Program and severely limit what restoration work is even possible in the State of Maryland."

FACT: We agree, as does the bill's sponsor, and suggest that credits be released according to a timed schedule determined by MDE.

CWRP: "On public notice: Currently, public hearings can be requested and are granted. We absolute do not oppose public hearings, but they are expensive and if they are required for every project, this will add significant expense and time for any applicant, the majority of whom are local governments, non-profits, and government agencies. Furthermore, the planning and implementation of public hearings are time consuming for state agencies and would require more staff to manage."

FACT: This is a false statement. Zoom meetings cost a trivial amount of money and a small amount of time. While it is true that public hearing can be requested, the problem is that most residents are rarely aware of these projects and therefore don't request public hearings. The reason there has not been massive outcry about "restoration" projects is that the public notification process is broken.

While bill HR 942 is not prescriptive, one would hope that MDE would be begin by requiring that more than immediate property owners or communities be notified about projects since restoration sites are often in natural areas used by entire jurisdictions. Plus, the impact of projects can be felt far outside the immediate community as evidenced by the fact that stream restorations are meant to impact the Bay. Communities should also be notified of projects proposed for private property since the impact of projects is never confined solely within private property boundaries.

One could envision that MDE and local jurisdictions could be required to notify all interested parties who have requested, via a web site for electronic sign-up, to be notified via email of requests for stream restoration project permits. Such web sites could allow interested parties to be notified of all projects statewide, or just for selected jurisdictions. Note that the USACE already has a web site to sign-up for permit requests at https://www.nab.usace.army.mil/Missions/Regulatory/Public-Notices . MDE has a site where notices are posted at https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Pages/publicinformation.aspx, but it is almost impossible to find with a common sense web search and it doesn't link to any of the detailed project proposal information (it does provide an email address to request more information, but why not cut out the middle man?). Furthermore, all public comments should be responded to and all public comments as well as department and permittee responses could be posted on the web site without the need for a public information act request by the public. Currently, these comments all go into a black hole.

If there are any vendor (permittee) modifications to their proposals, either required by MDE, the USACE or for any other reason (except for trivial changes such as fixing typographic errors), the modified proposal could be posted and interested parties could be notified. Non-trivial changes could trigger another round of public hearings and comments. Additional rounds of public hearings and comments could be held as additional, non-trivial modifications to proposals are made. Expediting any review process only serves to limit government oversight and citizen review, input, and comment. Quality proposals should not require modifications post submittal.

The public could be kept informed of the status of each permit via postings to the web site. This site could show all the steps in the process leading up to a final determination (i.e. permit approval or denial or withdrawal by the applicant) and where in this process each permit currently resides. The web site should allow the public to register for a tracking account which would push update notifications to the registrant. This could be patterned after the MD General Assembly website (https://mgaleg.maryland.gov/mgawebsite/) where one can register to be notified of progress on a bill of interest.

CWRP: “This would slow, not just stream restoration projects, but the review, approval, and enforcement of all projects that require MDE approvals. This does not just include housing and commercial development but importance public works projects such as schools, transportation improvements, and affordable housing.”

> **FACT: This is both a false and a self-serving statement by a for-profit industry. This is a bill about stream restorations. HB 942 has absolutely nothing to do with housing and commercial development or schools, transportation improvements, and affordable housing. Expediting any review process only serves to limit government oversight and citizen review, input, and comment. If the concern is that the speed of permitting for stream restorations could be slowed by necessary oversight, the US Army Corps of Engineers has the authority to authorize out-of-stream projects for mitigation per the Federal Mitigation Rule.**

CWRP: “For transparency and efficiency CWRP recommends the adoption of a permit tracking system similar to the Virginia Department of Environmental Quality’s Permitting and Evaluation Platform.

> **FACT: The Virginia site (https://portal.deq.virginia.gov/peep-search) is only for businesses, not for use by the general public. Per this site, “This system is intended solely for users conducting business with DEQ for the purposes of fulfilling obligations under a permit, regulation, statute or other DEQ program. Those who need to review DEQ records for other purposes may submit a request under the Freedom of Information Act.” This is hardly a model of transparency.**

Ecosystem Investment Partners (EIP), by Nicholas Dilks

EIP: “Impervious acre crediting methodologies used to meet the TMDL already make scientific benefit comparisons between upland BMPs versus stream restoration, and there is strong evidence that while both provide benefit, stream restoration is far more cost effective.”

