



## 2. Pollution Prevention

**Purpose:**  
Many construction sites require storage of chemicals and materials that have detrimental effects if released into our watersheds. A storage plan for these potential pollution sources as well as a spill prevention and clean up plan are required to mitigate these risks.

**Requirement:**  
Design, install, implement, and maintain effective pollution prevention measures to minimize the discharge of pollutants. At a minimum, such measures must be designed, installed, implemented and maintained in accordance with the following requirements.

**Hydroseed**

- As per manufacturer's instructions.
- Must include mulch component
- Not acceptable stabilization for winter construction period

Excellent application of hydroseed with a mulch component. Entire soil surface has been covered and is temporarily stabilized.

Poor hydroseed application. Not applied at the appropriate rate, soil not prepared, and very little mulch component in mix.

**Site Stabilization**

**Diversion Berm installation:**

A. Berm Height: 1.5 feet  
B. Berm Width: 2 feet  
C. Flow width: 4 feet  
D. Flow depth: 8 inches  
Side slopes: 2:1 (H:V) or flatter

- Construct berm to the minimum specification above.
- Compact the berm with a shovel or earth-moving equipment.
- Seed and mulch berm or cover with erosion control matting immediately after installation.
- Stabilize the flow channel with seed and mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
- Ensure the berm drains to an outlet stabilized with riprap. Ensure that there is no erosion at the outlet.

Excellent installation of reinforced silt fence and J-hooks in front of a stone-lined drainage channel.

**ALTERNATIVE KEY-IN DETAIL**

**Install Perimeter Controls**

### Low Risk Site Handbook for Erosion Prevention and Sediment Control

A construction stormwater discharge permit must be obtained for construction activity that results in total land disturbance of equal to or greater than 1 acre, including construction activities where disturbance is less than 1 acre, but is part of a larger common plan of development, if the larger development will ultimately result in the disturbance of 1 or more acres.

Vermont Construction General Permit (CGP) 3-9020 guides an applicant in assessing the potential risk to water quality from the proposed construction activity and categorizes the project activity as Low Risk, Moderate Risk, or that which requires an Individual Permit.

The practices in this handbook serve as the required Erosion Prevention and Sediment Control Plan for construction activity that is determined to be "Low Risk" under CGP 3-9020.

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**How to comply:**

- Minimize the exposure of the following to precipitation and to stormwater:
  - building materials,
  - building products,
  - construction wastes,
  - trash,
  - landscape materials,
  - fertilizers,
  - pesticides,
  - herbicides,
  - detergents,
  - sanitary waste, and
  - other materials present on the site.
- Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

**Pollution Prevention**

**Requirements for Dust Control:**  
Construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing during dry periods where off-site damage may occur if dust is not controlled shall be sprayed with water to prevent dust mobilization. **Chemical applications, including the use of chloride, shall not be applied without written approval from the VT DEC.**

**Requirements for Final Stabilization:**  
All areas of disturbance must have permanent stabilization within 48 hours of reaching final grade.

- Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.
- Prepare bare soil for seeding by grading the top 4 to 6 inches of soil and removing any large rocks or debris, and apply seed per suppliers specifications.

**Site Stabilization**

6. The diversion berm shall remain in place until the disturbed areas are completely stabilized.

Good construction, seeding, and stabilization of diversion berm. Note that diversion ditch is lined with grass on flatter part of slope, and with rock on steeper part.

**Divert Upland Runoff**

**Erosion Control Berms**  
Erosion control berms are comprised of a dense mixture of intertwining wood fragments and grit that form a stable, long lasting mulch. Common sources include stump grindings, and aged wood waste.

**Erosion Control Berm Installation:**

- Stump grindings from land clearing are an excellent source of material for erosion control berms, and may be readily produced when the area to be developed is forested.
- Erosion control berms are effective on frozen ground, rock outcrops, and forested areas with heavy root cover. It may be necessary to pack down or remove vegetation to prevent the creation of voids or bridges which will allow berm washout and pass sediment laden water offsite.
- The erosion control berm should be a minimum of 1 foot tall and 2 feet wide. On longer or steeper slopes a larger berm may be necessary.

**Erosion Control Berm Maintenance:**

- Erosion control berms must be redressed and reshaped as necessary to ensure that sediment doesn't accumulate more than halfway up the berm face.

**Site Stabilization**

**Section 2: The Requirements**

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**3. Limit Concurrent Earth Disturbance**

**Purpose:**  
Limit the amount of soil exposed at one time to reduce the potential erosion on the construction site.

**Requirement:**  
The maximum area of concurrent earth disturbance is specified on the site's written authorization to discharge. Earth disturbance at any one time cannot exceed the maximum concurrent disturbance identified in the authorization. Areas that are at final stabilization or that have been temporarily stabilized in accordance with Section 4 of this handbook, are not counted toward the maximum concurrent disturbance area.

**Limit Concurrent Earth Disturbance**

**5. Stabilized Construction Access**

**Purpose:**  
A stabilized construction access helps remove mud and sediment from vehicles and equipment to prevent tracking onto streets.

**Requirements:**  
If there will be any vehicle or equipment traffic off of the construction site, you must install a stabilized construction access at the start of construction.

Stabilized Construction Access

**7. Install Perimeter Controls**

**Purpose:**  
Silt Fence and Erosion Control Berms intercept runoff and allow suspended sediment to settle or filter out. Filter Socks and Straw Wattles also filter construction runoff and are acceptable for use in specific situations. Silt Fence, Erosion Control Berms, Filter Socks and Straw Wattles are all acceptable perimeter controls based on site specific conditions. Permittees must ensure the right practice is selected for erosion prevention and sediment control.

**Requirements:**  
Perimeter controls must be installed:

- On the downhill side of the construction activities
- Between any ditch, swale, storm drain, or surface water and the disturbed soil
- Perimeter controls not labeled as biodegradable shall be removed once the drainage area has reached final stabilization

\* Hay bales must not be used exclusively as sediment barriers due to their tendency to degrade and fall apart and may only be used in support of other required practices.

**Install Perimeter Controls**

**Filter Socks**  
A manufactured tube made of either a synthetic material or an organic fiber which is filled with erosion control mix or other finely shredded organic material such as coconut fiber. They are an excellent practice for slowing runoff on long open slopes and for use around stockpiles.

**Filter Sock Installation:**

- Filter socks are best used for small areas of disturbance, at the base of stockpiles, across slope contours and across paved areas.
- Full contact with the ground is critical for filter socks to be effective and to prevent bypass. A trench 2"-3" deep shall be dug along the path of the filter sock, with the exception of installations across paved areas.
- Most applications will require staking at 10 ft intervals, which should help both keep the filter sock in place and push it downward for maximum contact with the ground.

**Filter Sock Maintenance:**

- Accumulated sediment should be removed and placed in an upland location when material reaches half of the filter sock height.
- Filter socks can be reshaped if they become flattened or caked in sediment.

**Install Perimeter Controls**

**Section 1: Introduction**  
**What is erosion prevention and sediment control?**  
Stormwater runoff carrying sediment into streams, lakes, and wetlands is a large contributor to surface water quality problems in Vermont. Sediment discharges from unmanaged construction sites can adversely impact aquatic habitat, and may have lasting impacts on fish and other aquatic organisms.

On most construction sites, the existing vegetation that holds the soil in place and protects it from the erosive forces of rain and runoff is removed, leaving large areas of soil exposed. During rainfall or snowmelt, the exposed soil may be easily eroded and transported to nearby streams, lakes, or wetlands\*.

**Introduction**

**How to comply:**  
Plan ahead and phase the construction activities to ensure that no more than the permitted maximum concurrent acreage is disturbed and unstabilized at one time.

Be sure to properly stabilize exposed soil using one of the methods introduced in Section 4 of this handbook before beginning work in a new section of the site.

**Limit Concurrent Earth Disturbance**

**How to install:**  
**Rock Size:** Use a mix of 1 to 4 inch stone  
**Depth:** 8 inches minimum  
**Width:** 12 feet minimum, flared at road for vehicle turning  
**Length:** 40 feet minimum (or length of driveway for residential projects, if shorter)  
**Geotextile:** Place filter cloth under entire stone bed

**Maintenance:**  
Redress with clean stone or scarify to open voids as required to keep sediment from tracking onto the street.

Good stabilized construction access. Adequate width to accommodate construction traffic and prevent mud tracking offsite. Ensure that the pad is 8 inches deep and 40 feet long.

**Site Stabilization**

**How to Comply:**  
Select and install a perimeter control from the following options: Silt Fence, Erosion Control Berms, Filter Socks, or Straw Wattles.

**Where to place:**

- Place perimeter controls on the downhill side of disturbed soil. If space is available, place perimeter control 10 ft from the bottom of the slope, otherwise place along the contour at the bottom of the slope.
- Ensure the perimeter control catches all runoff from disturbed soil.
- Maximum drainage area is 1/4 acre for 100 feet of silt fence and erosion control berm.
- Install perimeter controls across the slope (not up and down slope)
- Do not install perimeter controls across ditches, channels, or streams.
- Maximum slope length (in feet) above a filter sock or straw wattle:

Slope (%)	Silt Sock (Depth)				Slope (%)	Straw Wattle (Depth)
	12"	18"	24"	32"		
< 4	125	250	275	350	< 4	50
5-10	125	150	200	275	4-11	20
10-20	80	75	100	150	12-24	10
20-25	50	75	100	100	25-45	10
25-45	40	45	60	75	45-75	5
> 45	25	30	35	50	> 45	5

**Install Perimeter Controls**

The erosion control berm above is allowing for both ponding and filtering of stormwater.

**EROSION CONTROL BERM DETAIL**

**Install Perimeter Controls**

To prevent this from happening, a small number of practices to prevent erosion and contain soil on the construction site must be used. The most effective approach to prevent a sediment discharge is temporary and final stabilization of exposed soils. Controls for sediment laden runoff are necessary at times, but should not be used as the primary means of prevention.

\*Projects involving work within a jurisdictional (perennial) waterway for stream alteration, please contact your regional River Management Engineer for technical and permitting assistance.

\*Projects involving work within or adjacent to jurisdictional lakes or buffers, please contact your regional Lakes and Ponds permitting staff for technical and permitting assistance.

\*Projects involving work within jurisdictional wetlands or buffers, please contact your regional Wetland Ecologist for technical and permitting assistance.

**Introduction**

**4. Site Stabilization**

**Purpose:**  
Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to temporarily stabilize exposed soil and prevent soil erosion prior to vegetative growth. Mulches and matting protect the soil surface while grass is establishing. Areas of earth disturbance may also be stabilized with stone, such as rip-rap or gravel, or other impervious surfaces such as pavement and concrete.

**Requirements for Temporary Stabilization:**  
All areas of earth disturbance must have temporary or final stabilization within 14 days of initial disturbance, as stated in the project authorization. After this time, disturbed areas must be temporarily stabilized or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site.

**The following exception applies:**

- Temporary stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches), provided any dewatering, if necessary, is conducted in accordance with Part 13.

Poor construction access. Rock pad is poorly constructed, rock is too small. Filter fabric is required under the 2 - 4 inch rock. Mud should not be tracked onto street.

- Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day.
- Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal.
- You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the state.

**Site Stabilization**

**Perimeter Control Construction Specifications**

**Silt Fence**  
A temporary barrier of geotextile fabric installed on the contours across a project site to intercept sediment laden runoff from small drainage areas of disturbed soil.

**Silt Fence Installation:**

- Dig a trench 6 inches deep across the slope
- Unroll silt fence along the trench
- Ensure stakes are on the downhill side of the fence
- Join fencing by rolling the end stakes together
- Drive stakes in against downhill side of trench
- Drive stakes until 16 inches of fabric is in trench
- Push fabric into trench; spread along bottom
- Fill trench with soil and pack down
- Gravel can be used to create ground contact with filter fabric when bedrock, ledges, or nearby tree roots do not allow for trenching. (A secondary perimeter control can be effective in these locations as well.)

**Silt Fence Maintenance:**

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.
- Replace any silt fence that is torn, ripped, or otherwise damaged that is no longer effective.

**Install Perimeter Controls**

**Install Perimeter Controls**

**Straw Wattle Installation:**  
Straw Wattles are best used for small areas of disturbance, at the base of stockpiles and across slope contours.

- Full contact with the ground is critical for straw wattles to be effective and to prevent short circuiting. A trench 2"-3" deep shall be dug along the path of the wattle.
- Straw wattles shall be secured with 18-24" stakes every 3-4' and with a stake at each end. Stakes shall be driven through the middle of the wattle and perpendicular to slope, leaving at least 2-3' of stake extending above wattle. In limited cases, wattles may be secured without stakes by use of sandbags if staking is not feasible.
- Adjacent wattles shall tightly abut or overlap.

**Straw Wattle Maintenance:**

- Accumulated sediment should be removed and placed in an upland location.

**Install Perimeter Controls**

**Section 2: The Requirements**

- Demarcate Limits of Disturbance . . . . . 3

**Purpose:**  
Delineating the site will help to limit the area of disturbance to only what is necessary for construction, prevent unauthorized disturbance, preserve existing vegetation, and limit erosion potential on the site.

**Requirement:**  
You must physically mark the limits of construction activity using one of the methods described below.

Demarcate Limits of Disturbance

**How to comply:**  
As required by the authorization, temporary stabilization for areas of earth disturbance shall be completed utilizing one or more of the methods below:

**Hay or Straw Mulch**

**Mulching Rates**

April 16 - Oct. 14 - Hay or Straw\*: 1 inch deep (1.2 bales/1000 s.f.)  
Oct. 15 - April 15 - Hay or Straw\*: 2 inch deep (2.4 bales/1000 s.f.)  
\*seed may also be incorporated

Excellent application of hay mulch. Good mulch cover and perimeter control around soil stockpile.

**Site Stabilization**

**6. Divert Upland Runoff**

**Purpose:**  
Diversion berms intercept stormwater runoff contributing from above the construction site and direct it around the disturbed area. This prevents offsite runoff from entering the construction site, thus reducing the potential for erosion and reducing the drainage area contributing to the site.

**Requirements:**  
If stormwater runoff contributes to the construction site from up slope areas and the site meets the following two conditions, you are required to first install a diversion berm and stabilized swale before disturbing any additional soil.

- One or more acres of soil will be disturbed at any one time.
- Average slope of the disturbed area is 20% or steeper.\*

\* See page 63 for slope calculations.

**Divert Upland Runoff**

**Silt Fence Maintenance:**

- Remove accumulated sediment before it is halfway up the fence.
- Ensure that silt fence is trenched in ground and there are no gaps.
- Replace any silt fence that is torn, ripped, or otherwise damaged that is no longer effective.

**Install Perimeter Controls**

**Straw Wattles**  
Straw wattles are similar to filter socks, but with less density due to straw filling material. These can be used in successive rows to slow sheet flow and collect sediment on long slopes or around the base of soil stock piles, but are not appropriate for application on impervious surfaces such as asphalt, concrete, or ledge.

**Straw Wattle Installation:**  
Straw Wattles are best used for small areas of disturbance, at the base of stockpiles and across slope contours.

- Full contact with the ground is critical for straw wattles to be effective and to prevent short circuiting. A trench 2"-3" deep shall be dug along the path of the wattle.
- Straw wattles shall be secured with 18-24" stakes every 3-4' and with a stake at each end. Stakes shall be driven through the middle of the wattle and perpendicular to slope, leaving at least 2-3' of stake extending above wattle. In limited cases, wattles may be secured without stakes by use of sandbags if staking is not feasible.
- Adjacent wattles shall tightly abut or overlap.

**Straw Wattle Maintenance:**

- Accumulated sediment should be removed and placed in an upland location.

**Install Perimeter Controls**

**How to comply:**  
Before initiating any earth disturbing activities, install a perimeter fence, orange barrier tape, or flagging on stakes or trees to physically demarcate the approved limits of earth disturbance.

Properly placed barrier tape marks the boundaries and limits of construction on this site.

**Demarcate Limits of Disturbance**

**Wood Chip Mulch or Stump Grindings**  
Cover entire area with 2-7 inches or more of wood chip mulch or stump grindings.

Good application of wood chip mulch and stump grindings.

**Mulching Rates**

Berms and ditches divert up slope runoff around construction site and reduce erosion and sedimentation problems. Stabilize berms and ditches after construction.

**Divert Upland Runoff**

Good use of J-hook in silt fence to trap sediment in water running along the fence. Sediment must be removed before it reaches halfway to top of fence.

Poor installation of silt fencing. Silt fence must be trenched in along bottom. Hay bales are not approved as sediment barriers.

**Install Perimeter Controls**

- Straw wattles can be reshaped if they become flattened or caked in sediment.

**Install Perimeter Controls**

Straw wattle properly staked in and providing setting of runoff from this shallow slope. Note a clean wattle was placed in front of an older less effective wattle.

**Install Perimeter Controls**

Revisions

No.	Description	Date	By
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**Use of These Drawings**

- Unless otherwise noted, these Drawings are intended for preliminary planning, coordination with other disciplines or utilities, and/or approval from the regulatory authorities. They are not intended as construction drawings unless noted as such or marked approved by a regulatory authority.
- By use of these drawings for construction of the Project, the Owner represents that they have reviewed, approved, and accepted the drawings, obtained all necessary permits, and have met with all applicable parties/disciplines, including but not limited to, the Engineer and the Architect, to insure these plans are properly coordinated including, but not limited to, contract documents, specifications, owner/contractor agreements, building and mechanical plans, private and public utilities, and other pertinent permits for construction.
- Owner and Architect are responsible for final design and location of buildings shown, including an area measuring a minimum five (5) feet around any building and coordinating final utility connections shown on these plans.
- Prior to using these plans for construction layout, the user shall contact TCE to ensure the plan contains the most current revisions.
- These Drawings are specific to the Project and are not transferable. As instruments of service, these drawings, and copies thereof, furnished by TCE are its exclusive property. Changes to the drawings may only be made by TCE. If errors or omissions are discovered, they shall be brought to the attention of TCE immediately.
- It is the User's responsibility to ensure this copy contains the most current revisions.

**For Permitting Only**

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Project Title

**EPSC Low Risk Handbook Sheet 1**

Date: 10/03/2021

Scale:

Project Number: 15-212

Drawn By: CMJ

Approved By: JAD

Approved By: JAD

Field Book: