Module 4: Regulatory requirements for Land Disturbance Activity

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4a. Goal

After completing this module, you should understand how the VESCL and the ESC regulations work together in order to provide a consistent system for implementing a VESCP statewide.

4b. Regulatory requirements Land Disturbing Activities

9VAC25-840-10. Definitions

"Act" means the Erosion and Sediment Control Law, Article 2.4 (§ 62.1-44.15:51 et seq.) of Chapter 3.1 of Title 62.1 of the Code of Virginia.

"Denuded" means a term applied to land that has been physically disturbed and no longer supports vegetative cover.

"Erosion and Sediment Control Plan" or "plan" means a document containing material for the conservation of soil and water resources of a unit or group of units of land. It may include appropriate maps, an appropriate soil and water plan inventory and management information with needed interpretations, and a record of decisions contributing to conservation treatment. The plan shall contain all major conservation decisions and all information deemed necessary by the plan-approving authority to assure that the entire unit or units of land will be so treated to achieve the conservation objectives.

"Person" means any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, county, city, town or other political subdivision of the Commonwealth, governmental body, including a federal or state entity as applicable, any interstate body, or any other legal entity.

"Program administrator" means the person or persons responsible for administering and enforcing the erosion and sediment control program of a VESCP authority.

9VAC25-840-20. Purpose.

The purpose of this chapter is to form the basis for the administration, implementation and enforcement of the Act. The intent of this chapter is to establish the framework for compliance with the Act while at the same time providing flexibility for innovative solutions to erosion and sediment control concerns.

9VAC25-840-30. Scope and applicability.

A. This chapter sets forth minimum standards for the effective control of soil erosion, sediment deposition, and nonagricultural runoff that must be met:

1. In VESCPs adopted under § 62.1-44.15:54 of the Act;

2. In erosion and sediment control plans that may be submitted directly to the department pursuant to § 62.1-44.15:55 A of the Act;

3. In annual general erosion and sediment control standards and specifications that electric, natural gas, and telephone utility companies, interstate and intrastate natural gas pipeline companies, and railroad companies are required to file, and authorities created pursuant to § 15.2-5102 of the Code of Virginia may file with the department pursuant to § 2.1-44.15:55 D of the Act;

4. In erosion and sediment control plans or annual standards and specifications that state agencies are required to file with the department pursuant to § 62.1-44.15:56 of the Act; and

5. In erosion and sediment control plans or annual standards and specifications that federal agencies may submit to the department pursuant to § 62.1-44.15:56 of the Act.

D. Any VESCP authority that administers a VESCP may charge applicants a reasonable fee to defray the costs of program administration. Such fee may be in addition to any fee charged for administration of a Virginia stormwater management program, although payment of fees may be consolidated in order to provide greater convenience and efficiency for those responsible for compliance with the programs. A VESCP authority shall hold a public hearing prior to establishing a schedule of fees. The fee shall not exceed an amount commensurate with the services rendered, taking into consideration the time, skill, and the VESCP authority's expense involved.

9VAC25-840-40. Minimum standards.

A VESCP must be consistent with the following criteria, techniques and methods:

Minimum Standards

The regulations set forth the minimum standards for the effective control of soil erosion, sediment deposition, and non-agricultural runoff that must be met in every Virginia Erosion and Sediment Control Program (VESCP). It could be said that the Minimum Standards are "performance standards" that should be incorporated in the ESC plan and implemented on the actual land disturbing activity.

It was expected that these minimum standards would be mutually understood by the plan preparer, plan reviewer, developer (operator), and inspector, and allow for equal enforcement and compliance of these rules throughout the state.

The Minimum Standards (MS) can be divided into a number of distinct groups:

- Erosion control (MS-1, 2, 3, 5) Soil stabilization
- Sediment control (MS-4 and 6)
- Slope protection (MS-7, 8 and 9)
- Channels, culverts and outlets (MS-10 and 11)
- Water courses (MS-12, 13, 14 and 15)
- Underground utilities (MS-16)
- Construction entrances (MS-17)
- Project completion (MS-18)
- Post construction stormwater management (MS-19)

Text in *italics* on the following pages indicates the language of the minimum standard copied from the regulations. For the official language please follow this link to the Virginia Legislative Information System (LIS); http://lis.virginia.gov/cgi-bin/legp604.exe?000+reg+9VAC25-840-10

MS-1: 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 for more than one year.

MS-1 was changed in 2012 to align with the 2014 Construction General Permit and EPA's effluent limit guidelines (ELGs), which requires stabilization of all areas that remain dormant for more than 14 days.

- If final or grade is reached on any portion of the site vegetation must be established to prevent erosion. Temporary seeding must be applied if any protion of the site will remain dormant for more than 14 days to prevent erosion.
- Ground cover can reduce the erosion potential by 90% to 99%

Not at Final Grade

- Stabilize in 14 days
- Temporarily seed
- Mulch
- Permanently stabilize if dormant >1 year

At Final Grade

- Stabilize in 7 days
- Permanently or temporarily seed and mulch
- Mulch

MS-2: Stock Piles, Waste and Borrow Areas

During construction of the project, soil stock piles 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 borrows areas and soil intentionally transported from the project site.

- Per MS-1, soil stockpiles and areas that are going to *remain dormant* for more than 14 days should also be stabilized with temporary cover (i.e. mulch or annual vegetation), unless it will remain on site for more than one year, then it should be stabilized using permanent vegetation
- This also applies to off-site borrow and spoil areas

Mulch on stockpile and protected with silt fence
Purpose: Mulch prevents erosion by protecting the surface from raindrop impact and silt fence intercepts and detains from disturbed areas

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.

Minimum standard 3 is what the VESCP authority should use to verify that a site is ready for release of bonds or surety

- The inspector from the VESCP may have the final say on whether final site stabilization has been achieved

Permanent vegetation
Purpose: Reduce erosion and decrease sediment yield from disturbed area

MS-4: First-Step 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.

- This minimum standard is meant to assure that sediment does not leave the perimeter of the LDA once site clearing, grading and construction commences
- Phasing of a LDA should include this minimum standard
- 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 should be kept to a minimum until the perimeter controls are in place

Examples of perimeter controls:

- Silt fences
- Sediment traps
- Sediment basins
- Construction entrance
- Temporary diversions
- Diversions

Silt fence with wire support

Silt fence with wooden stakes

Purpose: Intercept and detain small amounts of sediment from disturbed areas during construction operation to prevent sediment from leaving the site and decrease velocity of sheet flows and low-to-moderate level channel flow

MS-5: Earthen Structure Stabilization

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

- In this case, MS-5 requires immediate stabilization so that the earthen erosion and sediment control structures that were installed do not become a source of sediment. Earthen structures are generally intended to impound, convey or divert water so immediate stabilization is needed to prevent damage or failure of the structure.

Earthen structures seeded and mulched immediately after construction
Purpose: Reduce erosion and sedimentation and reduce damage from sediment and runoff to downstream or off-site areas

MS-6: Traps and 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.

a) *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.*

b) *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* (134 cubic yards per acre is equivalent to one inch runoff). *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.*

Sediment trapping devises:

- Place near the lowest drainage points of a project
- Installed as a first step measure (MS-4)
- Stabilize immediately (MS-5)
- Must include outlet protection for basins (MS-11)

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.

It is important that slopes are properly seeded and mulched so that permanent vegetation is established and erosion by concentrated flow does not occur.

- While plants on a slope need water for germination and establishment, cut and fill slopes are inherently unstable and any runoff from up-gradient areas must be conveyed down the slope in a non-erodible manner
- Roughening the surface of the slope decreases runoff, lowers the velocity runoff, increases water retention, and leads to better seed germination
    - This practice should generally be implemented unless the slope will require a high degree of maintenance mowing after vegetative establishment

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.

The outlet of these slope drains need **outlet protection** to prevent erosion from the concentrated flows.

Temporary slope drains

Purpose: Temporarily conduct concentrated stormwater runoff safely down the face of a cut or fill slope without causing erosion on or below the slope

MS-9: Water Seeps

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

- Cut and fill operations may expose shallow aquifers or groundwater tables from which water may seep through the side of a slope
    - The water seeps can cause slopes to erode or slough from the soil's weight above

Slope Failure from a Water Seep

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.

The cost to clean out a site's stormwater infrastructure is well over $8.00 per cubic yard of sediment for street and culvert and more than $60.00 per cubic yard for hydro-flushing of storm sewers.

- Storm sewers are designed to efficiently transport stormwater away from the site, so when sediment enters the storm sewer system, two negative effects can occur:

  When the velocity of flow is high, much of the sediment will be quickly transported to the nearest receiving channel.

  When the velocity of the flow is low, the sediment may be deposited in the pipes resulting in clogging and potential flooding of a site during storm events

Silt fence drop inlet protection

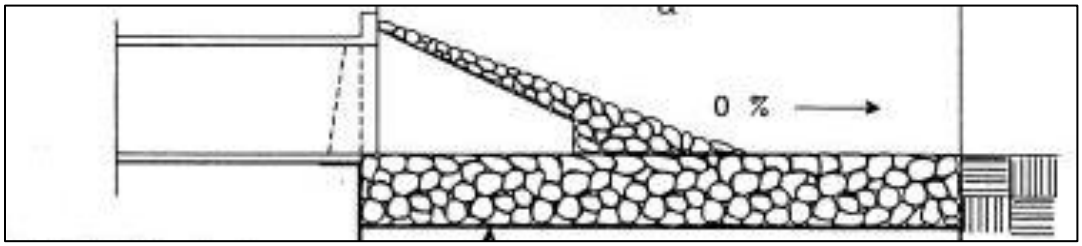
Block and gravel drop inlet sediment filter

Purpose: Prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area

MS-11: 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.

- Outlet protection provides energy dissipation from the concentrated discharge from a pipe or channel in order to prevent erosion and provide a stable transition
- Must constructed at 0 grade (see below)



Outlet protection
Purpose: Prevent scour at stormwater outlets, protect outlet structure, and minimize potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows

MS-12: Watercourse Construction

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 extent possible 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.

In stream work
Purpose: Use of non-erodible materials prevents damage to the stream bed and sedimentation

MS-13: Temporary Stream Crossing

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.

Utility stream crossing
Purpose: Help protect sediment from entering the stream from construction within approach areas and minimize amount of disturbance within the stream itself

T**emporary stream crossing**
Purpose: Provide a means for construction traffic to cross flowing streams without damaging the channel or banks and keep sediment generated by construction traffic out of the stream

MS-14: Other Watercourse Regulations

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

Activities in live water courses usually falls under the jurisdiction of other agencies and/or regulations, including:

- U.S. Army Corps of Engineers (404 Permit)
- DEQ's 401 permitting regulations
- Virginia Marine Resources Commission (VMRC)
- DGIF or local wetland board time of year restrictions

All applicable permits need to be obtained and need to be available on site before construction in live water courses may start

Water bodies may be identified through wetlands delineation, followed by a jurisdictional determination by the U.S. Army Corps of Engineers. Wetlands and streams and other water bodies and the impact on these water bodies are usually indicated on plats, sometimes including permit numbers.

Note: Jurisdiction of wetlands and shorelines in coastal areas and areas under the Chesapeake Bay Act may have complicated jurisdictional divisions.

MS -15: Bed and Bank Stabilization

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

- When working in a watercourse, MS-15 requires stabilization to be done immediately after completion of the work
- When working in water, the safety of the workers and equipment is important. The weather also factors in heavily when deciding to continue working in a watercourse or not due to potentially high flows of water

Vegetative streambank stabilization
Purpose: Protect streambanks from erosive forces of flowing water

MS-16: Utility Construction

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 approved sediment trapping devices (or both), before being 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) *Re-stabilization shall be accomplished in accordance with this chapter* (9VAC25-840)

f) *Applicable safety requirements shall be complied with*

- The basic principle of controlling erosion and sedimentation on utility projects is to get the trench back-filled and stabilized as soon as possible
- Section (f) refers to the safety requirements set forth by OSHA in regards to trench depth and the requirement for shoring or trench boxes when workers are in the trench

Backfilling a utility trench

MS-17: Vehicular Tracking and Construction Entrances

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.

- During wet weather, construction traffic can transport a significant amount of sediment (i.e. mud) onto paved public roads, creating not only a sedimentation problem but also a safety hazard and public nuisance
- The operator is responsible for keeping public roads adjacent to their project clean
- Mud should be swept or shoveled off the road and deposited on areas where it will not cause another sedimentation problem

Sweeping and washing
Washing is only permitted after shoveling and sweeping of sediment

Temporary stone construction entrance
Purpose: Reduce amount of mud transported onto paved public roads by motor vehicles or runoff

MS-18: Temporary Control Removal

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 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

- Temporary erosion and sediment control measures can become a problem if left in place beyond their useful life
  - Sediment fences can trap wildlife and small animals
  - Sediment basins can become drowning hazards or sources of sediment in cases of failure, and they become unsightly
- Temporary control measures should be removed and the area should be stabilized as soon as their function has been completed or are no longer needed

Some sediment basins are designed to be converted to stormwater basins at the end of a project. This should only be done once final stabilization has been achieved

Frayed and weathered silt fence that was not removed at the end of the project

MS-19 Standards and criteria for stormwater discharges

Minimum Standard (MS) 19 of the Virginia Erosion and Sediment Control (ESC) Regulations (**9VAC25-840-40.19**) requires designers to evaluate the adequacy of the downstream manmade and/or natural channels to safely convey the developed condition runoff. The criterion of the ESC regulations requires the designer verify the adequacy of all channels and pipes in the following manner:

1. Demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project (in which case the channel or pipe system is assumed to be adequate based on the correspondingly small impact of the project's runoff to the larger stream or channel system);

2. (a) Natural channels shall be analyzed by the use of a 2-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.

   (b) All 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 2-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 ten-year storm to verify that stormwater will be contained within the pipe or system.

If the existing natural or manmade channels or pipes are not adequate, the applicant shall:

(1) Improve the channel to a condition that meets 2(b) above;

(2) Improve the pipe or pipe system so that the 10-year storm is contained within the system;

(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 ten-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 which is satisfactory to the VESCP authority to prevent downstream erosion.

Natural Channel	• 2-year storm cannot overtop channel banks nor erode channel bed or banks
Man-Made Channel	• 10-year storm cannot overtop channel banks • 2-year storm cannot errode bed or banks
Stormwater Infrastructure (pipes)	• 10-year storm must be contained within pipe or system

Variances

(9VAC25-840-50)

The VESCP authority may waive or modify any of the requirements that are deemed inappropriate or too restrictive for site conditions, by granting a variance. Variance requests must be considered judiciously, and the VESCP authority should take a conservative and responsible approach, keeping in mind the need to protect downstream properties and the environment from damage due to soil erosion, sediment deposition, and nonagricultural runoff. Variances should only be approved when they are reasonable and supported by site-specific rationale. A variance may be granted under these two conditions:

1. At time of plan submission, applicant can request a variance to become a part of the approved ESC plan
   - Applicant explains reasoning to VESCP authority in writing
   - VESCP authority approves or disapproves the variance and documents the variance on plans
2. During construction, person responsible for implementing the approved plan can request a variance
   - Request is made in writing to VESCP authority

- VESCP authority approves or disapproves the request
- If no response from VESCP authority within 10 days, the request is disapproved
- Applicant may resubmit a variance request with additional documentation

The VESCP authority shall consider variance requests judiciously, keeping in mind both the need of the applicant to maximize cost effectiveness and the need to protect off-site properties and resources from damage.
(9VAC25-840-50)

9VAC25-840-80. Criteria for determining status of land-disturbing activity.

A. The program administrator shall determine the validity of a claim of exempt status by a property owner who disturbs 10,000 square feet or more or 2,500 square feet or more in all areas of jurisdictions designated as subject to the Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC25-830). As soon as a nonexempt status is determined, the requirements of the Act shall be immediately enforced.

B. Should a land-disturbing activity not begin during the 180-day period following plan approval or cease for more than 180 days, the VESCP authority may evaluate the existing approved erosion and sediment control plan to determine whether the plan still satisfies local and state erosion and sediment control criteria and to verify that all design factors are still valid. If the VESCP authority finds the previously filed plan to be inadequate, a modified plan shall be submitted and approved prior to the resumption of land-disturbing activity.