> **THIS SECTION NOT COMPLETE (see revised FAP).**

Maryland Association of Counties (MACo), by Dominic Butchko

MACo: “This bill would impose stringent barriers on stream restoration projects, effectively hampering one of counties’ most effective tools for stormwater management.”

> **FACT: This is not a true statement – it is not supported by the documented photographic evidence in the West Montgomery County Citizens Association’s written testimony that stream restorations are being blown-out by rainstorms due to uncontrolled or inadequately controlled out-of-stream runoff. (See the WMCCA comments on MDE’s written testimony).**

MACo: “Stream restoration has been a widely approved practice to meet state and federal requirements under municipal separate storm sewer system (MS4) permits.

FACT: This is a misleading statement. While stream restorations are widely approved, that does not refute the fact that the approval process is flawed due to Expert Panel conflicts of interest and that stream restorations are a failed practice, both physically and biologically. To use an analogy, the promoters of DDT would say that its use was a widely approved practice. (See our comments on MDE's written testimony).

MACo: "The Chesapeake Bay Program has accepted stream restoration projects as a best management practice (BMP) for years and already has a rigorous and scientifically based approval process for updating its BMP."

FACT: This is a false statement. CBP's approval process is not scientifically based and is not created by an independent panel of scientists with no financial conflicts of interest. The current CBP Expert Panels includes employees of the stream restoration industry who, by definition, have a conflict of interest. (See our comments on MDE's written testimony).

MACo echoes the concerns and opposition of the Maryland Municipal Stormwater Association (MAMSA) – whose members represent nearly all counties and are the subject matter experts in stormwater and stream restoration.

FACT: This is a false statement. MAMSA's membership is primarily people with engineering backgrounds. They clearly are not experts in all the disciplines involved in evaluating the total impact of stream restorations including, but not limited to fluvial geomorphology, geology, hydrology, riparian ecology, wetland ecology, stream ecology, population ecology and dynamics, botany, ornithology, herpetology, ichthyology, identification and habitat expertise, total environmental impact analysis, and ecosystem services analysis.

Maryland Municipal Stormwater Association (MAMSA), by Lisa Ochsenhirt

MAMSA: The Chesapeake Bay Program has a BMP approval process that involves having a panel of experts undertake a rigorous scientific examination of a proposed BMP. There is no basis for revising the requirements for stream restoration given the level of review that has already occurred.

FACT: This is a false statement. CBP's approval process is not scientifically based and is not created by an independent panel of scientists with no financial conflicts of interest. The CBP Expert Panels include employees of the stream restoration industry. The panel members as a whole do not have expertise in all the disciplines involved in evaluating the total impact of stream restorations including, but not limited to fluvial geomorphology, geology, hydrology, riparian ecology, wetland ecology, stream ecology, population ecology and dynamics, botany, ornithology, herpetology, ichthyology, identification and habitat expertise, total environmental impact analysis, and ecosystem services analysis.

There <u>is</u> a basis for revising the requirements for stream restoration given 1) the documented photographic evidence in the West Montgomery County Citizens Association's written testimony and the Chesapeake Bay Program's Expert Panel Report, including Figure 1[5], that

[5] "Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed," Approved by the Urban Stormwater Work Group of the Chesapeake Bay Program Date: June 18,

stream restorations are being blown-out by rainstorms due to uncontrolled or inadequately controlled out-of-stream runoff and 2) the scientific reports that stream restorations do not result in biological uplift[6] [7] [8] [9]. (See the WMCCA comments on MDE's written testimony).

Maryland Department of the Environment (MDE), by Gabrielle Leah

MDE: "Ongoing House Bill 869 Study and MDE Stream Restoration Analysis: Currently MDE's Wetlands and Waterways Protection Program is undertaking a study on ecological restoration permitting as mandated by HB 869 Permitting for Ecological Restoration Projects - Required Study enacted during the 2022 legislative session, which is due to be completed on or before June 1, 2024. The parameters of the study required by HB 869 overlap with many of the proposed requirements under HB 942. The current participants in the study represent a diverse group of community and environmental organizations, restoration practitioners, academia/research, and other government agencies. The Department is concerned that this legislation predetermines a review and permitting framework for stream restoration projects which will not allow for a thorough and meaningful completion of the HB 869 study and does not consider input from across the regulated community."

