

Montgomery Coalition to Stop Stream Destruction

February 16, 2021

County Executive Marc Elrich
Executive Office Building, Rockville, MD 20850

Montgomery Parks Director Michael F. Riley
Wheaton HQ, Wheaton, MD 20902

SUBJECT: “Stream Restoration” Projects

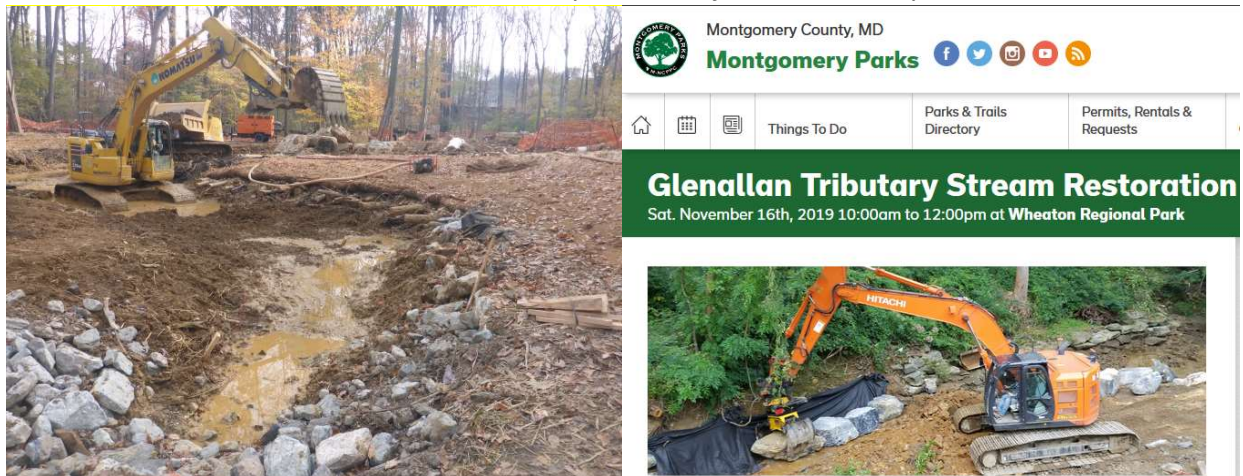
Dear County Executive Elrich and Parks Director Riley:

The Montgomery Coalition to Stop Stream Destruction represents a diverse cross-section of the County including environmental and faith-based organizations, civic and homeowners’ associations, and a broad array of concerned residents across the county. We have an interest in protecting our streams by questioning the practice of stream engineering known as “stream restoration” in Montgomery County and Montgomery Parks.

Based on the information in this letter, we call for 1) a common sense, temporary pause in “stream restoration” projects, 2) a temporary pause in the inclusion of “stream restoration” projects in new MS4 Permits and the County’s design/build “Clean Water Montgomery Program” RFP, and 3) the initiation of a dialog among all stakeholders.

Every year, millions of taxpayer dollars are spent on “stream restoration” projects. First and foremost, the term “stream restoration” is misleading since these projects do not actually restore streams as explained below. To see is to believe, and the self-evident, inconvenient truth is that “stream restoration” projects cause irreparable damage to our natural areas – existing irreplaceable natural features in the footprints of “stream restoration” projects are lost forever. See, for example, the photographs below.

Below: Left, a “stream restoration” in Upper Watts Branch, City of Rockville (Photo by City of Rockville). Right, a “stream restoration” in a Montgomery Park. No amount of post-construction planting can reconstitute a destroyed natural forest community.



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A “stream restoration” (as defined by Maryland Department of the Environment) is a stormwater management engineering practice that uses heavy equipment such as bulldozers and backhoes to modify a stream channel. Typically, this means using heavy boulders from outside sources to armor-plate sections of the stream bank, changing a stream’s natural meander pattern based on theoretical mathematical formulas (based on some version of the Natural Channel Design methodology), cutting down stream banks, and raising the level of stream channels with fill material brought from off-site. This involves removing tons of stream bank soil along with all the plants and animals residing on and in it. To provide access for the heavy equipment, hundreds or thousands of trees are cut down to build access roads, and then many more trees are cut down during the construction project itself. To add insult to injury, the County and Parks have asked that their “stream restoration” projects be exempted from our forest conservation laws.

“Stream restorations”, which clear cut and bulldoze our forested stream valleys, are among the most destructive things we can do, especially in this age of unsustainable forest fragmentation and loss of habitat and native biodiversity. No matter the condition of their channels, these stream valleys are largely our last remaining refuge for wildlife and reservoir of biodiversity. **(Note: to be clear, we do not oppose necessary utility or infrastructure protection projects in stream valleys - e.g., for exposed sewer lines, fiber optic cables, stormwater outfall pipes, bridges, and roads - or some projects to protect private property.)**

Why are “stream restoration” projects done? They are typically used to help meet the requirements of the Municipal Separate Storm Sewer System (MS4) Permit required under the federal Clean Water Act and issued by Maryland Department of the Environment (MDE). The permit requires that Montgomery County and Parks decrease the amount certain pollutants (nitrogen, phosphorus, and suspended sediments) entering the Chesapeake Bay. Some “stream restorations” are done as mitigation for environmental destruction done elsewhere (for example, the proposed Beltway expansion). However, while sediment caused by stream bank erosion may be reduced by these projects which armor-plate sections of streams, research by Robert Hilderbrand ⁽¹⁾ has shown that, “Despite the promise and allure of repairing damaged streams, there is little evidence for ecological uplift after a stream’s geomorphic attributes have been repaired.” ⁽¹⁾ In other words, while armor-plating streams with boulders and stabilizing banks with geotextile fabric may temporarily decrease erosion (temporary since future storms can and do blow out these structures), the biological health of the area is not improved. In fact, the devastating biological impact of excavations by bulldozers and backhoes in our stream valleys is obvious to even the most casual observer as seen in the photographs in this letter.

Below, side-by-side photographs from the same location show pre- and during-construction views of a “stream restoration”. Note the forest community loss and the engineered armor-plating of the stream bank that was once a natural area.

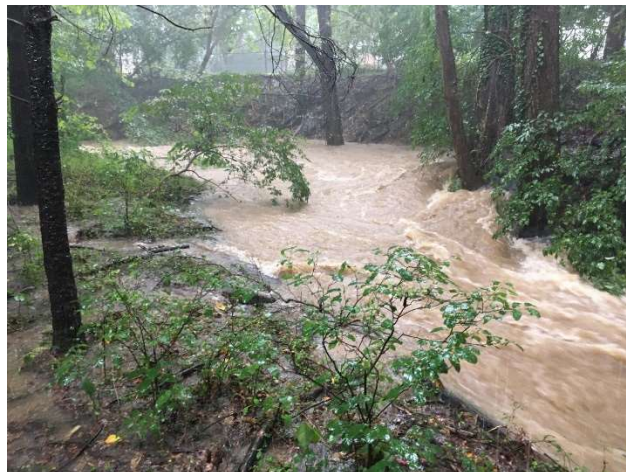
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Below: Blohm Park in City of Gaithersburg at Watkins Mill Rd bridge over Whetstone Run looking downstream. These were taken at the same location. Note the armor-plating of the stream bank on the right. (photos by K. Bawer, 9-3-2020 and 2-6-2021)



Even though “stream restorations” are demonstrably destructive to our relatively few remaining natural areas, the County and Parks are proceeding full speed ahead with these ecologically damaging projects. Consider the impact of “stream restorations” in Montgomery County: “To date, the County has completed stream restoration projects, restoring almost 30,000 linear feet of stream...”* per the latest report on meeting our MS4 Permit. The truth is that these misguided projects convert our natural stream valleys into engineered stormwater conveyances without addressing the root cause of the problem – stormwater fire-hosing into streams from developed areas (i.e., impervious surfaces such as roofs, roads, sidewalks, driveways, etc.).

Below: Downstream from the Joseph’s Branch “stream restoration” (completed in 2005), behind 3926 Rickover Rd., downstream from the Joseph’s Branch 3B (Spruell Dr. location) and west (upstream) from Connecticut Ave). This is what happens downstream from a “stream restoration” project when stormwater from development is not kept out of stream valleys. 9/10/2020 during a rain event (Photo by K. Bawer)



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“Stream restorations” address the symptoms of the stormwater problem (stream bank erosion) but not the root cause in an effort to check the MS4 Permit box or to do a mitigation project that is paid for by a private corporation. * (<https://www.montgomerycountymd.gov/DEP/Resources/Files/downloads/water-reports/npdes/AnnualReport-FY19-Final.pdf>)

We oppose MS4 Permit practices that degrade the ecological health of local watersheds. The County and Parks should meet their MS4 Permit obligations in a manner that improves the ecological health of both the local watershed and the Chesapeake Bay. The same applies to private company funded mitigation projects such as those from the proposed Beltway expansion. Therefore, we oppose “stream restorations” since they demonstrably harm the local environment. Mitigation projects, MS4 Permit projects, and other projects to protect streams from stormwater runoff should be done in already disturbed upland (out of stream valley) areas such as road rights-of-way and by using non-destructive practices such as riparian plantings which keep stormwater out of streams.

