



A Regional Commission White Paper

Barriers to the Establishment of Nutrient Credit Banks in the Upper Roanoke River Watershed

Shira Goldman, Regional Planner I; Amanda McGee, Director of Community Development

Published: December 2025

Abstract

There are currently no nutrient credit banks in the headwaters of the Upper Roanoke River Watershed and few in the whole subbasin (HUC 8: 03010101). The lack of upstream banks means all credit purchases from developers happen downstream, having adverse water quality impacts for upstream communities with TMDLs or impaired waters.

According to responses received from experts, barriers to establishing nutrient banks include high land costs in the upper parts of the basin compared to lower in the watershed, existing market saturation, and limited local sponsorship.

The Commission’s regional recommendations include keeping nutrient credit trades local to the land disturbances, prioritizing conservation-aligned projects, leverage credit stacking where appropriate, and emphasizing stream/wetland restoration credits.

Localities included: Botetourt County, Roanoke County, Franklin County, City of Salem, and City of Roanoke

Table of Contents:

Abstract.....	1
Nutrient Credit Trading in the Roanoke Valley	2
Existing Banks and Impaired Waters Maps.....	5
What is Nutrient Trading?.....	7
Baseline Requirements	12
Application Requirements	12
Credit Calculation Procedures.....	13
Implementation Plans.....	13
Fees and Cost Estimates	14
Release Schedule	15
Stakeholder Feedback Summaries and Literature Review	16
Case Studies and Existing Trading Context.....	18
Wildwood Farms Nutrient Bank.....	18
Shoulder Run Stream Restoration Nutrient Bank..	18
Regional Recommendations	21
Encourage Credit Banks Near Nutrient Impact Areas.....	21
Prioritize Conservation-Aligned Projects	22
Prioritize Stream Restoration Approaches	24
Engage Local Stakeholders Early	26
Consider Alternatives	26
VDEQ Contact Information and NPS Credit Trading Resources	27
Acknowledgements	27
Appendix	28

Nutrient Credit Trading in the Roanoke Valley

The Upper Roanoke River watershed (URRW; 03010101) plays a crucial role in the health and function of the entire Roanoke River Basin, which drains into the Albemarle Sound in North Carolina. The URRW includes the headwaters of the Roanoke River (Figure 1) in RVARC counties of Roanoke and Botetourt, as well as the City of Salem and City of Roanoke. Montgomery and Floyd County also extend into the headwaters. This area influences the quality and quantity of water flowing downstream, meaning pollution or sedimentation in this zone can have cascading effects throughout the watershed. As development increases across the region, it is increasingly important to balance growth with maintaining healthy waterways, reducing nutrient pollution, and protecting aquatic life. One tool used to achieve these goals is nutrient credit trading. However, while nutrient trading can provide cost-effective flexibility, it also raises important questions about where water quality improvements occur and who benefits from them.

In the City of Roanoke, nutrient trading was the most popular stormwater quality compliance method for developers from 2017 to 2021.¹ Between 56 and 67% of the development used nutrient credits as their compliance method. Buying credits was especially common for smaller projects, with a median disturbance of 1.36 acres. In the City of Roanoke study, the median credit price was \$8000. However, all credits purchased came from banks downstream of the City², as shown in Figure 1. There is a problem of downstream trading due to a lack of credit banks in the City or upstream of the City. If credits are purchased from banks downstream, the Roanoke Valley may continue to experience sedimentation and nutrient impacts to waterways even as developments technically meet regulatory requirements.

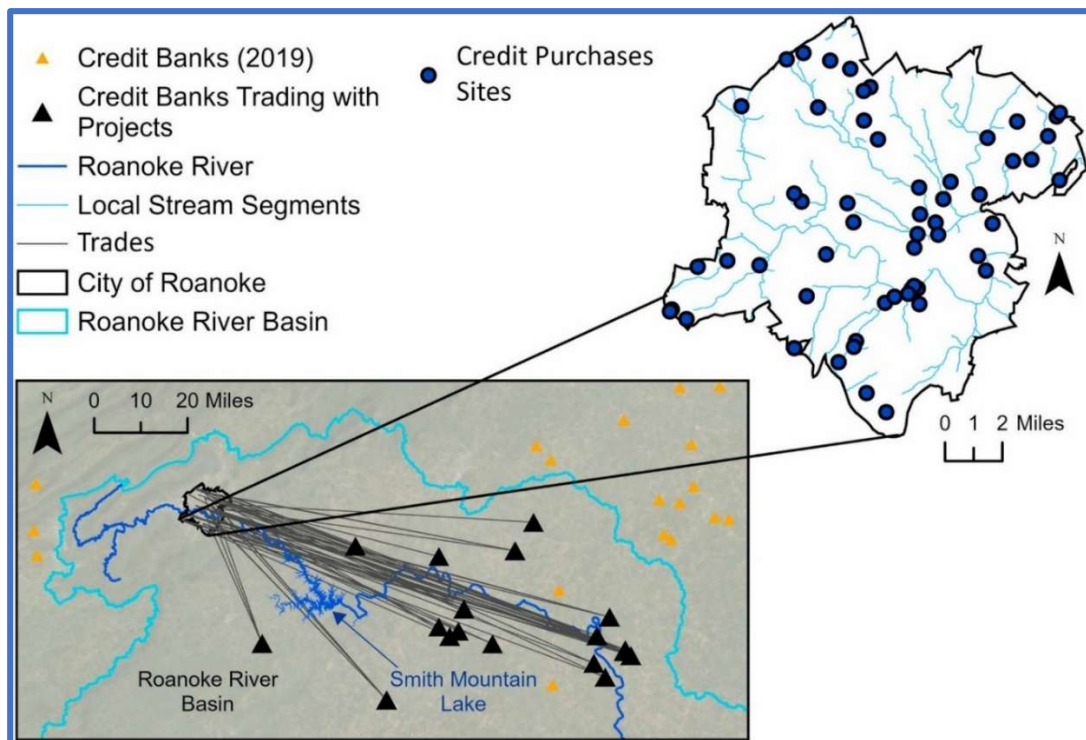
The URRW contains a considerable number of waterways that are currently listed as impaired or have established Total Maximum Daily Loads (TMDLs) as they travel through the watershed because they do not meet the Virginia water quality standards for aquatic life or recreation.³

¹ Nelson, J. D., Aguilar, M. F., Saby, L., Stephenson, K., & Goodall, J. L. (2024). *Exploring the adoption of water quality trading as an alternative stormwater regulatory compliance strategy for land development projects: A case study for Roanoke, Virginia*. *Journal of Environmental Management*, 356, 120548. <https://doi.org/10.1016/j.jenvman.2024.120548>

² Nelson et al., *Exploring the adoption of water quality trading as an alternative stormwater regulatory compliance strategy for land development projects*.

³ Roanoke County, Virginia. (2025). *Total Maximum Daily Load (TMDL) Action Plan – Sediment*. <https://www.roanokecountyva.gov/DocumentCenter/View/32525/Sediment-TMDL-Action-Plan-March-2025?bidId=>.

Figure 1. Nutrient credit trading in the City of Roanoke, Virginia. All sites that purchased credits purchased them from credit banks downstream. Credit: Nelson et al., 2024.⁴



One of the most persistent contaminants affecting these waterways is polychlorinated biphenyls (PCBs). PCBs can remain in the *environment* for prolonged periods due to their chemical stability. They often attach to sediment in local waterways, which accumulates in organisms such as fish. The Roanoke River is under a health advisory issued by the Virginia Department of Health to eat no more than two meals per month from many fish species caught in the Roanoke River.⁵ The watershed also faces multiple other water quality challenges that threaten aquatic ecosystems and human health. Bacteria (usually *E. coli*) in waterways is a strong indicator of fecal contamination and can lead to illness in humans. Benthic macroinvertebrates are biological indicators of watershed health as they cannot escape pollution and have predictable responses to human disturbance.⁶ Although nitrogen and phosphorus are not the primary pollutants driving local TMDLs, excess nutrients remain an important water quality concern. Excess nutrients can accelerate algal growth which eventually reduces dissolved oxygen. Insufficient dissolved oxygen can cause hypoxia which can

⁴ Nelson et al., *Exploring the adoption of water quality trading as an alternative stormwater regulatory compliance strategy for land development projects*.

⁵ Roanoke County, Virginia. (n.d.). *Polychlorinated Biphenyls (PCBs) Facts [PDFS]*. Retrieved November 10, 2025. <https://www.roanokecountyva.gov/DocumentCenter/View/9349/PCB-Facts-May-2017>.

⁶ EPA. (n.d.). *Indicators: Benthic Macroinvertebrates*. Retrieved November 26, 2025.

<https://www.epa.gov/national-aquatic-resource-surveys/indicators-benthic-macroinvertebrates>.

kill fish and other aquatic organisms. Accordingly, while BMPs may directly reduce downstream nitrogen and phosphorus, it can also indirectly reduce runoff, which can lower bacteria, PCBs, sediment, and potentially reduce mercury and dissolved oxygen amounts in waterways.

There is an opportunity to expand the nutrient banking network in the URRW to ensure developers can access local credits that also benefit overall water quality and aquatic ecosystems.

