

Managing Stormwater as First Order of Business.
 Selection of BMPs are Second.
 The Future of Permit Compliance.

Sediment and Erosion Control Seminar – Building for the Future
 February 10, 2022
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 Minnesota

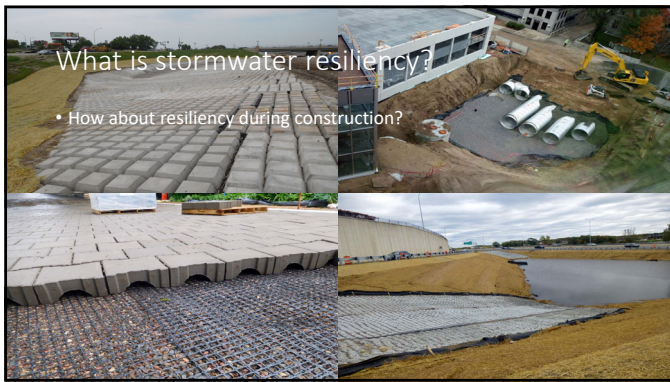


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Today's Seminar Topics

1. Construction Stormwater Permit Update
2. Linear Projects
3. Blankets, alternatives
4. Stream degradation study
5. Post-construction updates
- 6. Stormwater Management**
7. Grading Permits and updates

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All the following are true, and remain accurate:

- Develop and implement a quality control program (SWPPP)
- Protect inlets (C&G, Field, culvert)
- Defend where water leaves
- Defend the exit
- Defend the perimeter
- Defend stockpiles
- Properly dewater
- Stabilized exposed soils
- Establish vegetation
- Manage permanent stormwater treatment

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Apply Effort to Yield the Best Outcome

11.4	Permittees must inspect all erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness. Permittees must repair, replace or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery unless another time frame is specified in item 11.5 or 11.6. Permittees may take additional time if field conditions prevent access to the area. [Minn. R. 7090]
8.3	Permittees must minimize the need for disturbance of portions of the project with steep slopes. When steep slopes must be disturbed, permittees must use techniques such as phasing and stabilization practices designed for steep slopes (e.g., slope draining and terracing). [Minn. R. 7090]
9.3	If downgradient sediment controls are overloaded, based on frequent failure or excessive maintenance requirements, permittees must install additional upgradient sediment control practices or redundant BMPs to eliminate the overloading and amend the SWPPP to identify these additional practices as required in item 6.3. [Minn. R. 7090]

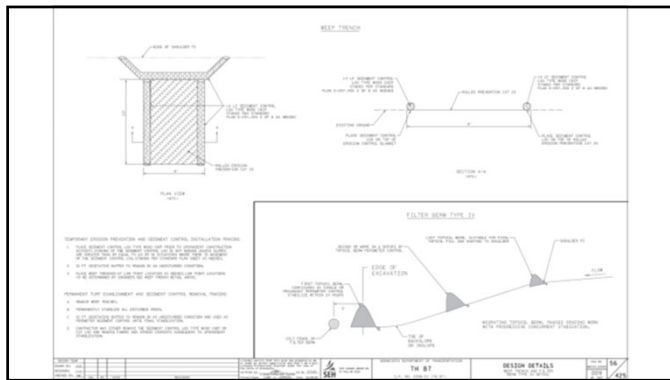
- We spend way too much time installing, arguing and maintaining BMPs, when the problem is too much stormwater at specific locations.
- We routinely exceed performance limits of installed BMPs

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Focus on Stormwater

- Divert/bypass stormwater around active work
- Limit disturbance at any one time.
 - Divert stormwater to natural vegetated low points (retain green space for as long as possible).
 - Complete the work.
 - Stabilized in increments (stages).
- Divert stormwater to sediment traps, wet ponds
- Work during dry periods (winter)
- Stabilize rapidly (temporarily or permanent) to mimic pre-existing vegetated condition

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What is stormwater?

- The stuff that wrecks things and adds costs to construction.
- Routinely delays schedule, adds time, and money
- We spend a lot of money on BMPs that fail to protect our resources.

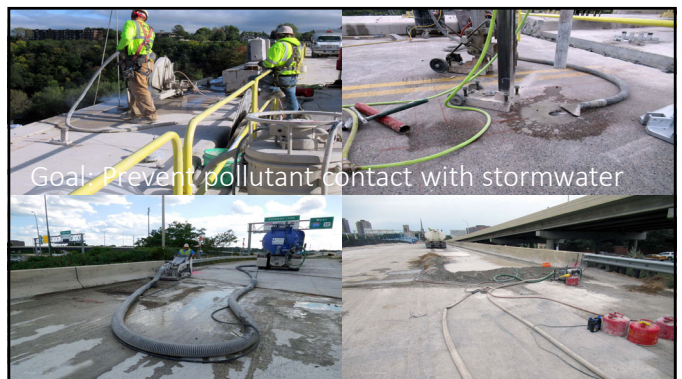


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Stormwater May Also Be Frozen



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Goal: Prevent pollutant contact with stormwater

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Obtain the BIG picture

- Walk the site
- Google the site
- Photograph the site, document pre-existing conditions
- Identify the risky locations
- Identify the risky operations
- Develop site plans
- Assign responsibility

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Seven Modes of “Sediment” Control (types of a specific stormwater management program)

1. **Sediment Generation Avoidance**
2. Sediment Filtration
3. Sediment Friction
4. **Sedimentation**
5. Sediment Barriers
6. **Sediment Diversions**
7. Sediment Chemicals

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Erosion Prevention BMPs mimic vegetation

