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March 11, 2024

Committee: Education, Energy, and the Environment Committee

Testimony on: SENATE BILL 798 "Stream Restoration Contractors Licensing Board, Stream Restoration Contractors, and Stream Restoration Project Requirements"

Position: UNFAVORABLE

Hearing Date: March 12, 2024

I **OPPOSE** SB 798 for the following reasons since this bill would undermine efforts to restore the health of the Chesapeake Bay, undermine efforts to protect communities from the effects of climate change, and undermine efforts to advance environmental progress.

First, in the spirit of full disclosure, I have no financial interest in the practice of stormwater control or stream "restorations." This is important to state since some who may testify or who have lobbied may be industry employees with a financial interest in stream "restorations" or who are paid by nonprofits to promote stream "restorations." As always, follow the money to determine the motivation.

Second, the bill's requirement that public notice must be given to residents of the entire county in which the project is to occur would be a great leap forward in government transparency.

However, this bill is a misguided attempt to license practitioners of the scientifically discredited practice of so-called stream "restoration." The term stream "restoration" is a misnomer of epic proportions. It is the only destructive tool for stormwater management in the stormwater management toolkit and creates frankenstreams - nothing that would ever be found in nature - with artificial meanders, unnatural rock dams, and stone-armored banks (see photographs in Appendix 1). Empirical evidence of washed-out stream "restoration" projects (see photos in Appendix 2) and published scientific papers prove that stream "restorations" are *not* an effective practice to keep nitrogen, phosphorous, and sediment out of the Bay, nor to improve the ecology at the project location.

The establishment of a Stream Restoration Contractors Licensing Board and the licensing of stream "restoration" contractors would be an attempt to convey a false sense of legitimacy to an illegitimate industry and practice. The scientifically unfounded promise of stream "restorations" promoted by the industry and proponents is the "field of dreams" approach – build it and the ecological recovery will come. The problem is that neither empirical evidence (that is, direct observations) nor the published scientific evidence support this.

Maryland Department of the Environment knows that stream "restorations" are snake oil projects, as do local jurisdictions, the stream restoration industrial complex, and the various river keepers, and non-profit federations and conservancies. They know that the promise of stream "restorations" is like snake oil because observations on the ground show the clearcutting of stream-side forests which destroy miles of natural habitat. They know that stream "restorations" are like snake oil because these projects are supposed to stabilize streams but are washed-out by storms after construction and because photographic documentation shows muddy sediment laden water running through the sites of "restored" streams. They also know that claims of ecological recovery at stream "restoration" sites are false and directly contradicted by the published scientific literature. We should not license stream

"restoration" practitioners who, like snake oil salesmen, hawk a fraudulent product: "Step right up for Doc Matin's miracle stream "restoration" cure. Only one million dollars a project."

Appendix 1 has photos showing the destruction caused by stream "restorations." These photos show the massive loss of fish and wildlife habitat, the loss of habitat for disappearing pollinators like bees and butterflies, and the clearcutting of stream-side forests that accelerates global warming and will take 100 years or more to replace what was destroyed. Stream "restorations" result in the trashing of our natural habitats that are important to protecting our quality of life and for future generations to enjoy. Appendix 1 has photos of disastrous projects (and all stream "restorations" are disastrous) in:

- Anne Arundel County:
    - Beards Creek (in Annapolis Landing)
    - Broad Creek Valley West
    - Broad Creek MVA
    - Broad Creek Park
    - Camp Woodlands
    - Church Creek Headwaters
    - Bacon Ridge Branch at Elks Camp Barrett
- Baltimore County
    - Pearlstone Retreat Center in Reisterstown
    - Scotts Level Branch
- Cecil County
    - Bayview
- Fredrick County
    - Point of Rocks
- Harford County
    - Emmord Branch Unnamed Tributary
    - Heavenly Waters Park
    - Annie's Playground
    - Barrington Restoration Project
- Howard County:
    - Longfellow project - clearcut and then 700 replanted trees died
    - Font Hill
    - Nash Run
    - Dead Run
- Montgomery County:
    - Nature Forward (formerly Audubon Naturalist Society)
    - Falls Reach
    - Asbury Methodist Village
    - Upper Watts Branch
    - Whetstone Run
    - Solitaire Court
- Prince George's County
    - Tinkers Creek
    - Bear Branch

    - Crain Stream
- Reston, VA
    - Upper Snakeden Branch

These projects are the gift that keeps on giving for the $25 billion dollar stream "restoration" industry since their guarantee is typically only for one year and they know that these projects will get washed out by future storms. After that, we the taxpayers pay for the repairs.