Figure 2. Upper Roanoke River Watershed (03010101 HUC 8). HUC 4 = Subregion, HUC 6= Basin, HUC 8= Subbasin, HUC 10= Watershed, HUC 12= Subwatershed. Credit: Adapted from *Virginia Hydrologic Unit Explorer* (Virginia Department of Conservation and Recreation).⁷

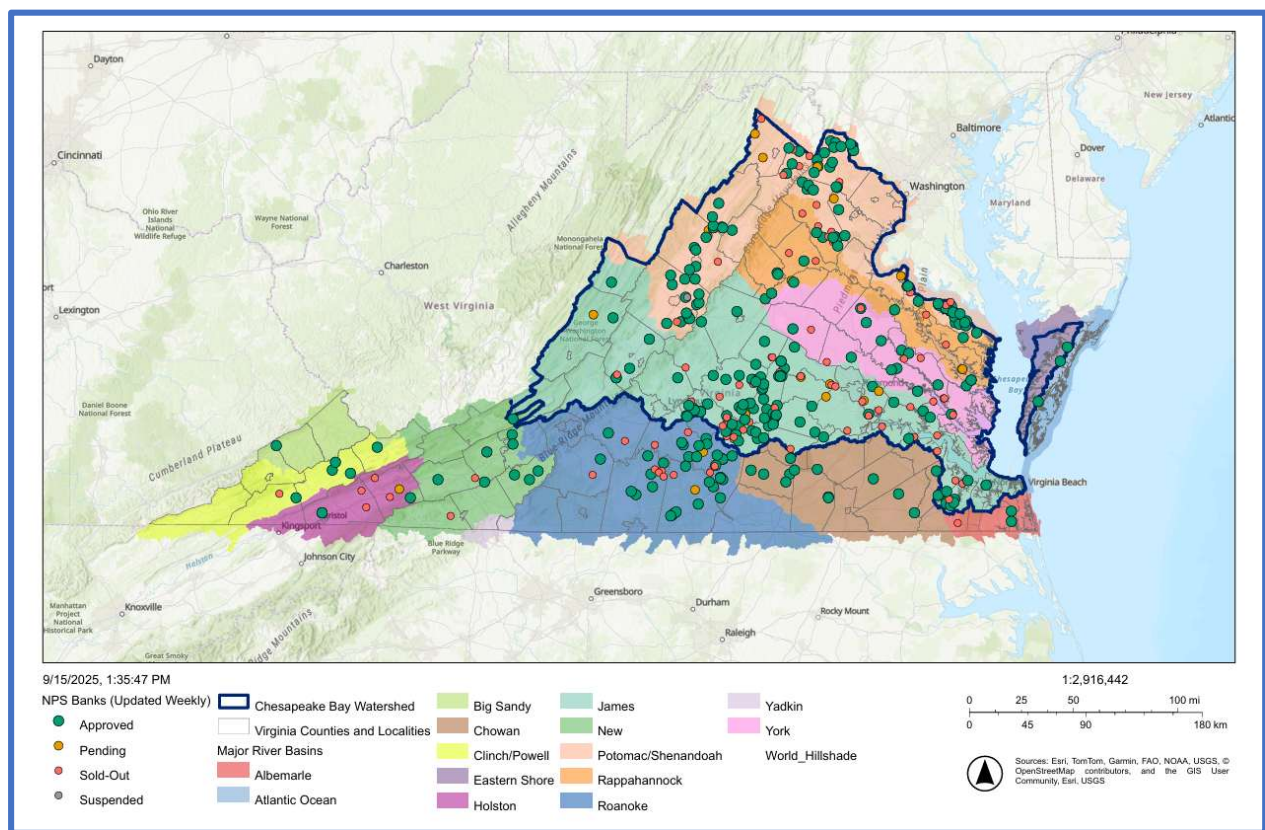


⁷ Virginia Department of Conservation and Recreation. (n.d.). *Virginia hydrologic unit explorer* [Web map]. Retrieved October 10, 2025. <https://casdis.dcr.virginia.gov/htdocs/maps/HUExplorer.html>.

Existing Banks and Impaired Waters Maps

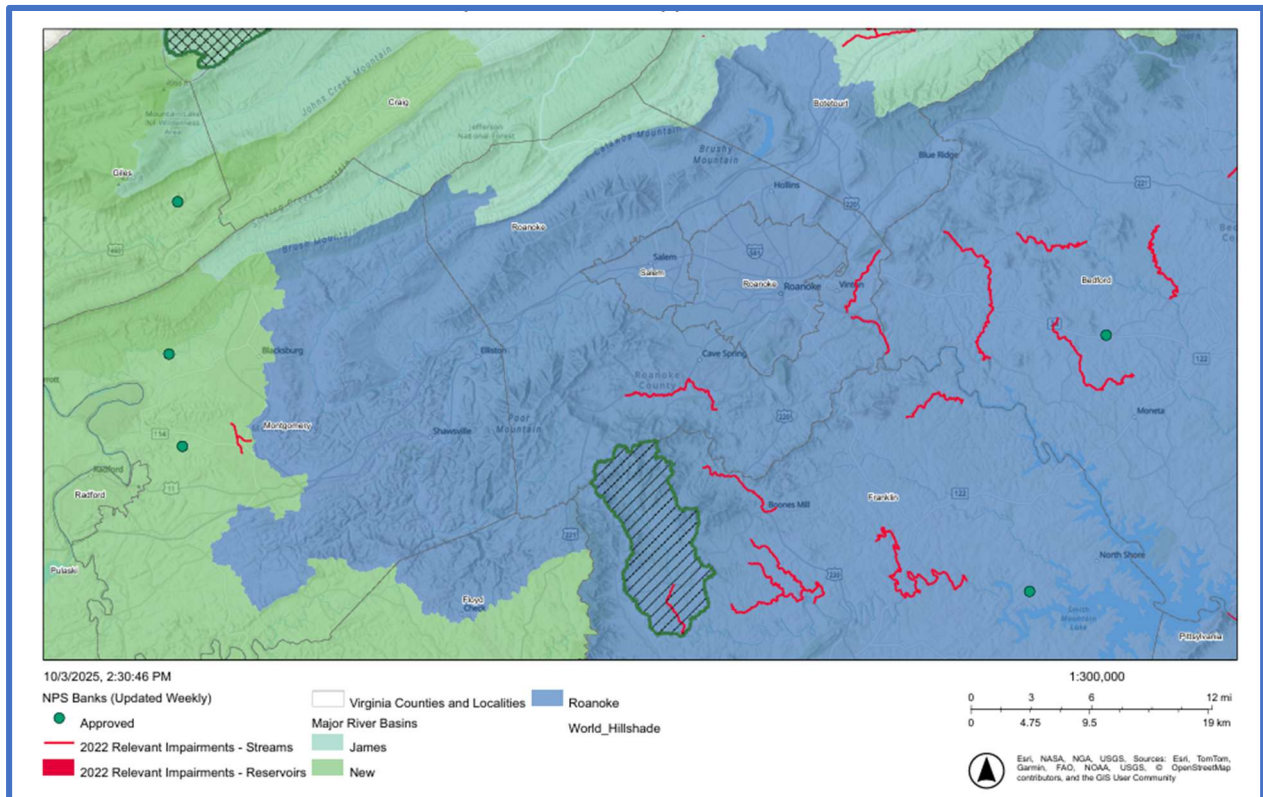
Currently, nutrient banks appear to be most common in the central part of the state and downstream in the Roanoke Major River Basin (Figure 3). There are very few in the RVARC region, only existing in Franklin County, despite various relevant impairments and nutrient TMDLs (Figure 4).

Figure 3. Locations of NPS Nutrient Banks and their status as of September 2025 in the Chesapeake Bay Watershed, and Major River Basins of Virginia. Credit: VDEQ, NPS Nutrient Trading Data Viewer — Office of Ecology, Water Monitoring and Assessment Program.⁸



⁸ Virginia Department of Environmental Quality (VDEQ), Office of Ecology, Water Monitoring and Assessment Program. (n.d.) *NPS Nutrient Trading Data Viewer*. Retrieved October 10, 2025. <https://experience.arcgis.com/experience/21b967a192c44fb89941c8265d430e39>.

Figure 4. Locations of NPS Nutrient Banks and their status, impaired streams and reservoirs, and Major River Basins in the RVARC served area, which includes the URRW. Hatched areas surrounded by green represent Nutrient TMDL Areas. Credit: VDEQ, NPS Nutrient Trading Data Viewer — Office of Ecology, Water Monitoring and Assessment Program.⁹



⁹ VDEQ, NPS Nutrient Trading Data Viewer.

What is Nutrient Trading and How Does it Work?

Nutrient trading is a market system created in 2005 in which facilities can meet regulatory water quality goals.¹⁰ When development sites cannot meet the absorption requirements on-site, the developers can purchase “credits” from nearby landowners, who have aided water quality on their land, to offset water quality impacts from their construction. The Virginia Erosion and Stormwater Management Program (VESMP) requires land developers with a Construction General Permit (CGP) (required for construction activities resulting in land disturbance over one acre) to mitigate stormwater runoff pollution impacts from construction using an improved list of water quality best management practices (BMPs). While onsite treatment works best to reduce pollutants, VESMP allows developers to purchase nutrient credits from water quality mitigation in lieu of onsite treatment.

Nutrient credits are from other sources that have achieved reductions beyond their requirements. This system can be used to offset nutrient loads—usually phosphorus—by supporting off-site BMPs when on-site options might be space-dependent or cost-prohibitive. Phosphorus is a “keystone pollutant” in the VESMP. Mitigation actions that are permitted to reduce phosphorus are also assumed to reduce nitrogen and sediment.¹¹ However, sediment credit use is not available to Roanoke Valley MS4s, as they are outside of the Chesapeake Bay Watershed. Term credits—seasonal or temporary BMPs that require ongoing maintenance, like planting cover crops or reduced fertilizer applications—may only be used by MS4 permittees.^{12,13}

VDEQ classifies perpetual credits as “often generated by permanent practices on deed-restricted land” and adds that they “can be used to permanently satisfy pollution reduction requirements”.

Nutrient credit banks are typically comprised of agricultural land that is converted to forested land and approved for perpetual credit generation by VDEQ. However, they may also include stream or floodplain restoration and riparian buffers. Nutrient reductions focus on total phosphorus using the Virginia Runoff Reduction Method, with

¹⁰ Virginia Department of Environmental Quality. (n.d.). *Nutrient Trading*. Retrieved October 10, 2025. <https://www.deq.virginia.gov/news-info/shortcuts/permits/water/nutrient-trading>.

¹¹ U.S. Environmental Protection Agency [EPA], U.S. Department of Agriculture [USDA], & Virginia Department of Environmental Quality [VDEQ]. (2019). *Stormwater financing solutions for nutrient reductions: Innovative financing strategies for reducing nutrients webinar series* [Webinar]. <https://www.epa.gov/sites/default/files/2019-08/documents/stormwaterfinancingfornutrientreductions-webinar.pdf>.

¹² Virginia Code. (2025). § 62.1-44.19:21.1. Sediment credit use by regulated MS4s. <https://law.lis.virginia.gov/vacode/title62.1/chapter3.1/section62.1-44.19:21.1/>.

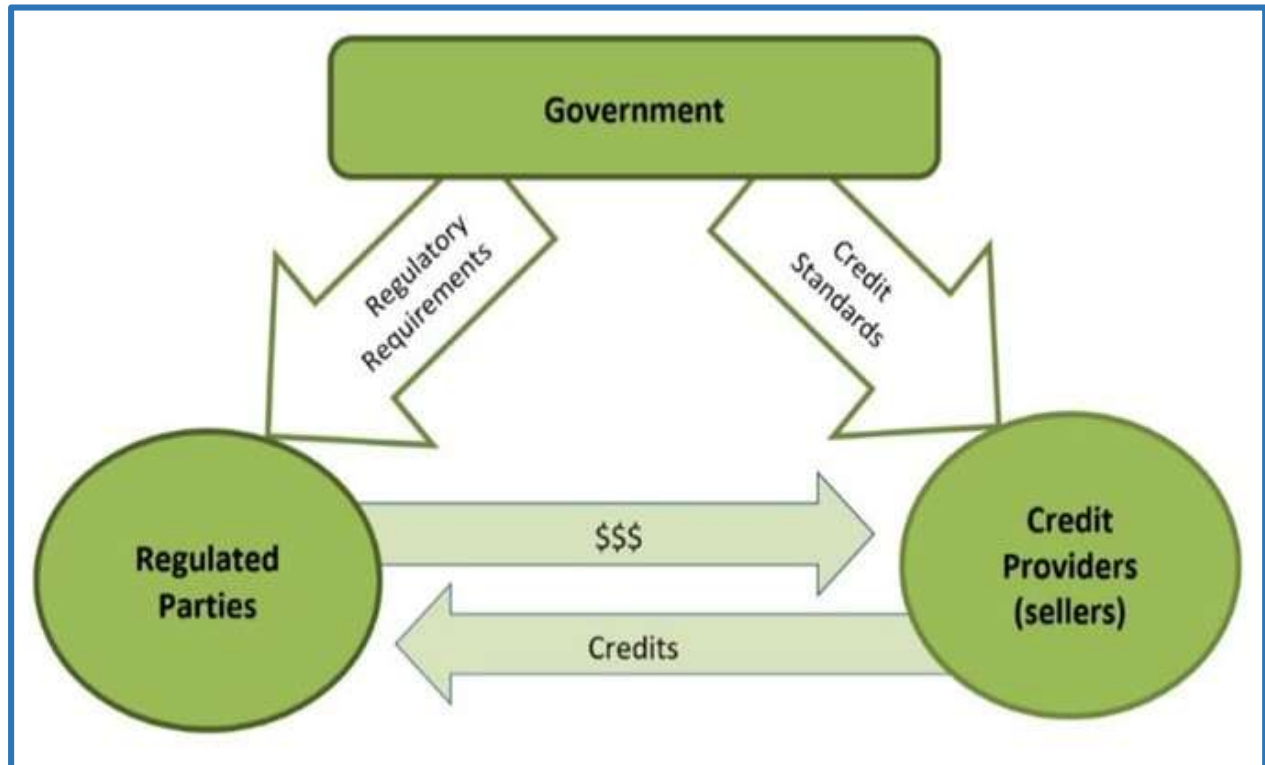
¹³ Virginia Code. (2025). § 62.1-44.19:21. Nutrient credit use by regulated entities. <https://law.lis.virginia.gov/vacode/title62.1/chapter3.1/section62.1-44.19%3A21/>.

different requirements for new development and redevelopment. Developers who hold a CGP are allowed to buy credits when they meet any of the following conditions:¹⁴

1. Less than five acres of land will be disturbed;
2. The post-construction phosphorus control requirement is less than 10 pounds per year; or
3. At least 75% of the required phosphorus nutrient reductions are achieved onsite. If at least 75% of the required phosphorus nutrient reductions cannot be met onsite, the operator must demonstrate the following to the satisfaction of the VESMP authority:
 - a. Alternative stormwater site designs have been considered that may accommodate onsite BMPs.
 - b. On-site BMPs have been considered in alternative stormwater site designs to the maximum extent practicable.
 - c. Appropriate onsite BMPs will be implemented.
 - d. Full compliance with the post-development nonpoint nutrient runoff compliance requirements cannot practically be met onsite.

¹⁴ Virginia General Assembly. (2024). 9VAC25-875-610. *Offsite compliance options*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter875/section610/>.

Figure 5. Relationship between regulated parties and credit providers. Developers (regulated parties) can save money and time by buying credits instead of overhauling their site design, and landowners (credit providers/sellers) can earn income for conservation work. Credit: *Virginia Citizen's Guide to Environmental Credit Trading Programs: An Overview*.¹⁵



Credits are sold at a 1:1 trading ratio, meaning that for every one pound of nutrient reduction credit that a bank creates, a buyer can use one pound of that credit to meet their regulatory obligation. Credit banks must already be established and have achieved reductions for developers to purchase perpetual credits. There are two main types of credits: point and nonpoint source. Point source credits are generated by facilities that discharge below their permitted nutrient limits, while NPS credits are created through land-use changes and BMPs (e.g., stream restoration, agricultural land retirement). VESMP focuses on nonpoint source credits because the runoff from development originates from multiple, potentially unidentifiable, points of a construction site.

¹⁵ Stephenson, K., Chase-Walsh, S., Lindrose, A., Worley, J., & Ignosh, J. (2022). *Virginia citizen's guide to environmental credit trading programs: An overview* (Publication ANR-173P). Virginia Cooperative Extension. <https://vtechworks.lib.vt.edu/server/api/core/bitstreams/abb7b06c-090b-4f71-b31d-bc4bf880992b/content>.

In Virginia, nutrient credits must come from the same or adjacent subbasin, or HUC 8.¹⁶ Additional restrictions apply in areas with impaired waters or local TMDLs. Credits must be sourced upstream of the impairment if a local nutrient TMDL applies. Projects must trace discharges using the NPS Nutrient Trading Data Viewer.¹⁷ For sites that drain into waters impaired for dissolved oxygen, benthic community, chlorophyll-a, or nutrients, but do not have an approved TMDL, exchanging credits is limited to credits generated in accordance with the following hierarchy¹⁸, also visualized in Figure 6:

- a. Upstream of where the discharge reaches impaired waters if credits are available;
- b. Within the same 12-digit HUC if credits are available;
- c. Within the same 10-digit HUC if credits are available;
- d. Within the same 8-digit HUC if credits are available;
- e. Within an adjacent 8-digit HUC within the same tributary if credits are available;
or
- f. Within the same tributary.

For facilities to determine their NPS credit requirement, they must consult their VSMP authorities. RVARC counties in the Roanoke River watershed—including Botetourt, Roanoke, Franklin, the City of Roanoke, and the City of Salem—serve as local authorities.¹⁹ Thus, stormwater management plans, CGPs, registration statements, notices of termination, permit modifications and transfer of ownership agreements for construction are submitted to their appropriate VESMP authority (where the land-disturbing activity occurs) for review and approval of VDEQ-certified credits.

VESMP authorities can still require upstream credits only if needed to protect local quality. If it is shown that the impairments are not caused by nutrients or that using credits would not worsen the issue, then the hierarchy rules above do not apply.

¹⁶ Virginia General Assembly. (2024). 9VAC25-900-91. Exchange of credits. Virginia Administrative Code.