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Mode 6. Sediment Diversions

- Divert/bypass sediment load to manageable location (wet ponds, tanks, sanitary)
 - Trench/ditch cuts
 - Flumes
 - Lift stations
 - Tank haul

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Managing **All** Drainage, at all times

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Upgradient Inlet Diversion

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Curb and gutter passage (Stabilize the last 200 lf where water leaves)



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Bypass around exit

9.10 Permittes must locate stockpiles outside of natural buffers or surface waters, including stormwater conveyances such as curb and gutter systems unless there is a bypass in place for the stormwater. [Min. R. 7000]

Down Drains/Bypass

- Slope drains
- Abutment drainage
- Roof drains (temporary extensions)

TEMPORARY SLOPE DRAIN PIPE SIZE REQUIREMENTS	
Drainage Area (Acres)	Pipe Diameter (In)
0.5	12
1.5	18
2.5	21
3.5	24
5.0	30

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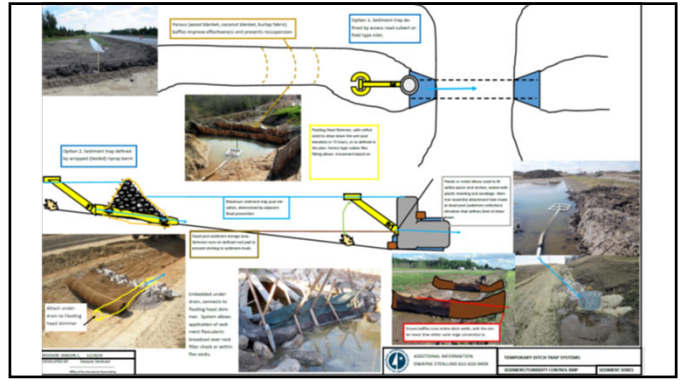
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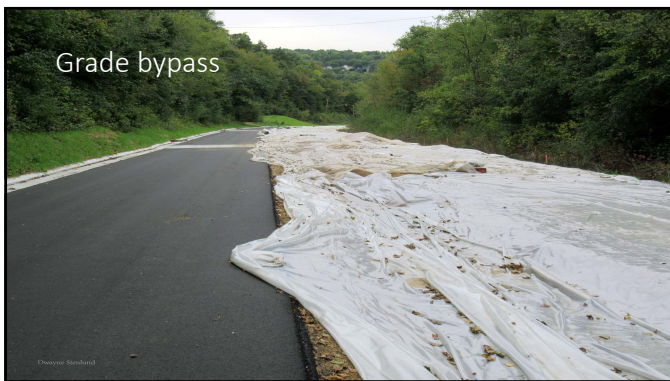


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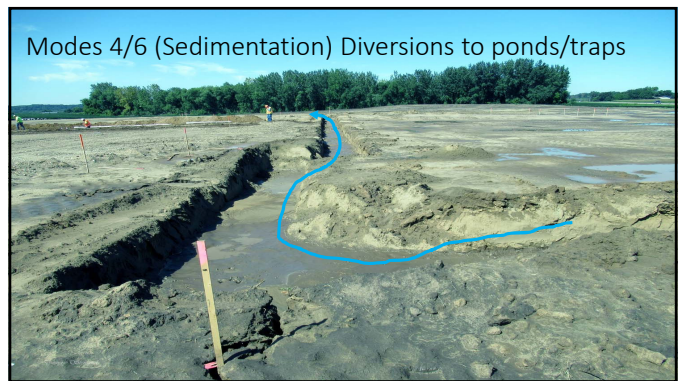
Slope bypass

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Grade bypass

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Modes 4/6 (Sedimentation) Diversions to ponds/traps

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Lift station bypass. Pump water where it can be treated prior to discharge (trap or tank)

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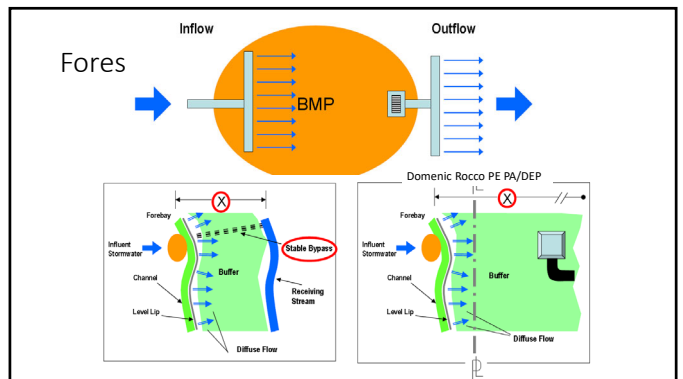
Lift Station (Bypass) Dewatering

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Real time routing of storm water to constructed low points

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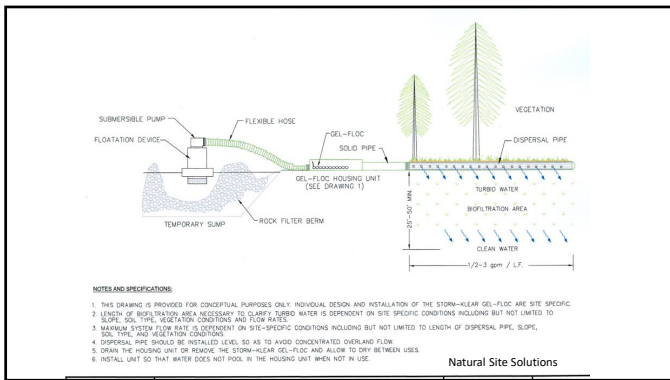
Protect the buffers, stage the green space

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Identify/reserve Upland Green space

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Direct to vegetated buffers

- Area must be within ROW

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Ultimate Goal: Establish Vegetation

- Harvest and reuse stormwater

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