FACT: Unfortunately, the HB 869 study will not result in an independent report. Any results, conclusions, and recommendations from the HB 869 2022 study will be potentially biased by MDE and tightly controlled by MDE. Study participants were told during the 12/13/2022 meeting that participants will not be able to vote on any aspects of the final report and that the final report will be authored solely by MDE (per Ken Bawer, a participant in the study representing West Montgomery County Citizens Association). While MDE says that it may consider input from across the regulated community, MDE has stated that they are not bound to accept any recommendations of the study group members. Thus, MDE is free to "listen and ignore." Another problem is that MDE was apparently satisfied with current stream restoration construction techniques and MS4 permit crediting schemes prior to this study, so this study is being controlled by a group with a predisposition to maintain the status quo. The study is arguably flawed from its inception due to this conflict of interest. The only way to

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2019 (https://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2019/07/Approved-Verification-Memo-061819.pdf)

[6] Hilderbrand, Robert H., et. al., "Quantifying the ecological uplift and effectiveness of differing stream "restoration" approaches in Maryland," Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, 2020 (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf)

[7] Jepsen, R., Caraco, D., Fraley-McNeal, L, Buchanan, C., and Nagel, A. 2022. "An Analysis of Pooled Monitoring Data in Maryland to Evaluate the Effects of "restoration" on Stream Quality in Urbanized Watersheds: Final Report." ICPRB Report 22-2. Interstate Commission on the Potomac River Basin, Rockville, MD. (https://www.potomacriver.org/wp-content/uploads/2022/06/ICP-22-1_Jepsen.pdf)

[8] Palmer, M. A. et. al., 2014, "Ecological "restoration" of Streams and Rivers: Shifting Strategies and Shifting Goals," Annual Review of Ecology, Evolution, and Systematics. 2014. 45:247–69 (www.ecolsys.annualreviews.org or www.annualreviews.org)

[9] Pedersen ML, Kristensen KK, Friberg N (2014), "Re-Meandering of Lowland Streams: Will Disobeying the Laws of Geomorphology Have Ecological Consequences?" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4180926/)

ensure that the results of the study are based solely on science would be to have a truly independent panel of scientist in fields such as fluvial geomorphology, ecology, botany, etc. conduct a study based on the science, not based on considerations of the for-profit stream restoration industry or entrenched MDE thinking.

MDE: "In addition, MDE is charged with protecting Maryland's waterways from loss and degradation as well as meeting Chesapeake Bay restoration and TMDL goals. As part of these responsibilities, MDE has undertaken many initiatives related to stream restoration to analyze Maryland's progress towards these goals and ensure our resources (including riparian forests) are protected."

FACT: Empirical observation clearly shows that MDE is clearly not protecting riparian forests. See Ken Bawer's written testimony which includes a video link and numerous photos showing the damage done to riparian forests in natural areas by stream "restorations" around the state.

MDE: "Mitigation Banking: HB 942 would have serious negative consequences for mitigation banking in Maryland. As written, HB 942 significantly discourages mitigation banking and may incentivize permittee-responsible mitigation, including largely unsuccessful "postage stamp" sized mitigation projects."

FACT: There is no evidence provided to support the assertion that "HB 942 HB 942 significantly discourages mitigation banking and may incentivize permittee-responsible mitigation."

FACT: There is no evidence provided to support the assertion of "largely unsuccessful "postage stamp" sized mitigation projects." The Mitigation Rule states, "The studies that we have reviewed have shown that mitigation banks have experienced many of the same problems as permittee-responsible mitigation." The fact is that stream restorations done for any purpose, including mitigation banking, are unsuccessful because they destroy large areas of riparian forests, destroy wildlife habitat, and rarely, if ever, result in biological uplift of in-stream biology[10] [11] [12] [13].

MDE: "The 2008 Federal Mitigation Rule sets a preference for mitigation banks and the current mitigation program…."

