Re: R.H. Simmons comments for Full Board of Supervisors Meeting (Public Comment), December 1, 2020

Dear Fairfax County Board of Supervisors,

I wish to bring an urgent matter to your attention that involves the imminent destruction of two recently acquired Fairfax County parks. Regardless of how the privately owned parks were acquired by the county, the Goodman and Brickelmaier parks in the Hollin Hills community will be completely converted from forested, passive recreation parkland to deforested, stormwater management facilities by the scheduled natural channel design construction projects.

It is appalling that two such overkill projects were chosen for these parks, both comprising small upper headwater streams that are hardly commensurate with the massive scope of the projects and the $4M (and growing) cost.

There is great urgency for action here because formal bid submissions for the projects will be received at 11:00 am on December 9, 2020. We implore the BOS to intervene and suspend the projects until a number of serious issues can be resolved - see below.

Serious concerns with natural channel design approach

Fig. 1. A recent stream construction project at Upper Watts Branch Forest Preserve, City of Rockville, Maryland. Notice that the existing stream was completely destroyed to create an artificial floodplain by clearing the forested valley and raising the channel with tons of fill (sediment), tree trunks, and boulders. Photo by City of Rockville.

Natural channel design (NCD) destroys existing streams, streamside forests, and associated seepage wetlands by utterly replacing them.

NCD projects are highly destructive to forest communities and wetlands because they require extensive clearing of canopy trees and forest along the stream banks to create artificial floodplains and stream channels (Fig. 1). Rosgen's NCD methodology is simply being misapplied to forested, upper headwater streams in the region, driven by the multi-billion dollar stream restoration industry and government partners that are sustained by costly NCD projects and virtually bottomless government spending.

Irreparable destruction of forest, native flora, ancient soils, and landscape memory

The forested stream valleys of Brickelmaier and Goodman parks are documented old-age forest communities, with the majority of the parks' canopy trees over 120 years in age. Therefore, vegetation regrowth in the Limits of Disturbance (LOD) to even approximate an in-kind replacement would take at least 100 years.

The wooded parks are more than an assortment of individual trees - they are forest stands. They also comprise the viewshed of numerous properties, which will be entirely denuded and degraded. These stands are irreplaceable not only for their age and size, but also because they comprise species that are generally unavailable in the nursery industry (i.e., upland hickories, White Ash, Red Mulberry, upland oaks, etc.).

There are also valid concerns from neighboring property owners as to many trees that will sustain damage to critical root zones during construction and subsequently fall over onto homes and properties.

Plans for replacing existing vegetation are further complicated by the fact that much of the specified plant material for post construction planting is not representative of the species that comprise the two parcels (see attached floras). It is not an in-kind replacement of the cleared vegetation. Moreover, it is well documented in scientific literature that "late successional" plantings, such as those specified for these projects, have a high failure rate.

Simply put, anyone over the age of 35 will simply not see a mature canopy tree along these two streams again in their lifetime, let alone the old-age giants that grow here today.

It is also unlikely that the stream valley's existing natural features will return - naturally or otherwise - because the living foundation of the habitat, the result of millennia of evolution and complex interactions of organisms and geologic conditions, cannot be replicated - and certainly not by a "forest-in-a-can" method. One cannot plant a forest community, one can only plant individual trees and other vegetation. Only nature and very long periods of time can produce diverse, ecologically functioning natural communities such as currently exist.

Stream restoration projects do not actually target phosphorus-rich deposits

Total Maximum Daily Load (TMDL) requirements for sediment are set based upon what is necessary to reduce phosphorus loading because phosphorus is transported to the Bay in large quantities adsorbed to sediments. Managing excess phosphorus (P) delivery is therefore probably the greatest concern.

Eroding geologic materials in upper headwater streams typically have minimal phosphorus in them compared to mid and lower stream reaches that contain floodplain sediments. Yet, headwater streams are often targets for geomorphic restoration work because erosion can occur there.

Six equidistant soil samples were taken by R.H. Simmons from mineral soil of exposed stream banks along the Goodman Park intermittent stream and Brickelmaier Park low-discharge perennial stream. These were analyzed for phosphorus (P) using the Mehlich-3 method by Brookside Laboratories, Inc. As expected, phosphorus levels were very low in all of the samples (see attached Mehlich-3 test results).

The most important measures to curb excess phosphorus sediments are by improved agricultural practices, sanitary sewer rehabilitation, and better urban stormwater runoff management. So-called stream restoration projects, however, do not actually target phosphorus-rich deposits, despite the fact that funding for these projects is largely based on reducing phosphorus sediments.

Downstream flooding of properties is expected

Incised stream channels actually do a much better job of containing floodwaters and impervious surface runoff than natural channel design projects do. This is because the incised channels of upper headwater streams act as conduits or stormwater gullies and do not typically overflow their banks, even in the heaviest downpours. Similarly, the Goodman and Brickelmaier parks' streams never overflow their banks.

Natural channel design, in contrast, seeks to connect a stream channel with "its" floodplain (artificially created with respect to upper headwater streams) by significantly raising the channel with fill (imported sediment), wood, and rock and allowing the stream to overflow its banks (Fig. 1).

The four, low-lying properties at the Paul Spring Road entrances to the parks bordering the edge of the FEMA floodplain of Paul Spring Branch are seriously threatened with overbank flooding if these projects proceed as planned. The floodwaters do not emanate from Paul Spring Branch but are purely the result of unchecked impervious surface runoff entering the streams from above.

There are also flooding concerns for the backs of the Crooks and McDermott properties because the newly configured Goodman Park stream will actually course over the property lines through their back yards, as well as very near the Fleming property line (see attached HHPP parks map).

Flooding concerns are probably greatest for the Williams property because it is the lowest lying site in the landscape, but also because 16 mature canopy trees will be removed between the property line and the stream channel. That is all of the trees in this area (except for two adjacent to the property) and most of the existing mature canopy trees at the Goodman Park entrance on either side of the stream.

Nationwide Permit 27 (NWP) for the projects impermissibly granted

With respect to the proposed filling of the Brickelmaier channel, the county plans will result in the conversion of the Brickelmaier channel from a low-discharge perennial stream to an intermittent stream, or more likely an ephemeral stream, which is a violation of the Nationwide permit 27 (NWP) and protections for waters of the United States because the NWP does not authorize the conversion of a stream or natural wetlands into another aquatic habitat type (see attached letter to USACE).

Additionally, the issued permit terms and conditions require an uplift (improvement) over and above existing in terms of net increases in aquatic resource functions and services. Project plans do not provide any analyses or documentation that a net increase in function or added services will result from the construction of a new channel.

Moreover, the ecological reference used to develop model output does not sufficiently resemble the existing low-discharge system to be considered permissible. It is also questioned that the conditional VDEQ 401 Water Quality Certification conditions would be met considering these points raised herein.

Allowing the issued permit to stand as authorized would also effectively rob base-flow to Paul Spring Branch below, rendering the post-construction, drier-bed channel a mere stormwater management conduit for sheetflow and runoff instead of an already-functioning, forested, low-discharge perennial stream.

Regarding both parks, clearing mature stream valley forests and replacing them with artificial plantings - both in species makeup and numbers of plants - are obvious adverse environmental impact that negate any net increase in function or added ecosystem services required by the terms and conditions of the NWP.

Viable, proven alternatives not considered

All jurisdictions share a public trust responsibility and commitment to properly steward and preserve their natural resources for present and future generations and the good of the environment. It is critical to thoroughly assess and present all irreplaceable natural resources potentially affected by a stream restoration or wetlands project as necessary environmental review prior to construction.

The pros and cons of a project need to be properly quantified and weighed if a quality outcome is to be expected. This has not occurred with these projects.

The careful and *selective* use of log jams and wood snags that mimic natural processes are proven best practice recommendations for stabilizing and helping to restore eroded stream channels (Fig. 2).

Selectively stabilizing a stream channel in places by carefully armoring stream banks and channels with wood or boulders is also a much less environmentally damaging and costly approach.

Sometimes the No Build Option is the best alternative.

Fig. 2. Ten-year-old, failed NCD project along Strawberry Run in the City of Alexandria, Virginia that is naturally stabilizing itself with wood snags and log jams, which trap sediment and provide aquatic wildlife habitat. The selective boulder armoring in sections of this small order, upper headwater stream was minimal and largely successful (right background of photo). Photo by R.H. Simmons.

These methods are every bit as sound as natural channel design and regenerative stormwater conveyance approaches in restoring stressed urban streams - yet they do not require the clearcutting of whole swaths of stream valley forests for construction staging areas and artificial floodplains. They also can be implemented without destroying a stream's aquatic wildlife and fauna inhabiting stream banks, stream valley forests, and seepage wetlands.

Thank you for your consideration of this matter.

Respectfully submitted on behalf of Hollin Hills Parks Preservation (HHPP),

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