A LACK OF OVERSIGHT IMPERILS SEEPAGE WETLANDS AND FORESTED STREAM VALLEYS IN MARYLAND, D.C., AND VIRGINIA

By RODERICK H. SIMMONS

NATURAL CHANNEL DESIGN (NCD) is an engineering practice for stream reconstruction that attempts to mitigate the effects of uncontrolled stormwater runoff from upstream development. These projects are highly destructive to forest communities and wetlands because they require extensive clearing of canopy trees and forest along the stream valley to create artificial floodplains where none naturally exist (Fig. 1). The process involves raising incised stream channels by dumping tons of compacted soil, wood, and rock into them to deliberately cause overbank flooding into adjacent, non-alluvial seepage wetlands and forest communities. (Non-alluvial, in its simplest sense, means not formed or sustained by the actions of a stream.)

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.*

The Nationwide permit 27 (NWP 27) for stream projects is often inadmissibly granted. The NWP 27 is a federal permit for protecting Waters of the United States (WOTUS) by regulating dumping and filling in wetlands and waterways, among other activities. Reconfiguring and filling stream channels are routine when using NCD and regenerative stormwater conveyance (RSC) methods for stream construction projects. Boulder-armoring of stream banks (rip-rap) is also a form of filling waterways, even if a stream is not significantly altered by doing so. Therefore, all stream construction projects require a NWP 27 permit before any work can begin.

The U.S. Army Corps of Engineers (USACE) oversees and authorizes NWP 27 permits. ***Yet many permits are impermissibly granted because applicants and their consultants deliberately mischaracterize jurisdictional wetlands explicitly protected by the NWP 27.*** While jurisdictional wetlands (WOTUS) are regularly delineated within project limits of upper headwater streams, they are often incorrectly classified in documentation supporting the NWP 27 Permit Application Preconstruction Notification and the NWP 27. For example, a currently scheduled project in the City of Alexandria, Virginia, refers to non-alluvial seepage wetlands in the project footprint as "alluvial overbank wetlands" and states that the "full

Fig. 2. Coastal Plain / Outer Piedmont Acidic Seepage Swamp: *Acer rubrum - Nyssa sylvatica - Magnolia virginiana / Viburnum nudum / Osmundastrum cinnamomeum—Woodwardia areolata* Forest (USNVC: CEGL006238) along the south bank of Taylor Run at Chinquapin Park in the City of Alexandria, Virginia. Despite some protection from physical encroachment, natural channel design construction will destroy this groundwater-controlled, non-alluvial wetland by creating an artificial floodplain where none naturally exists and using the non-alluvial wetland as an alluvial habitat to be washed out by overland flooding regimes. *Photo by R.H. Simmons.*

design... includes restoring the channel to handle current and future watershed conditions in order to reestablish a stable, natural flooding regime," as well as the "facilitation of overbank flows that will help improve water quality" (WSSI 2020). Most, if not all, upper headwater streams throughout the region do not overflow their banks, and natural floodplains do not exist along such streams. **In pre-settlement conditions, these headwater streams were small, meandering brooks that never overflowed their banks simply because there was insufficient streamflow volume to exceed the capacity of the channel.** Instead, what occurs are narrow, ancestral alluvial benches and stream banks. These are very different from floodplains. The forested stream valley ravines we see today were likely formed during the Early Pleistocene Epoch in prehistory, not by events in the last few millennia to present.

Degrading and potentially destroying non-alluvial seepage wetlands for the purpose of stormwater management impermissibly converts these highly functioning wetlands into another aquatic type (Figs. 2 & 3). This is a *prima facie* violation of the terms and conditions of qualifying for a NWP 27 permit and is an unambiguous case of causing or creating more than minimal adverse environmental effects. As such, a NWP 27 cannot be lawfully issued. Impermissible conversion of aquatic types abuses seepage wetlands as an on-the-ground surrogate for truly alluvial habitats. Anticipated adverse impacts include severe flooding, sedimentation, loss of groundwater flow through, and unquantified changes to geochemistry and hydrology. The "French-drain" type pore space loss of hydrostatic water to the subsurface soils which support groundwater-fed wetlands would also be lost.

The streams themselves are also destroyed and all supporting biotic functions and values with them. The NWP 27 requires that whatever habitat remains post-construction must be demonstrably shown to provide ecological function lift (a net increase or improvement in aquatic resource functions and services) over and above existing functions. No NWP 27 can be issued without this evidence. Most project plans involving headwater streams and seep-

age wetlands, as submitted and coordinated, do not provide documentation of either existing functional baseline or the amount of anticipated functional lift and how it will be quantitatively measured. Moreover, the direct and indirect adverse environmental effects the activity would cause (as required in the pre-construction notification) are typically inadequate and erroneous.