In addition to the visibly destructive nature of “stream restorations”, research papers we reviewed concluded the following:

- 1) that the results of “stream restorations” showed little evidence for ecological uplift (using ecological indicators such as macroinvertebrate taxonomic diversity) ^(1,2),
- 2) that the removal of trees during “stream restorations” lead to higher riparian groundwater nutrient concentrations ⁽³⁾, and
- 3) that recovery of biodiversity was rare for the vast majority of stream restoration projects ⁽⁴⁾.

Bill Stack, who helped develop the “Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects” ⁽⁵⁾ which is used by MDE for MS4 Permit practices, identified “the root causes of stream bank erosion: impervious cover,” and said that, “...municipalities are spending enormous amounts of money on [stream restoration] projects that generate the necessary water quality credit but have no real impact on stream function.” ⁽⁶⁾ It is clear that in-stream projects do absolutely nothing to fix the root cause of the problem: keeping stormwater from upland, impervious surfaces out of streams.

Indeed, there are several local ecological factors that are currently not even considered when approving “stream restoration” projects including: the full range of flora and fauna loss, lost ecosystem services (e.g., lost CO₂ uptake, lost O₂ production, food web disruption, tree death due to critical root zone damage, etc.) during and after construction, hydrologic disruption due to riparian soil grading and compaction (e.g., destruction of seeps and springs), and the carbon footprint of large-scale construction activities. And upland alternatives to “stream restorations” are sometimes not even considered - this was the case with the Fallsreach project in the photographs below.

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Below: Fallsreach Stormwater Pond Upgrade and Stream Restoration Project | Department of Environmental Protection, Montgomery County, MD. Left: The entire Fallsreach stream, a tributary of Watts Branch (west of I-270) is running through the black pipe; 3/19/2019. Right: Complete removal of large stretches of entire forest communities with a destroyed natural stream channel replaced by engineered structures; 3/19/2019 (photos by K. Bawer)



Rather than using “stream restorations”, which degrade the environmental health of the local area, it is far better to meet MS4 Permit requirements and perform mitigation projects by using 1) upland stormwater control practices in already disturbed areas, and 2) other non-destructive practices such as forest planting and riparian conservation landscaping. The alternatives to “stream restorations” that we support from the [June 2020 MS4 Accounting Guidance document](#) include, for example (from Table 1) the “Land Cover Conversion” practices (Forest Planting, Riparian Forest Planting, Conservation Landscaping, Riparian Conservation Landscaping, Forest Conservation, Impervious Surface Reduction, Street Trees, and Urban Tree Canopy Planting) with the caveat that only native plants should be used and “Urban Soil Restoration” practices, and (from Table 2) most of the Runoff Reduction (RR) Practices (for example, bioretentions, rain gardens, green roofs, etc.). Controlling stormwater before it can even enter streams using the above practices would eliminate the need for “stream restorations” since “stream restorations” are done to control stream bank erosion and flooding. Keeping stormwater runoff out of streams would result in less flooding and stream bank erosion would drastically decrease to naturally occurring rates.

Upland stormwater practices and other Land Cover Conversion practices as defined in the Accounting Guidance should always be the preferred alternatives to “stream restorations”. In cases where a particular “stream restoration” is being considered, and it is determined that the alternative upland stormwater control projects and Cover Conversion practices are not possible (in full or in part) in the watershed, we recommend that as much upland stormwater control and Land Cover Conversion as possible be done. Further, additional locations in different watersheds should also be identified for projects to avoid doing the “stream restoration”.

In the event that a “stream restoration” is being considered, it should always require justification versus a proposed set of upland projects by comparing local ecological factors such as:

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- 1) an accounting of the full range of flora and fauna that will be lost by conducting pre-construction field surveys by experts in the fields of botany, herpetology, mycology, ichthyology, etc.,
- 2) a calculation of projected lost ecosystem services (e.g., lost CO₂ uptake, lost O₂ production, food web disruption, tree death due to critical root zone damage, etc.) during and after construction,
- 3) the extent of hydrologic disruption due to grading and soil compaction (e.g., destruction of seeps and springs), and
- 4) a comparison of the projected carbon footprint of construction activities.

All proposed “stream restoration” projects should score higher than the alternative proposed set of upland projects (which could be in the same or different watershed) on all four factors above and be required to demonstrate post-construction biological uplift compared to pre-construction measurements in order to be used for MS4 Permit credit.

In addition, “stream restoration” projects should never be exempted from any state or local forest conservation or forest protection laws. Currently, both the County and Parks are exempted (at their own request) from our forest conservation laws.

The complex web of interactions between fauna, flora, geology, and hydrology that interact in natural areas is irreplaceable and cannot be recreated by engineering projects using bulldozers, backhoes, and trucked-in material to create artificial structures in our natural areas. We should be guided by the principal of “Do No Harm” in stream valleys. Just as the Chesapeake Bay has environmental value, so does the rich environment of our stream valleys. There are better ways to protect the Bay than by using “stream restorations” to destroy our existing streams, streamside forests, and wetlands and replacing them with engineered stormwater drainage facilities.

Just as Montgomery County took a nationally recognized leadership position in banning the use of certain lawn pesticides in the face of intense pushback from industry, the County should also become a leader in questioning the practice of “stream restorations” that supports a billion-dollar industry.

Another concern is that “stream restoration” projects and the County’s design/build RFP are proceeding without adequate public input, and without due consideration of upland (out of stream valley) alternatives that would protect our natural areas and streams by controlling stormwater within previously disturbed areas.

Given the mixed (or lack of publicly available) results of past “stream restoration” projects in the County and Parks, scientific evidence questioning the benefits of such projects, and the concept that upland projects can address the problem of stormwater by keeping it out of streams to begin with, a reasonable course of action would be a common sense, temporary pause in “stream restoration” projects (with exceptions for infrastructure protection projects as noted above) and the design/build RFP release, and a robust, respectful, and comprehensive discussion of issues and ideas among all stakeholders.

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These temporary pauses and discussions would, for example, allow all interested parties to 1) understand the current and proposed selection process of “stream restorations” versus alternative upland projects, 2) have opportunity to provide input, and 3) evaluate the wisdom of continuing “stream restoration” projects that can cause an unacceptable loss of irreplaceable native forest, wildlife, and landscape memory.

Please let us know if you will agree to 1) a common sense, temporary pause in “stream restoration” projects (with the above exceptions), 2) a temporary pause in the inclusion of “stream restoration” projects in the new MS4 Permits and the County’s design/build RFP, and 3) the initiation of a dialog among all stakeholders (including, for example, the County Executive’s Office, Departments of Environmental Protection (DEP), Transportation (MCDOT), and Permitting Services (DPS), Water Quality Advisory Group (WQAG), Montgomery Parks, Montgomery County Public Schools, Washington Suburban Sanitation Commission (WSSC), State Highway Administration (SHA), community groups, and environmental groups such as ours) to discuss all the issues, policies (e.g., “de-siloing” to increase coordination and cooperation between County departments and between the County and Parks), decision-making process, etc. related to “stream restorations”.

We appreciate your consideration of our requests and hope to begin a dialog on these issues as soon as possible. We would be happy to meet with you, your staff, and others to further discuss the issues raised in this letter.

Sincerely,

xxxxxxSIGNATURESxxxxxxxxxx

Cc:

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Debbie Spielberg, Special Assistant to the County Executive
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Jai Cole, Division Chief, Park Planning & Stewardship Division, Montgomery Parks
Andy Frank, Park Development Division Chief, Montgomery Parks
Katie Rictor, Montgomery Parks Foundation

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- (1) 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)
- (2) Pedersen ML, Kristensen KK, Friberg N (2014), “Re-Meandering of Lowland Streams: Will Disobeying the Laws of Geomorphology Have Ecological Consequences?” ([PLoS ONE 9\(9\): e108558. doi:10.1371/journal.pone.0108558](https://doi.org/10.1371/journal.pone.0108558))
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- (4) 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.)
- (5) Berg, J., et.al., (2014), “Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects,” Test-Drive Revisions Approved by the [Water Quality Goal Implementation Team]WQGIT: September 8, 2014, Prepared by: Tom Schueler, Chesapeake Stormwater Network and Bill Stack, Center for Watershed Protection (http://chesapeakestormwater.net/wp-content/uploads/dlm_uploads/2013/10/stream-restoration-short-version.pdf)
- (6) Stack, B., 2019, “Chesapeake Bay Program Stream Restoration Credits: Moving Toward Functional Lift?”, Bill Stack, PE, Deputy Director of Programs, Center for Watershed Protection, September 12th, 2019; (<https://www.cwp.org/chesapeake-bay-program-stream-restoration-credits-moving-toward-functional-lift/>)