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SCAN ME

## Fouling Waterways: Not All Concrete is the Same

Virginia's Construction General Permit (VAR 10) requires contractors to direct concrete washout to a leak-proof container or a leak-proof settling basin. Why? Because it is toxic. Concrete washout has a pH value of around 12.5, almost the same as bleach. It can cause chemical burns to skin and eyes, and it kills all the microorganisms needed by plants to use soil nutrients if poured on the ground. In addition, concrete washout is detrimental to fish, wildlife, and insects. Hence, it is a permit violation to discharge concrete washout water onto the ground, into a waterway, or into any facet of a storm drainage system, which includes inlets, roadside

gutters or swales, ditches, or any other types of stormwater conveyances.

In contrast, concrete rubble is an inert construction waste product that is neither chemically nor biologically reactive. It is comprised of cement, aggregates, and water. Once it hardens, it is chemically stabile, and it does not decompose. Because concrete rubble offers no threat to the environment, it may be disposed of in a landfill, but it is often repurposed for use as shoreline stabilization or crushed for use as aggregate, which is called recycled concrete aggregate (RCA).<sup>1</sup>



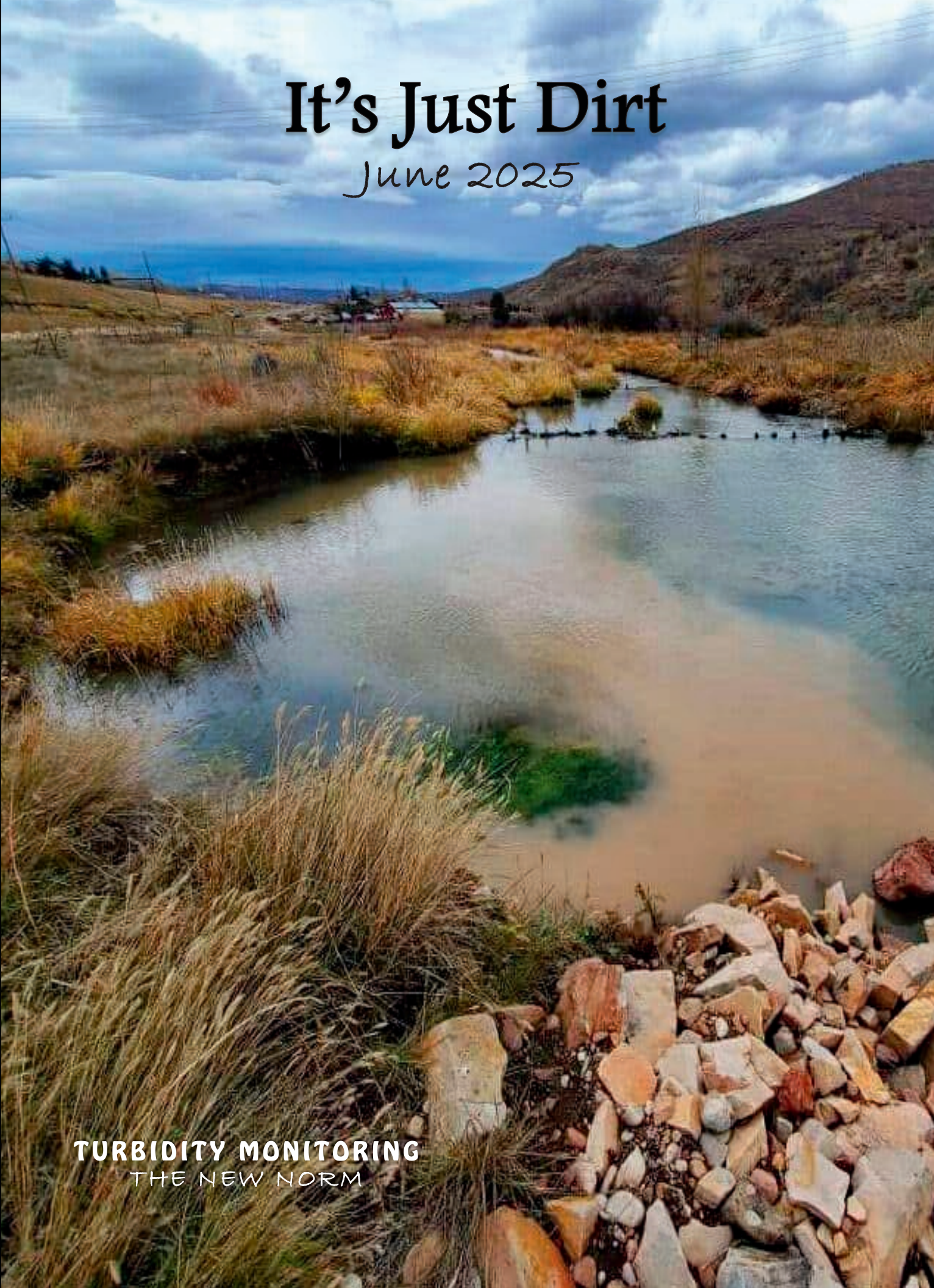
Concrete washout is toxic; it is illegal to openly discharge it.



