

EROSION AND SEDIMENT CONTROL PLAN CHECKLIST

Section 1: Erosion and Sediment Control

GENERAL

☐ Complete set of plans; include all sheets pertaining to the site grading and stormwater and any activities impacting erosion and sediment control and drainage:

- Existing conditions
- Demolition
- Site grading
- Erosion and sediment control
- Storm sewer systems
- Stormwater management facilities
- Utility layout
- Landscaping
- On-site and off-site borrow and disposal areas that do not have separate approved ESC Plans

☐ Variance if necessary, requested in writing, for the plan approving authority to waive or modify any of the minimum standards and specifications of the *Virginia Erosion and Sediment Control Handbook (VESCH)* deemed inappropriate based on site conditions specific to this review case only. Variances which are approved shall be properly documented in the plan and become part of the approved erosion and sediment control plan for the site.

☐ Professional's seal; the designer's original seal, signature, and date are required on the cover sheet of each Narrative and each set of Plan Sheets, as required by the VSMP Authority. A facsimile is acceptable for subsequent Plan Sheets.

PLANS

☐ Vicinity map - a small map locating the site in relation to the surrounding area. Include any landmarks that might assist in locating the site.

☐ Indicate north - The direction of north in relation to the site.

☐ Off-site areas - Include any off-site land-disturbing activities (e.g., borrow sites, disposal areas, waste areas, utility extensions, etc.) not covered by a separate approved ESC Plan.

- ☐ Erosion and sediment control notes - At a minimum, include the erosion and sediment control notes found in the *VESCH*. Ensure that all applicable Minimum Standards not covered elsewhere in the plan have been addressed. Include a note that any off-site land-disturbing activity associated with the project must have an approved ESC Plan.

- ☐ Legend - Provide a complete listing of all ESC measures used, including the *VESCH* uniform code symbol and the standard and specification number. Include any other items necessary to identify pertinent features in the plan.

- ☐ Property lines and easements - Show all property and easement lines. For each adjacent property, list the deed book and page number and the property owner's name and address.

- ☐ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.

- ☐ Limits of clearing and grading – Delineate all areas that are to be cleared and graded.

- ☐ Disturbed area estimates – in acres or square feet.

- ☐ Protection of areas not being cleared - Fencing or other measures to protect areas that are not to be disturbed on the site.

- ☐ Critical areas – Note all critical areas on the plan.

- ☐ Existing contours - The existing contours of the site at no more than a five foot contour interval.

- ☐ Final contours and elevations - Changes to the existing contours, including final drainage patterns, at no more than a two foot contour interval. Note the finished floor elevation (FFE) of all buildings on site, including basements.

- ☐ Existing and proposed spot elevations – to supplement existing and proposed contours, topography, or site grading information. Spot elevations may replace final contours in some instances, especially if terrain is in a low lying area or relatively flat.

- ☐ Existing site features – includes roads, buildings, homes, utilities, streams, fences, structures, and other important surface features of the site.

- ☐ Soils map – includes soil symbols, boundaries, and legend in accordance with the current Soil Survey of Campbell County.

- ☐ Environmental inventory – generally includes tidal shores and wetlands, non-tidal wetlands, resource protection area, hydric soils and slopes steeper than 25 percent. For

wetlands, provide a copy of issued permits or satisfactory evidence that appropriate permits are being pursued for the entire project.

☐ 100-year floodplain limits – also includes any special flood hazard area or flood zones based on appropriate Federal Management Agency Flood Insurance Rate Maps (FIRMs) or Flood Hazard Boundary Maps (FHBMs) of Campbell County.

☐ Drainage areas - includes offsite and onsite areas, existing or proposed as applicable. Include drainage divides and directional labels for all subareas at points of interest and size (in acres), weighted runoff coefficient or curve number and times of concentration for each subarea.

☐ Critical erosion areas – these areas require special consideration or unique erosion and sediment control measures. Refer to the VESCH for criteria.

☐ Site development - All improvements such as buildings, parking lots, access roads, utility construction, above and below ground utilities, stormwater management and drainage facilities, trails or sidewalks, proposed vegetation and landscaping, amenities, etc. Show all physical items that could affect or be affected by erosion, sediment, and drainage.

☐ Adequate conveyances – Ensure that stormwater conveyances with adequate capacity and adequate erosion resistance have been provided for all on-site concentrated stormwater runoff. Off-site channels that receive runoff from the site, including those receiving runoff from stormwater management facilities, must be adequate. Increased volumes of sheet flows must be diverted to a stable outlet, adequate channel, pipe or pipe system, or a stormwater management facility.

☐ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the VESCH.

☐ Temporary stockpile areas – Includes staging and equipment storage areas as required for onsite or offsite construction activities, or indicate that none are anticipated for this project.

☐ Direction of flow for conveyances - Indicate the direction of flow for all stormwater conveyances (storm drains, stormwater conveyance channels).

☐ Maintenance - A schedule of regular inspections, maintenance, and repair of temporary erosion and sediment control structures and permanent stormwater management facilities should be set forth.

- ☐ Storm drain profiles - Provide profiles of all storm drains except roof drains. If the type of pipe (RCP, CMP, HDPE, etc.) is not called out on the profiles, then the most conservative pipe material that may be specified for the project must be used in the adequacy calculations.
- ☐ Detail drawings - Any structural practices used that are not found in the VESCH or approved annual agency specifications should be described and illustrated with detail drawings.
- ☐ Trench dewatering – includes methods and erosion and sediment control if anticipated for the project.
- ☐ Construction sequence – outlines the anticipated sequence for installation of erosion and sediment controls and site grading and utility work to be performed for the project by the site contractor.
- ☐ Phasing plan – required for larger project sites that are to be developed in stages or phases.
- ☐ Professional seal and signature – as required by the VSMP Authority, on final and complete approved plans, drawings, technical reports, and specifications.

NARRATIVE

- ☐ Project description - Briefly describe the nature and purpose of the land-disturbing activity. Provide the area (acres) to be disturbed. Identify the Owner of the development.
- ☐ Existing site conditions - A description of the existing topography (% slopes), ground cover, and drainage (on-site and receiving channels).
- ☐ Adjacent areas - A description of all neighboring areas such as residential developments, agricultural areas, streams, lakes, roads, etc., that might be affected by the land disturbance.
- ☐ Off-site areas - Describe any off-site land-disturbing activities that may occur (borrow sites, disposal areas, easements, etc.). Identify the Owner of the off-site area and the locality responsible for plan review. Include a statement that any off-site land-disturbing activity associated with the project must have an approved ESC Plan. Submit documentation of the approved ESC Plan for each of these sites.
- ☐ Soils - Provide a description of the soils on the site, giving such information as soil name, mapping unit, ability to erode, permeability, surface runoff, and a *brief* description of depth,

texture and soil structure. Show the site location on the Soil Survey, if it is available. Include a plan showing the boundaries of each soil type on the development site.

☐ Critical areas - A description of areas on the site that have potentially serious erosion problems or that are sensitive to sediment impacts (steep slopes, watercourses, wet weather / underground springs, etc.).

☐ Erosion and sediment control measures - A description of the structural and vegetative methods that will be used to control erosion and sedimentation on the site. Controls should satisfy applicable minimum standards and specifications in Chapter 3 of the 1992 *Virginia Erosion and Sediment Control Handbook* (VESCH).

☐ Management strategies / Sequence of construction - Address management strategies, the sequence of construction, and any phasing of installation of ESC measures.

☐ Stabilization measures - A brief description, including specifications, of how the site will be stabilized after construction is completed, including temporary and permanent seeding and mulching, paving, stone, soil stabilization blankets, and matting, sodding, landscaping, or special stabilization techniques to be used at the site.

☐ Maintenance of ESC measures - A schedule of regular inspections, maintenance, and repair of erosion and sediment control structures should be set forth.

☐ Calculations for temporary erosion and sediment control measures - For each temporary ESC measure, provide the calculations required by the standards and specifications.

☐ Specifications for erosion and sediment control measures - For each erosion and sediment control measure employed in the plan, include in the Narrative the following sections from the standard and specification in the VESCH:

1. Construction Specifications
2. Installation
3. Maintenance
4. Any approved variances or revisions to the standards and specifications.

☐ Temporary sediment basin design data sheet – submitted for each basin along with a schematic or sketch cross section showing applicable design and construction data, storage volumes (wet-dry), dimensions, and elevations. Peak design runoff should be based on the 2- or 25-year design storm event based on maximum disturbed site conditions (existing, interim, or proposed conditions).

MINIMUM STANDARDS (must be on plan sheets)

- ☐ **MS-1:** Has temporary stabilization been addressed for any period longer than 14 days and permanent stabilization been addressed for any period longer than one year in the narrative?
- ☐ **MS-2:** Has stabilization of soil stockpiles, borrow areas, and disposal areas been addressed in the narrative and on the plan?
- ☐ **MS-3:** Has the establishment and maintenance of permanent vegetative stabilization been addressed?
- ☐ **MS-4:** Does the plan specifically state that sediment-trapping facilities shall be constructed as a first step in land-disturbing activities?
- ☐ **MS-5:** Does the plan specifically state that stabilization of earthen structures is required immediately after installation? Is this noted for each measure on the plan?
- ☐ **MS-6:** Are sediment traps and sediment basins specified where needed and designed to the standard and specification?
- ☐ **MS-7:** Have the design and temporary/permanent stabilization of cut and fill slopes been adequately addressed? Is surface roughening provided for slopes steeper than 3:1?
- ☐ **MS-8:** Have adequate temporary or permanent conveyances (paved flumes, channels, slope drains) been provided for concentrated stormwater runoff on cut and fill slopes?
- ☐ **MS-9:** Has water seeping from a slope face been addressed (e.g., subsurface drains)?
- ☐ **MS-10:** Is adequate inlet protection provided for all operational storm drain and culvert inlets?
- ☐ **MS-11:** Are adequate outlet protection and/or channel linings provided for all stormwater conveyance channels and receiving channels? Is there a schedule indicating:
 - 1. Dimensions of the outlet protection? Lining? Size of riprap?
 - 2. Cross section and slope of the channels? Type of lining? Size of riprap, if used?
- ☐ **MS-12:** Are in-stream protection measures required so that channel impacts are minimized?
- ☐ **MS-13:** Are temporary stream crossings of non-erodible material required where applicable?
- ☐ **MS-14:** Are all applicable federal, state and local regulations pertaining to working in or crossing live watercourses being followed?

☐ **MS-15:** Has immediate re-stabilization of areas subject to in-stream construction (bed and banks) been adequately addressed?

☐ **MS-16:** Have disturbances from underground utility line installations been addressed?

1. No more than 500 linear feet of trench open at one time?
2. Excavation material placed on the uphill side of trenches (except where prohibited by safety standard requirements)?
3. Effluent from dewatering filtered or passed through a sediment-trapping device?
4. Proper backfill, compaction, and restabilization?

☐ **MS-17:** Is the transport of soil and mud onto public roadways properly controlled? (i.e., Construction Entrances, wash racks, transport of sediment to a trapping facility, cleaning of roadways at the end of each day, no washing before sweeping and shoveling)

☐ **MS-18:** Has the removal of temporary practices been addressed?

Have the removal of accumulated sediment and the final stabilization of the resulting disturbed areas been addressed?

☐ **MS-19:** Are properties and waterways downstream from development adequately protected from sediment deposition, erosion, and damage due to increases in volume, velocity and peak flow rate of stormwater runoff? Have adequate channels been provided on-site?

- 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:
 - i) The applicant shall 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 question; or
 - (1) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
 - (2) All previously constructed man-made channels shall be analyzed by the use of a ten-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
- (3) 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.
- ii) 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 ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or
- (2) Improve the pipe or pipe system to a condition where the ten-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 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.
- c) The applicant shall provide evidence of permission to make the improvements.
- d) All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
- e) If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the VESCP of 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.
- f) Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipaters shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
- g) All on-site channels must be verified to be adequate.
- h) 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.
- i) 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.
- j) All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

- k) 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 man-made channels shall satisfy the flow rate capacity and velocity requirements for natural or man-made 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, 2, and 10-year, 24-hour storms to a level that is less than or equal to the peak flow rate from the site assuming it 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 it was in a good forested condition divided by the runoff volume from the site in its proposed condition, and shall be exempt from any flow rate capacity and velocity requirements for natural or man-made channels as defined in any regulations promulgated pursuant to § 62.1-44.15:54 or 62.1-44.15:65 of the act.
- l) For plans approved on and after July 1, 2014, the flow rate capacity and velocity requirements of § 62.1-44.15:51 for the act and this subsection shall be satisfied by compliance with water quantity requirements in the Stormwater Management Act (§ 62.1-44.15:24 et seq. of the Code of Virginia) and attendant regulations, unless such land-disturbing activities are in accordance with 9VAC25-870-48 of the Virginia Stormwater Management Program (VSMP) permit regulations.
- m) Compliance with the water quantity minimum standards set out in 9VAC25-870-66 of the Virginia Stormwater Management Program (VSMP) permit regulations shall be deemed to satisfy the requirements of minimum standard 19.