ES=P

EXPOSED SOIL = POLLUTION

How You Can Save 100 Feet of Chesapeake Bay Tributaries in an Hour by Halting Construction Site Mud Pollution

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THE ESSENCE OF THIS PUBLICATION IS SIMPLE...

As long as exposed soil exists on a construction site, pollution of downstream waters will occur even if the site has silt fence and other perimeter controls.

WHAT TO LOOK FOR IS EQUALLY SIMPLE...

When initial earth-moving has ceased on a construction site, all exposed soil must be completely mulched & seeded. A dense growth of grass should appear in five to eight weeks (March-October).

YOU CAN SAVE 100 FEET OF DOWNSTREAM WATERS PER HOUR BY...

Informing inspection agencies of sites needing better stabilization and providing the agencies with the public support essential to effective enforcement.

INTRODUCTION

Enough soil can erode from a typical construction to pollute three miles of downstream waters. Recovery of these polluted waters can take a century.[1] However, with the use of the right protection measures this pollution can be eliminated. And ***THE*** most effective protection is to prevent erosion in the first place by covering exposed soil with straw mulch, grass, or other "stabilization" materials. When compared to other measures, like the black silt fence pictured to the right, they simply can't keep enough mud on the site to prevent pollution. ***In fact, whenever you see exposed soil on a construction site, you can assume pollution will occur come the next rain.*** This is why the USEPA and most Chesapeake Bay watershed states require stabilization of all disturbed soils within 3 to 14 days from the date when construction site clearance begins. However, compliance with this vitally important law is less then 100% in many parts of the Bay watershed. Until we can improve compliance, efforts to restore the Chesapeake Bay and our many other degraded waterways will be in jeopardy. This is

Silt fence and other perimeter controls far less effective than stabilization

[1] Fox, H.L. 1974. Effects of Urbanization on the Patuxent River: With Special Emphasis on Sediment Transport, Storage and Migration. Thesis (Ph. D.)--Johns Hopkins University, 1975.

where you come in and how you can save a hundred feet of waterway with just an hour of your time.

We want to inform all Bay watershed residents that exposed soil on a construction site means pollution of the nearest waterway come the next rain. Our goal is to get people to react to exposed construction site soil with the same concern triggered by littering or aggressive driving. As this perception spreads we believe the extent of exposed construction site soil will diminish through voluntary actions on the part of the development and construction community.

This publication is intended to help volunteers and other watershed advocates identify construction sites that could benefit from greater use of stabilization measures. The identification is done from roads, parking lots and other public areas in view of a site. There is no need to trespass onto a construction site. In fact, we implore you not to trespass.

The advocate would then notify an inspection agency of the opportunity to enhance protection of local waters and the Bay by reducing exposed soil through stabilization measures. Advice for identifying the agency covering your area is provided later in this publication, in the section headed *Laws & Inspection Agencies*.

We realize some folks may find these notifications intimidating. As explained in the next paragraph, your findings can still serve a very important purpose even if you opt not to notify the inspection agency.

At the end of this publication you will find a *Watershed Advocates Construction ES=P Checklist*. Use the paper version of the checklist to record your findings while observing a construction site. Once you have access to a computer, add your findings to the *Watershed Advocates Construction ES=P Database* at: ceds.org/espreport. ***Please do not mail the paper forms to us.*** Again, simply adding your findings to the database will help considerably, even if you don't take further action.

How does this help?

Well, we hope the database will contain enough information to allow Chesapeake Bay advocacy groups to identify those counties, towns, cities and even states doing particularly well at minimizing exposed construction site soils. These jurisdictions would be commended for their success. We also hope the database will contain the information needed to commend development companies for making full use of stabilization measures.

The database will also allow Chesapeake Bay advocacy groups to identify those localities where stabilization is not being used to full effectiveness. The groups would then explore options for providing the localities with the public support essential to improve effectiveness.