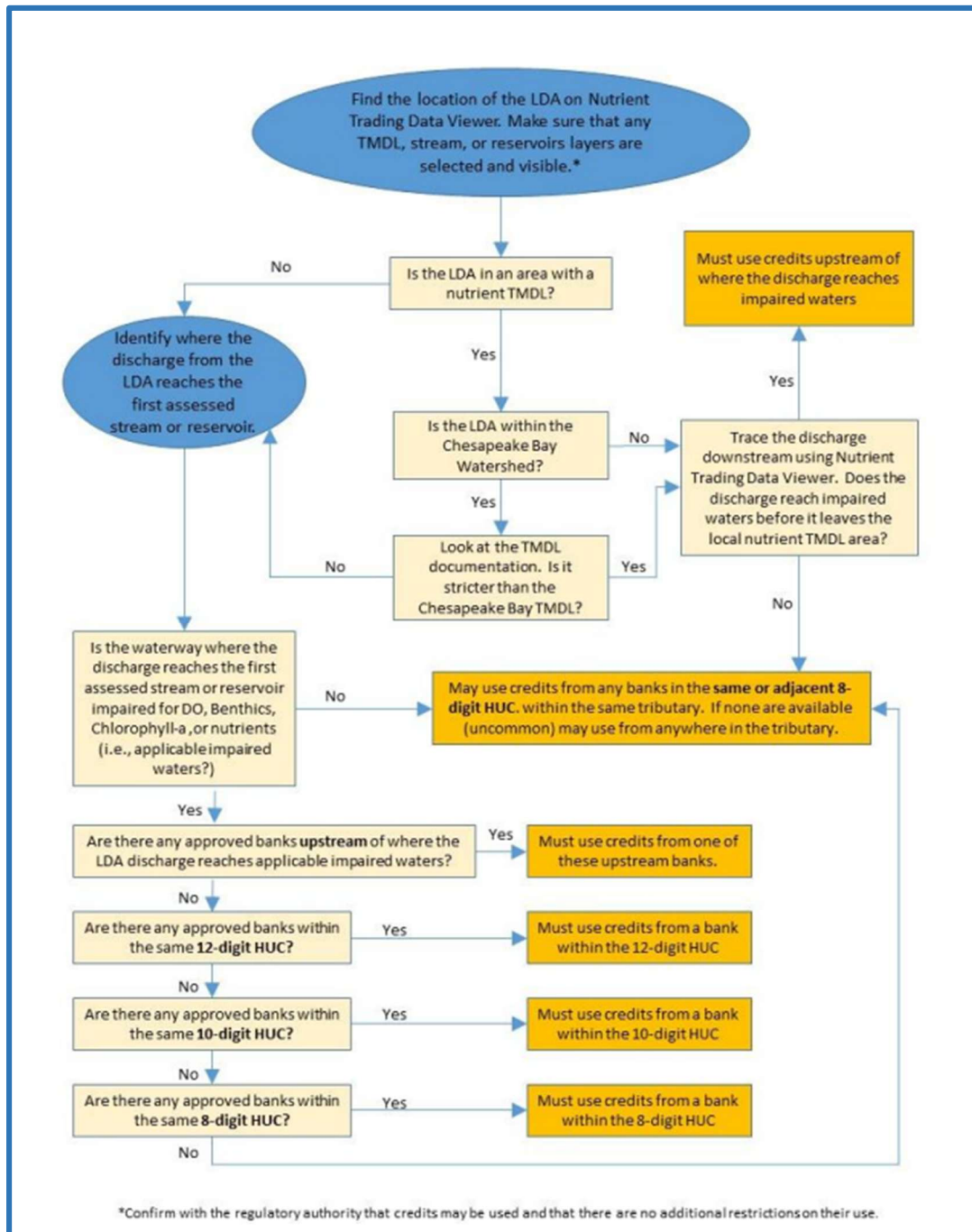
<https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section91/>.

¹⁷ VDEQ, *NPS Nutrient Trading Data Viewer*.

¹⁸ Virginia General Assembly, 9VAC25-900-91. *Exchange of credits*.

¹⁹ Virginia Department of Environmental Quality. (n.d.). *Stormwater – Construction*. Retrieved October 10, 2025 <https://www.deq.virginia.gov/water/stormwater/stormwater-construction#:~:text=Water%20Quality%20Design%20Criteria%20%2D%20UPDATE,rescinded%20effective%20July%203%2C%202025>.

Figure 6. Process for off-site compliance purchase eligibility as of 2018 for nutrient credits. LDA means “Land Disturbing Activity”. Credit: VDEQ Guidance Memo GM21 2007.²⁰



²⁰ Virginia Department of Environmental Quality. (2022). *Local Water Quality Protections for Nonpoint Source Nutrient Credit Use for Regulated Land Disturbing Activities* (Document ID: GM21-2007). Virginia Regulatory Town Hall. <https://www.townhall.virginia.gov/L/ViewGDoc.cfm?gdid=7159>.

Baseline Requirements

Before a project can generate credits, it must demonstrate compliance with all applicable baseline conditions as outlined in 9VAC25-900-100.²¹ For urban development, redevelopment, or retrofit projects, the project must either satisfy approved TMDL nutrient reduction targets or, where no TMDL exists, follow VESMP post-construction water quality standards for prior-developed lands. Implementing these baseline BMPs could mean large operations and maintenance costs. Grants can be used to achieve baseline but not for credit-generating practices.

Application Requirements

Applicants must submit a VDEQ application (or renewal at least 60 days before expiration) in accordance with 9VAC25-900-80.²² The application itself requires substantial planning, documentation, and knowledge of compliance and regulatory requirements. Applicants must provide descriptions of the project and its management practices, contact information for all parties involved, detailed maps and site conditions, calculations for potential nutrient credits, financial assurance mechanisms, and proof of clear title. Additionally, projects may require supporting permits, documentation of prior grants, and coordination with contractors or innovative practices, along with appropriate fees and site protection instruments. Credit-generating projects require applicants to submit legally enforceable instruments and adhere to specific release schedules.

These provisions highlight how the regulatory and administrative burden (including technical, financial, and legal obligations) make it neither cheap nor simple for a layperson to navigate the process independently. Establishing a nutrient credit project likely involves multidisciplinary expertise, careful planning, and considerable resources, underscoring that these programs are generally accessible only to experienced consultants or those with municipal support.

Once the application is received, VDEQ conducts an administrative review of the application within 30 calendar days of receipt to determine completeness. For land conversion practices, VDEQ may perform a site visit within 30 days of an application receipt and determine the completeness of the application within 45 days. Within 15 days of deeming the application complete, they either approve it with a certification or deny it via a public notice online on the VDEQ website.²³

²¹ Virginia General Assembly. (2024). 9VAC25-900-100. *Establishing baseline*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section100/>.

²² Virginia General Assembly. (2020). 9VAC25-900-80. *Procedure for application for certification of nutrient credits*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section80/>.

²³ Virginia General Assembly, 9VAC25-900-80. *Procedure for application for certification of nutrient credits*.

Credit Calculation Procedures

According to 9VAC25-900-110²⁴, credit generation depends on the type of practice and its nutrient reduction effectiveness. In the Southern Rivers watersheds, applicants calculate potential nutrient credits using department-approved removal efficiencies and delivery factors specific to the watershed. For land use conversions, credits are based on the difference in nutrient loads per acre between the pre-conversion and post-conversion land use, accounting for required baseline practices. Wetland and stream restoration credits are determined by comparing pre-restoration conditions to post-restoration outcomes using approved methods. Practices not previously approved by the department are reviewed case-by-case, with applicants providing removal efficiency data and supporting information. For more information, reference the full credit calculation procedures administrative document.

Implementation Plans

For land use conversions (managed afforestation or natural succession), the plan must detail planting density, invasive species control, timber management, baseline agricultural practices, and performance monitoring. For other land conversions or non-land use agricultural projects, the plan must describe the management area, baseline practices, BMP implementation schedules, and nutrient management plans. Wetland and stream restoration projects require detailed site plans, construction schedules, monitoring protocols, performance standards, and long-term management strategies, including stewardship and financial assurance. Urban projects must describe the contributing drainage area, existing BMPs, nutrient management plans, and stormwater or erosion control plans. For all other activities, the department may require additional information necessary to evaluate and certify nutrient credits. For more information, reference the full implementation plan administrative document 9VAC25-900-120.²⁵

According to 9VAC25-900-140²⁶, project owners must allow VDEQ or representatives access to the site and related records, including plans and financial assurance documents. VDEQ can inspect facilities, equipment, practices, and operations, as well as take samples if needed.

²⁴ Virginia General Assembly. (2024). 9VAC25-900-110. *Credit calculation procedures*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section110/>.

²⁵ Virginia General Assembly, 9VAC25-900-120. *Implementation plan*.

²⁶ Virginia General Assembly. (2020). 9VAC25-900-140. *Inspections and information to be furnished*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section140/>.

Fees and Cost Estimates

As the fee table (Table 2) displays, application fees can vary from \$3-\$10,000. This is solely the fee to apply for nutrient credit certification and does not account for detailed cost estimates required by DEQ for repair, operation, and maintenance of structural BMPs.²⁷ For perpetual credits, the estimate includes repairs and 50 years of O&M. Estimates must include hiring a third party to perform these tasks. Wetland and stream restoration projects require separate estimates for monitoring and long-term management. Perpetual credit projects must update their cost estimates every five years to ensure they remain sufficient.²⁸ Altogether, determining the financial obligations and technical calculations required for this process would be difficult for those without specialized knowledge or experience with nutrient credit trading.

Table 2. Application fee schedule for perpetual nutrient credits certification. Credit: From Virginia Administrative Code. 9VAC25-900-220.²⁹

Base Fee	\$5,000
Supplementary Fees – Total Number of Perpetual Phosphorus Credits (X)	
X ≤ 30	\$1,000
30 < X ≤ 60	\$5,000
60 < X ≤ 90	\$5,000
X > 90	\$7,000

Table 2. Term Nutrient Credits Certification Application Fees

Base Fee	\$5,000
Supplementary Fees	\$/ (Credit*Term Years)
1st 100 term nutrient credits (1 to 100)	\$4.00
2nd 100 term nutrient credits (101 to 200)	\$5.00
3rd 100 term nutrient credits (201 to 300)	\$2.00
4th 100 term nutrient credits (> 300)	\$1.00

Table 3. Renewal Term Nutrient Credits Certification Application Fees

Base Fee	\$1,000
Supplementary Fees	\$/ (Credit*Term Years)
1st 100 term nutrient credits (1 to 100)	\$4.00
2nd 100 term nutrient credits (101 to 200)	\$5.00
3rd 100 term nutrient credits (201 to 300)	\$2.00
4th 100 term nutrient credits (> 300)	\$1.00

²⁷ Virginia General Assembly. (2020). 9VAC25-900-220. *Application fee schedule*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section220/>

²⁸ Virginia General Assembly. (2020). 9VAC25-900-250. *Cost estimates for perpetual and term credit nutrient credit-generating projects*. Virginia Administrative Code.

<https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section250/>

²⁹ Virginia General Assembly, 9VAC25-900-220. *Application fee schedule*.

Release Schedule

The release schedule, as stated in 9VAC25-900-90³⁰, explains that not all credits are available on day one of credit certification. 25% of credits are released after VDEQ certifies that conditions are met. For afforestation projects, an additional 25% is released once over 400 woody stems per acre are planted, and the remaining balance is released after VDEQ confirms the plan meets performance criteria. For wetland or stream restoration projects, if all performance standards are met and the site/channel is stable, and (for streams) a bankfull event occurred that year, up to another 25% may be released. If no bankfull event occurred but standards are met and the channel is stable, only 10% may be released that year. After the fourth monitoring year, no more releases occur until a bankfull event is documented; if it occurs post-Year 4 and all standards are met, up to 25% may be released that year (not to exceed the remaining balance). Other practices are usually set to release credits on a case-by-case basis. While some may assume nutrient credits can be generated quickly to meet an unexpected compliance challenge, the phased approach might mean that generating and buying credits can take years, emphasizing that nutrient credit projects require long-term coordination and continuous oversight.

Tradable credits can be viewed on the RIBITS database.³¹ As of December 15, 2025, VDEQ has partnered with Water Ledger to improve upon RIBITS. Unlike RIBITS, Stream, Wetland, and Nutrient Credit Exchange (SWaN) lists pricing, serial codes for individual credits or transactions, and may report delayed information about credit availability. The platform is user-friendly and allows you to filter by credit class, credit product, watershed, and HUC to view the real-time available credit supply or credit demand. Automated compliance connects directly with VDEQ and RIBITS for instant reporting and verification, eliminating manual paperwork and data entry and automatically tracking every transaction. You must pay for the software to initiate in trade.³²

³⁰ Virginia General Assembly. (2024). 9VAC25-900-90. *Nutrient credit release and registration*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section90/>.

³¹ U.S. Army Corps of Engineers. (n.d.). *RIBITS: Regulatory In-lieu Fee and Bank Information Tracking System*. Retrieved October 10, 2025. https://ribits.ops.usace.army.mil/ords/f?p=107:285:::::PO_OVERALL_VIEW,PO_FFF_ID,PO_FFF:1,0,2.

³² Water Ledger. *SWaN*. Retrieved December 19, 2025. <https://swan.waterledger.com/what>.

Stakeholder Feedback Summaries and Literature Review

According to the responses received from representatives of Virginia Nutrient Bank, VDEQ, Resource Environmental Solutions (RES), and the City of Roanoke, some barriers to establishing nutrient banks include **high land costs** in the upper parts of the basin compared to lower in the watershed, **existing market saturation**, as most current demand is already being met by existing banks, and **limited local sponsorship**, since many banks are not operated by nearby organizations.

According to Virginia Nutrient Bank, a private company that facilitates the creation and sale of nutrient credits for water quality compliance, the Roanoke River Basin is the third largest watershed in Virginia for nutrient demand after the James and Potomac. Historically, converting agricultural land to forest was the primary credit delivery method but because land is cheaper downstream from the Roanoke area, most nutrient banks were built in lower parts of the watershed.^{33,34} For example, RES, an environmental consulting company, established a bank in the Roanoke watershed ([see Shoulder Run case study](#)), where they used stream restoration rather than farmland conversion to generate credits. The company has enough credits to meet demand, but it plans to remain active in the market once those credits are sold.

The development and pricing of stream-based nutrient banks near Roanoke are influenced by several key factors. The potential credit yield for a project depends on site-specific soil characteristics. These include bulk density and nutrient content, which directly affect the cost per credit. The region faces added challenges from its mountainous topography and rocky soils, which make it difficult to access and establish perpetual banking sites and would likely increase project costs. In 2020, VDEQ updated land conversion rates using new modeling, cutting the credit-per-acre value for agricultural conversions in half, further challenging the profitability of new banks.

Based on the response from RES and the lack of upstream banks, the cost per credit of phosphorus is likely decreasing over time. This usually happens when there's already enough supply in the market, so sellers lower prices to stay competitive. Additionally, the basin already has more credits available than there is demand for. Adding more credits to an oversupplied market makes it difficult to sell credits at a profitable price.

In a NPS WQT study published in 2021, another VDEQ representative mentioned that although agricultural conversion banks were the most popular credit-producing method, other projects have included conversions of golf courses to forest, the establishment of

³³ Saby, L., Nelson, J. D., Band, L. E., & Goodall, J. L. (2021). *Nonpoint source water quality trading outcomes: Landscape-scale patterns and integration with watershed management priorities*. *Journal of Environmental Management*, 294, 112914. <https://doi.org/10.1016/j.jenvman.2021.112914>.

³⁴ In discussion with RES staff member, email message to author, October 2025.

a bioretention pond, and stream restoration projects.³⁵

However, most trades occur far from impact sites, often outside the HUC 8 but within the HUC 6 basin. 57% of transactions crossed HUC8 boundaries; only 0.5% were within the same HUC 12 (local watershed). Some transactions (2%) even crossed HUC 6 boundaries, which is technically noncompliant. This pattern indicates that pollution mitigation is “exported” from urban to rural watersheds, with urban areas purchasing more credits and rural areas selling them. This is similar to wetland mitigation trends, where restoration shifts from more expensive urban areas to cheaper, rural areas.³⁶

The spatial disconnect between nutrient trading and conservation goals suggests a weak alignment between market-based credit trading and state conservation priorities. As of 2021, about 69% of nonpoint source water quality trading bank areas and 96% of credit purchase areas fall outside of ConserveVirginia’s conservation or land management priority zone.³⁷ This means that most trading does not fall within the state’s environmental goals. Roughly 22% of mitigation site areas actively conflicted with state priorities, such as converting prime farmland to forest, while 9% of bank areas supported conservation objectives, like reforestation degraded riparian buffers.³⁸

It is common for private firms operating at a state-wide or national scale to step in and build banks where credit sales will be profitable. More local sponsorship from nearby firms or local governments could lead to more strategically placed banks upstream, in areas that private developers with no local water quality knowledge may overlook.

The EPA’s 303d list under the TMDL program, which identifies impaired waters, will be updated in April 2026. This may create new requirements for where nutrient banks are needed or where new credits must be purchased.³⁹

³⁵ Saby et al., 2021. *Nonpoint source water quality trading outcomes: Landscape-scale patterns and integration with watershed management priorities.*

³⁶ Saby et al., 2021. *Nonpoint source water quality trading outcomes: Landscape-scale patterns and integration with watershed management priorities.*

³⁷ Saby et al., 2021. *Nonpoint source water quality trading outcomes: Landscape-scale patterns and integration with watershed management priorities.*

³⁸ Saby et al., 2021. *Nonpoint source water quality trading outcomes: Landscape-scale patterns and integration with watershed management priorities.*

³⁹ Peter Stutts, email message to author, October 2025.

Case Studies and Existing Trading Context

Wildwood Farms Nutrient Bank

Wildwood Farms in Appomattox County is one example of nutrient banking success and the first private nutrient bank certified by VDEQ.⁴⁰ The Chesapeake Bay Nutrient Land Trust reached out to the farm owner, John Harrison, to partner with him on this nutrient banking project. Harrison decided to cut back on cattle and convert about 12% of his land (around 110 acres out of 900) to forest and riparian buffers. These plantings help to reduce erosion and nutrient runoff. He has seen a positive impact on the water quality of his stream, which leads to the Chesapeake Bay. This grants his land a bank of tradeable “nutrient credits.” Over time, the credits are traded for cash from developers who are required to address water quality when they build things like roads and parking lots. The cash payments cover the cost of the tree planting project as well as payments to the farmers. Project manager Brent Fults calls these projects a “private investment with public benefits.” Harrison praises nutrient banks as a way to clean up the surrounding rivers and the Chesapeake Bay while creating another revenue stream for the farm that allows him to maintain the traditional wide-open spaces on the farm as well.⁴¹

Shoulder Run Stream Restoration Nutrient Bank

Shoulder Run is a nutrient bank for the Upper Roanoke River Watershed, located in Bedford County. The Shoulder Run Stream project restored the headwater stream systems within active pastureland. Original conditions included degraded banks and no riparian buffer with polluted soil.

⁴⁰ Corbin, J. (2021). *Trading and Offset of Nutrients (and sediment) in the Chesapeake Bay Watershed* [PowerPoint slides]. Presented at the Chesapeake Bay Local Government Advisory Committee Meeting. Restoration Systems, LLC. https://www.chesapeakebay.net/files/documents/8._nutrient_trading_and_offsets_-_jeff_corbin.pdf.

⁴¹ USDA. (2014). *Cleaner Water and Nutrient Credits* [Video]. YouTube. <https://www.youtube.com/watch?v=yzCNpEzJf-s>.

Figures 7 and 8 represent Shoulder Run in Bedford County before stream restoration, and Figure 9 represents after. Credit: RES, *Shoulder Run Stream Restoration Nutrient Bank Project*.⁴²

Figure 7. Overgrazed pasture.



Figure 8. Stream with unstable and eroding banks.



⁴² RES, *Shoulder Run Stream Restoration Nutrient Bank*.

Figure 9. Restored stream with a healthy floodplain and increased habitat.



By repairing the degraded banks, RES prevented 309.68 tons/year of total suspended solids, 1375.85 lbs./year of total phosphorus, and 881.67 lbs./year of total nitrogen from entering the Chesapeake Bay. Repairs to this landscape included beaver dam analogs, floodplain restoration, natural channel design, and oxbow ponds. The completed restoration created a “highly functioning eco-corridor with a highly connected floodplain and a stream system with diverse habitat niches,” according to RES.⁴³

⁴³ RES. (n.d.). *Shoulder Run Stream Restoration Nutrient Bank*. Retrieved October 10, 2025. <https://res.us/projects/shoulder-run-stream-restoration-nutrient-bank/>.

Regional Recommendations

Encourage Credit Banks Near Nutrient Impact Areas

According to multiple studies that compare on-site BMPs and buying credits requirements, credit purchases can be more economical for meeting stormwater regulations for new developments.^{44,45} However, it is important for regional nutrient credit programs to be designed with local environmental protection in mind.

How: Encourage VESMP authorities to strongly enforce VDEQ Guidance Memo GM21-2007⁴⁶, which encourages trades to remain close to impacts. A staff member of RES staff and VDEQ stated that enforcement by VESMP authorities has been inconsistent across the state.⁴⁷ Enforcement of this memo could help to limit trades to the HUC 8 if the land disturbing activity impacts locally impaired waters.

VESMP authorities can amend their ordinances to restrict trading to more stringent boundaries (such as by locality) to encourage protection of local water quality. Ultimately, the VESMP authority must confirm trading eligibility for construction activities. If the LDA is in a TMDL area or drains to relevant impaired waters (as shown on the NPS Nutrient Trading Data Viewer) and there are no upstream nutrient banks or they do not meet the VESMP authorities' more stringent local water-quality-based limitations, then the LDA must implement on-site BMPs. VDEQ cannot enforce this; it is the responsibility of the VESMP authority. Nutrient bank brokers may be contacted for credit pricing and letters of credit availability only after the VESMP authority has confirmed eligibility for NPS nutrient credit use and the LDA's available nutrient banks have been determined.

Member governments can identify priority HUC-12 subwatersheds, focusing on those showing net negative credit balances (purchasing more credits than they generate or sell). They can also identify underutilized agricultural land, golf courses, and impaired waterways for potential banks. Localities may also want to create a list of applicable BMP types per site. Localities can secure conservation easements on public land so that they possess the land to meet their development regulatory

⁴⁴ Corrales, J., Naja, G. M., Bhat, M. G., & Miralles-Wilhelm, F. (2014). *Modeling a phosphorus credit trading program in an agricultural watershed*. *Journal of Environmental Management*, 143, 162-172.

<https://doi.org/10.1016/j.jenvman.2014.04.031f>.

⁴⁵ Nobles, A. L., Goodall, J. L., & Fitch, G. M. (2017). *Comparing Costs of Onsite Best Management Practices to Nutrient Credits for Stormwater Management: A Case Study in Virginia*. *JAWRA Journal of the American Water Resources Association*, 53(1), 131-143. <https://doi.org/10.1111/1752-1688.12487>.

⁴⁶ VDEQ, Local Water Quality Protections for Nonpoint Source Nutrient Credit Use for Regulated Land Disturbing Activities (Document ID: GM21-2007). Virginia Regulatory Town Hall.

⁴⁷ Peter Stutts, email message to author, October 2025.

requirements. Once VDEQ certifies and releases credits, the credits may be sold or applied to the locality's own permit needs.

The region should also work to build relationships with VDEQ staff, particularly those [listed at the end of this report](#). They are technical experts who ultimately certify sites for credit generation and can assist with nutrient trading questions. It may also be helpful to investigate the new SWaN platform. There are three available tiers: free, \$15 a month, and \$50 a month. The \$15 tier provides access to live market data and allows the user to generate and download reports. Thus, this tier may be sufficient for localities to keep them informed of the credit market and act if the demand arises. There is a 12 months free access promotion if users register by January 31, 2026.

Prioritize Conservation-Aligned Projects

Many banks currently conflict with state priorities, such as converting prime farmland, which undermines agricultural preservation goals.

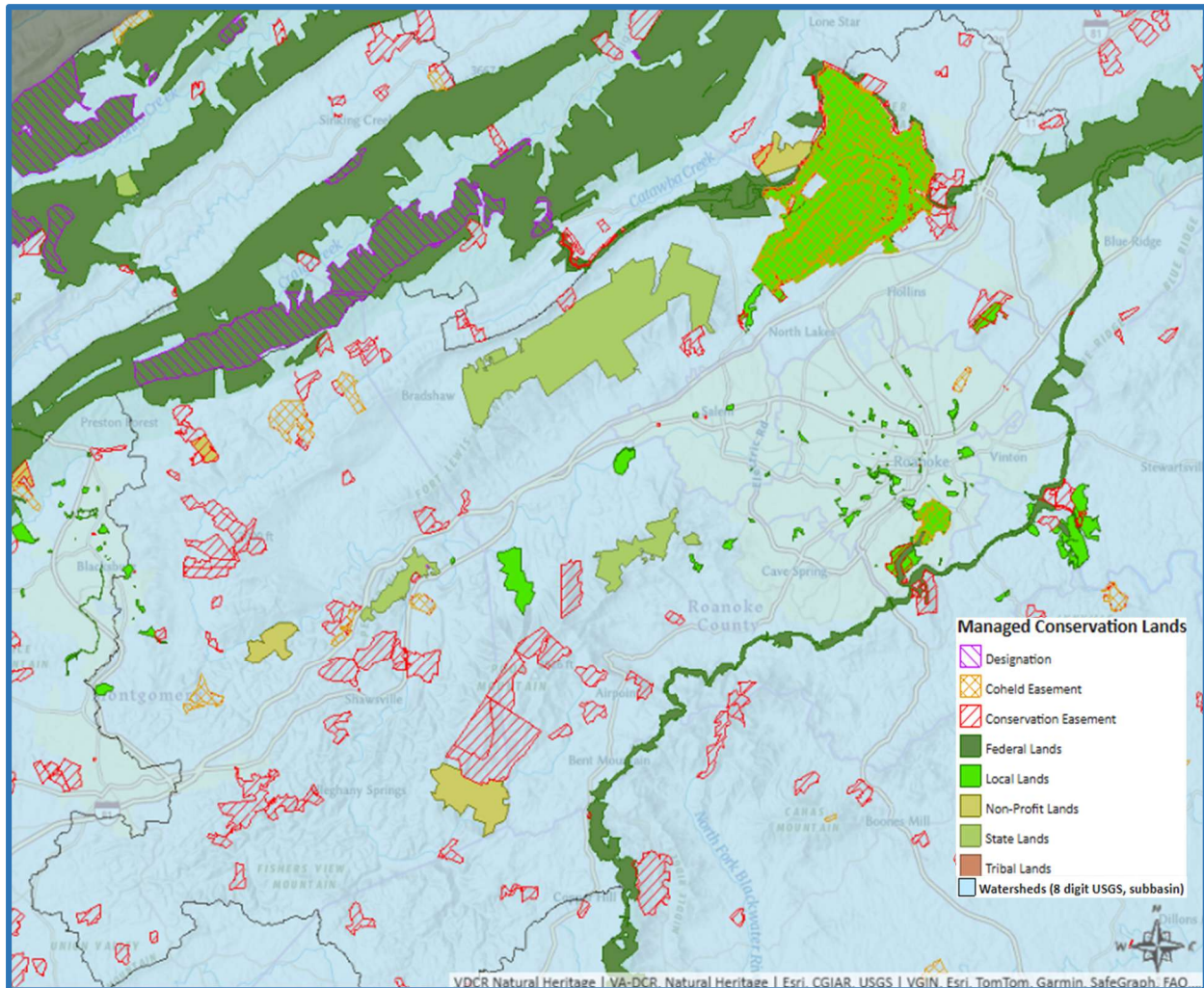
How: Focus on sites that fall within ConserveVirginia's conservation priority zones, a statewide framework developed by the Virginia Department of Conservation and Recreation, to ensure the nutrient reductions support state environmental goals. Target degraded riparian buffers, forest restoration, impaired water areas, and areas where mitigation aligns with ecological objectives rather than solely market convenience.

Credit stacking could also be an opportunity to provide multiple benefits (e.g., habitat restoration and carbon sequestration on top of improved water quality) to the environment while providing further incentives to landowners. A VDEQ-approved wetland or stream mitigation bank may also generate nutrient credits with proper documentation that shows the credits are not being double-counted for mitigation and nutrient compliance.⁴⁸ This would allow for some flexibility to meet demand; if there is a low demand for mitigation credits but high demand for nutrient credits, the site owner can switch some of their mitigation credits to nutrient credits instead (the corresponding mitigation credits would retire so double counting does not occur).

Additionally, if the restoration does more than what is required for the mitigation, the extra improvements could earn nutrient credits without affecting the mitigation credits. This could be cost-effective and beneficial for suitable headwater sites.

⁴⁸ Virginia General Assembly. (2024). 9VAC25-900-120. *Implementation plan*. Virginia Administrative Code. <https://law.lis.virginia.gov/admincode/title9/agency25/chapter900/section120/>.

Figure 10: This map visualizes VDCR-managed conservation lands as displayed in the Virginia Natural Heritage Data Explorer (updated on October 1, 2025). ConserveVirginia v3.0, which identifies the highest priority conservation lands in the state of Virginia, shows large areas of highest priority conservation lands in the headwaters of the Roanoke River watershed, including Botetourt County, Roanoke County, and the City of Salem.⁴⁹



⁴⁹ VDCR. (2021). ConserveVirginia: Virginia’s Land Conservation Strategy, Version 3.0. <https://www.dcr.virginia.gov/conservevirginia>.

MEMBER GOVERNMENTS: Counties of Alleghany, Botetourt, Craig, Franklin, and Roanoke; Cities of Covington, Roanoke, and Salem; Towns of Clifton Forge, Rocky Mount, and Vinton. www.rvarc.org

Prioritize Stream Restoration Approaches

Where agricultural land conversion is too expensive, stream restoration projects provide an opportunity to generate local, high-value credits and improve aquatic habitat within the Upper Roanoke Watershed.

How: Direct focus on local banks using stream or wetland restoration, particularly in headwater tributaries where nutrient reductions improve water quality downstream. Encourage mixed-species plantings to enhance biodiversity, flood resilience, and ecosystem services.

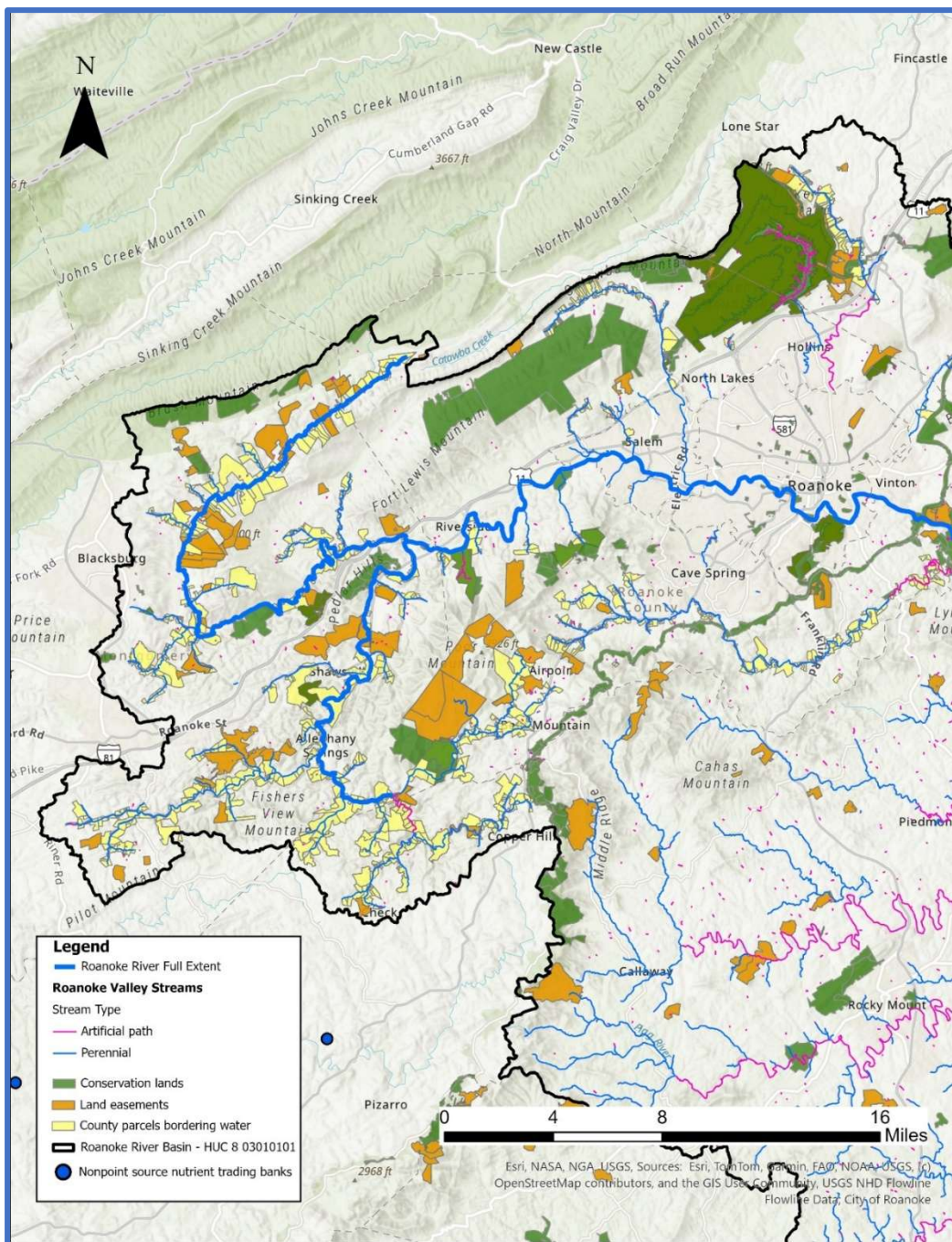
Relevant tributaries that may include suitable parcels throughout the Roanoke Valley for potential restoration include (Figure 11):

Lick Fork, Goose Creek, Flat Run, Bottom Creek, Camp Creek, Big Laurel Creek, Mill Creek, Elliott Creek, Cooks Branch, Rocky Branch, Smith Creek, Falling Branch, Dark Run, Spring Branch, Brake Branch, Bradshaw Creek, Flatwoods Branch, Craig Branch, Taylor Hollow, Wilson Creek, Den Creek, Cedar Run, Indian Run, Dry Run, Mill Creek (Montgomery County), Cove Hollow, Dry Branch, Unnamed branch along Gladden Rd – Salem, Paint Bank Branch Creek, Horners Branch Creek, Unnamed branch near Ellison Ave, Dry Creek, Gish Branch Creek, Jumping Run Creek, Masons Creek, Peters Creek, West Fork Carvin Creek, Carvin Creek, Tinker Creek, Glade Creek, Martins Creek, Back Creek, Little Back Creek, North and South Fork Roanoke River

For wetland or stream restoration projects, the first step is to conduct an existing conditions assessment. This survey documents the site's current ecological state and establishes a baseline in accordance with 9VAC25-900-100 F.⁵⁰ After restoration, the site is monitored and compared to this baseline to measure improvements. The number of nutrient credits a project can generate is then calculated using specific protocols or guidance, tailored on a case-by-case basis, and relies on the best available scientific and technical information. The final credit determination must be approved by VDEQ.

⁵⁰ Virginia General Assembly, 9VAC25-900-100. *Establishing baseline.*

Figure 11: Potential parcels for nutrient bank establishment in the headwaters of the URRW. The yellow parcels are zoned agricultural along tributaries to the Roanoke River. It is worth reaching out to the landowners in the City of Salem, Botetourt County, and Roanoke County to inquire about potentially converting their land and the feasibility of this. Floyd County zoning was not filtered for agricultural land due to a lack of available zoning data, and the City of Roanoke was not included due to barriers of higher land costs. Credit: RVARC, 2025.



Engage Local Stakeholders Early

Transparent and proactive engagement with landowners is essential to foster trust and increase participation in nutrient banking.

How: Communicate clearly about long-term financial benefits, including timber revenue (for forest banks) and low maintenance costs. Highlight that, under 9VAC25-900-120 C, forests established as nutrient credit banks may be selectively timbered, allowing landowners to profit over time while maintaining compliance.⁵¹ Offer technical support for feasibility assessments, as most landowners work with consultants and face challenges in navigating regulatory and financial requirements.

Consider Alternatives

If a nutrient credit bank upstream is not feasible, it is worth exploring other restoration projects to improve water quality downstream, which would be especially beneficial for the Roanoke River watershed. One alternative example is the Riparian Forests for Landowners Program funded by the Virginia Department of Forestry (DOF). Riparian forest buffers are transition areas that protect waters by slowing flows, capturing sediment and pollutants, stabilizing the soil, and providing habitat for aquatic life. A buffer can also provide recreation and aesthetic benefits for landowners. This program provides free forest buffer installation and one year of maintenance to landowners. This is a first-come, first-served program with establishment through spring 2025 and maintenance through 2026.

For more information regarding this program, you can contact the DOF Watershed staff at: watershed@DOF.Virginia.gov
(434) 220-9024

Another option that benefits water quality and makes restoration more affordable for landowners is Virginia's Agricultural BMP Tax Credit, administered by local Soil & Water Conservation Districts. For more information, contact your local Soil & Water Conservation Districts (SWCD) or visit: <https://www.dcr.virginia.gov/soil-and-water/costshare3>.

Mount Castles SWCD (covers Botetourt County)
Blue Ridge SWCD (covers Roanoke County and Franklin County)

⁵¹ Virginia General Assembly, 9VAC25-900-120. *Implementation plan*.

VDEQ Contact Information and NPS Credit Trading Resources

Derick Winn – 804-965-4875 | Derick.Winn@deq.virginia.gov

Tyler Monteith – 804-489-1809 | Tyler.monteith@deq.virginia.gov

For more information regarding credit use examples:

<https://www.townhall.virginia.gov/L/ViewGDoc.cfm?gdid=7159>

A listing of phosphorus credit projects can be found at the VDEQ nutrient trading website (RIBITS): <https://ribits.ops.usace.army.mil/ords/f?p=107:158>

SWaN: <https://swan.waterledger.com/how>

Virginia's 2024 water quality assessments (303d integrated report) can be visualized here: <https://experience.arcgis.com/experience/d94403e56a4f4e1e91b1c3ed7427c324/page/Introduction>

Acknowledgements

Thank you to Marcus Aguilar, Peter Stutts, and Derick Winn for sharing your time and expertise during our discussions.

Appendix

Table A1. Summary of stream impairments and approved TMDLs in the URRW. The TMDL area pollutants are total phosphorus, leading to benthic macroinvertebrate impairment. Credit: Adapted from Virginia Department of Environmental Quality (VDEQ) Non-Point Source (NPS) Nutrient Trading Data Viewer.⁵² The NPS Nutrient Trading Data Viewer uses and references 2022 data until the viewer is updated).

Impairment	Waterways
Benthic	Back Creek
Macroinvertebrate	Beaverdam Creek
	Blackwater River
	Bore Auger Creek
	Buck Run
	Falling Creek
	Flat Creek
	Johns Creek
	Jonnikin Creek
	Little Creek
	Little Otter River
	Lynville Creek
	Little Otter River, Johns Creek, Wells Creek, and Buffalo Creek (TMDL Area)
	Maggodee Creek
	N.F. Blackwater River
	North Fork Little Chestnut Creek, Upper
	Pigg River
	Poplar Branch
	Roanoke River
	Roanoke (Staunton) River, Unnamed Tributary
	Story Creek
	Upper Blackwater River Watershed (TMDL Area)
	Wolf Creek
Fecal coliform/E. coli	Back Creek
	Beaverdam Creek
	Blackwater River (also PCBs and mercury in fish tissue)
	Bore Auger Creek
	Buck Run

⁵² VDEQ, (n.d.) *NPS Nutrient Trading Data*. Retrieved November 10, 2025.
<https://experience.arcgis.com/experience/21b967a192c44fb89941c8265d430e39>.

Impairment	Waterways
Fecal coliform/E. coli	Falling Creek Little Creek Little Otter River Maggodee Creek (also temperature) N.F. Blackwater River Oslin Creek, U.T. (XOJ) Pigg River Poplar Branch Roanoke River (also PCBs) Roanoke (Staunton) River, Unnamed Tributary Stony Fork Story Creek Wolf Creek
Dissolved Oxygen	Leesville Lake

Table A2. Compiled list of approved WQT Nutrient Banks (sold-out and active) in the Roanoke River Sub Basin HUC 03010101 using VDEQ NPS Nutrient Trading Data Map (sourced 10/5/2025).

Banks	Glade Hill	Smith Farm	Shoulder Run
Bank Sponsor	NERD Farms, LLC	Franklin County - Owner of Credits Mr. Michael Burnette	CBAY-VA, LLC
County	Franklin	Franklin	Bedford
Type	-	-	-
Establishment Date	Sold-Out 09/23/2019	07/19/2021	09/25/2023
Acres	-	-	-
Point of Contact	Nathan Blackwell - Owner Email: nathan@virginianutrientbank.com Phone: (540) 908-1679	Michael Burnette - Sponsor Email: Michael.Burnette@franklincountyva.gov Phone: (540) 483-3030	Amy Staley - Sales POC Email: vacreditsales@res.us Phone: (919) 209-1055
Banks	Tasker's Run	Roanoke Altavista	Chappy's Ridge
Bank Sponsor	CBAY-VA, LLC	Riverbanks VA, LCC	CBAY-VA, LLC
County	Bedford	Pittsylvania	Campbell
Type	-	-	-
Establishment Date	Sold-Out 01/16/2025	10/18/2024	Sold-Out 09/20/2019
Acres	-	-	-
Point of Contact	Amy Staley - Sales POC Email: vacreditsales@res.us Phone: (919) 209-1055	Person of Contact: Casey Jensen - Consultant Email: ecocapva@gmail.com Phone: (804) 836-6636	Amy Staley - Owner Email: vacreditsales@res.us Phone: (919) 209-1055

Table A3. Compiled list of approved Mitigation Banks (sold-out and active) in the Roanoke River Sub Basin HUC 03010101 using RIBITS database (sourced 10/5/2025).

Banks	Callaway	Beaverdam Creek	Graham and David Mitigation Bank
Bank Sponsor	Blue Ridge Ecological Services & Watershed Strategies	Beaverdam Mitigation LLC	Graham and David Mitigation Bank, LLC
County	Franklin	Bedford	Montgomery
Type	Riverine	Wetland and Riverine	Riverine
Establishment Date	12/03/2010 (Sold-Out 05/16/2017)	06/25/2025	05/06/2014
Acres	150.20	43	427
Point of Contact	Thom Leedom – Owner of Blue Ridge Ecological Services Email: ecologist@swva.net Phone: (540) 250-6355 Dave Tribble – Owner of Watershed Strategies Email: blueridgeland@gmail.com	David Jordan Email: david@dmjordan.com Phone: (571) 233-5830 Avi Sareen - Consultant TNT Environmental Inc. Email: avi@tntenv.com Phone: (703) 466-5123	Joyce Graham – Sponsor Email: jlgraham@usit.net Phone: (540) 320-5215 Nicola McGoff - Consultant Wild Ginger Field Services Charlottesville, VA Email: nmcgoff@wildgingerfieldservices.com Phone: (708) 704-7162

Table A4. Compiled list of pending, withdrawn, or terminated Mitigation Banks (sold-out and active) in the Roanoke River Sub Basin HUC 03010101 using RIBITS (sourced 10/5/2025). Some of these mitigation banks currently exist near or along the headwaters. For example, Graham and David Mitigation Bank is shown as an easement along the South Fork Roanoke River. This is the same as the Upper Roanoke mitigation bank along Falling Branch and the Copper Hill mitigation bank along Lick Fork. Camp Alta Mons, which was withdrawn, was along the South Fork Roanoke River and Purgatory Creek. These could be worth re-exploring as nutrient banks.

Banks	Upper Roanoke Mitigation Bank	Copper Hill	Iron Mine Hollow
Bank Sponsor	Naturion	Copper Hill Mitigation LLC	Foresters Incorporated
County	Franklin and Montgomery	Floyd	Montgomery
Type	Riverine	Wetland and Riverine	Wetland and Riverine
Status	Pending 07/09/2025	Pending 09/28/2023	Terminated
Acres	159.50	19	40
Point of Contact	<p>Carly Cranston - Consultant Email: carly.cranston@naturion.com Phone: (757) 358-6189</p> <p>Mindy Herman Email: mindy@ecocreditmarketing.com Phone: (828) 244-3910</p> <p>Jon Roller - Ecosystem Services, LLC Email: jon@ecosystemsolutions.us Phone: (540) 578-4296</p>	<p>David Jordan Email: david@dmjordan.com Phone: (571) 233-5830 Fax: (703) 669-2729</p> <p>Avi Sareen - Consultant TNT Environmental Inc. Email: avi@tntenv.com Phone: (703) 466-5123</p>	<p>Britt Boucher - Foresters Incorporated Email: britt@foresters-inc.com Phone: (540) 951-8927</p>

Banks	Camp Alta Mons	Goondocks	Pignut Mountain
Bank Sponsor	Blue Ridge Ecological Services	Davey Mitigation c/o Davey Resource Group, Inc.	-
County	Montgomery	Campbell	Campbell
Type	Wetland and Riverine	Wetland and Riverine	-
Status	Withdrawn 09/18/2014	Pending 05/21/2024	Pending 12/04/2024
Acres	875	482	-
Point of Contact	Thom Leedom – Owner of Blue Ridge Ecological Services Email: ecologist@swva.net Phone: (540) 250-6355	Alison Robinson - Consultant Email: arobinson@wetlands.com Phone: (703) 679-5622 Jennifer Van Houten - Sponsor Davey Mitigation Email: jennifer.vanhouten@davey.com Phone: (703) 679-5641	Herman Hudson Email: herman.w.hudson@usace.army.mil Phone: (757) 201-7808 Vincent Pero Email: vincent.d.pero@usace.army.mil Phone: (757) 297-0011 Sydney Von Wilson - VA Department of Environmental Quality Email: sydney.vonWilson@deq.virginia.gov Phone: (804) 316-2587

AI tools assisted with locating legislative documents used in this report in accordance with the RVARC AI Policy. Final reviews and edits were completed by RVARC staff.