The main drivers of this abuse of our stream valleys are unchecked growth and urban sprawl—rubber stamped by planning boards in virtually every jurisdiction regionwide—and conversion of protected stream valleys to stormwater management facilities in a futile attempt to accommodate runoff from massive amounts of stormwater runoff into small streams—in lieu of properly managing runoff outside of the immediate watershed—shocked and confused the environmental community and general public (Hobson 2021). Fairfax County Stormwater Planning recommended that "the realigned Colvin Run segment be designed using natural channel design to incorporate aquatic habitat, improve water quality, and enhance the adjacent wetlands," according to Craig Carinci, Director of Stormwater Planning. Carinci also wrote to the Virginia Marine Resources Commission and USACE to complain that NCD was not embraced here (Hobson 2021). In this case, as starkly contrasted with the City of Alexandria examples, USACE decided to protect a large Pied-

Fig. 3. Huge ferns and a series of acidic woodland seeps along the south branch of Lucky Run in the City of Alexandria, Virginia are critically imperiled by a misapplied natural channel design project that plans to flood the wetlands with unchecked stormwater runoff from I-95 and other impervious surfaces. Acidic woodland seeps are also non-alluvial wetlands and are intermediate in floristic diversity between Magnolia Bog and Acidic Seepage Swamp communities (Simmons 2015). *Photo by R.H. Simmons.*

greatly expanded impervious surface. Recently, near Tysons Corner in Fairfax County, Virginia, the serious environmental problems caused by dumping

mont / Northern Coastal Plain Basic Seepage Swamp (USNVC: CEGL006406) along the south side of Colvin Run above the confluence with an alluvial

Fig. 4. A recently constructed massive drainage channel replacing a section of 1960s-relocated Colvin Run in Fairfax County, Virginia. Leesburg Pike (Rt. 7), shown in photo center, is being doubly widened. A large Piedmont / Northern Coastal Plain Basic Seepage Swamp (USNVC: CEGL006406) runs along the south side of the above channel outside of the right photo frame. Despite the denuded, degraded landscape, the concrete channel is the only way to confine and accommodate enormous quantities of stormwater runoff from the widened roadway and environs without transferring it to forested wetlands and stream valleys, especially with 72" culvert outfalls aimed at said wetlands (middle left of photo). *Photo by R.H. Simmons.*

swamp at Difficult Run by not allowing NCD. This required the large, straight concrete channel to protect the non-alluvial forested wetlands (Fig. 4). "Of 10 total options considered for Colvin Run with input from the environmental agencies, this option was determined to be the least environmentally impactful" (Hobson 2021). Perhaps if stormwater management agencies and consultants would direct their agendas to upholding environmental regulations and protecting WOTUS instead of operating as facilitators of development, conditions might improve. Those enabling and funding the stream construction industry have little appreciation or understanding of the scientific disciplines of stream geomorphology, geohydrology, wetlands science, and stream ecology. Protection of our irreplaceable natural resources requires a strict adherence to scientific integrity, best practices, and environmental regulations.

REFERENCES

Hobson, M. *"Residents Mourn 'The Death of Colvin Run'."* McLean Connection, April 7, 2021. web: connectionarchives.com/PDF/2021/040721/McLean.pdf#page=6)

Simmons, R.H. 2015. *Native Vascular Flora of the City of Alexandria, Virginia.* City of Alexandria Department Recreation, Parks, and Cultural Activities, Natural Resources Division, Alexandria, Virginia. web: alexandriava.gov/22560

Simmons, R.H., 2020. Letter to U.S. Army Corps of Engineers, Norfolk District. 18 December 2020.

Simmons, R.H., R.D. Williams, R.W. Taylor, L.D. Durham, and D.V. Tiwari. 2019. City of Alexandria Natural Resource Management Plan. City of Alexandria Department of Recreation, Parks, and Cultural Activities, Alexandria, Virginia. 38 pp. Final Draft Natural Resources Management Plan.

Stack, W. 2018. Chesapeake Bay Program Stream Restoration Credits: *Moving Toward Functional Lift?* Center for Watershed Protection. web: cwp.org

Taylor Run Stream Restoration Frequently Asked Questions (TRSRFAQ). 2020. web: alexandriava.gov/uploadedFiles/tes/Stormwater/TaylorRunStreamRestorationFAQ

Wetlands Studies and Solutions, Inc. (WSSI). 2020. Nationwide Permit #27 Permit Application. Preconstruction Notification: Taylor Run NAO-2020-00370.