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[10] Hilderbrand, Robert H., et. al., "Quantifying the ecological uplift and effectiveness of differing stream "restoration" approaches in Maryland," Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, 2020 (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf)

[11] Jepsen, R., Caraco, D., Fraley-McNeal, L, Buchanan, C., and Nagel, A. 2022. "An Analysis of Pooled Monitoring Data in Maryland to Evaluate the Effects of "restoration" on Stream Quality in Urbanized Watersheds: Final Report." ICPRB Report 22-2. Interstate Commission on the Potomac River Basin, Rockville, MD. (https://www.potomacriver.org/wp-content/uploads/2022/06/ICP-22-1_Jepsen.pdf)

[12] Palmer, M. A. et. al., 2014, "Ecological "restoration" of Streams and Rivers: Shifting Strategies and Shifting Goals," Annual Review of Ecology, Evolution, and Systematics. 2014. 45:247–69 (www.ecolsys.annualreviews.org or www.annualreviews.org)

[13] Pedersen ML, Kristensen KK, Friberg N (2014), "Re-Meandering of Lowland Streams: Will Disobeying the Laws of Geomorphology Have Ecological Consequences?" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4180926/)

FACT: This is not true. The Federal Mitigation Rule[14] states, "There are three mechanisms for providing compensatory mitigation: permittee-responsible compensatory mitigation, mitigation banks and in-lieu fee mitigation. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year." Furthermore, the Fed Mitigation Rules states that "economic factors should not supersede ecological considerations."

MDE: "TMDL/MS4 Crediting: TMDL credits are determined by protocols approved by the Chesapeake Bay Program (CBP) in order to align MDE's crediting process with the Chesapeake Bay Phase 6 Model. It would not be possible for MDE alone to alter them. Any changes to the ISR accounting and MS4 Equivalent Impervious Acre (EIA) calculations will require an update to the 2021 Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated Guidance for National Pollutant Discharge Elimination System Stormwater Permits ("2021 Accounting Document")."

FACT: MDE misreads what is in HB 942. This bill does not request, nor require, any changes to TMDL credits nor any changes to the ISR accounting and MS4 Equivalent Impervious Acre (EIA) calculations. However, MDE does control which practices are allowed within its Accounting Guidance[15] document. For example, while HB 942 does not suggest this, MDE could completely disallow the practice of stream restorations to be used for MS4 permit crediting.

MDE: "Alteration of the accounting and credit calculations would require a major permit modification for all 10 issued MS4 Phase I permits, which must be approved by the U.S. Environmental Protection Agency and go through the state required public notice process."

FACT: This bill does not request, nor require, any changes to TMDL credits nor any changes to the ISR accounting and MS4 Equivalent Impervious Acre (EIA) calculations. However, if MDE deems it prudent to do so, there is no need for permit modifications for the 10 issued MS4 Phase I permits. The new accounting and credit calculations, once approved by EPA and going through the public notice process, could apply to the new permits after the current permits expire.

MDE: "Biological Uplift Goal: While stream restoration projects are designed to address acute bank stability and instream habitat impacts, impacts to biology cannot be remediated through stream restoration alone as upland pollution also contributes to biological impacts."

FACT: This is misleading and inaccurate. First, stream restorations done for MS4 permits do not require that biological uplift be achieved. However, stream restorations built as mitigation projects are <u>required</u> to remediate impacts to biology and demonstrate biological uplift.

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[14] Federal Register, Thursday, April 10, 2008, Part II, Department of Defense, Department of the Army, Corps of Engineers: 33 CFR Parts 325 and 332; Environmental Protection Agency: 40 CFR Part 230; Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (aka Federal Register / Vol. 73, No. 70 / Thursday, April 10, 2008 / Rules and Regulations) (referred to as the "Mitigation Rules or Federal Mitigation Rules") (https://www.epa.gov/sites/default/files/2015-03/documents/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf)

[15] Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Final%20Determination%20Dox%20N5%202021/MS4%20Accounting%20Guidance%20FINAL%2011%2005%202021.pdf

Another misleading implication of MDE's statement is that stream restorations are an important and essential component of remediating impacts to biology along with upland pollution (read: stormwater) control. This is the "we must use all the tools in our toolbox" argument that is not supported by scientific evidence. The science says that that stream restorations do not result in biological uplift (see the 4 references above from Hilderbrand et. al., Jepsen et. al., Palmer et. al., and Pedersen, et. al.).

Having said that, the missing scientific link is that no one has studied the results of the impact of relatively complete upland stormwater control, in the absence of a stream restoration, on in-stream biological uplift. However, one part of the equation has been examined: what happens to the eroded banks of a stream when relatively complete upland stormwater control is done in the absence of a stream restoration? Upland, out-of-stream stormwater control would remove the primary cause of active stream bank erosion and thus eliminate the need for stream restorations. There is scientific evidence by Fraley McNeal, et. al.[16] that after controlling stormwater upland, stream banks will self-recover. But the industry doesn't like passive, self-recovery solutions because there is no money to be made.

MDE: "Biological uplift is the goal of a holistic watershed management approach which utilizes a suite of best management practices (BMPs) (including stream restoration where necessary and approved) to address a multitude of pollutants that impact biology."

FACT: This is misleading. Although MDE states that biological uplift is someone's goal, biological uplift is apparently not one of MDE's goals. MDE curiously does not require biological uplift to be demonstrated for MS4 permit credit. That is why HB 942 makes this a requirement for all stream restoration projects. And as stated above, another misleading implication of MDE's statement is that stream restorations are an important and essential practice to achieve biological uplift along with upland pollution (read: stormwater) control. This is the "we must use all the tools in our toolbox" argument that is not supported by scientific evidence.

MDE: "Monitoring: Under the proposed legislation, stream restoration projects must be monitored for a period of 10 years (prior to release of any credits) to verify achievement of stated goals."

FACT: Delegate Terrasa stated that she would offer an amendment which would defer to MDE in setting a credit release schedule.

MDE: "It will require a considerable undertaking for MDE to develop monitoring plan requirements to assess biological uplift goals (which may not be attainable) for individual projects independent of the monitoring and verification procedures that already exist."

FACT: MDE misunderstands the bill's requirements. Bill HB 942 does not require monitoring which is independent of the monitoring and verification procedures that already exist. Rather, this bill simply requires that more projects be subjected to the currently existing type of monitoring and verification procedures. This bill does not require MDE to recreate the wheel.

[16] "The Self-Recovery of Stream Channel Stability in Urban Watersheds due to BMP Implementation," by Lisa Fraley McNeal, Bill Stack, et. al., March 2021, Prepared by the Center for Watershed Protection, Inc. https://cbtrust.org/wp-content/uploads/Self_Recovery_of_Stream_Channel_Stability_Final_Draft_03-23-21.pdf

MDE's current monitoring plan requirements are wholly inadequate and are not even a firm requirement. Currently, no matter how many stream restorations a jurisdiction does for MS4 permit credits, only one stream restoration project is required to be monitored. Adding insult to injury, the monitoring results from that one project can be totally useless. For example, the one stream restoration project out of many that Montgomery County chose to monitor is called the Breewood project. Unfortunately, it is impossible to attribute the results of the Breewood stream restoration monitoring to the stream restoration project itself. This is because the instream monitoring station is downstream from not just the stream restoration but also other stormwater control practices including Green Streets projects such as bioretentions and pervious pavement.

But even doing one stream restoration monitoring for an MS4 permit is not a firm requirement. MDE actually allows jurisdictions to completely opt out of that requirement by instead paying into a pool of money which is used to fund research.

MDE: "As stated above MDE believes that biological uplift is not a realistic goal for every stream restoration project."

FACT: If MDE does not believe that biological uplift can be achieved by a specific project, MDE should not grant a permit for that project in the first place. In fact, stream restorations done for mitigation projects are required to demonstrate biological uplift as required by the Federal Mitigation Rule. Therefore, MDE should also require biological uplift for stream restorations done for the MS4 permit. A stream restoration is a stream restoration.

The ultimate purpose of stream restoration projects done for MS4 permits is to promote biological uplift in the Bay (i.e., to increase aquatic vegetation and fish, crab, and oyster stocks). Incomprehensibly, MDE's MS4 permits do not also require local biological uplift to be demonstrated at the actual project site which can be very far from the Bay. Aside from checking the MS4 permit box, there is no point to the destruction caused by a "restoration" project which only enhances a stream's physical attributes (i.e., decreases erosion) if the end result does not also provide biological uplift at the project site. We should not have to sacrifice our local natural areas, even if they are not in pre-colonial condition, on the altar of saving the Bay.

MDE: "Best Available Science: The 2021 Accounting Document directs jurisdictions to use protocols from the 2014 Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects ("Expert Panel") to calculate Stream Restoration credit, which incorporates the most recent science on crediting and verification methods and is written by a panel of local scientists, practitioners, and watershed managers."