Some folks are fine evaluating construction sites on their own. Others prefer to work as part of a group. Either option works.

If you are a loner then this publication provides all the background needed to get started. We think you'll find the evaluation procedures both simple and straight-forward.

For watershed organizations and others who prefer to work in groups, we can schedule a two-hour Saturday morning training session in your area. After a half-hour presentation followed by discussion we'll look at several active construction sites near the training location. After the session you'll be able to evaluate sites on your own. But its likely you'll meet others at the training session with whom you can form a team. We can help you divide the watershed up into areas covered by specific teams.

So, how does all this allow you to save a hundred feet of waterway for each hour you volunteer to this effort? Well, we figure it'll take you no more then an hour to evaluate a site and report your findings. We also figure that for each hour invested you will make it possible to win stabilization of enough exposed construction site soil to save an average of a hundred feet of downstream waters.

WHY DOES EXPOSED SOIL = POLLUTION?
The answer to this question is simple: Clay.

Soil is made up of three particle sizes: sand, silt and clay. Clay is the smallest and the hardest to remove once it has been eroded from the soil surface and entrained in runoff. One might think that the small size renders clay particles harmless. In some respects the opposite is true. Much of the phosphorus, pesticides, and other pollutants washing from construction sites travel attached to clay particles. Many fish eggs have a slightly sticky coating and clay can adhere so thickly to the egg surface that oxygen flow is blocked suffocating the developing fish embryo. Clay is the most expensive particle to remove from drinking water sources. Clay and other suspended particles are responsible for a large portion of the turbidity which blocks sunlight and has greatly diminished the extent of submerged aquatic vegetation (SAV) throughout the Chesapeake Bay and other Maryland waters.

Sand and coarse silt can be kept on a construction site with silt fence, sediment traps (like that pictured to the right) and other perimeter control measures. These perimeter measures mostly rely upon settling to remove sediment from runoff. The larger particles settle fairly quickly while days or weeks may be required for clay and finer silts to settle from suspension. So, the most effective way of keeping clay on a construction site is to prevent erosion, which means minimizing the exposure of soil to the erosive force of rainfall and runoff. This, in turn, means protecting soil as quickly as possible following disturbance with a layer of straw mulch, then grass.

Sediment traps capture sand, some silt but little clay

Road beds and parking lot areas are protected by laying down a layer of stone. Collectively, mulch, grass and stone are known as ***"stabilization measures"***.

Generally, perimeter silt fence and traps can retain 30% to 50% of eroded soil on the construction site whereas mulch, grass and other stabilization measures reduce erosion (and offsite sediment pollution) by 90% to 99%!

EROSION CONTROL VERY COST EFFECTIVE

It's no coincidence that all the Chesapeake Bay watershed jurisdictions require rapid use of stabilization measures. Erosion control is one of ***the*** most cost-effective pollution control programs we have. For example, in Maryland an unprotected construction site might erode at a rate of 40 tons/acre/year, which is a hundred times the rate for cropland, and a thousand times that of forest.[2] It costs $800 to $1500 to apply mulch and grass seed to an acre of construction site.[3] These practices reduce erosion by 90% to 99%.[4] So, assuming a typical construction site is active for a year, mulch and seeding would keep 36- to 39-tons of sediment on each acre at a cost of $20 to $42 per ton.

Now let's take a look at the damages each ton of sediment might cause.

Maryland has 470 miles of trout streams[5], each mile of which adds about $35,000 per year to the state and local economy.[6] A single 20-acre construction site could destroy three miles of trout stream for a decade to a century.[7] That would work out to an economic loss of at least $1.1 million. It would cost $25,000 to apply erosion control measures which would keep 780 tons of sediment out of the trout stream. So the ratio of cost to benefit would be 1:42 ($25,000 cost:$1,050,000 benefit).