Concrete rubble is inert, and it is safe for the environment.

<sup>1</sup>Armstrongs Group. [Recycled Concrete Aggregate: Uses, Properties, and Benefits](#)

JUNE 2025: Turbidity and Dewatering / Native Plants for Stormwater Management / Minimum Standards / 9th Edition



# It's Just Dirt

June 2025

TURBIDITY MONITORING  
THE NEW NORM



# Protecting Waterways: A Guide to Turbidity and Dewatering

By Taylor Adkins; Cynthia S. Linkenhoker (ed.)

Construction projects can stir up soil and sediment, sending particles into nearby waterways. This cloudiness, called turbidity, harms aquatic ecosystems by blocking sunlight, reducing oxygen, and smothering plants and animals.

As per the [Virginia 2024 Construction General Permit \(CGP\)](#), contractors must follow specific steps to manage dewatering and turbidity. By understanding the basics and using simple tools, contractors can meet the CGP requirements, protect waterways, and avoid project delays.

## What Is Dewatering?

Dewatering is the process of removing groundwater or surface water, or both, from areas on active construction sites to keep them safe and dry for workers. Such water may have collected on the site from rainfall, stormwater runoff, or groundwater seepage. When discharging this water, which may contain sediment and debris, contractors must filter it or pass it through an approved sediment trapping device, or both, in a manner that does not adversely affect flowing streams or off-site property.

## What Is Turbidity?

Turbidity is a measure of the amount of cloudiness in water to assess the content of suspended particles like dirt or debris. High turbidity can damage ecosystems by (1) smothering fish eggs and aquatic plants, (2) reducing oxygen levels that aquatic life need to survive, and (3) blocking sunlight needed for underwater life.

## Why Monitor Turbidity?

Turbidity monitoring helps contractors determine when additional controls or corrective actions are needed to limit the amount of sediment leaving their sites. This leads to the following benefits:

- Environmental Protection:** Prevents harm to aquatic ecosystems.
- Regulatory Compliance:** Ensures discharges from the project meet CGP requirements.
- Cost Savings:** Avoids fines, delays, and expensive cleanup.



## What Supplies Are Needed?

- Turbidity Meter:** for measuring water cloudiness. Ensure to select a turbidity meter that meets U.S. EPA requirements.<sup>1</sup>
- Distilled Water:** for cleaning equipment.
- Sample Jar (Cuvette):** for collecting discharge samples.
- Calibration Media:** to ensure the meter properly works.
- Personal Protective Equipment (PPE):** to keep workers safe.
- Logbook:** provides a place to record results and corrective actions.
- Camera or Smartphone:** to show conditions.
- Map:** to identify sampling locations.

**TIP:** Select a turbidity meter that meets US EPA requirements.<sup>1</sup>



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<sup>1</sup>USEPA. <https://www.epa.gov/system/files/documents/2022-01/cgp-inspection-and-monitoring-guide-for-dewatering.pdf>

