

**FINAL**

**CONSTRUCTION GENERAL PERMIT INSPECTION AND  
COMPLIANCE PROCEDURES**

**JOINT BASE LANGLEY EUSTIS – LANGLEY, VIRGINIA**

*Prepared for:*

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CONTRACT NUMBER W912QR-12-D-0002, DELIVERY ORDER DK01

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AUGUST 2021

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## ACRONYMS AND ABBREVIATIONS

633 CES	633d Civil Engineer Squadron
AFI	Air Force Instruction
COV	Code of Virginia
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
ETL	Engineering Technical Letter
GP	General Permit
JBLE-Langley	Joint Base Langley Eustis - Langley
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
SWM	Stormwater Management
SWPPP	Stormwater Pollution Prevention Plan
UFC	Unified Facility Criteria
USAF	United States Air Force
VDEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VESCH	Virginia Erosion and Sediment Control Handbook
VESCL&R	Virginia Erosion and Sediment Control Law and Regulations
VESCP	Virginia Erosion and Sediment Control Program
VSMP	Virginia Stormwater Management Program

## SECTION 1 INTRODUCTION

### 1.1 Background Information

Parsons collaborated with the staff of Joint Base Langley Eustis – Langley (JBLE-Langley) 633d Civil Engineer Squadron (633 CES) to compile erosion and sediment control (ESC) and stormwater management (SWM) procedures to assist the contractor in meeting the requirements for construction site stormwater runoff control and postconstruction stormwater management. The procedures for construction and postconstruction storm water management were developed to meet the Virginia Department of Environmental Quality (VDEQ) requirements of the:

- General Permit (GP) for Discharges of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4) (Permit No. VAR04), referenced as MS4 GP, and associated regulations (9VAC-870 et. seq.);
- Virginia Erosion and Sediment Control Law (Code of Virginia (COV) § 62.1-44 et. seq.) and Virginia Erosion and Sediment Control Regulations (9VAC25-840 et. seq.), referenced as Virginia Erosion and Sediment Control Law and Regulations (VESCL&R);
- Virginia Stormwater Management Program (VSMP) Regulations (9VAC25-870 et. seq.); and
- GP for Stormwater Associated with Construction Activities (VAR10), referenced as Construction GP, and associated regulations (9VAC-880 et. seq.).

In addition to the VDEQ requirements, the contractor is expected to be familiar with and comply with any Department of Defense, United States Air Force (USAF), or JBLE-Langley requirement, including this document, as well as:

- Department of Defense – Unified Facilities Criteria (UFC) 1-200-02: *High Performance and Sustainable Building Requirements*
- Department of Defense – UFC 3-210-10: *Low Impact Development*
- JBLE-Langley – *Environmental Special Conditions*
- JBLE-Langley – *MS4 Program Plan*
- Simplified Acquisition of Base Engineer Requirements General Provisions
- Secretary of the Airforce – Air Force Instruction (AFI) 32-1067: *Water and Fuel Systems*
- Secretary of the Airforce – AFI 32-1032: *Planning and Programing Appropriated Fund, Maintenance, Repair, and Construction Project*

### 1.2 The 633 CES Oversight

Permittees operating under the MS4 GP shall develop an oversight program to regulate land-disturbing activities occurring within the MS4, as required by minimum control measure (MCM) requirements of

- Section II.B.4., Construction site stormwater runoff control and
- Section II.B.5., Postconstruction stormwater management.

This document, as well as the JBLE-Langley MS4 Program Plan and JBLE-Langley Environmental Management Special Conditions, define the legal authority of the 633 CES to regulate land-disturbing activities occurring at JBLE-Langley. The state ESC and SWM program is administered by VDEQ in accordance with the VESCL&R and VSMP Regulations, respectively, and the VDEQ is to be

considered the Virginia Erosion and Sediment Control Program (VESCP) and VSMP Authority throughout the document. The VDEQ and Environmental Protection Agency (EPA) maintain jurisdictional authority to ensure all land-disturbing activities comply with the VESCL&R, VSMP Regulations, and applicable Federal regulations.

Any land-disturbing activity occurring at JBLE-Langley shall comply with the procedures described herein, as well as any additional USAF, VESCL&R, VSMP regulations, or Federal requirements. Compliance with all applicable regulations is expected for any inspection conducted by the 633 CES, VDEQ, or EPA. The contractor is responsible for the design of a properly functioning project that meets requirements within the VESCL&R and VSMP regulations. It is the responsibility of the contractor to ensure that the techniques used are appropriate for the conditions of an individual site. Where it is determined that conformance with this document is not appropriate, alternative design, materials, and methodologies may be considered on a case-by-case basis for approval by the 633 CES and/or VDEQ.

## SECTION 2

### LAND-DISTURBING ACTIVITY DELINEATIONS

For this document, land-disturbing activities at JBLE-Langley are delineated, based on area, into four categories that each have differing submittal requirements. These delineations are land-disturbing activities disturbing less than 2,500 square feet, between 2,500 and 10,000 square feet, between 10,000 square feet and 1 acre, and greater than 1 acre. Figure 2-1 gives an example of these delineations in comparison with a common baseball diamond. Land-disturbing activities are defined in COV § 62.1-44 as

A man-made change to the land surface that potentially changes its runoff characteristics including clearing, grading, or excavation, except that the term shall not include those exemptions specified in § 62.1-44.15:34.

**Figure 2-1 Land-Disturbing Delineation Comparison**



For all land-disturbing activities at JBLE-Langley, the 633 CES maintains authority to reject the implementation of the project if submittals identified in this section are not provided or are incomplete for the applicable land-disturbing delineation. Table 2-1 shows the documentation that is required to be submitted to the 633 CES and VDEQ. The contractor shall submit all documents identified below to the Contracting Officer during the design phase for review by the 633 CES. Once approved, the documents shall be submitted to VDEQ, as required in the JBLE-Langley Environmental Special Conditions Document.

**Table 2-1 JBLE-Langley Required Document Submissions**

<b>Land-Disturbing Delineation</b>	<b>Document Requirement</b>
Activities between 2,500 and 10,000 square feet	Narrative describing the nature and purpose of the land disturbing activity
	Stormwater calculations (if applicable)
	Erosion and Sediment Control Plan (ESC Plan)
	Completed ESC Plan checklist (Appendix A)
Activities between 10,000 square feet and 1 acre	Narrative describing the nature and purpose of the land-disturbing activity
	Stormwater calculations (if applicable)
	ESC Plan
	Stormwater Management Plan (SWM Plan) meeting requirements of 9VAC25-870-55
All activities greater than 1 acre	Narrative describing the nature and purpose of the land-disturbing activity
	Stormwater calculations (if applicable)
	Completed ESC Plan checklist (Appendix A)
	Stormwater Pollution Prevention Plan (SWPPP) (minimally consisting of an ESC Plan, SWM Plan, and a Pollution Prevention Plan)
	Virginia Department of Environmental Quality (VDEQ) Construction GP Registration Statement
	Copy of the VDEQ Construction GP (VAR10) or individual permit

In addition to the document submittals above, any amendments to these documents occurring during construction are required to be submitted to the 633 CES and VDEQ.

## **2.1 Land-Disturbing Activities Less Than 2,500 Square Feet**

Land-disturbing activities less than 2,500 square feet have no requirements to prepare or implement an ESC Plan but are required to manage their runoff to minimize erosion and sediment conveyance into the JBLE-Langley MS4 system.

All construction operations shall comply with the requirements of the VESCL&R. The contractor shall provide erosion control fencing (silt) to prevent site runoff. Hay bales must not be used for erosion control and inlet protection from stormwater runoff. The contractor shall submit alternate methods of protection to the Contracting Officer to provide to the 633 CES at the preconstruction conference for review and approval. The Contracting Officer will notify the Contractor of the 633 CES decision on the alternate methods prior to issuance of Notice to Proceed.

## 2.2 Land-Disturbing Activities Between 2,500 and 10,000 Square Feet

For all land-disturbing activities greater than 2,500 square feet, an ESC Plan must be prepared in accordance with the *Virginia Erosion and Sediment Control Handbook* (VESCH), to meet the applicable minimum standards identified in the VESCL&R, which are detailed in Section 4. Supporting documentation to the ESC Plan includes a narrative describing the nature and purpose of the land disturbing activity, storm water calculations (if applicable), the completed ESC plan review checklist (Appendix A), contractor's maintenance responsibilities for ESC measures, and any other supporting documentation.

During the design phase, the contractor shall submit the ESC Plan and supporting documentation to the Contracting Officer to provide to the 633 CES for review and approval. The Contracting Officer shall require that land disturbance not begin until an ESC Plan or an agreement in lieu of a plan as provided in § 62.1-44.15:55 is approved by the local VESCP authority in accordance with the VESCL&R (§ 62.1-44.15:51 et seq. of the COV). Variances and exceptions for ESC Plans are detailed in Section 3.4. The plan shall be

- (1) Compliant with the minimum standards identified in 9VAC25-840-40 of the Erosion and Sediment Control Regulations or
- (2) Compliant with department-approved annual standards and specifications. Where applicable, the plan shall be consistent with any additional or more stringent, or both, erosion and sediment control requirements established by state regulation or local ordinance.

The review of the ESC Plan will be conducted by qualified 633 CES personnel who hold a certificate of competence from the VESCP in the area of plan review, as defined in 9VAC25-850 et. seq. Upon receiving approval from the 633 CES, the contractor will submit to VDEQ.

## 2.3 Land-Disturbing Activities Between 10,000 Square Feet and 1 Acre

For all projects disturbing greater than 10,000 square feet, in addition to the ESC Plan requirements, a SWM Plan shall be developed. In general, the SWM Plan will provide details on permanent SWM measures to be implemented at the site once final grade has been achieved. A summary of the SWM Plan requirements are provided in Section 6, and permanent SWM measures are detailed in Section 7.

During the design phase, the contractor shall submit the ESC Plan and supporting documentation and SWM Plan to the Contracting Officer to provide to the 633 CES prior to submission to the VESCP and VSMP Authority for review and approval. Upon receiving approval from the 633 CES, the contractor will submit to the VESCP and VSMP Authority.

The review of the SWM Plan will be conducted by qualified 633 CES personnel who hold a certificate of competence from the VSMP in the area of plan review, as defined in 9VAC25-850 et. seq. Upon receiving approval from the 633 CES, the contractor will submit to VDEQ.

## 2.4 Land-Disturbing Activities Greater Than 1 Acre

As part of the MS4 GP, JBLE-Langley is required to enforce procedures to require that large construction activities as defined in 9VAC25-870-10 and small construction activities as defined in 9VAC25-870-10, including municipal construction activities, secure necessary state permit authorizations from the VDEQ to discharge stormwater. If greater than 1 acre (43,560 sq. ft.) is to be disturbed as part of the project, the contractor shall obtain a Construction GP (VAR10) from VDEQ. A Stormwater Pollution Prevention Plan (SWPPP)—minimally consisting of an ESC Plan, a SWM Plan, and a Pollution Prevention Plan—shall be prepared to support the stormwater permit.

Although the VDEQ is the administering authority, the 633 CES maintains authority to review and potentially reject any required part of the SWPPP or permit application.

During the design phase, the contractor shall submit the SWPPP and VDEQ Construction General Permit Registration Statement to the Contracting Officer to provide to the 633 CES for review and approval. Upon receiving approval from the 633 CES, the contractor shall submit the SWPPP and permit application to the VDEQ. The contractor is solely responsible for applying for, obtaining funding for, and complying with the terms of the permit. Upon receiving the permit, a copy of the GP coverage letter shall be forwarded to the 633 CES prior to the construction start date. In addition, a copy of the final permit must be posted on site and SWPPP be maintained on site.

## SECTION 3

### JBLE-LANGLEY ENFORCEMENT

#### 3.1 Preconstruction Conference

A preconstruction conference shall be held prior to commencement of a land-disturbing activity to clarify roles, responsibilities, and obligations of all parties involved. At a minimum, the preconstruction conference shall be attended by the contractor and a 633 CES representative.

The contractor shall develop a plan during the preconstruction conference and work with the 633 CES throughout the construction project on integrating, phasing, and transitioning temporary ESC measures to permanent SWM measures.

#### 3.2 Construction Compliance Inspection and Enforcement Requirements

For all construction activities at JBLE-Langley greater than 10,000 square feet, the 633 CES shall implement a compliance and enforcement program that meets the JBLE-Langley MS4 GP construction MCM requirements, where the 633 CES is considered the operator:

- (1) The operator shall inspect land-disturbing activities for compliance with an approved ESC Plan or agreement in lieu of a plan in accordance with the minimum standards identified in 9VAC25-840-40 or with department-approved annual standards and specifications.
- (2) The operator shall implement an inspection schedule for land-disturbing activities identified in Section II B 4 a as follows:
  - (a) Upon initial installation of erosion and sediment controls;
  - (b) At least once during every two-week period;
  - (c) Within 48 hours of any runoff-producing storm event; and
  - (d) Upon completion of the project and prior to the release of any applicable performance bonds.

Where an operator establishes an alternative inspection program as provided for in 9VAC25-840-60 B 2, the written schedule shall be implemented in lieu of Section II B 4 c (2) and the written plan shall be included in the MS4 Program Plan.

- (3) Operator inspections shall be conducted by personnel who hold a certificate of competence in accordance with 9VAC25-850-40. Documentation of certification shall be made available upon request by the VESCP authority or other regulatory agency.
- (4) The operator shall promote to the public a mechanism for receipt of complaints regarding regulated land-disturbing activities and shall follow up on any complaints regarding potential water quality and compliance issues.
- (5) The operator shall utilize its legal authority to require compliance with the approved plan where an inspection finds that the approved plan is not being properly implemented.
- (6) The operator shall utilize, as appropriate, its legal authority to require changes to an approved plan when an inspection finds that the approved plan is inadequate to effectively control soil erosion, sediment deposition, and runoff to prevent the unreasonable degradation of properties, stream channels, waters, and other natural resources.
- (7) The operator shall require implementation of appropriate controls to prevent nonstormwater discharges to the MS4, such as wastewater, concrete washout, fuels and oils, and other illicit discharges identified during land-disturbing activity inspections of the

MS4. The discharge of non-stormwater discharges other than those identified in 9VAC25-890-20 through the MS4 is not authorized by this state permit.

- (8) The operator may develop and implement a progressive compliance and enforcement strategy provided that such strategy is included in the MS4 Program Plan and is consistent with 9VAC25-840.

The 633 CES uses USAF Form 1477-Appendix B and the VDEQ Construction General Permit Inspection Report to conduct construction site inspections in accordance with the requirements above. In addition, VDEQ inspectors will also periodically inspect Construction GP sites on JBLE-Langley. All ESC measures shown on the plan shall be inspected, and any problems or violations shall be documented in the report. Required or recommended corrective actions for each problem or violation shall be noted on the report along with a date by which all corrective actions must be completed. A signed and dated copy of the report shall be provided to all parties involved with the land-disturbing activity within 24 hours of the inspection.

### 3.3 Corrective Actions

The contractor shall be responsible for ensuring that corrective action is taken in response to problems and violations listed on the inspection report. If the listed violation(s) constitute noncompliance and/or required corrective actions are not completed by the deadline noted on the report, a Notice to Comply, Stop Work Order, and/or other enforcement actions may be issued.

An appeal to VDEQ for additional oversight may be used for ongoing noncompliance.

### 3.4 Variances and Exceptions

A variance or exception for development of an ESC Plan may be granted if any requirements are deemed inappropriate or too restrictive for site conditions. The contractor may request a variance or exception at the time of plan submission or during construction.

The applicant shall submit a written request to the VESCP Authority (VDEQ) for a variance or exception, with an explanation and description of the specific condition necessitating the request. The request must also include a detailed description of the alternative practice and justification that the practice meets the intent of the regulation for which the variance is sought.

The 633 CES shall respond in writing either approving or disapproving the variance or exception request. All requests shall be considered unapproved until written approval from the 633 CES has been received. Furthermore, all approved variances or exceptions shall be documented in the ESC plan.

### 3.5 Pollution Prevention

The contractor shall implement controls to ensure no pollutant enters the storm drain from the affected area during construction. The contractor should determine potential pollutant sources that can be exposed to precipitation on the construction site and implement controls to ensure these pollutants are not discharged to the JBLE-Langley MS4. Any discharge to the JBLE-Langley MS4 that is not entirely composed of stormwater and not explicitly permitted or exempt from permitting requirements is considered an illicit discharge. Examples of illicit discharges include the following:

- Dumping of trash or debris
- Disposing of vehicle/equipment maintenance fluids into a storm drain
- Leaking dumpsters flowing into a storm drain inlet
- Pouring paints, stains, or other hazardous materials into a storm drain

- Cleaning paint brushes/applicators in or near a storm drain
- Allowing wash waters with soaps, detergents, or paint debris into a storm drain inlet
- Washing silt, sediment, concrete, cement, or gravel into a storm drain
- Allowing uncontrolled release of sediment into a storm drain inlet
- A measurable flow during dry weather that contains any other pollutants

To minimize the potential for hazardous materials being discharged to the JBLE-Langley MS4, the 633 CES requires spill protection and control devices, such as secondary containment, be implemented when chemicals or hazardous substances are used on site. If a spill occurs, the 633 CES should be immediately notified. If petroleum, oils, or lubricants are to be stored in containers exceeding 55-gallons, the base-wide Spill Prevention, Control, and Countermeasure Plan should be reviewed by the contractor and a copy should be kept at the project site.

The 633 CES, as well as state and federal regulations, requires solid wastes to be managed to prevent the discharge of pollutants and ensure they are disposed of properly. When concrete wastes may be produced, proper concrete washout methods must be implemented, and the wastes are to be disposed of properly.

### **3.6 Post-construction Compliance Inspection and Enforcement Requirements**

For all construction activities at JBLE-Langley greater than 10,000 square feet, JBLE-Langley shall implement a post-construction oversight program occurring within the boundaries of the MS4. The 633 CES shall implement a compliance and enforcement program that meets the JBLE-Langley MS4 GP Post-construction MCM requirements, reproduced below, where the 633 CES is considered the operator:

- b. Required design criteria for stormwater runoff controls. The operator shall utilize legal authority, such as ordinances, permits, orders, specific contract language, and interjurisdictional agreements, to require that activities identified in Section II B 5 address stormwater runoff in such a manner that stormwater runoff controls are designed and installed:
  - (1) In accordance with the appropriate water quality and water quantity design criteria as required in Part II (9VAC25-870-40 et seq.) of 9VAC25-870;
  - (2) In accordance with any additional applicable state or local design criteria required at project initiation; and
  - (3) Where applicable, in accordance with any department-approved annual standards and specifications.

These inspections will be performed by VSMP (VDEQ) inspectors certified in accordance with 9VAC25-850.

### **3.7 Notice of Termination**

As required by 9VAC25-880-60, the contractor shall submit a notice of termination to the VDEQ after one or more of the following conditions have been met:

1. Necessary permanent control measures included in the SWPPP for the site are in place and functioning effectively and final stabilization has been achieved on all portions of the site for which the operator is responsible. When applicable, long-term responsibility and maintenance requirements for permanent control measures shall be recorded in the local land records prior to the submission of a notice of termination;

2. Another operator has assumed control over all areas of the site that have not been finally stabilized and obtained coverage for the ongoing discharge;
3. Coverage under an alternative Virginia Pollutant Discharge Elimination System or state permit has been obtained; or
4. For residential construction only, temporary soil stabilization has been completed and the residence has been transferred to the homeowner.

The notice of termination should be submitted by the contractor no later than 30 days after one of the above conditions is met.

## SECTION 4

### EROSION AND SEDIMENT CONTROL PLAN REQUIREMENTS

ESC Plans will be completed in accordance with the requirements of the VESCL&R. The requirements are described in this section, and a checklist is provided in Appendix A. Relevant compliance notes are included in Appendix B.

ESC Plans are required to be developed in accordance with the guidance provided in the VESCH. The VESCH details how to prepare an ESC Plan in Chapter 6, Preparing an ESC Plan. The suggested steps for preparing an ESC Plan detailed in the VESCH are summarized below:

1. Data Collection
2. Data Analysis
3. Site Plan Development
4. Plan for ESC
5. Prepare the Plan

The ESC Plan narrative and site plan requirements are summarized in Sections 4.1 and 4.2.

#### 4.1 Narrative

The final ESC Plan will contain a narrative, which is a written description and justification of the ESC measures for the site. The VESCH details the importance of the narrative:

A narrative is a written statement which explains the erosion and sediment control decisions made for a particular project and the justification for those decisions. The narrative is especially important to the plan approving authority because it contains concise information concerning existing site conditions, construction schedules, and other pertinent items which are not apparent in a typical site plan. Since a plan approving authority cannot always visit the site or discuss the project length with the site planner, it is essential that the necessary information be provided for the plan review.

The narrative shall include, at a minimum, the items included in the checklist provided in Appendix A and the VESCH. These minimum requirements are summarized below in Table 4-1:

**Table 4-1 ESC Plan Narrative Requirements**

<b>Project Description</b>	<b>Critical Areas with Increased Potential for Erosion</b>
Existing Site Conditions	Erosion and Sediment Control Measures
Adjacent Areas Affected by Land Disturbance	Permanent Stabilization
Off-Site Areas that Will Be Affected	Stormwater Runoff Considerations
Soil Types in the Land-Disturbance Area	Calculations
Project Description	Critical Areas with Increased Potential for Erosion

#### 4.2 Site Plan

The final ESC Plan will contain a site plan, which is a detailed construction drawing of the ESC measures for the site. The site plan shall include, at a minimum, all the items included in the checklist provided in Appendix A and the VESCH. These minimum requirements are summarized in Table 4-2:

**Table 4-2 ESC Plan Site Plan Requirements**

<b>Vicinity Map</b>	<b>Existing Drainage Patterns</b>
North Arrow	Critical Areas with Increased Potential for Erosion
Limits of Clearing and Grading	Site Development Plan Showing All Improvements
Existing Contours	Location of Erosion and Sediment Controls and Stormwater Management Practices
Final Contours	Off-Site Areas that Will Be Affected
Existing Vegetation	Detail Drawings (if Necessary)
Soils in the Land-Disturbance Area	Maintenance Schedule

## SECTION 5

# CONSTRUCTION EROSION AND SEDIMENT CONTROL MEASURES

This section recommends some of the typical construction ESC measures for use at JBLE-Langley, but it is not an exhaustive list. Chapter 3 of the VESCH identifies several options for ESC measures for the following categories: safety, road stabilization, sediment barriers, dikes and diversions, sediment traps and basins, flumes, waterway and outlet protection, stream protection, subsurface drainage, site preparation for vegetation establishment, grass establishment, mulches, other vegetative controls, and dust control. It is the contractor's responsibility to provide ESC measures that adequately control erosion and sedimentation in its ESC Plan and properly implement these control measures on site. The use of hay bales to control erosion is *not* allowed at JBLE-Langley.

Based on the conditions of the site and the extent of land disturbance, it is likely that a combination of ESC measures will be required to minimize erosion and sedimentation. The ESC Plan will identify all ESC measures to be used throughout all phases of land-disturbing activity. If an ESC measure is deemed to be inadequate to control erosion and sedimentation during the land-disturbing activity, a suitable replacement shall be immediately installed, and the ESC Plan should be amended and resubmitted for approval. If an ESC measure is discovered to be damaged or not properly performing, the root cause shall be determined, and the ESC measure should be repaired or replaced immediately.

On larger sites, over variable terrain or soil types, or on sites with other constraints on specific ESC measures, it is likely that several different ESC measures will be required to work in concert to provide adequate ESC. How the site will change throughout the land-disturbing activity shall be considered when selecting the appropriate ESC measure.

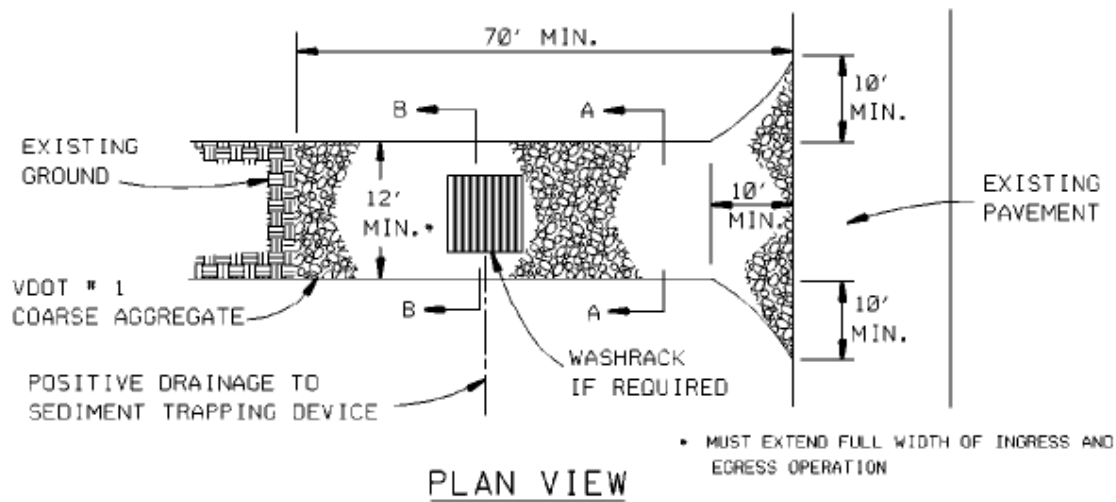
### 5.1 Temporary Stone Construction Entrance

For sites that will require vehicles to enter and exit the site, a stabilized construction entrance is required to minimize mud and dirt from these ingress/egress points onto adjacent public roadways or other paved areas. The construction entrance shall be at least 12 feet wide and 70 feet long. The entrance should be excavated at least 3 inches below the existing soil surface; cleared of all vegetation, roots, and other objectionable material; then stabilized with 6 inches of Virginia Department of Transportation (VDOT) #1 Coarse Aggregate, consisting of 2- to 3-inch stone, with a filter fabric underliner.

JBLE-Langley has the following maintenance requirements when a temporary stone construction entrance is used:

- Inspect routinely
- Keep temporary roadway ditches clear
- Repair as needed or as directed

Section 3.02 of the VESCH provides additional details on the conditions requiring a construction entrance, planning considerations, design criteria, construction specifications, and maintenance requirements. Any implementation of the temporary construction entrance must meet the Section 3.02 requirements. Figure 5-1 shows a plan view drawing of the minimum standards required for the construction entrance. Elevation and section drawings can be obtained through the VESCH or directly from VDEQ.

**Figure 5-1 Stone Construction Entrance Plan View**

## 5.2 Silt Fence

For areas that receive low-to-moderate level channel flows, a silt fence intercepts and detains small amounts of sediments from disturbed areas during construction operations. The silt fence is a temporary sediment barrier consisting of synthetic fabric stretched across and attached to supporting posts and entrenched. Implementation of a silt fence as an ESC measure is only allowed where the size of the drainage area is no more than one quarter acre per 100 feet of silt fence length; the maximum slope length behind the barrier is 100 feet; and the maximum gradient behind the barrier is 50 percent (2:1).

Section 3.05 of the VESCH provides additional details on conditions requiring a silt fence, planning considerations, design criteria, construction specifications, installation requirements, and maintenance requirements. Any implementation of silt fencing must meet the Section 3.05 requirements.

JBLE-Langley requires silt fences as sediment control, at a minimum, under the following conditions:

- Placed below the toe of exposed/erodible slopes
- Downslope of exposed soil
- Around temporary stockpiles
- Along streams and channels
- Along the perimeter of a project

JBLE-Langley has the following maintenance requirements when a silt fence is implemented:

- Inspect regularly before and after storm events
- Repair undercut silt fences, or those that are torn, slumping, or split
- Remove collected sediment
- Maintain log book

### 5.3 Storm Drain Inlet Protection

When there are existing storm drain inlets or when storm drain inlets are to be made operational before permanent stabilization of the land-disturbing area, storm drain inlet protection is required. Storm drain inlet protection prevents sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area. Storm drain inlet protection typically includes a sediment filter or an excavated impounding area around a storm drain drop inlet or curb inlet. The use of storm drain inlet protection measures must ensure ponding will not affect traffic patterns at JBLE-Langley. The following material types are recommended for storm drain inlet protection at JBLE-Langley:

- Filter fabric fence
- Excavated drop inlet sediment trap
- Gravel bags
- Foam barriers and fiber rolls

For land-disturbing activities greater than 1 acre, either a temporary sediment trap (VESCH Section 3.13) or temporary sediment basin (VESCH Section 3.14) is required. For all other land-disturbing activities, the following protection methods are recommended in the VESCH:

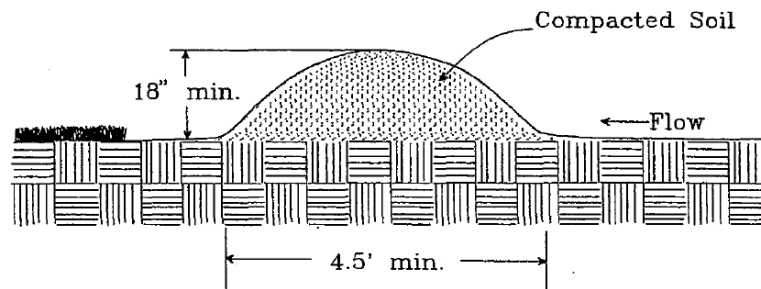
- Silt fence drop inlet protection (construction specifications: VESCH Plate 3.07-1)
- Gravel and wire mesh drop inlet sediment filter (construction specifications: VESCH Plate 3.07-2)
- Block and gravel drop inlet sediment filter (construction specifications: VESCH Plate 3.07-3)
- Excavated drop inlet sediment trap (construction specifications: VESCH Plate 3.07-4)
- Sod drop inlet sediment filter (construction specifications: VESCH Plate 3.07-5)
- Gravel curb inlet sediment filter (construction specifications: VESCH Plate 3.07-6)
- Curb inlet protection with 2-inch x 4-inch wooden weir (construction specifications: VESCH Plate 3.07-7)
- Block and gravel curb inlet sediment filter (construction specifications: VESCH Plate 3.07-8)

Section 3.07 of the VESCH provides additional details on the conditions requiring storm drain inlet protection, planning considerations, design criteria, construction specifications, and maintenance requirements. Any implementation of storm drain inlet protection must meet the Section 3.07 requirements.

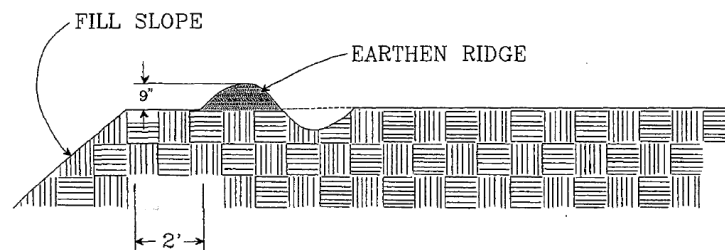
### 5.4 Temporary Diversions

The VESCH provides details on four different methods of diversion, all of which are designed to intercept and divert stormwater runoff. The four types of diversions are described below:

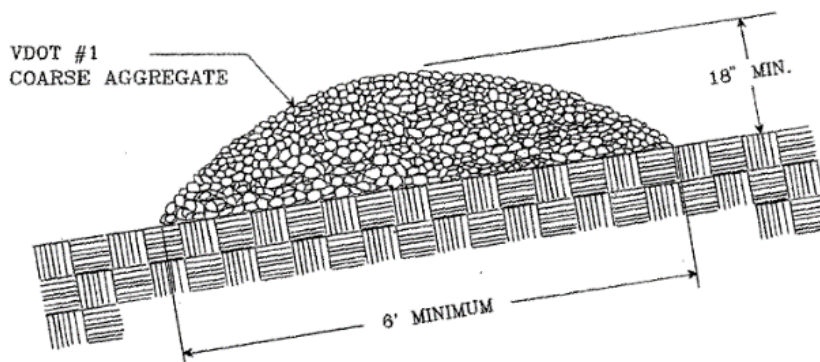
- Temporary diversion dike (VESCH Section 3.09, Figure 5-2): A temporary ridge of compacted soil constructed at the top or base of a sloping disturbed area.

**Figure 5-2 Temporary Diversion Dike**

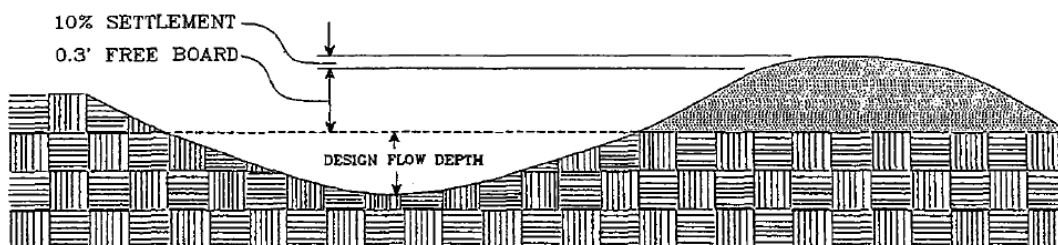
- Temporary fill diversion (VESCH Section 3.10, Figure 5-3): A channel with a supporting ridge of soil on the lower side, constructed along the top of an active earth fill.

**Figure 5-3 Temporary Fill Diversion**

- Temporary right-of-way diversion (VESCH Section 3.11, Figure 5-4): A ridge of compacted soil or loose rock or gravel constructed across disturbed rights-of-way and similar sloping areas.

**Figure 5-4 Temporary Right-of-Way Diversion**

- Diversion (VESCH Section 3.12, Figure 5-5): A channel constructed across a slope with a supporting earthen ridge on the lower side.

**Figure 5-5 Diversion**

A diversion is required where runoff from areas of higher elevation may damage property, cause erosion, or interfere with the establishment of vegetation in the lower area; where surface and/or shallow subsurface flow is damaging slope upland; or where slope length needs to be reduced to minimize soil loss.

Each of the sections in the VESCH identified above provides additional details on the conditions requiring each type of diversion, planning considerations, design criteria, construction specifications, and maintenance requirements. Any implementation of diversions must meet the requirements of the associated section.

## 5.5 Temporary Seeding

Temporary stabilization to reduce erosion and sedimentation is required when the final grade of a site will not be achieved for a period of more than 14 days, but less than one year. Temporary seeding will provide stabilization to denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, and temporary roadblocks while these areas await permanent vegetation or other erosion control measures to be established. The type and rate of application of temporary seeding will vary based on season. Table 5-1 provides details on the acceptable temporary seeding plant materials, regardless of region. Table 5-2 provides details on the acceptable planting dates for temporary seeding plant materials specific to the Coastal Plain region of Virginia.

**Table 5-1 Acceptable Temporary Seeding Plant Materials**

Planting Dates	Species	Rate (pounds/acre)
Sep 1 to Feb 15	50/50 mix of annual ryegrass ( <i>Lolium multiflorum</i> ) and cereal (winter) rye ( <i>Secale cereale</i> )	50 to 100
Feb 15 to Apr 30	Annual ryegrass ( <i>Lolium multiflorum</i> )	60 to 100

**Table 5-2 Regional Specific Temporary Seeding Plant Materials.**

Species	Rate (pounds/acre)	Season	Notes/Characteristics
Oats ( <i>Avena sativa</i> )	50 to 100	Feb 15 to Apr 30	Use spring varieties (e.g., Noble).
Rye ( <i>Secale cereale</i> )	50 to 110	Feb 15 to Apr 30 Sept 1 to Nov 15	Use for late fall seedings, winter cover. Tolerates cold and low moisture.
Annual ryegrass ( <i>Lolium multiflorum</i> )	60	Feb 15 to Apr 30 Sept 1 to Nov 15	May be added in mixes. Will mow out of most stands.
Weeping lovegrass ( <i>Eragrostis curvula</i> )	15	May 1 to Sept 1	Warm-season perennial. May bunch. Tolerates hot, dry slopes and acid, infertile soils. May be added to mixes.
Korean lespedeza ( <i>Lespedeza stipulacea</i> )	25	Feb 15 to Apr 30 May 1 to Sep 1	Warm-season annual legume. Tolerates acid soils. May be added to mixes.

Section 3.31 of the VESCH provides additional details on the conditions requiring temporary seeding, planning considerations, and specifications. Any implementation of temporary seeding must meet the Section 3.31 requirements.

## **SECTION 6**

### **STORMWATER MANAGEMENT PLAN REQUIREMENTS**

The SWM Plan shall be developed to meet the minimum requirements of Stormwater Management Program regulations (9VAC-870-55) and include the following:

1. Information on the type of and location of stormwater discharges, information on the features to which stormwater is being discharged, including surface waters or karst features if present, and predevelopment and postdevelopment drainage areas
2. Contact information, including the name, address, telephone number, and email address of the owner and the tax reference number and parcel number of the property or properties affected
3. A narrative that includes a description of current site conditions and final site conditions or if allowed by the VSMP authority, the information provided and documented during the review process that addresses the current and final site conditions
4. A general description of the proposed stormwater management facilities and the mechanism through which the facilities will be operated and maintained after construction is complete
5. Information on the proposed stormwater management facilities, including (i) the type of facilities; (ii) location, including geographic coordinates; (iii) acres treated; and (iv) the surface waters or karst features into which the facility will discharge
6. Hydrologic and hydraulic computations, including runoff characteristics
7. Documentation and calculations verifying compliance with the water quality and quantity requirements of these regulations
8. A map of the site that depicts the topography of the site and includes
  - a. All contributing drainage areas;
  - b. Existing streams, ponds, culverts, ditches, wetlands, other water bodies, and floodplains;
  - c. Soil types, geologic formations if karst features are present in the area, forest cover, and other vegetative areas;
  - d. Current land use including existing structures, roads, and locations of known utilities and easements;
  - e. Sufficient information on adjoining parcels to assess the impacts of stormwater from the site on these parcels;
  - f. The limits of clearing and grading, and the proposed drainage patterns on the site;
  - g. Proposed buildings, roads, parking areas, utilities, and stormwater management facilities; and
  - h. Proposed land use with tabulation of the percentage of surface area to be adapted to various uses, including planned locations of utilities, roads, and easements.
9. If an operator intends to meet the requirements established in 9VAC25-870-63 or 9VAC25-870-66 through the use of off-site compliance options, where applicable, then a letter of availability from the off-site provider must be included.

Based on the conditions of the site and the extent of land disturbance, it is likely that a combination of stormwater best management practices will be required, some of which are summarized in Section 7. The 633 CES or VDEQ may require additional information to be provided as part of the SWM Plan.

In addition to the VSMP regulations, the SWM Plan should include information on how to maintain or restore the site to the predevelopment hydrology, as required by the Energy Independence and Security Act 438 for construction sites exceeding 5,000 square feet.

## SECTION 7

# POSTCONSTRUCTION STORMWATER MANAGEMENT MEASURES

This section recommends some of the typical permanent SWM measures for use at JBLE-Langley, but it is not an exhaustive list. Chapter 3 of the VESCH identify several additional options for SWM measures. Disturbed areas shall be stabilized as quickly as possible after final grade has been attained using permanent structures, temporary or permanent vegetation and mulch, or a combination of these measures. Temporary vegetation and mulches can be used when permanent stabilization is not practical, such as when finished grading may be delayed.

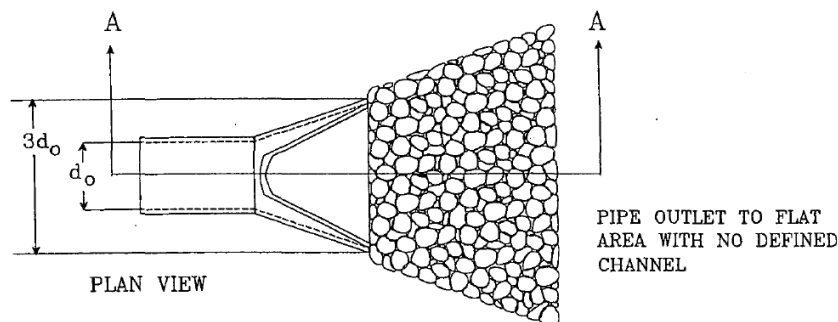
Once a site is stabilized, a thorough maintenance and follow-up program shall be implemented to ensure all control practices perform as designed. It is the contractor's responsibility to provide SWM measures that adequately control erosion and sedimentation in the final design for a site and provide operation and maintenance procedures for each permanent SWM measure as part of the SWM Plan. These operation and maintenance measures will be implemented into JBLE-Langley's permanent stormwater plan. The contractor's final considerations for permanent SWM measures include providing detail to the 633 CES on the following criteria:

- Certification by a licensed professional affirming elevations, conforming to specifications
- Producing as-built plans
- Developing an operations and maintenance manual
- Training maintenance personnel for routine inspections and maintenance tasks
- Performing annual inspection and documentation by a licensed/qualified professional

### 7.1 Outlet Protection

Outlet protection is a structurally lined apron or other acceptable energy-dissipating device placed at the outlet of pipes or paved channel sections to prevent scour at stormwater outlets, protect the outlet structure, and minimize potential for downstream erosion by reducing the velocity and energy of concentrated stormwater flows. Figure 7-1 give an example plan view of a pipe outlet protection.

**Figure 7-1 Pipe Outlet Protection**

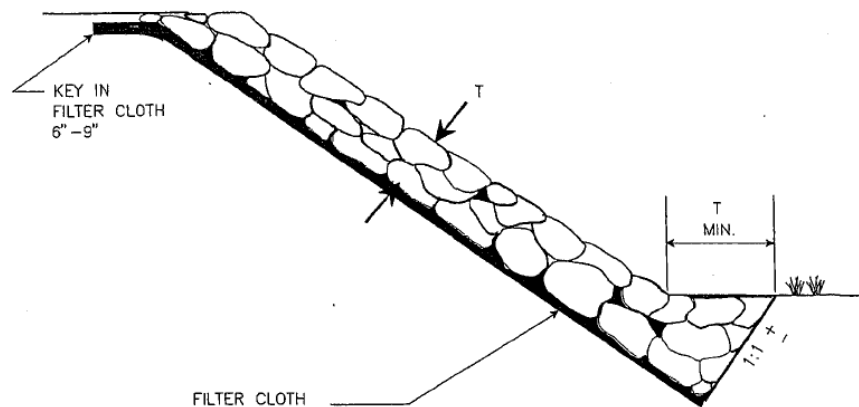


Section 3.18 of the VESCH provides additional details on the conditions requiring outlet protection, planning considerations, design criteria for pipe outlets and paved channel outlets, construction specifications, and maintenance requirements. Any implementation of outlet protection must meet the Section 3.18 requirements.

## 7.2 Riprap

Riprap is a permanent, erosion-resistant ground cover of large, loose, angular stone with filter fabric or granular underlining. Riprap is typically used to protect the soil from the erosive forces of concentrated runoff, slow the velocity of concentrated runoff while enhancing the potential for infiltration, and stabilize slopes with seepage problems and/or noncohesive soils. Figure 7-2 give an example installation design of riprap.

**Figure 7-2 Riprap with Filter Cloth Underliner**

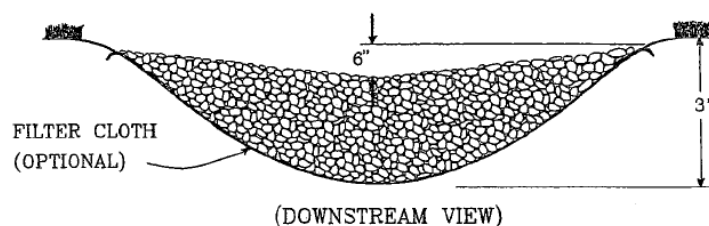


Section 3.19 of the VESCH provides additional details on the conditions requiring riprap, planning considerations, design criteria, construction specifications, and maintenance requirements. Appendix 3.19-a provides details on riprap design in channels, and Appendix 3.19-b provides details on riprap design in lakes and ponds subject to wave action. Any implementation of riprap must meet the Section 3.19 requirements.

## 7.3 Rock Check Dams

Rock check dams are small stone dams constructed across a swale or drainage ditch to reduce the velocity of concentrated stormwater flows, thereby reducing erosion of the swale or ditch. The use of rock check dams is limited to small open channels that drain 10 acres or less. Figure 7-3 shows an example design of a rock check dam.

**Figure 7-3 Rock Check Dam for Drainage of 2 Acres or Less**

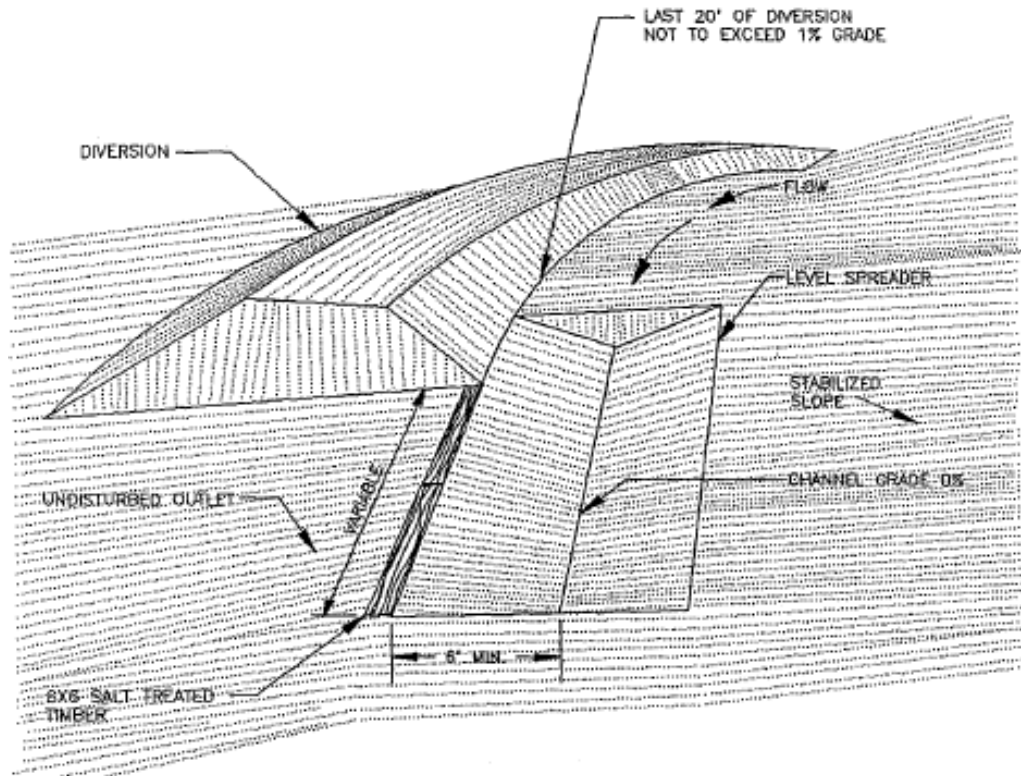


Section 3.19 of the VESCH provides additional details on the conditions requiring rock check dams, planning considerations, specifications, sediment removal requirements, requirements for removal of rock check dams, and maintenance requirements. Any implementation of rock check dams must meet the Section 3.19 requirements.

## 7.4 Level Spreader

Level spreaders are outlets for dikes and diversions that convert concentrated runoff to sheet flow, allowing it to release uniformly onto areas stabilized by vegetation. Figure 7-4 shows a perspective view of a level spreader.

**Figure 7-4 Level Spreader Perspective View**



Section 3.21 of the VESCH provides additional details on the conditions requiring level spreaders, planning considerations, design criteria, construction specifications, and maintenance requirements. Any implementation of level spreaders must meet the Section 3.21 requirements.

## 7.5 Permanent Seeding

Stabilizing disturbed areas by using a perennial vegetative cover improves wildlife habitat and enhances natural beauty. Permanent seeding is required when a disturbed area will not receive its final grade for over a year. The selection of plant material should be based on the climate and planting season, as well as each site-specific topography, soils, and land use. Each site may require modification to provide an adequate seedbed, which includes the following elements:

- Enough fine-grained material to maintain adequate moisture and nutrient supply
- Sufficient pore space to permit root penetration
- Sufficient depth of soil to provide adequate root zone
- Favorable pH range for plant growth (6.0-7.0)
- Freedom from toxic amounts of materials harmful to plant growth

- Freedom from excessive roots branches, large stones, large clods of earth, or trash of any kind

Approved methods to amend the soil are detailed in the Permanent Seeding section of the VESCH, Section 3.32, as well as the Topsoiling section of the VESCH, Section 3.30. Plant information sheets for approved annual grasses and grains, annual legumes, perennials, miscellaneous erosion control grasses, and legumes are included in Appendix 3.32-c of the VESCH, but must also be approved for planting by 633 CES included the Environmental Special Conditions document. Although the VESCH approves of millet species, millet is prohibited in the 633 CES Environmental Special Conditions due to bird attraction.

Section 3.32 provides additional details on the conditions requiring permanent seeding, planning considerations, and specifications. Appendix 3.32-a provides details on seed quality criteria, Appendix 3.32-b provides keys to successful establishment of grasses and legumes, and Appendix 3.32-c, as mentioned above, provides plant information sheets on VESCH-recommended plant species. Any implementation of permanent seeding must meet the Section 3.32 requirements and the 633 CES Environmental Special Conditions restrictions.

## 7.6 Sodding

Sodding provides permanent turf immediately and is used where site conditions do not allow the sprouting of permanent seeding or where sodding is preferred to other means of grass establishment. Sodding may be preferred to permanent seeding when attempting to reduce the production of dust and mud associated with soil surfaces, stabilize drainage ways where concentrated overland flow will occur, or to filter device for sediments in areas prior to achieving permanent stabilization. The VESCH Section 3.33 describes the types of sods available in Virginia and recommended uses, which include Kentucky bluegrass, tall fescue, Bermuda grass, and zoysia grass, as well as their approved varieties. Similar to permanent seeding, the area must be acceptable for the establishment of permanent vegetative cover; reference Section 7.5 of this document or Section 3.32 of the VESCH for soil requirements.

Section 3.33 provides additional details on the conditions requiring sodding, planning considerations, specifications, and maintenance requirements. Any implementation of sodding must meet the Section 3.33 requirements.

## 7.7 Mulching

Mulching is the application of plant residues or other suitable materials to soil surfaces to prevent erosion by protecting the soil surface from raindrop impact and reducing the velocity of overland flow and/or to foster the growth of vegetation by increasing available moisture and providing insulation against extreme heat or cold. Mulching should be used with temporary (Section 5.5) or permanent seeding (Section 7.5), as well as when areas cannot establish vegetative cover because of the season or because trees, shrubs, or certain ground covers do not provide soil stabilization by themselves.

Section 3.35 of the VESCH provides additional details on the conditions requiring mulching, planning considerations, and specifications. Any implementation of mulching must meet the Section 3.35 requirements.

## 7.8 Soil Stabilization Blankets and Matting

Soil stabilization blankets and matting involve installing a protective cover (blanket) or a soil stabilization textile mat on a prepared planting area of a steep slope, channel, or shore to aid in controlling erosion in critical areas by providing a microclimate that protects young vegetation and

promotes its establishment. Soil stabilization blankets and matting are used when erosion hazard is high and planting is likely to be too slow in providing adequate vegetative cover, in vegetated channels where the velocity of design flow exceeds “allowable” velocity, on streambanks or tidal shorelines where moving water is likely to wash out new plantings, or in areas where the forces of wind prevent standard mulching practices from remaining in place until vegetation becomes established.

Section 3.36 of the VESCH provides additional details on the conditions requiring soil stabilization blankets and matting, planning considerations, VDOT nomenclature and product information, materials, installation requirements, and maintenance requirements. Any implementation of soil stabilization blankets and matting must meet the Section 3.36 requirements.

## SECTION 8 REFERENCES

- Department of Defense. 2014 August 1. *High Performance and Sustainable Building Requirements*. Unified Facilities Criteria 1-200-02.
- Department of Defense. 2016 February 1. *Low Impact Development*. Unified Facilities Criteria 3-210-10.
- JBLE-Eustis. 2016 May. *Standards and Specifications for Erosion and Sediment Control for Joint Base Langley Eustis – Eustis*.
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- VDEQ. 1992. *Virginia Erosion and Sediment Control Handbook*. Third Edition.
- VDOT. 2017 July. *Virginia Department of Transportation Drainage Manual*.
- VDOT. 2018 September. *Virginia Department of Transportation Approved Materials Lists*.

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## **APPENDIX A VDEQ-PROVIDED ESC PLAN CHECKLIST**

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## **APPENDIX B**

### **VDEQ ESC COMPLIANCE NOTES**

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**APPENDIX C**  
**JBLE-LANGLEY INSPECTION SHEET (AF FORM 1477)**

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