But the benefits don't end at the mouth of the trout stream. Eventually each ton of sediment deposited in the trout stream would travel downstream causing additional damages. If the sediment came to rest in a navigable channel the removal cost would be $6 to $28 per ton.[8]

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[2] These erosion rates are based upon the Chesapeake Bay Watershed Phase 5.3 Model available online at: http://ches.communitymodeling.org/models/CBPhase5/index.php

[3] See: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=41&minmeasure=4

[4] See: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=min_measure&min_measure_id=4

[5] See: http://www.dnr.state.md.us/irc/docs/00006468.pdf

[6] See: ftp://ftp-fc.sc.egov.usda.gov/Economics/recreate/WQeconforBradk.pdf

[7] See: http://ceds.org/audit/Urbanization_and_Streams-Studies_of_Hydrologic_Impacts.pdf

[8] See: http://www.ndc.iwr.usace.army.mil//dredge/dd10cos2.htm

The cost to remove sediment from Columbia, MD lakes runs around $175 per ton.[9] These costs further increase the benefits of preventing erosion.

Additional benefits would come from reduced water treatment costs, other recreational and commercial fisheries preserved, enhanced waterfront property value, and on the list could go. So, as we said, erosion control is one of our most cost effective pollution control strategies. The true cost to benefits ratio could be as high as $100 saved for each dollar spent.

HOW EROSION & SEDIMENT CONTROL WORKS

Now that you know why stabilization is so important, let's take a moment to look at the basics of erosion and sediment control as applied to construction sites. On the next page you'll find a series of illustrations showing how site development progresses and the type of measures used to minimize erosion and trap eroded soil (sediment) at the site perimeter.

Initially, a narrow swath is cleared along the downhill edge of the site. The swath is just wide enough to install measures like silt fence, a swale (ditch) or dike (ridge of earth) to capture runoff from exposed soils further uphill. These measures then carry the runoff to a sediment trap (small pond) or a sediment basin (large pond). Once these perimeter controls are completed all soil surfaces are mulched and seeded.

Now that perimeter controls are in place the remainder of the site can be cleared of vegetation. On many sites some earth-moving is needed to create the relatively level areas required to erect buildings and to accommodate roads. The site should quickly be brought up to the point where both road and building construction can begin. This point is called *rough grade*. Once rough grade is reached earth-moving usually stops for a period of weeks or months until development is near completion and *fine* or *final* grading is performed.

When rough grade is reached all areas outside of road beds and parking lots should be mulched and seeded. A layer of stone should be laid down on road and parking lot beds. The mulch, seed and stone are all forms of *stabilization*, which reduces soil erosion by 90% to 99%. Perimeter measures such as silt fence, sediment traps and basins can only retain a third to half the eroded soil onsite. The rest flows into nearby waterways causing sediment pollution.

To understand how erosion and sediment control works think in terms of major storms, not weekly rains. During, say, the worse storm in a normal two-year period, large volumes of runoff flows from exposed soils. The volume is far less from stabilized soils. The high velocity of runoff from exposed soils can quickly cause muddy flows to overtop perimeter silt fence. Sediment deposited in traps and even basins can be resuspended and discharged into nearby waterways. This is why perimeter controls are less effective than one might imagine.

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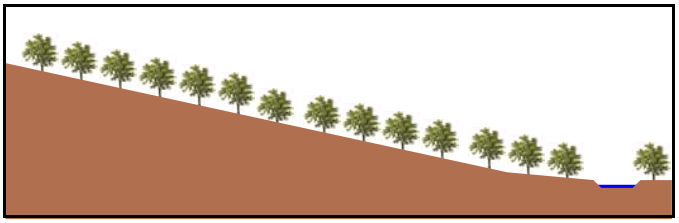
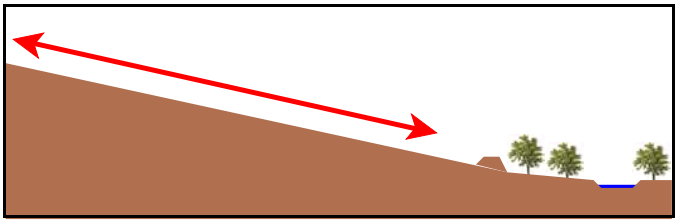
[9] See: http://www.columbiaassociation.com/pdfs/getinvolved/Dredging200703.pdf

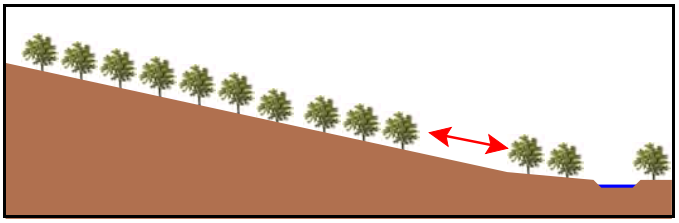
How Erosion & Sediment Control Works



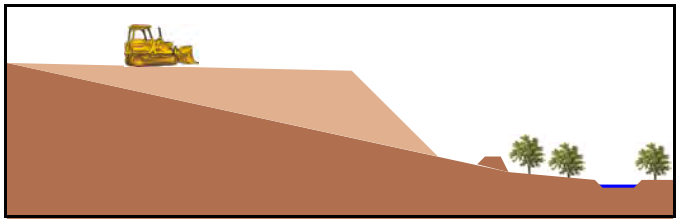
1 Site Prior To Disturbance



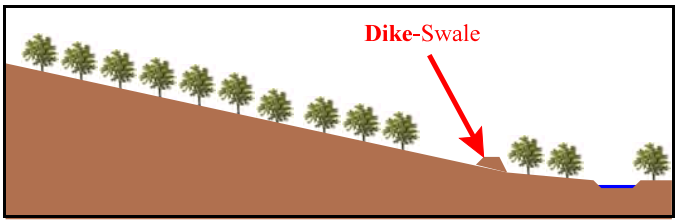
4 Remainder of Site Cleared



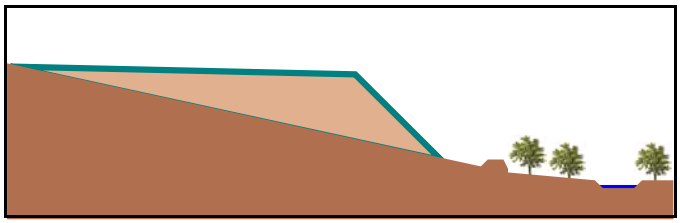
2 Perimeter Swath Cleared



5 Earth-Moving Brings Site To Rough Grade



3 Perimeter Controls Installed



6 Rough Grade Reached - All Soil Stabilized

Site At Rough Grade

Perimeter Sediment Trap

Perimeter Swale With Silt Fence on Dike Top

Hydroseeding: Applies Mulch, Grass Seed, Fertilizer & Water; Dense Growth in 4-6 Weeks

Mulch needs to be thick enough so underlying soils cannot be seen. Grass seedlings should sprout within ten days or so during the planting season (March - October). Any areas with sparse seedling growth should be reseeded. If rain has been uncommon then irrigation may be required. By four to six weeks following seeding, a dense growth of grass should be present. In Pennsylvania grass must cover a minimum of 70% of the soil. After January 9, 2013, Maryland requires a minimum 95% vegetative cover. If four to six weeks have elapsed yet vegetative cover is sparse, then additional treatments are required. You should notify the appropriate inspection agency of the stabilization deficiency *(see next section for agency contact information)*.

LAWS & INSPECTION AGENCIES

Following is the law adopted by the Bay watershed states requiring stabilization of exposed construction site soils along with a description of how to contact inspection agencies in each state. As you will see, all require essentially the same thing. Once a site reaches rough grade or remains idle for more than a few weeks, all exposed soils must be stabilized.

Delaware: The Delaware Sediment & Stormwater Regulations (Title 7, Section 5101) require:

> *All plans shall include details of temporary and permanent stabilization measures including placement of the following statement on all plans submitted for approval. Following soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within 14 calendar days as to the surface of all perimeter sediment controls, topsoil stockpiles, and all other disturbed or graded areas on the project site.*

Sediment control inspection rests mostly with the local government. For contact information see: http://www.dnrec.delaware.gov/swc/Drainage/Pages/DelegatedAgencies.aspx

District of Columbia: Section 538 Guidelines for Erosion and Sedimentation Control states:

> *(k) Establish temporary cover by seeding or mulching graded areas except streets and parking areas where underground utilities are planned which may otherwise be exposed for a period greater than thirty (30) days before permanent stabilization can be achieved. This practice should be accomplished as soon as rough grading work is done; and*
>
> *(l) Stabilize all streets and parking areas, within thirty (30) days of final grading, with base course crushed stone.*

The District's Inspection and Enforcement Branch is responsible for construction site sediment control: http://ddoe.dc.gov/service/construction-site-inspections

Maryland: The Code of Maryland Regulations (COMAR 26.12.17.01.07B(3)(e)(iv)) states:

Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within three calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven days as to all other disturbed or graded areas on the project site.

Local government agencies enforce erosion and sediment control laws in 14 of Maryland's 23 counties and in eight of the larger cities. Phone numbers for these local enforcement agencies are provided at the bottom of the following Maryland Department of the Environment (MDE) webpage: Erosion and Sediment Control in Maryland.[10] For all other locations in Maryland call MDE at: Week Days (410) 537-3510 or Nights/Weekends 1-866-633-4686.

New York: Section 2, of the *New York Standards and Specifications for Erosion and Sediment Control*, states:

Where land disturbance is necessary, temporary seeding or mulching must be used on areas which will be exposed for more than 14 days.

Contact the Department of Environmental Conservation regional office for your area: http://www.dec.ny.gov/about/558.html

Pennsylvania: Title 25, Section 102.22(b), of the Pennsylvania Code states:

Upon temporary cessation of an earth disturbance activity or any stage or phase of an activity where a cessation of earth disturbance activities will exceed 4 days, the site shall be immediately seeded, mulched, or otherwise protected from accelerated erosion and sedimentation pending future earth disturbance activities.

In Pennsylvania, construction site erosion and sediment control enforcement rests with the local Soil Conservation District or the Department of Environmental Protection (DEP) regional office. To locate the District serving your area go to: http://pacd.org/your-district/find-your-district/

To find the nearest DEP Regional Office go to: www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Virginia: Regulation 4VAC50-30-40, of the Virginia Code states:

[10] See: http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/SoilErosionandSedimentControl/Pages/programs/waterprograms/sedimentandstormwater/erosionsedimentcontrol/index.aspx

Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.

Virginia is about to lower the 30-day threshold to 14 days. Erosion and sediment control enforcement rests with 166 local county, city or town programs. To determine the enforcement agency for your area contact the Virginia Department of Conservation and Recreation Division of Soil and Water office for your region: http://www.dcr.virginia.gov/stormwater_management/swintro.shtml#regional.

West Virginia: Section 3.10 Temporary Seeding, of the *West Virginia Erosion and Sediment Control Best Management Practice Manual* the states:

Use this method [temporary seeding] *where exposed soil surfaces are not to be fine-graded for periods longer than 21 days. Such areas include denuded areas, soil stockpiles, dikes, dams, sides of sediment basins, temporary road banks, etc.*

To report a problem at a construction site contact Environmental Enforcement at the WV Department of Environmental Protection Romney office: 304-822-7266.

HOW YOUR EFFORTS WILL HELP CURB MUD POLLUTION

By calling attention to opportunities for protecting exposed soil, your efforts will help to reduce construction site mud pollution in several very important ways.

First, in these tight budgetary times many inspection agencies lack the personnel to visit construction sites at the frequency needed to maintain a high level of compliance. Notifying the agency of sites with significant violations will help them focus limited staff resources on those sites with serious problems. This may alert the agency to sites requiring attention which other wise might not be noted for days or weeks ***or the next big storm!***

Second, we hope to instill the concept of ***Exposed Soil = Pollution*** in the general public. If this goal is achieved then exposed soil on a construction site may become just as politically incorrect as other taboos, like junk cars on lawns, burning leaves, or aggressive driving. Even partial success towards this goal may motivate far greater voluntary compliance then presently occurs. The more people reporting exposed soil, the more rapidly we'll reach a threshold where voluntary compliance accelerates.

Third, by adding your findings to the *Watershed Advocates Construction ES=P Database,* Chesapeake Bay advocacy groups will be able to monitor how well specific counties (townships and cities) are doing in complying with soil stabilization laws. By combining your reports with others we can identify those areas where additional public support is needed to help the inspection agency achieve a higher level of compliance.

In the remainder of this publication we'll describe each of the very simple steps in evaluating a site for compliance with stabilization requirements.

HOW TO EVALUATE A CONSTRUCTION SITE & COMPLETE THE CHECKLIST

In this section we'll walk you through each of the questions presented in the *Watershed Advocates Construction ES=P Database Checklist*, which you'll find at the end of this document

1. **Construction Site Information:** Please provide as much of the following information as you can.

   a. **Name of Construction Site:** Usually found on a sign, like that to the right, near the main entrance to the site.

   b. **Company Developing Site:** Also may be found on a sign near the site entrance. Chesapeake Bay advocacy groups may wish to commend a company which consistently has good stabilization on their sites.

   c. **Company Contact Info:** Again, this information may be found on a sign at the site entrance. Note any of the following given on the sign: mailing address, phone number, e-mail, web address, or contact person.

   d. **City/Town:** The borough, township, city, or postal zone in which the construction site is located.

   e. **County:** Please note the county in which the site is located.

A principal use of these reports will be to identify cities, townships or counties deserving recognition for a job well done and where greater public support is needed to enhance compliance with water quality protection laws. This is why we ask for city, town and county info.

   f. **State:** The state in which the construction site is located.

   g. **Photo Numbers:** If you're using a digital camera then notes the number range for the photos taken. Occassionally we will ask you to forward the photos to us, but they are mostly for your records.

   h. **Evaluation Date:** The date you visited the site.

2. **Location:** Since most sites lack a street address, a detailed and precise description of the site location is critical. For example, describe the location with something like: *On the north side of Main Street, 1/4 mile east of First Avenue* or *NW corner of Main & First*. If

your cell phone or car has a gps function then please note the site coordinates.

3. **Could we get your contact information:** We ask for this information in case we have questions and so we can provide you with an update on what your report and that of others has accomplished. Your e-mail address is particularly important. Its far easier to communicate by e-mail than phone or snail-mail. Also, if we have your e-mail address we can forward summaries and other reports regarding the survey.

4. **What is the area of the site:** By *area* we mean how much land the site covers. By *site* we mean all that area which was originally cleared of vegetation when construction first began. Usually the outer boundary is marked by mature trees and other undisturbed vegetation. In the photo to the right, a red dashed line runs along the outer limits of disturbance. In this case the site is all that land within the red boundary.

For large sites you can usually measure at least one side using your car odometer. Smaller sites can be a bit more challenging, but following are several estimation techniques. First, we prefer expressing site area in acres (209 ft x 209 ft) but you could also use dimensions (feet by feet) or any other units you prefer. Many of us find it easier to estimate dimensions by using a familiar reference, like the number of NFL football fields (360 ft x 160 ft or 1.3-acres) that could fit on the site or Walmart Supercenters (2.5 acres). Some people find it easier to use the width of their yard. You can also use online aerial photos, like Google Earth, Bing, etc. Though the photo will likely predate site clearance you can usually figure out the site boundaries. The online measuring tools then make it possible to compute site area.

5. **What portion of the site can be seen from public areas** *(without trespassing)***:** When you first come across a site you may not know how much is visible from public areas. But when you consult aerial photos later you can probably make a guesstimate of this. However, if you simply don't know then leave the percentage blank.

6. **Of the originally disturbed area, what percentage is *completed* with building foundations, streets, parking lots, lawns and other landscaped areas:** Of the area you can see, how much has progressed to the point where temporary stabilization is no longer needed? In other words, what percentage of the site contains [partial or fully] completed buildings, building foundations, paved streets or parking lots, permanent lawns or other landscaping?

7. **What percentage of the *incomplete* portion of the site is (*see four options below)*:** By incomplete, we mean all those areas of the site that lack the features listed in Question #6,

above.

What percentage of the *incomplete* portion of the site is:

a. **Fully exposed soil percent:** While viewing a site from adjoining public areas, what percentage of the *incomplete* area consists of exposed soil? Soils are ***NOT*** fully exposed if they are covered by any mulch, grass or stone; even a little.

Of the area visible in this photo, about 70% is exposed soil

Same site as above, but 0% exposed soil. All disturbed soils have been covered with a layer of mulch thick enough to obscure underlying soils

What percentage of the *incomplete* portion of the site...

b. **Has some mulch, grass or other stabilization, but underlying soils are still visible:** It appears that the budget for many construction sites covers the cost for just one treatment of mulch, grass seed, fertilizer and irrigation water. In some cases one treatment is all that is needed to achieve a dense growth of grass. In others, two or three treatments are required to achieve good stabilization. On the next page are two photos. The photo on the left shows what a good layer of mulch looks like. At an application rate of two- to three-tons per acre, the mulch totally obscures underlying soils from

view. The photo on the right is of a site where the first treatment was only partially successful. Some grass has sprouted and most of the mulch has decayed or blown away. The soil on the left is well protected while that on the right is not. So, to answer Question 7b, what percentage of the *incomplete* portion of the site looks like the photo on the right, with *partial* but not *full* stabilization?

← Good Stabilization
Straw mulch completely blankets underlying soil from view.

Poor Stabilization →
Soil still visible through the sparse grass and mulch.

What percentage of the *incomplete* portion of the site is:

c. **Stabilized with sufficient mulch, grass or stone to obscure underlying soils:** What percentage on the *incomplete* portion of the site has enough straw mulch or grass to obscure underlying soils from view. Include road beds or parking areas with enough stone so soils are no longer visible. Enter the combined percentage at this point on the checklist.

and

d. **Of those areas with grass, what is the average percentage vegetative cover:** The denser the vegetative cover, the lower the erosion rate and the less pollution of nearby waterways. Of the *incomplete* portion of the site with vegetation, attempt to estimate the average percent vegetative cover. In other words, for those areas with grass, what percentage of the ground is no longer visible. Again, the focus here is on vegetative cover, not mulch. If vegetation obscures half the underlying surface enter 50% next to Question 4d, even if you see mulch through the grass.

About 30% Vegetative Cover

About 75% Vegetative Cover

8. **Are bulldozers, graders or other earth-moving equipment present on the site:** Sites are supposed to be developed in at least two phases. First, a narrow swath is cleared along the downslope edge of the site. Silt fence, swales, dikes, sediment traps and other *perimeter* control measures are installed within this swath then fully stabilized with mulch and grass. The interior of the site can then be cleared. On all but the flattest sites a period of cutting and filling then ensues where the site is brought up to *rough grade*. Once a site reaches rough grade earth-moving ceases and the site can be fully stabilized. At that point earth-moving equipment, like the grader, loader and bulldozer pictured below, are usually moved to another site.

Do you see any earth-moving equipment on the site?

Sometimes a game will be played known as the ***Bulldozer Bluff***. Many inspection agencies do not require stabilization until earth-moving has ceased. Unscrupulous companies will keep a piece of equipment on the site, run it about the site every few weeks and claim that earth-moving is still occurring. In fact this is simply a ploy to avoid stabilization costs. The following questions are designed to help you determine if this game is being played. So, if earth-moving equipment is present then answer the following questions. Otherwise go on to Question #9.

a. **Have you visited the site before:** Yes or No.

b. **If yes, how many days ago *(Did you visit the site?):***

c. **Do you see evidence of earth-moving since your last visit:** If you see fresh earth then earth-moving may have occurred. If you took photos during your last visit, make a comparison to see if it looks like filling, cutting or grading has caused elevations to change. See if equipment is sitting in the same place as the last visit, indicating no earth-moving occurred. If you see scattered weeds or other vegetation throughout an area of exposed soil, then little earth-moving has likely occurred. If objects are in the same place in both photos then the vicinity likely hasn't been disturbed.

Building foundation

9. **Are building foundations present:** The construction of a

building starts with the pouring of the foundation. This can only occur once the site reaches rough grade. In other words, by the time foundations appear a site is past the point where all remaining exposed soils should be stabilized.

10. **Do you feel work on the site has stopped or been delayed for more than 14 days:** Sometimes earth-moving and other development work will halt before the site reaches rough grade. This happened at many sites at the start of the last recession. As a general rule, all remaining exposed soils, including soil stockpiles, must be treated with mulch and grass seed when activity stops for 14 days or more. In some states the threshold is as short as four days.

11. **Do you see evidence that eroded soil is or has flowed from the site:** By this we mean deposits of fresh, unvegetated sediment along a stream channel below the site. Muddy water should never flow from a site during dry-weather. However, sites with poor stabilization will release very muddy runoff even if perimeter controls are in good working order.

The black filter cloth (aka silt fence) doesn't really filter since the pores clog quickly. Instead it functions as a very temporary dam to settle sediment from suspension. One can frequently find points where runoff has overtopped the silt fence, flowed underneath or between silt fence sections, or escaped through tears.

WATERSHED ADVOCATES CONSTRUCTION ES=P CHECKLIST

1. Construction Site Information: Please provide as much of the following information as you can.

   Name of Construction Site:_____

   Company Developing Site:_____

   Company Contact Info:_____

   City/Town:_____ County:_____ State:_____

   Photo Numbers:_____ Evaluation Date:_____

2. **LOCATION:** Since most sites lack a street address, describe the location:_____

   _____

   GPS Coordinates: North_____ West_____

3. Could we get your contact information in case we have questions and so we can provide you with an update on what your report and that of others has accomplished?

   Name:_____

   Email:_____ Phone Number:_____

4. What is the area of the site (acres, feet-by-feet, etc.):_____

5. What portion of the site can you see from public areas *(without trespassing)*:_____%

6. Of the originally disturbed area, what percentage is ***completed*** with building foundations, streets, parking lots, lawns, other landscaped areas, etc:_____%

7. What percentage of the ***incomplete*** portion of the site is:

   a. Fully exposed soil:_____%

   b. Stabilized with some mulch, grass or stone, but underlying soils are still visible:_____%

   c. Stabilized with sufficient mulch, grass or stone to obscure underlying soils:_____%; and

   d. Of those areas with grass, what is the average percent vegetative cover:_____%

8. Are bulldozers, graders or other earth-moving equipment present on the site: ☐ Yes ☐ No

   Have you visited the site before? ☐ Yes ☐ No If yes, how many days ago:_____ Do you see evidence of earth-moving since your last visit? ☐ Yes ☐ No ☐ Uncertain

9. Are building foundations present? ☐ Yes ☐ No

10. Do you feel work on the site has stopped or beendelayed for more than 14 days? ☐ Yes ☐ No ☐ Uncertain

11. Do you see evidence that eroded soil has flowed from the site: ☐ Yes *(describe below)* ☐ No ☐ Uncertain

COMMENTS:_____

_____

_____

_____ _____