## Step-by-Step Guide - Monitoring Turbidity<sup>1</sup>

- Get Ready**
  - Gather the necessary equipment.
  - Calibrate the turbidity meter using the provided instructions to ensure accuracy.
- Start Dewatering**
  - Begin pumping water from the construction site.
- Take a Sample**
  - Collect a water sample from the discharge point within 15 minutes of starting the pump.
  - Measure turbidity using the meter.
- Compare Results to Permit Limits**
  - Option 1:** Dewatering discharge sample is no more than 50 NTU<sup>2</sup> above an upstream sample in the receiving waterway.
  - Option 2:** Discharge sample is no more than 150 NTU at the dewatering discharge.
  - Option 3:** The weekly average discharge is no more than 50 NTU at the dewatering discharge.
- What to Do If Turbidity Is Too High**
  - Immediately stop discharging.
  - Inspect the controls for issues.
  - Repair, clean, or replace controls as needed.
  - Re-sample the water after making changes.
- Visual Screening**
  - Look at the discharge water and note its color, smell, and any floating solids, foam, or oily sheen.
  - If anything looks unusual, take corrective action, even if the turbidity reading meets the limit.
- Document Everything**
  - Record the date, time, location, turbidity readings, and any actions you took.
  - Take photos of the discharge point and sample conditions.

**“If you don’t write it down, it didn’t happen.”**

<sup>1</sup>Virginia Department of Transportation. *Quick Reference: Turbidity Monitoring for Construction Dewatering.*  
<sup>2</sup>NTU= Nephelometric Turbidity unit, i.e. the unit used to measure the turbidity of a fluid or the presence of suspended particles in water.

## Stay in Compliance

Monitoring turbidity is a straightforward way to protect the environment and meet permit requirements. By following this process, construction teams can prevent problems, protect local waterways, and keep projects moving forward.

For more details, consult:

- [Virginia DEQ 2024 Construction General Permit](#)
- [EPA Dewatering Monitoring Guidelines](#)
- Specific manufacturer recommendations for control measures (i.e., dewatering bags, sediment rolls, etc.)

## 2024 CGP Compliance Turbidity Benchmark Options

### Option 1

Grab sample at the dewatering discharge is no more than 50 NTU above an upstream sample in the receiving water

### Option 2

Grab sample at the dewatering discharge is no more than 150 NTU

### Option 3

Grab samples at the dewatering discharge shall be no more than 50 NTU, taken as a weekly average





# Minimum Standards for Erosion & Sediment Control

By Michelle Donohoe; Cynthia S. Linkenhoker (ed.)

Virginia's Erosion and Stormwater Management Regulation ([9VAC25-875](#)) requires adherence to 19 Minimum Standards for Erosion and Sediment Control. These important requirements are designed to protect Virginia's natural resources, including soil, waterways, and surrounding properties, during active

land disturbing projects. These standards, as provided below, focus on minimizing erosion, stabilizing bare soil, managing stormwater runoff, controlling sediment, and ensuring that downstream properties and waterways are not harmed by the increase in volume, velocity, and peak flow rate of stormwater from construction sites.

## MS-1: Soil Stabilization.

- Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site.
- Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 14 days.
- Permanent stabilization shall be applied to areas that are to be left dormant [i.e., inactive] for more than one year.



**Tip:** Temporary soil stabilization products include straw mulch, tarps, erosion control blankets, and other options. Grass seed does not qualify as temporary stabilization until grass is established.



## MS-2: Soil Stockpiles, Borrow, and Waste Areas.

During construction of the project, soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.



**Tip:** If you intentionally haul dirt from your site, YOU ARE RESPONSIBLE for providing temporary and permanent soil stabilization and documenting the location of this activity in the Stormwater Pollution Prevention Plan (SWPPP). You are also required to stabilize soil stockpiles and borrow areas, whether they are onsite or offsite.



## MS-3: Permanent Vegetation.

A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive, and will inhibit erosion.



**Tip:** In addition to the requirements of MS-3, permanent vegetation must also satisfy Std. & Spec. C-SSM-10 Permanent Seeding in Virginia's new Stormwater Management Handbook: "An establishment and persistence of 75 percent or more living overall perennial vegetation of the intended species mix and a maximum contiguous bare area of < 500 square feet is required to effectively limit sheet and rill erosion and permanently stabilize the soil surface."



## MS-4: Installation of Sediment Trapping Measures.

Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.



**Tip:** Construction entrances are included as a first step measure. Also, it is understood that a certain amount of initial land disturbance may be required to provide access for equipment to install the perimeter controls, but site clearing and grading shall be kept to a minimum until the perimeter controls are in place and properly installed.



## MS-5: Stabilization of Earthen Structures.

Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.



**Tip:** "Immediately means "as soon as practicable, but no later than the end of the next business day." MS-5 not only applies to dams, dikes, and diversions but also to sediment traps and sediment basins. As previously noted, there are many available products for soil stabilization including hardwood or straw mulch, sod, rip rap, aggregate, soil stabilization blanket/matting, plastic tarps, hydroseeding, etc. Grass seed alone does not qualify until the grass is well established.



## MS-6: Sediment Traps & Sediment Basins.

Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.

- The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
- Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration.
- Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.



**Tip:** As noted in MS-4, sediment traps and sediment basins must be installed as a first step measure and per MS-5, stabilized immediately. Ensure to follow the approved plan and install snorkels, as necessary. Per MS-11, ensure sediment basins and sediment traps have outlet protection and any required temporary or permanent channel lining installed in both the conveyance channel and the receiving channel. Per MS-19, ensure they discharge to an adequate natural or manmade channel.





**MS-7: Cut and Fill Slopes.**

Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.



***Tip:** To reduce erosion, consider decreasing slope length and grade, where feasible. Ensure to comply with Roanoke County's steep slope requirements in the County's new Erosion and Stormwater Management Ordinance. Once slope grading is complete, provide soil stabilization measures to protect against erosion.*



**MS-8: Concentrated Runoff.**

Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume, or slope drain structure.



***Tip:** If using slope drains, make sure to select the correct pipe diameter for the contributing drainage area. Ensure to extend the slope drain down the entire length of the slope and provide outlet protection where it discharges to prevent erosion from the concentrated flow. Securely stake the slope drains to the slope and securely fasten pipe sections together.*



**MS-9: Water Seeps.**

When water seeps from a slope face, adequate drainage or other protection shall be provided.



***Tip:** Cut and fill operations may expose aquifers or groundwater. Employ corrective measures such as interception drains, retaining walls, revetments, reverse benches, etc. Ensure the water is directed to a stable outlet. Document the repair in the SWPPP. When the seepage repair is complete, ensure to provide temporary soil stabilization on the slope face to protect it against erosion. Depending on steepness, soil stabilization blanket/matting may be desirable.*



**MS-10: Inlet Protection.**

All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.



***Tip:** There are a variety of options to protect storm drainage inlets. Choose one with overflow capabilities to ensure your site isn't flooded during large rain events. If you use silt fence, make sure to install the top rail (as shown) to ensure the fabric doesn't collapse, which will allow sediment to enter the structure.*



**MS-11: Stormwater Channel and Outlet Protection.**

Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.



***Tip:** Outlet protection dissipates the energy from the concentrated discharge from a pipe or channel, thereby preventing erosion at the outlet. Contractors often install temporary or permanent lining in the conveyance channel OR the receiving channel; make sure to line both, as they are each subject to erosion from concentrated flow.*



**MS-12: Work in Live Watercourses.**

When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport, and stabilize the work area to the greatest possible extent during construction. Non-erodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by non-erodible cover materials.



***Tip:** Do not use check dams or silt fence in live streams. Stabilize in-stream construction areas before leaving the site. Obtain all necessary permits before the work commences, and keep a copy of each permit in the SWPPP.*



**MS-13: Crossing Live Watercourses.**

When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of non-erodible material shall be provided.



***Tip:** This includes getting equipment to the other side of creeks and streams to start construction. If two vehicles cross one right after the other, the stream has now been crossed twice! It can no longer be crossed again for a period of 6 months unless a temporary vehicular stream crossing is installed. Ensure pipes are designed to carry the expected flow from a 2-year storm.*

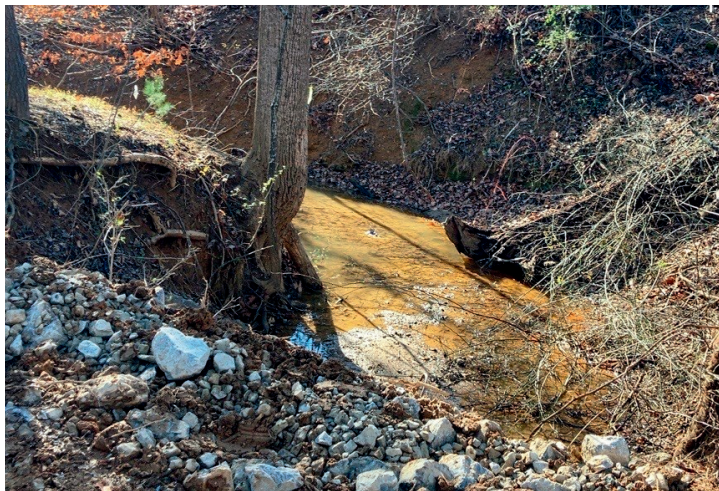


**MS-14: Other Watercourse Regulations.**

All applicable federal, state and local requirements pertaining to working in or crossing live watercourses shall be met.



***Tip:** Ensure to obtain all necessary permits prior to commencement of the work. There are a host of agencies that may have jurisdiction over your project, including the United States Army Corps of Engineers (USACE), the Virginia Department of Environmental Quality (DEQ), the Virginia Marine Resources Commission (VMRC), local wetlands boards, and others. Keep a copy of each permit in the SWPPP.*





MS-15: Stabilization of Bed and Banks.

The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.



*Tip: If work cannot be completed in a day, provide protective measures to prevent erosion and to protect downstream properties and waterways from sedimentation.*



MS-16: Underground Utility Line Installation.

Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

- a. No more than 500 linear feet of trench may be opened at one time.
- b. Excavated material shall be placed on the uphill side of trenches.
- c. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
- d. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
- e. Restabilization shall be accomplished in accordance with this chapter. [9VAC25-875-470]



*Tip: Roanoke County does not allow VDOT #57 stone for use as infrastructure bedding or backfill. Don't forget about the new turbidity and dewatering requirements! (See pgs. 2-3.)*



MS-17: Construction Vehicle Access Routes.

Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.



*Tip: Always install filter fabric beneath the stone in a temporary construction entrance, as it provides a barrier between the stone and the underlying soil. Use VDOT #1 (preferred), VDOT #2, or VDOT #3 stone, 6" deep.*



MS-18: Removal of Temporary Control Measures.

All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the VESCP/VESMP authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.



*Tip: Regrade, as necessary, and stabilize any disturbed or bare areas created during the removal of temporary control measures.*



MS-19: Downstream Protection.

Properties and waterways downstream from development sites shall be protected from **sediment deposition, erosion, and damage** due to increases in **volume, velocity, and peak flow** rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria. Stream restoration and relocation projects that incorporate natural channel design concepts are not manmade channels and shall be exempt from any flow rate capacity and velocity requirements for natural or manmade channels:

- a. Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
- b. Adequacy of all channels and pipes shall be verified in the following manner:
  - (1) The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is 100 times greater than the contributing drainage area of the project in question; or
  - (2) (a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not over top channel banks nor cause erosion of channel bed or banks;
  - (b) All previously constructed man-made channels shall be analyzed by the use of a 10-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
  - (c) Pipes and storm sewer systems shall be analyzed by the use of a 10-year storm to verify that stormwater will be contained within the pipe or system.
- c. If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
  - (1) Improve the channels to a condition where a 10-year storm will not overtop the banks and a two-year storm will not cause erosion to the channel, the bed, or the banks;
  - (2) Improve the pipe or pipe system to a condition where the 10-year storm is contained within the appurtenances;
  - (3) Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a 10-year storm to increase when runoff outfalls into a man-made channel; or
  - (4) Provide a combination of channel improvement, stormwater detention, or other measures that is satisfactory to the VESCP or VESMP authority to prevent downstream erosion.
- d. The applicant shall provide evidence of permission to make the improvements.
- e. All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
- f. If the applicant chooses an option that includes stormwater detention, the applicant shall obtain approval from the VESCP or VESMP authority for a plan for maintenance of the detention facilities. The plan shall set forth the maintenance

- requirements of the facility and the person responsible for performing the maintenance.
- g. Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
- h. All on-site channels must be verified to be adequate.
- i. Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe, or pipe system or to a detention facility.
- j. In applying these stormwater management criteria, individual lots or parcels in a residential, commercial, or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
- k. All measures used to protect properties and waterways shall be employed in a manner that minimizes impacts on the physical, chemical, and biological integrity of rivers, streams, and other waters of the state.
- l. Any plan approved prior to July 1, 2014, that provides for stormwater management that addresses any flow rate capacity and velocity requirements for natural or manmade channels shall satisfy the flow rate capacity and velocity requirements for natural or manmade channels if the practices are designed to (i) detain the water quality volume and to release it over 48 hours; (ii) detain and release over a 24-hour period the expected rainfall resulting from the one year, 24-hour storm; and (iii) reduce the allowable peak flow rate resulting from the 1.5-year, 2-year, and 10-year 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming the site was in a good forested condition, achieved through multiplication of the forested peak flow rate by a reduction factor that is equal to the runoff volume from the site when the site was in a good forested condition divided by the runoff volume from the site in the site's proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or manmade channels as defined in any regulations promulgated pursuant to § 62.1-44.15:28 of the Code of Virginia (VESMA) or § 62.1-44.15:54 or 62.1-44.15:65 of the Code of Virginia (ESCL).
- m. For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Code of Virginia (ESCL) and this subdivision 19 shall be satisfied by compliance with water quantity requirements in the VESMA and attendant regulations, unless such land-disturbing activities (i) are in accordance with provisions for time limits on applicability of approved design criteria in 9VAC25-875-480 or grandfathering in 9VAC25-875-490, in which case the flow rate capacity and velocity requirements of § 62.1-44.15:52 A of the Code of Virginia (ESCL) shall apply; or (ii) are exempt pursuant to § 62.1-44.15:34 G 2 of the Code of Virginia (VESMA).
- n. Compliance with the water quantity minimum standards set out in 9VAC25-875-600 shall be deemed to satisfy the requirements of this subdivision 19.



*Tip: Make sure concentrated stormwater runoff leaving your site discharges to an adequate pipe, channel, or storm drain system.*



# The Power of Native Plants for Stormwater Management

By Taylor Adkins; Cynthia S. Linkenhoker (ed.)

Stormwater management plays a crucial role in maintaining the health of rivers and ecosystems. In Roanoke County and beyond, stormwater management practices can help reduce flooding, prevent erosion, improve water quality, and preserve local biodiversity.

Native plants and trees have evolved over thousands of years to thrive in the local environment, making them

uniquely suited for managing stormwater. They usually function better than their non-native counterparts because they are more resistant to drought, disease, and insects, which gives them a better chance for survival.

Designers and engineers are wise to consider native plants and trees for use in their stormwater BMPs, given the variety of benefits these plants offer, as listed below:

- **Enhanced Water Absorption:** Native plants help absorb and filter excess water, reducing runoff and allowing rainwater to percolate into the ground thanks to their deeper root systems.
- **Erosion Control:** Many native species are adapted to wetland and riparian environments, where they stabilize soils and prevent erosion along stream banks, hillsides, and low-lying areas.
- **Wildlife Habitat:** Native plants provide food and shelter for local wildlife, including birds, pollinators, and beneficial insects. These species contribute to the overall health and biodiversity of the region.
- **Low Maintenance:** Once established, native plants are generally low-maintenance, requiring fewer inputs like fertilizers, pesticides, and irrigation, which reduces long-term costs for the property owner.

## Planting for Stormwater Management

When using native plants for stormwater management purposes, selecting the right plant species is critical. The Virginia Department of Environmental Quality (DEQ) has identified a collection of native species that are particularly well-suited for stormwater management in Roanoke County, based on their ability to: thrive in wet conditions, tolerate varying moisture levels, and help filter pollutants from stormwater runoff. A few of these plants are highlighted below. For a comprehensive list,

refer to the new Virginia Stormwater Management (SWM) Handbook, Appendix G.<sup>1</sup>

Also, as noted in the SWM Handbook, “When selecting plants for stormwater applications, locate the project site, determine its physiographic region, and prioritize species native to that zone. BMPs do not have to use plants exclusively from that region. However, incorporating vegetation native to a particular area may improve planting performance and better integrate into the local ecology.”

**Elderberry:** This native shrub is adaptable to various soil types and moisture levels. Its large clusters of white flowers and dark berries attract pollinators and birds, making it a great addition to stormwater systems.



**Soft Rush:** Found in wetlands and floodplains, this perennial is excellent for stormwater filtration and erosion control, especially in areas with standing water.

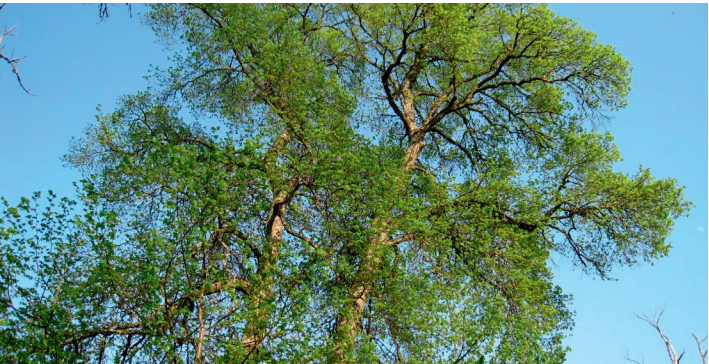


<sup>1</sup>*Virginia Stormwater Management Handbook.*

**Blue Flag Iris:** A striking plant with purple-blue flowers; it thrives in wetland areas and is highly effective at absorbing excess water and filtering pollutants from runoff.



**River Birch:** A tree that thrives in moist soils and flood-prone areas; it helps stabilize banks and reduces the velocity of stormwater runoff.



**Swamp White Oak:** A majestic tree that thrives in wetland conditions; it provides habitat and shade for wildlife while improving soil structure.



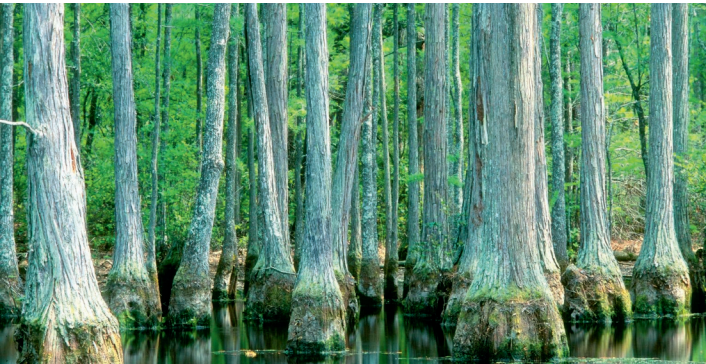
**Swamp Rose:** Thrives in moist, well-drained soils and helps stabilize streambanks and wetlands; its bright flowers attract pollinators.



**Honey Locust:** Known for its drought tolerance, Honey Locust can also withstand wet conditions and help filter stormwater, especially in areas with periodic flooding.



**Bald Cypress:** Ideal for floodplains and wetlands; this tree has distinctive "knees" that help anchor it in waterlogged soils, which prevents erosion.



**Red Maple:** A versatile tree that adapts to a wide range of soil types; it is excellent for areas that experience both wet and dry conditions.



**Monkey Flower:** Known for its bright flowers, it tolerates wet conditions, helps absorb water in stormwater systems, and attracts pollinators.





# STORMWATER CLEAN AWARD First Time Winners!

## Roanoke County Career and Technical Education Center

Roanoke County's Department of Development Services recently announced that Roanoke County Public Schools earned its first Stormwater Clean Award for the outstanding work underway at the site of the upcoming Career and Technical Education Center (CTE), located at 6251 Peters Creek Road, in Roanoke, VA.

The dynamic project team includes Branch and Joe Bandy & Sons. The project's expansive scope of work covering 23 acres includes rock blasting and rock crushing to provide onsite fill material, large-scale grading, and more. Despite some extreme weather events like Hurricane Helene's 50+ mph winds and heavy rains, the team has done a remarkable job in controlling erosion and sedimentation, including the control of dust generated by rock crushing activities and the minimization of sediment-laden stormwater runoff leaving the site, which has helped reduce any impacts to nearby Deer Branch creek.



*Well-stabilized sediment basin with baffles at the CTE facility.*



*Roanoke County's Department of Development Services proudly presented the Stormwater Clean Award to Roanoke County Public Schools and their dynamic team, Branch and Joe Bandy & Sons, for the outstanding work at the Career and Technical Education Center (CTE) on Peters Creek Road, in Roanoke, VA.*

## Ridge at Fairway Forest Section 2



*Roanoke County's Department of Development Services presented its prestigious Stormwater Clean Award to ABoone Real Estate, Inc. and its team of esteemed professionals, Bowman Excavating, Inc. and Ryan Homes, for stellar work at the Ridge at Fairway Forest Section 2 subdivision project, located in Salem, VA.*

Roanoke County's Department of Development Services presented its prestigious Stormwater Clean Award for the first time to Alexander Boone of ABoone Real Estate, Inc. and his impressive team, Bowman Excavating, Inc. and Ryan Homes, for their notable work at the Ridge at Fairway Forest Section 2 subdivision project, located on Fairway Ridge Road in Salem, VA.

Through some REALLY tough rain events, Eric

Bowman, of Bowman Excavating, Inc., worked quickly to get the project back into compliance under continuously difficult weather. Ryan Homes has been very diligent to continue the great site work on individual home sites by keeping silt fence installed, regularly sweeping the roads, keeping the Stormwater Pollution Prevention Plan (SWPPP) current, and promptly installing soil stabilization measures.

To learn more, visit [Contractor Appreciation Program](#).



# Making Wise Choices for Water and Wildlife

Land and disturbing contractors, who are tasked with stabilizing bare soils, often use landscape netting with straw to protect exposed dirt from the effects of rain drop erosion. Perhaps, what they do not realize is that landscape netting poses a risk to wildlife.

With some careful planning and material selection, it is fairly easy to ensure that local wildlife do not suffer undue harm from the products chosen for erosion and sediment control. For example, consider using check

dams at strategic spots in long runs of silt fence. This will not only allow concentrated runoff to safely pass, it will also provide an exit point for a variety of critters, like box turtles, that get trapped behind the fence. As an alternative to landscape netting, which often ensnares wildlife, select blankets or matting or apply hydroseed. Another easy tip is to remove sediment from behind silt fence to avoid overtopping. This will keep harmful sediment out of the nearest waterways, protecting the aquatic critters that live there.



Landscape netting is deadly, too!

If this Northern Racer hadn't been spotted, he would have died a long, painful death by starvation and infection.



I ended up with lacerations all over my body. I wish I could be outside eating mice and Copperheads instead!

# Erosion & Sediment Control Program AGRICULTURAL EXEMPTION FACTS

There is a prevailing misconception that all land disturbing activities conducted on property that is zoned and used for agricultural purposes are exempt from the Virginia Erosion and Stormwater Management (ESM) Program. NOT TRUE! There are some agricultural activities that are excepted (exempt) from the requirements of the ESM regulation, such as the tilling or planting of agricultural, horticultural, or forest crops, but there are other land disturbing activities that are NOT EXEMPT, such as the construction of roads, homes, sheds, and barns.



The exempt activities, pursuant to Virginia's Erosion and Stormwater Management Regulation (9VAC25-875), are incorporated into Roanoke County's Code, Chapter 8.1, the Erosion and Stormwater Management Ordinance # 070924-3, under exception #6, as follows:

Exception # From Chapter 8.1 Section 8.1-7*	Agricultural Exception *Roanoke County Code, Chapter 8.1 Erosion and Sediment Control Ordinance # 070924-3
6	Clearing of lands specifically for bona fide agricultural purposes; the management, tilling, planting, or harvesting of agricultural, horticultural, or forest crops; livestock feedlot operations; agricultural engineering operations, including construction of terraces, terrace outlets, check dams, desilting basins, dikes, ponds, ditches, strip cropping, lister furrowing, contour cultivating, contour furrowing, land drainage, and land irrigation; or as additionally set forth by the Board in regulations. However, this exception shall not apply to harvesting of forest crops unless the area on which harvesting occurs is reforested artificially or naturally in accordance with the provisions of Chapter 11 (§ 10.1-1100 et seq. of the Code of Virginia) or is converted to bona fide agricultural or improved pasture use as described in subsection B of § 10.1-1163 of the Code of Virginia.

Land-disturbing activities associated with the construction of any of the following **ARE NOT EXEMPT** from the County's Erosion and Stormwater Management Ordinance IF the project disturbs 2,500 square feet or more of land. Such projects must have an Erosion and Sediment Control permit and an approved Erosion and Sediment Control (ESC) plan from Roanoke County before construction begins.



BARNs



ROADs



SHEDs



HOMEs