It is a question of when, not if, a project will be washed-out by a post-construction storm event due to uncontrolled out-of-stream stormwater. Appendix 2 has photographs of washed-out stream "restoration" projects in:

- Anne Arundel County:
    - Annapolis Landing – washed out by storms
- Baltimore City
    - Stony Run – washed out by storms
- Montgomery County
    - Josephs Branch – washed out by storms
    - Cabin John Creek – washed out by storms
    - Long Branch – washed out by storms
    - Snakeden Branch – washed out by storms
    - Bedfordshire – washed out by storms
    - Old Farm Creek – washed out by storms and will be repaired for $800K in 2024
    - Grosvenor - washed out by storms and will be repaired for $4.8M in 2024
    - Lower Booze Creek - washed out by storms and was repaired for $3.6M
- Reston, VA
    - The Glade

Rather than buying into the cycle of constructing and then repairing failed stream "restorations" that will simply get washed out again, this money should be spent on out-of-stream stormwater control projects, such as bioretentions and conservation landscaping, to capture stormwater before it enters streams which removes the root cause of stream erosion.

What does the science say? Surely, everyone promoting stream "restorations" is familiar with the published scientific literature showing that these projects do not work including:

- A meta-analysis of 644 projects by M. Palmer et al. who said, "We show that a major emphasis remains on the use of dramatic structural interventions, such as completely reshaping a channel, despite growing scientific evidence that such approaches do not enhance ecological recovery, and the data we assembled (Table 2) suggest they are often ineffective in stabilizing channels when stability is the primary goal."[1] They also showed that water quality does not improve, that biology does not improve, and that ecology does not improve.

[1] Palmer, M. A., K. L. Hondula, and B. J. Koch, University of MD, 2014, "Ecological Restoration of Streams and Rivers: Shifting Strategies and Shifting Goals,", Annu. Rev. Ecol. Evol. Syst. 2014. 45:247-269. (https://akottkam.github.io/publications/Palmerpublications/Palmer2014a.pdf)

- R. Hilderbrand's meta-analysis of 40 NCD- and RSC-type projects that concluded, "There simply were few ecological differences between restored and unrestored sites. In fact, the unrestored sections upstream [from the restoration sites] were often ecologically better than the restored sections or those downstream of restorations."[2]
- A meta-analysis of 30 projects by Carr et. al. concluding that the ecology did not improve.[3]
- An analysis of 11 streams In Anne Arundel County by Southerland et. al. showing that the biology did not improve.[4]

Someone might say, "I have seen a paper that says project X worked." It is not surprising that the odd project may be shown to be successful in terms of nitrogen, phosphorous, and sediment reduction, and maybe even biological uplift. But the meta-analyses referenced above show that any successful projects are outliers - the rare exception rather than the rule. It is the rule that establishes the science, not one-offs.

In fact, Montgomery County Department of Environmental protection recently admitted that *none* of their past projects improved stream ecology.[5]

Once residents and elected officials understand the true results of stream "restorations," projects have been stopped:

- In Howard County, the Lake Elkhorn and Plumtree Branch projects were recently cancelled due to resident and officials' outrage.
- In Montgomery County, a January 14, 2024 letter to the County Executive and the County Council from 13 organizations and 90 individuals called for a halt to stream "restoration" projects.

Any arm waving about the need to "restore" streams to pre-colonial conditions ignores the reality that this is impossible given the current level of watershed development and population size. The same is true of the Bay itself per the recent Chesapeake Bay Program's STAC report on achieving water quality goals.[6]

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

[3] Carr, J., Hart, D., McNair, J., 2006, "Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success," The Patrick Center for Environmental Research, The Academy of Natural Sciences of Drexel University, Report Submitted to the William Penn Foundation. https://ansp.org/research/environmental-research/projects/restoration/

[4] Southerland, Mark, et. al., 2021, "Vertebrate Community Response to Regenerative Stream Conveyance (RSC) Restoration as a Resource Trade-Off," Award: 18002 CBT Restoration Research Grant to Tetra Tech and UMCES-Chesapeake Biological Laboratory; https://cbtrust.org/wp-content/uploads/FINAL-Report-for-18002-Tetra-Tech-CBL-CBT-RR-Vertebrates-in-RSCs-30SEP2021-Submitted-to-CBT.pdf

[5] DEP presentation about Grosvenor stream "restoration" to Stormwater Partners Network on Jan. 16, 2024 in response to a question.

[6] Chesapeake Bay Program report: Scientific and Technical Advisory Committee (STAC). (2023). Achieving water quality goals in the Chesapeake Bay: A comprehensive evaluation of system response [CESR] (K. Stephenson & D. Wardrop, Eds.). STAC Publication Number 23-006, Chesapeake Bay Program Scientific and Technical Advisory

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We should not license companies to destroy our natural areas when observations and the science show that stream "restorations" are failing in terms of not providing physical stability, not improving water quality, and not improving the ecology.

We should not license the industry to accelerate the use of stream "restorations" which have proven to be ineffective and destructive. We should listen to the science, not employees of the stream "restoration" industrial complex who have a financial interest in selling their snake oil projects to an unsuspecting public and elected officials.

In summary,

1. Stream "restorations" destroy natural areas. Direct evidence of washed-out projects and the science show that they do not work to either stabilize streams or improve the ecology.
2. Funds should instead be spent on out-of-stream stormwater control practices that, unlike stream "restorations," address a whole list of residents' concerns such as reducing urban flooding, reducing heat islands, increasing property values, providing urban green spaces, and protecting natural areas.
3. There are 20 out-of-stream stormwater control practices that are less expensive that stream "restorations" according to Maryland Department of the Environment's "Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated."[7]
4. The way to stop stream erosion is to address the problem at its source - to control stormwater *outside* of streams by non-destructive practices such as raingardens, bioswales, tree planting, etc. in already disturbed areas.

We can protect our streams and save money by meeting stormwater control and mitigation regulations with cheaper and more effective out-of-stream practices compared to so-called stream "restorations." This bill would increase the costs of meeting the pollution reduction targets and delay meeting the deadlines agreed to by Chesapeake Bay states.

Unlike so-called stream "restorations," out-of-stream practices address the root cause, not the symptom, of stream erosion. Out-of-stream practices capture stormwater from impervious surfaces such as roads, roofs, and parking lots and from farm runoff *before* it fire-hoses into our streams.

For these reasons, I **OPPOSE** SB 798 and I urge an **UNFAVORABLE** report.

Thank-you for consideration.

Committee (STAC), Edgewater, MD. 129 pp. https://www.chesapeake.org/stac/wp-content/uploads/2023/05/CESR-Final-update.pdf

[7]https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Final%20Determination%20Dox%20N5%202021/MS4%20Accounting%20Guidance%20FINAL%2011%2005%202021.pdf

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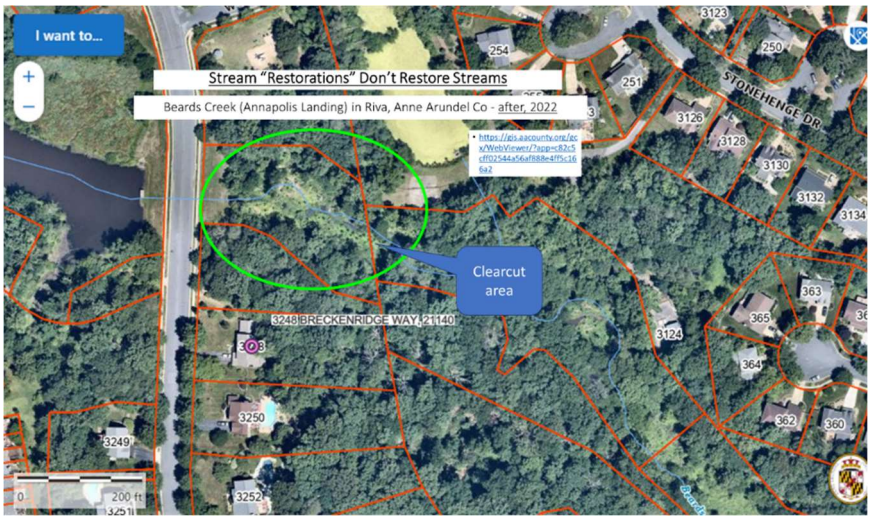
APPENDIX 1: Photos of damage done by stream "restorations"

- **Anne Arundel County:**
  - Beards Creek in Annapolis Landing (below)



  - Broad Creek Valley West (below)

o Broad Creek MVA (below)

Broad Creek MVA Stream "Restoration," Annapolis

o Broad Creek Park (below)

Broad Creek Park Stream "Restoration", Annapolis

- Camp Woodlands (below)

Camp Woodlands Stream Restoration (Broad Creek), Anne Arundel Co.

- Church Creek Headwaters (below)

Church Creek Headwaters, Anne Arundel Co.– Construction

- Bacon Ridge Branch at Elks Camp Barrett – still flowing with muddy water (below)

- **Howard County:**
  - Longfellow project - clearcut and then 700 replanted trees died (below)

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o Font Hill (below)

- Nash Run (below)

- https://www.howardcountymd.gov/sites/default/files/media/2017-12/Font%20Hill%20Presentation%2011.30.17.pdf

- Dead Run (below)

- **Montgomery County:**
  - Nature Forward (formerly Audubon Naturalist Society) (below)

Nature Forward (formerly ANS), Chevy Chase

(3/26/2021. downstream from Jones Mill Rd. Photos by K. Bawer)

  - Falls Reach (below)

Falls Reach, Potomac, MD

Before Montgomery County DEP "stream restoration" on Falls Reach. (Photo by DEP)

After "stream restoration" on Falls Reach completely destroyed the forest community in its footprint. (Photo by K. Bawer on 3/19/2019)

- Asbury Methodist Village (below)

Asbury Methodist Village, Montgomery County

- Upper Watts Branch (below)

Upper Watts Branch, Rockville

- Whetstone Run (below)

Whetstone Run, Gaithersburg

(Stream "restoration" in Blohm Park, Gaithersburg at Watkins Mill Rd. over Whetstone Run at the same location.
Note the stream bank armor-plating on the right. (Left on 9/3/2020; right on 5/03/2021); by K.Bawer)

- Solitaire Court (below)

Solitaire Court, Gaithersburg

- **Prince George's County**
  - Tinkers Creek (below)

Tinkers Creek, Prince George's County

• https://www.youtube.com/watch?v=7WhlNFKywDM

  - Bear Branch (below)

Bear Branch, Prince Georges County - AFTER

https://www.princegeorgescountymd.gov/DocumentCenter/View/37900/GS-2021-Day-4-Restoration-projects-12-PM

- Crain Stream (below)

Crain Stream Restoration, Prince George's County

- **Baltimore County**
  - Pearlstone Retreat Center in Reisterstown (below)

Pearlstone Retreat Center in Reisterstown, MD

- Scotts Level Branch (below)

Scotts Level Branch Stream Restoration Project

- **Fredrick County**
  - Point of Rocks Stream Restoration (below)

Point of Rocks Stream Restoration Project, Fredrick County

- **Harford County**
  - Emmord Branch Unnamed Tributary (below)

Emmord Branch Unnamed Tributary Stream Restoration, Harford Co.

  - Heavenly Waters Park (below)

Heavenly Waters Park Stream Restoration, Harford Co.

- Annie's Playground Stream Restoration Project (below)

- Barrington Restoration Project (below)

- **Cecil County**
  - Bayview

Bayview Stream "Restoration," Cecil Co

- **Reston, VA**
  - Upper Snakeden Branch Reston, VA (note how water is chocolate brown after "restoration")

Upper Snakeden Branch Reston, VA - after

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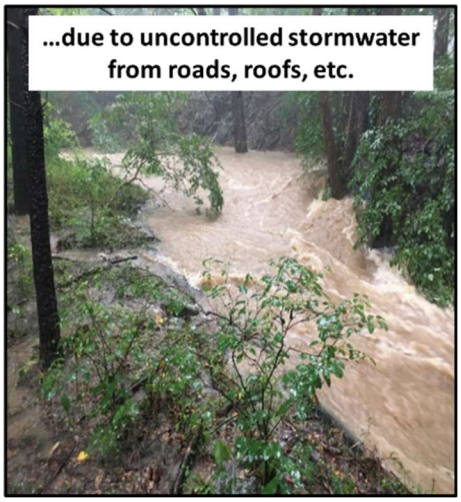
APPENDIX 2: Washed-out stream "restoration" projects

- **Montgomery County**
  - Josephs Branch (below) – washed out by storms

Josephs Branch, Kensington

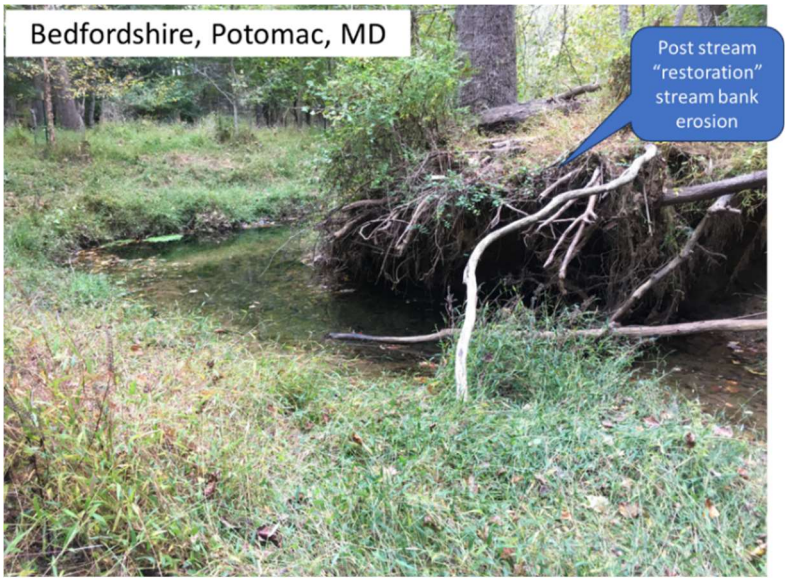


  - Cabin John Creek (below) – washed out by storms

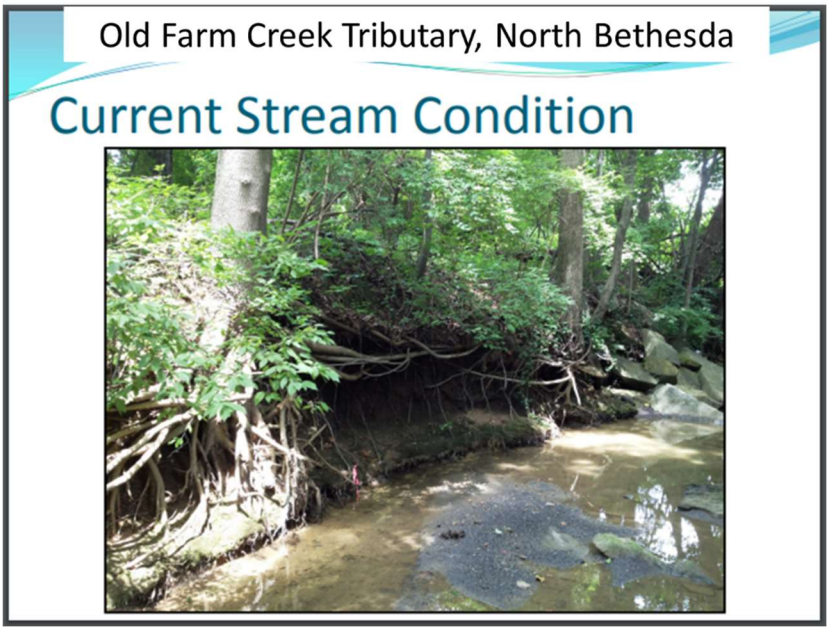
- Long Branch (below) – washed out by storms

- Snakeden Branch (below) – washed out by storms

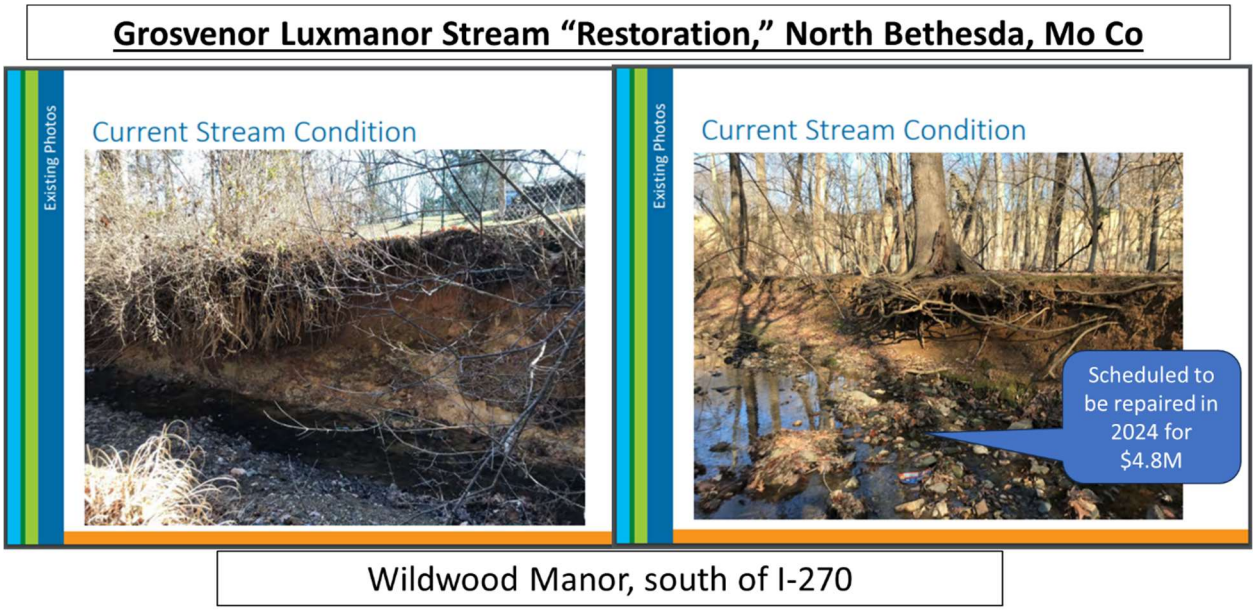
- Bedfordshire (below) – washed out by storms



- Old Farm Creek (below) – washed out by storms and will be repaired for $1.7M in 2024



- Grosvenor (below) - washed out by storms and will be repaired for $4.8M in 2024



- Lower Booze Creek (below) - washed out by storms and was repaired for $3.6M

- **Anne Arundel County:**
  - Annapolis Landing – washed out by storms

Annapolis Landing in Riva, Anne Arundel Co.

- Baltimore City
  - Stony Run – washed out by storms

Stony Run, Baltimore City

- **Reston, VA**
    - The Glade – washed out by storms

The Glade, Reach 4A, Reston VA