Products vs Process for Erosion Prevention and Sediment Recapture

Douglas W. Kirk, P.E., C.F.M. Chief Engineer of Environmental Compliance West Virginia Division of Highways March 5, 2024 After a couple years each in roadway and bridge design, Doug led the Hydraulic & Drainage Unit for 20 years. He is now the Chief Engineer of Environmental Compliance. He races homemade kayaks and helps clean up flood damage as needed.



Environmental Compliance Mission Statement In support of the West Virginia Department of Transportation's mission to responsibly provide a safe, efficient and reliable transportation system that supports economic opportunity and quality of life, the Chief Engineer of Environmental Compliance works on behalf of the State Highway Commissioner to ensure compliance with applicable environmental regulations.

"Glad that's not my job!"



The original DOH Environmental Monitor: Charlie Riling

Environmental Compliance Org Chart



Good collaborators

- NEPA
- District Environmental Coordinators
- Corridor H Environmental Monitors
- Permitting Unit
- Facility Compliance Coordinators
- Chief Engineers & Management

Functional Work Relationships

- Construction
- Design
- Planning
- Environmental
- Operations & Maintenance
- Leadership & Administration
- Legal
- Buildings & Grounds
- Districts
- Facilities
- Programming
- Business Managers

- Materials
- Traffic
- Equipment
- Permitting
- Geotech
- Surveying
- Bridge
- Technology
- Human Resources
- Consultants, Contractors & Suppliers
- FHWA, USACE, USFWS, DEP, DNR, WVFPM, Env. Advocates, SRO, EMD, etc...

Only 3 Environmental Goals on a construction site

- 1. NO muddy water leaving the site
- 2. NO violations of the Construction Stormwater Permit
- 3. Close the permit when construction is finished

The three environmental goals for contractors

•\$ •\$ •\$

"Products vs Process for Erosion Prevention and Sediment Recapture".

The purpose of this presentation is to give construction and materials professionals a better understanding of how products we buy, install, and maintain on a construction site complement a well-planned sequence of construction to minimize the environmental impacts of earth disturbing activities.

"Products vs Process for Erosion Prevention and Sediment Recapture".

We will discuss various products such as silt fence, silt socks, matting, flocculant, seed, and revegetation materials.

We will also introduce the idea that planning, designing and managing the construction process to minimize damage is the most effective way to eliminate conflict with regulatory agencies. "Products vs Process for Erosion Prevention and Sediment Recapture".

This is not a sales pitch for any product.

In fact, I will advocate that we should improve our process to reduce the need for products.



















PROPERLY Installed AND Maintained, these and other products will help capture some of the sediment before it leaves the site and flows into the stream.

But, what if we could prevent erosion?

Erosion Prevention over Sediment Control

"An Ounce of Prevention Is Worth A Pound of Cure." Yard project...



Improvement Plans

- Emphasize Erosion Prevention over Sediment Control
 - Immediate protection of disturbed areas
 - better seed mixtures
 - Treat exposed shale like the poor soil that it becomes, instead of pretending that it is durable rock

Improvement Plans

- Follow the *#\$%?! Permit and SWPPP!
- Additional Environmental Monitors and Coordinators
- New pay plan for E&S Items
- New digital Inspection form

Immediate protection of disturbed areas

This will prevent erosion, so you don't have to try to recapture the sediment before it leaves the site.



Never tear up more in one week than you can protect in the next

MEMORANDUM

TO: Contractors working for the WVDOH

FROM: Douglas Kirk, P.E., C.F.M., Chief Engineer of Environmental Compliance

SUBJECT: STABILIZATION OF DISTURBED AREAS

The West Virginia Division of Highways expends substantial resources trying to control sediment to keep it out of streams. A better investment would be to prevent erosion. Erosion & Sediment Control are often thought to be the same thing. But we should consider that "erosion control" and "sediment control" are two separate practices. Think of them as "erosion prevention" and "sediment recapture", respectively. The current state of practice utilizes sediment basins, chemicals, and various products that cost time and money, and require additional land acquisition and disturbance.

If we protect disturbed soil surfaces as soon as possible to prevent erosion, then the need to spend resources on sediment recapture will be greatly reduced. The first step is to seed and mulch disturbed areas soon after they are brought to grade or will not be disturbed for a while. This is required by the General Construction Stormwater Permit as stated in section III.A.3:

<u>III.A.3.</u> Except as noted below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has permanently ceased or 4 days for sites required to use enhanced BMP's.

 Where the initiation of stabilization measures by the 4th day, as applicable after construction activity temporarily or permanently ceases is precluded by natural causes, such as a drought or flood, stabilization measures shall be initiated as soon as conditions allow.

Permit (part of contract) already requires seed & mulch, ASAP

- Where construction activity will resume on a portion of the site within 14 days from when activities ceased, (i.e., the total time period that construction activity is temporarily halted is less than 14 days) then stabilization measures do not have to be initiated on that portion of the site by the seventh day after construction activities have temporarily ceased.
- Areas where the seed has failed to germinate adequately (uniform perennial vegetative cover with a density of 70%) within 30 days after seeding and mulching must be reseeded immediately, or as soon as weather conditions allow.

All WVDOH personnel and contractors are hereby reminded to follow this and all other requirement in the Construction Stormwater Permit. This applies to all permitted land disturbance, regardless of the purpose. Contractors are responsible for following the permit. If necessary, Environmental Coordinators, Environmental Monitors, and Construction Inspectors will inspect and document the extent of disturbance that is not appropriately protected. Contractors shall respond with a schedule of corrective action. Progressive correction will follow if necessary.

Questions may be directed to the District Environmental Coordinator, or Douglas Kirk, P.E., C.F.M., Chief Engineer of Environmental Compliance (douglas.w.kirk@wv.gov).

Cc: District Construction Engineers, Contractors Association of WV Bcc: SEC, CC, CG, CL, HF, HD, HO, HE Quarterly Environmental Coordinators Meeting Next Week

But this is not just THEIR JOB.

Erosion prevention and sediment control are part of the contract, just like earthwork, bridges and pavement.

New Inspection Form

WEST VIRGINIA DIVISION OF HIGHWAYS

ENVIRONMENTAL CONSTRUCTION INSPECTION FORM



A. PROJECT INFORMATION

Project Name:	Inspection Date:	
State Project #	Inspection Time:	
Federal Project #	Inspector Name:	
Rain in last 24 hrs:	Weather Conditions:	

B. CONSTRUCTION SITE ASSESSMENT

Environmental Protection Measure		Compliant?		Note or Description of Corrective Action with Pick Pating1
		No	N/A	Note of Description of corrective Action with Risk Rating-
1. Copies of project permit applications				
and approvals onsite (e.g., 404, 401, NEPA,				
construction stormwater, Floodplain).				
2. All required BMPs installed according				
to plans for current phase of construction.				
3. Perimeter controls installed downslope				
of disturbed areas.				
All materials, equipment, and project				
activities are contained within the project				
boundary.				
5. BMPs for instream work being				
conducted in accordance with permit				
(e.g., pump around, temp. bypass channel,				
coffer dam).				

Designers

Treat exposed shale like the poor soil that it becomes, instead of pretending that it is durable rock



Working on seeding and mulching update

Eliminate invasives,

add pollinator plants,

improve growth





RP-293: Evaluation and Recommendation to the WVDOH's Seeding and Mulching Processes and Specifications

Leslie Hopkinson

Associate Professor Civil and Environmental Engineering West Virginia University

June 18, 2019

WEST VIRGINIA UNIVERSITY Civil and Environmental Engineering



Take-aways

- Inspect the E&S features on your project.
- Work with your Environmental Coordinators.
- Tell the contractor what you want done, not how to do it.
- Only disturb what you are ready to work on.

WEST VIRGINIA DIVISION OF HIGHWAYS



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