FACT: This is a demonstrably false statement about the Expert Panel report[17]. First, these reports are not based on science, they are based on engineering principles. In fact, the crediting methods are based on irreproducible techniques. The crediting scheme is based on

[17] 2019 Protocol 1 Guidance: "Consensus Recommendations for Improving the Application of the Prevented Sediment Protocol for Urban Stream Restoration Projects Built for Pollutant Removal Credit," p. 23;
Full Report: https://chesapeakestormwater.net/wp-content/uploads/2022/07/9928-1.pdf

gross estimates of how effective stream restorations are in reducing erosion, and the report recommends using calculations which are estimates on top of estimates. This including using the highly unreliable BANCs method to estimate stream bank erosion which is not reproducible. The Expert Panel report says of the BANCS method that these theoretical calculation tools are "…susceptible to high variability when performed by different practitioners in the field." If a measurement cannot be reproduced by different people using the same methodology, it is scientifically useless.

On top of that, the Expert Panel is so unsure of the results of their estimation calculations that they take what falls out of the bottom and cut it by 50%. So much for having confidence in their work. There is no peer reviewed scientific literature to support using the Expert Panel recommendations.

To make matters worse, the Expert Panel included stream restoration industry employees who had a vested interest in ensuring that the crediting calculations maximize their profits – this is blatant conflict of interest. As such, the use of these Expert Panel reports is arguably a corrupt process.

MDE: "As MDE defers to the Expert Panel report, credit for MS4 EIA and TMDL progress as well as the reductions reported to the CBP for Bay TMDL progress already consider the best available science with regards to stream morphology, geology, biology, hydrology, ecology, watershed management, and wildlife corridors."

FACT: This is a misleading statement. Although MDE and the Expert Panel reports may consider the best science, they certainly do not follow the science. As stated above, the science shows that stream restorations don't result in biological uplift.

MDE: "Upland Alternatives: MDE is required under HB 942 to incentivize upland alternatives (deemed to be "less destructive to the environment") to stream restoration through the crediting mechanisms for TMDL, MS4 targets, mitigation goals, or other restoration goals. Credits for non-stream restoration practices are consistent with efficiencies from the CBP and match the credit provided in the Chesapeake Bay Phase 6 Model.

In order to provide additional incentives, MDE will have to develop additional unapproved BMPs, or be provided with (or conduct) studies demonstrating nutrient and sediment reductions that are greater than those already established by the current literature."

FACT: These are false statements. This bill does not prescribe how MDE incentivizes upland alternatives. MDE will not, in fact, have to develop any additional BMPs. There are already dozens of upland BMPs in MDE's Accounting Guidance[18] document that can be used for upland stormwater control such as green roofs and rain gardens. The more upland BMPs that are installed by a jurisdiction, the more credits will be garnered.

[18] Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Final%20Determination%20Dox%20N5%202021/MS4%20Accounting%20Guidance%20FINAL%2011%2005%202021.pdf

The provision of addition incentives for upland stormwater control may require some out of the box thinking. For example, DEP could increase credit for the rainfall depth treated for structural practices to greater than the current one inch maximum. Or, MDE could put an MS4 permit cap on the percentage of credits that can be achieved via stream restoration and a minimum for upland stormwater control credits. MDE could recommend laws requiring existing buildings to meet new-build stormwater control requirements upon property transfer (buying/selling). MDE could incentive upland stormwater control by combining certain MS4 Permits, such as Montgomery County and Montgomery Parks. Currently, Montgomery Parks points out that they have no ability to do upland stormwater control at its source when the stormwater comes from outside their parks in the county itself.

This bill does not require, nor suggest, that credits for efficiencies be changed, but it should be noted that the current credits for stream restoration are bogus numbers developed with the help of industry employees with a conflict of interest as described above.

MDE: "In addition, compensatory mitigation to offset impacts to stream impacts cannot be offset through upland projects under federal requirements."

FACT: This is a false statement. The Federal Mitigation Rule[19] does allow stream impacts to be offset through upland projects. It states that the district engineer may determine "that out-of-kind compensatory mitigation will better serve the aquatic resource needs of the watershed."

[19] Federal Register, Thursday, April 10, 2008, Part II, Department of Defense, Department of the Army, Corps of Engineers: 33 CFR Parts 325 and 332; Environmental Protection Agency: 40 CFR Part 230; Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (aka Federal Register / Vol. 73, No. 70 / Thursday, April 10, 2008 / Rules and Regulations) (referred to as the "Mitigation Rules or Federal Mitigation Rules") (https://www.epa.gov/sites/default/files/2015-03/documents/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf)