Stormwater Phase II

Developing an Effective Municipal Stormwater Management Program for Construction Sites

Nikos Singelis, US EPA Office of Wastewater Management
Barry Tonning, Tetra Tech
Erik Nelson, Douglas County, Colorado

Topics for Today's Webcast

- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- Common elements of an effective municipal construction stormwater program
- Setting up a program to review construction site plans
- Developing an inspection program
- Summary of key points
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

1) How many people are participating in the webcast today at your location?

A) Just me
B) 2 to 5
C) 6 to 10
D) More than 10

2) What is the population served by your MS4?

A) Less than 15,000
B) 15,000 to 25,000
C) 26,000 to 50,000
D) 51,000 to 100,000
E) 101,000 to 200,000
F) More than 200,000

Topics for Today's Webcast

- *Overview of federal requirements*
  - *Construction minimum measure*
  - *Qualifying Local Programs*
- Common elements of an effective municipal construction stormwater program
- Setting up a program to review construction site plans
- Developing an inspection program
- Summary of Key Points
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

Why do we have to do this?

- Sediment is one of the leading water resource pollutants nationwide
- Sediment loads from a construction site can be 80 to 100 times higher than from forested lands
- Other construction site wastes (cement, paint, fuel, oil, etc.) are also problems
- It’s the law . . . .

Phase II Minimum Control Measure:

Construction Site Stormwater Runoff Control

Regulated Municipalities must:

- Develop a program to reduce pollutants in stormwater from construction activities that disturb ≥ 1 acre*
- Have an ordinance, or other regulatory means, with penalties, that requires appropriate E&S controls and controls for other construction site wastes
- Review site plans and consider potential impacts on water quality
- Inspect sites and enforce
- Receive and consider input from the public

* Includes smaller sites that are part of a larger, common plan of development

What construction must be covered by these municipal programs?

- Stormwater discharges from sites that disturb 1 acre or more of land, including those within a “common plan of development,”
  - e.g. a half-acre lot in a 5 acre subdivision
- Site “operator” is commonly defined as:
  - Person with control over plans and specifications
  - Person with day-to-day control of site activities
  - Usually the owner, developer, or contractor

Phase II Minimum Control Measure:

Construction Site Stormwater Runoff Control

RECOMMEND:

- Procedures for site plan review should include review of individual pre-construction site plans
  - BMPs, water resource impacts can be addressed early
- Procedures for site inspections and enforcement can include steps to identify priority sites, based on the nature of the site, topography, soil characteristics, and receiving water quality
- Provide appropriate education and training for construction site operators
  - Reduces problems, improves compliance, establishes standard expectations (“predictability”) regarding inspections, enforcement, etc.

Qualifying Local Programs

- The Qualifying Local Programs concept was added to the Phase II regulations to:
  - Recognize strong existing local sediment and erosion control programs
  - Provide the opportunity to recognize other communities as they develop local sediment and erosion control programs in the future
  - Provide opportunities to streamline the regulatory process for construction site operators

Qualifying Local Programs

- The Qualifying Local Programs concept provides a kind of “one-stop shopping” for construction site operators
- Operators can simply follow local requirements in QLP communities because these requirements have been deemed equivalent to the state NPDES requirements

Qualifying Local Programs

- How Does it Work?
  - The NPDES permitting authority (usually a state agency), reviews existing local sediment and erosion control programs
  - If a local program meets the requirements outlined in 40 CFR 122.44(s), the permitting authority recognizes that program in its Construction General Permit
  - Construction sites that are operating within that jurisdiction's boundaries follow the local requirements
  - The state permitting authority may also waive the NOI (or application) requirement for small construction sites (1-5 acres), further streamlining the process

Qualifying Local Programs

- Approximately 10 states already utilize this provision and have tailored it to their own situations
- New memo from EPA HQ encourages further use of the Qualifying Local Programs concept
- State NPDES permitting authorities and Phase I and II communities are encouraged to work together to make further use of this provision

3) How many full-time equivalent staff does your entire stormwater program have?

A) 1-2
B) 3-5
C) 6-10
D) More than 10

Questions?

Topics for Today's Webcast

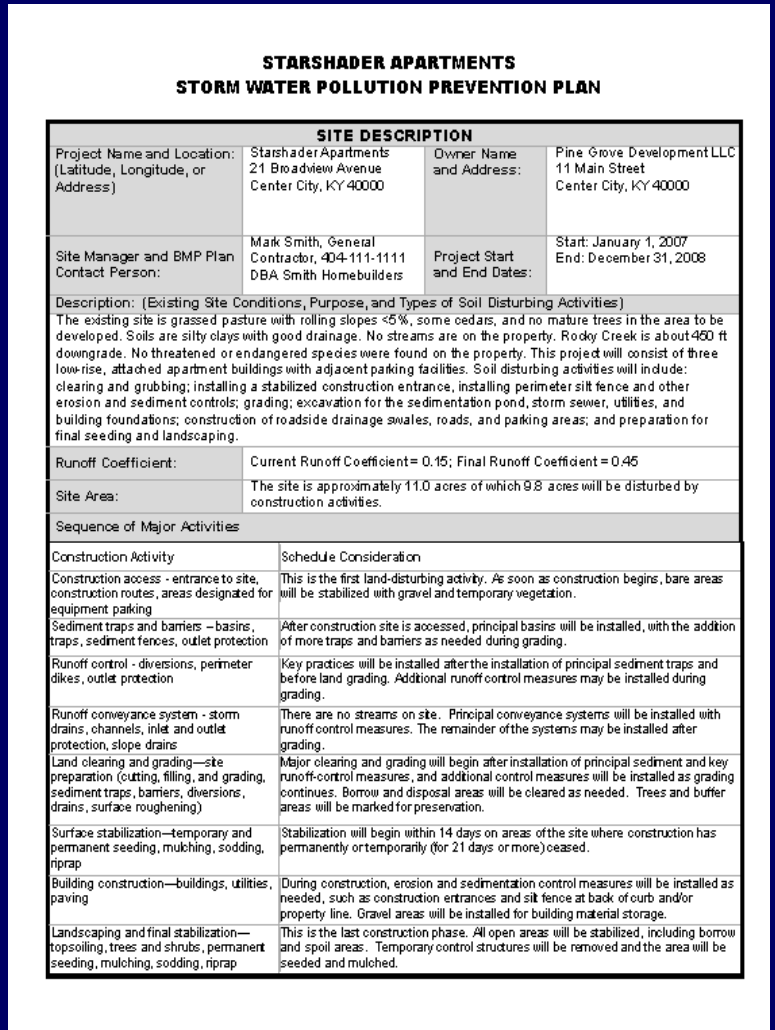
- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- *Common elements of an effective municipal construction stormwater program*
- Setting up a program to review construction site plans
- Developing an inspection program
- Summary of Key Points
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

What are the common elements of an effective program?

- Local ordinance specifying BMP requirements & etc.
- Inventory of construction sites with relevant info
- Prioritization of construction sites (e.g., by impacts, etc.)
- Education and training
- Plan review and approval process and procedure
- Inspections and enforcement mechanisms

Ordinance elements

- Grading/clearing ordinance specifying regulatory threshold (i.e., sq ft of disturbance)
- Ordinance addresses “other wastes” at sites, e.g., paint, cement, fuel, etc.
- Ordinance requires implementation of appropriate sediment and erosion control BMPs
- Ordinance includes sanctions or penalties for non-compliance



STARSHADER APARTMENTS
STORM WATER POLLUTION PREVENTION PLAN

SITE DESCRIPTION			
Project Name and Location: (Latitude, Longitude, or Address)	Starshader Apartments 21 Broadview Avenue Center City, KY 40000	Owner Name and Address:	Pine Grove Development LLC 11 Main Street Center City, KY 40000
Site Manager and BMP Plan Contact Person:	Mark Smith, General Contractor, 404-111-1111 DBA Smith Homebuilders	Project Start and End Dates:	Start: January 1, 2007 End: December 31, 2008
Description: (Existing Site Conditions, Purpose, and Types of Soil Disturbing Activities)			
The existing site is grassed pasture with rolling slopes <5%, some cedars, and no mature trees in the area to be developed. Soils are silty clays with good drainage. No streams are on the property. Rocky Creek is about 450 ft downgrade. No threatened or endangered species were found on the property. This project will consist of three low-rise, attached apartment buildings with adjacent parking facilities. Soil disturbing activities will include: clearing and grubbing; installing a stabilized construction entrance, installing perimeter silt fence and other erosion and sediment controls; grading; excavation for the sedimentation pond, storm sewer, utilities, and building foundations; construction of roadside drainage swales, roads, and parking areas; and preparation for final seeding and landscaping.			
Runoff Coefficient:	Current Runoff Coefficient = 0.15; Final Runoff Coefficient = 0.45		
Site Area:	The site is approximately 11.0 acres of which 9.8 acres will be disturbed by construction activities.		
Sequence of Major Activities			

Construction Activity	Schedule Consideration
Construction access - entrance to site, construction routes, areas designated for equipment parking	This is the first land-disturbing activity. As soon as construction begins, bare areas will be stabilized with gravel and temporary vegetation.
Sediment traps and barriers – basins, traps, sediment fences, outlet protection	After construction site is accessed, principal basins will be installed, with the addition of more traps and barriers as needed during grading.
Runoff control - diversions, perimeter dikes, outlet protection	Key practices will be installed after the installation of principal sediment traps and before land grading. Additional runoff control measures may be installed during grading.
Runoff conveyance system - storm drains, channels, inlet and outlet protection, slope drains	There are no streams on site. Principal conveyance systems will be installed with runoff control measures. The remainder of the systems may be installed after grading.
Land clearing and grading—site preparation (cutting, filling, and grading, sediment traps, barriers, diversions, drains, surface roughening)	Major clearing and grading will begin after installation of principal sediment and key runoff-control measures, and additional control measures will be installed as grading continues. Borrow and disposal areas will be cleared as needed. Trees and buffer areas will be marked for preservation.
Surface stabilization—temporary and permanent seeding, mulching, sodding, riprap	Stabilization will begin within 14 days on areas of the site where construction has permanently or temporarily (for 21 days or more) ceased.
Building construction—buildings, utilities, paving	During construction, erosion and sedimentation control measures will be installed as needed, such as construction entrances and silt fence at back of curb and/or property line. Gravel areas will be installed for building material storage.
Landscaping and final stabilization—topsoiling, trees and shrubs, permanent seeding, mulching, sodding, riprap	This is the last construction phase. All open areas will be stabilized, including borrow and spoil areas. Temporary control structures will be removed and the area will be seeded and mulched.

Other considerations

- Is the ordinance and state NPDES permit reasonably consistent?
- Does the ordinance describe the site plan review and approval process?
- Does the ordinance reference clear guidance on BMP design, installation, operation, and maintenance?
- Is the inspection and enforcement approach clear?

Inventory and prioritization of construction sites

- Develop a system to track construction sites
  - Should include plan review, inspection, and enforcement information on each site
- Consider prioritizing sites for inspection
  - Based on risk to water resources, operator history, etc.
- Consider developing procedures for receiving & and considering information submitted by the public

Education and training

- What type of training will MS4 staff receive?
  - Are controls reviewed?
  - Plan review & admin staff
  - Construction site inspectors
- What type of training will construction operators receive?
  - Is it required?
  - Engineers, developers, contractors, plan preparers
  - Construction site managers
  - Construction workers

Questions?

Topics for Today's Webcast

- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- Common elements of an effective municipal construction stormwater program
- *Setting up a program to review construction site plans*
- Developing an inspection program
- Summary of Key Points
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

Plan review and approval

- Develop system to review plans - earlier is better!
- Develop criteria and/or a checklist for plan review
- Guidance on what needs to be included in the plans
- Cite standard conditions
- Verify NPDES construction permit coverage
- Coordinate plan review activities with post-construction plan review

General considerations

- Can you describe the steps in your plan review and approval process?
- Does your program address public and private construction projects?
- What standard conditions are attached to plans?
- Are there ways to streamline plan review/approval and permitting?

Recordkeeping

- Is the plan review and approval process documented?
- Is there a database to track active construction sites, inspections, and enforcement?
- Are there procedures and documentation for inspections and enforcement?

Example Plan Review Checklist

- Vermont Erosion Prevention and Sediment Control Plan Checklist
- http://www.cicacenter.org/pdf/vtepsc.pdf

4. Erosion Prevention and Sediment Control Plan
(scale 1" = 100' or larger)

- ❑ limits of soil disturbance
- ❑ riparian conservation buffer limits and method to be used for demarcation
- ❑ location of all structural erosion and sediment control measures and details
- ❑ location of areas to be seeded and mulched
- ❑ stormwater pathways
- ❑ erosion control matting on slopes greater than 3:1
- ❑ no hay bales or silt fence running across contours or in areas of concentrated flow

4) What are the two (2) greatest needs of your construction site stormwater program? (Pick 2)

A) Training for staff
B) Improvements in our ordinance
C) More support from local government
D) Staffing
E) Administrative support
F) Support for non-staff expenses

Questions?

Topics for Today's Webcast

- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- Common elements of an effective municipal construction stormwater program
- Setting up a program to review construction site plans
- *Developing an inspection program*
- Summary of Key Points
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

Inspections and Enforcement

- Identify who will conduct the inspections
- Identify which sites will be inspected (prioritization)
- Decide when they will be inspected (regularly, priority-based, after rains)
- Develop procedures for inspecting sites (steps, checklist, reporting)
- Identify procedures for enforcement (warning, re-inspection, citation, etc.)

Inspection program basics

- Prioritizing/targeting sites for inspection (desktop)
- Meet & greet
- File review
  - NOI and/or permit
  - SW Pollution Prevention Plan
  - Signed inspection reports
- Walking inspection
  - Perimeter controls
  - Disturbed areas
  - Drainage system controls
  - Good housekeeping measures
- Closing interview and report write-up

Inspecting erosion & sediment controls

- Documentation is key!
  - Field notebook with notes
  - Inspection checklist
  - Samples/chain of custody
  - Photos/photo log
  - Copies of documents
  - Drawings & diagrams

- Reports include site info, permit number, date, inspector name, site manager name, downstream receiving water, photo locations, people interviewed, other important information

Use checklists for efficiency, standardization

COUNTY OF ORANGE / PDSD
Stormwater Program Inspection Form
FOR INSPECTION OF PRIVATE PROJECTS ISSUED GRADING & BUILDING PERMITS

SECTION I - GENERAL			
PROJECT ID:		INSPECTOR(S):	
ADDRESS/TRACT:			
ARRIVAL TIME:		DEPARTURE TIME:	PHOTOGRAPHS TAKEN: ☐ Y ☐ N
WEATHER CONDITION:		INSPECTION DATE:	
SITE PRIORITY (Check Applicable)	☐ HIGH PRIORITY	☐ MEDIUM PRIORITY	
	☐ LOW PRIORITY	☐ PRIORITY UNKNOWN	
SEASON (Check Applicable)	☐ WET (OCTOBER 1 THROUGH APRIL 30)	☐ DRY (MAY 1 THROUGH SEPTEMBER 30)	
NAME OF SITE REPRESENTATIVE PRESENT DURING INSPECTION:		PHONE No:	
DEVELOPMENT SIZE:	ESTIMATED % OF DISTURBED AREA:	THOMAS BROS. MAP/PG GRID	
DEVELOPER/CONTRACTOR NAME		OWNER NAME	

TYPE OF CONSTRUCTION:
☐ RESIDENTIAL ☐ COMMERCIAL ☐ INDUSTRIAL ☐ INFRASTRUCTURE
☐ RECONSTRUCTION ☐ TRANSPORTATION ☐ OTHER

SECTION II - RESULTS OF INSPECTION				
Erosion Control Practices	Y	N	N/A	COMMENTS
1. Are erosion controls being implemented and maintained on inactive and active disturbed soil areas (sheeting, mulch, hay, soil stabilizers, etc.), in accordance with Erosion and Sediment Control Plans (ESCPs) and provisions of the Grading Ordinance?				
2. Erosion observed? *If YES, describe the evidence of the erosion and whether it is major or minor.*				
Sediment Control Practices	Y	N	N/A	COMMENTS
3. Are sediment controls being implemented and maintained on all significant slopes (silt fences, fiber rolls, etc. at the base of slopes) and the downstream perimeter, in accordance with Erosion and Sediment Control Plans (ESCPs) and provisions of the Grading Ordinance?				
4. Sediment discharge observed? *If YES, describe the evidence of the discharge and whether it is major or minor. (If the discharge could impact wildlife, sensitive habitat/endangered species, an impaired water body (303d listed), ESA or ASBS area, go to the "Evaluation of Potential Impacts to Human or Environmental Health" form.)*				

CONSTRUCTION SITE INSPECTION CHECKLIST

Inspected By: _____

Project: _____

Contractor: _____

Date: _____

Check "Yes" or "No" or "N/A" if not applicable.

YES	NO	N/A		
_____	_____	_____	1.	Has there been rain at the site since the last inspection?
_____	_____	_____	2.	Are all sediment barriers (e.g., sandbags, straw bales, and silt fences) in place in accordance with the Plan and are they functioning properly?
_____	_____	_____	3.	If present, are all exposed slopes protected from erosion through the implementation of acceptable soil stabilization practices?
_____	_____	_____	4.	If present, are all sediment traps/basins installed and functioning properly?
_____	_____	_____	5.	Are all material handling and storage areas reasonably clean and free of spills, leaks, or other deleterious materials?
_____	_____	_____	6.	Are all equipment storage and maintenance areas reasonably clean and free of spills, leaks, or any other deleterious materials?
_____	_____	_____	7.	Are all materials and equipment properly covered?
_____	_____	_____	8.	Are all external discharge points (i.e., outfalls) reasonably free of any noticeable pollutant discharges?
_____	_____	_____	9.	Are all internal discharge points (i.e., storm drain inlets) provided with inlet protection?

INSPECTION LOG

The site shall be inspected before and after storm events with 0.25 inches or greater predicted or actual precipitation, and documented on the Construction Site Inspection Checklist Form. Incidents of noncompliance must be reported to the Engineer. A log of all inspections, as shown below, shall be kept current.

Date	Inspector	Type of Inspection			Observations (If post-storm inspection, note size of storm in inches)
		Routine	Pre-Storm	Post-Storm	

Common problems municipal inspectors find at sites

- No temporary or permanent cover
  - Required for areas idle for 14 days
- No sediment controls
  - Silt fences, sediment traps
- No controls on soil stockpiles
  - Mulch, seed, or silt fence
- No inlet protection
  - Drop & curb inlets
- Mud tracked onto paved roads
  - Poor (or no) vehicle exit
- Improper waste management
  - Concrete & other wash water, spills, fuel, etc.

What works for municipal programs?

- Using dedicated E&S control inspectors
- Pre- and post-storm event inspections
- Variety of enforcement mechanisms
  - Partial stop work orders
  - Delaying Building Dept. inspections and approvals if stormwater violations are not fixed
- Providing training to workers with site responsibilities
- Training plan review staff and inspectors
- MS4 programs that are consistent with state NPDES requirements

What doesn't work?

- Unnecessary inconsistencies between the ordinance and state permit
- Lack of clear BMP guidance
- Inspectors who are not trained on the state/local construction permit requirements
- Site plans that don't reflect reality in the field
- Inspections without enforcement

5) What percentage of active construction sites in your jurisdiction does your program inspect quarterly?

A) Less than 10 percent.
B) About 10 to 25 percent.
C) About 25 to 50 percent.
D) About 50 to 75 percent.
E) More than 75 percent.

6) What two (2) types of problems or violations are the most common in your jurisdiction? (Pick 2)

A) Site operator does not have permit coverage.
B) BMPs listed on plan documents are not installed.
C) BMPs are installed, but not maintained.
D) Bare areas at final grade are not seeded or mulched within prescribed timeframe (14-21 days).
E) Site personnel do not understand the basic principles of BMPs
F) There is no Stormwater Pollution Prevention Plan

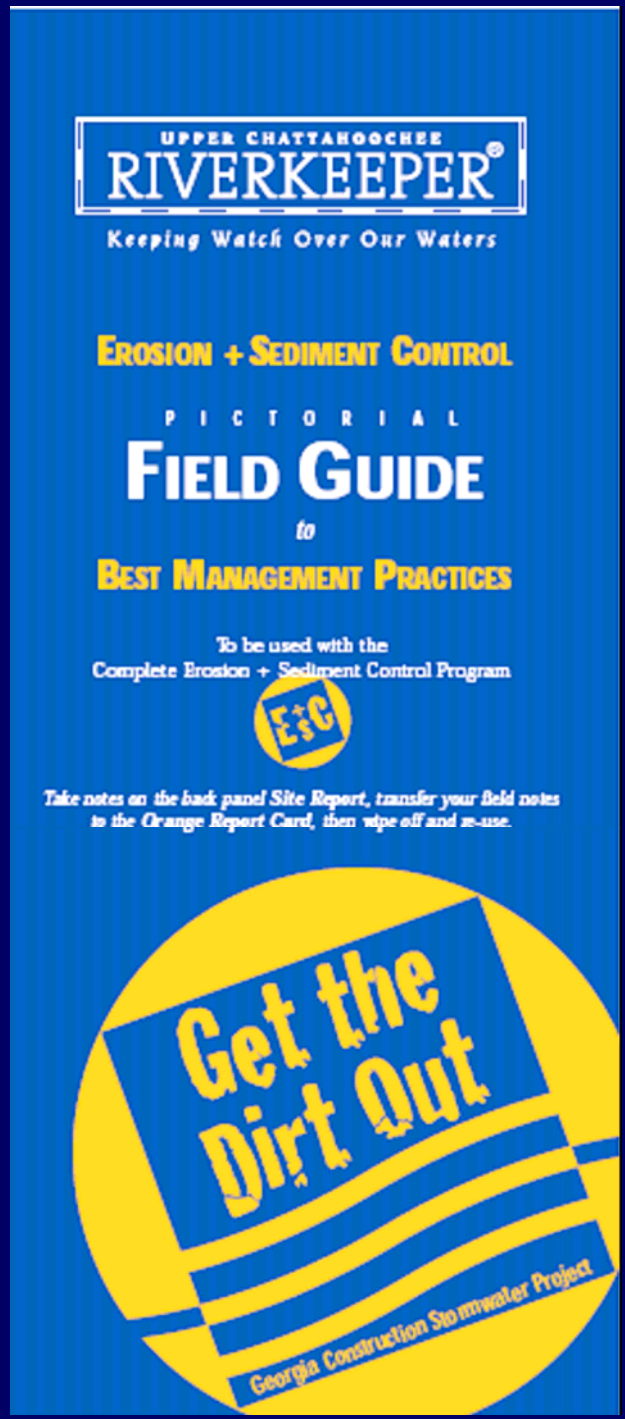
Citizen Inspection Programs

Volunteer monitoring program for construction sites

Sponsored by Upper Chattahoochee Riverkeeper Program

Atlanta, Georgia

http://www.getthedirtout.org/



Dikes, berms, and filters should pond/settle or filter soil from runoff. Look for bypasses, torn filters, or poor ponding (rapid flow-through).

A

Excellent berm of rock bags protecting drop inlet. Note that bags are only half full of rock, allowing tight fit. Good overlap; no large openings visible.

C

Fair protection of curbside drop inlet. Educate equipment operators on avoiding berms. Use in-drain filters if berms create hazards for roads open to public.

F

Poor inlet protection - no controls visible. Note straw and debris clogging inlet grating. Rock berms, rock bags, inlet filters, or other products could be used here.

Removes soil through ponding and settling during 24-48 hr draindown period after rain. Should not allow rapid flow-through of muddy water. Outlets often modified with rock berm or other flow restrictor during construction.

A

Good construction and operation. Note long basin design, seeded sidewalls, and flow restrictor (half-pipe and rock berm) in front of inlet hole.

C

Fair sediment basin construction, but should be seeded.
Outlet riser has rock berm flow restrictor, but no trash rack.

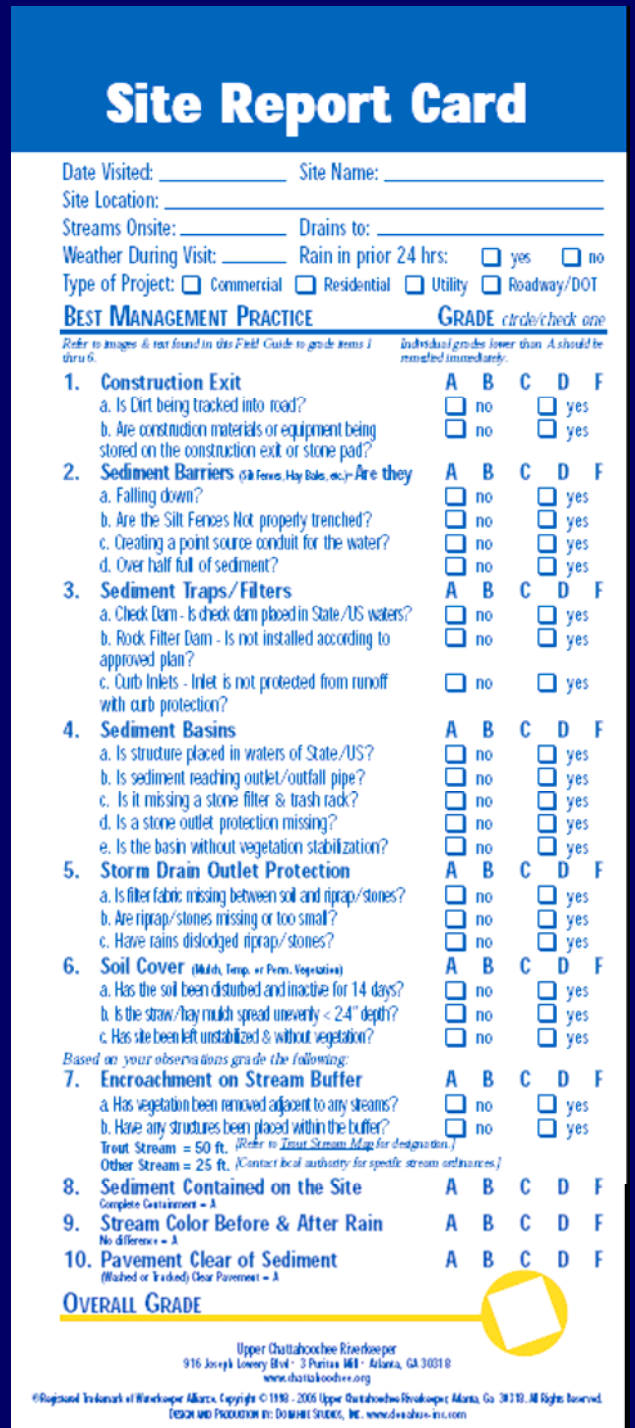
F

Good length and outlet, but very poor operation and maintenance. Side banks not seeded, no flow restrictor at V-notched inlet. Needs to be cleaned out.

Site Report Card

Monitoring personnel review and evaluate BMPs on each site

Results reported to contractor and/or regulatory agency



Site Report Card

Date Visited: _____ Site Name: _____

Site Location: _____

Streams Onsite: _____ Drains to: _____

Weather During Visit: _____ Rain in prior 24 hrs: ☐ yes ☐ no

Type of Project: ☐ Commercial ☐ Residential ☐ Utility ☐ Roadway/DOT

Best Management Practice	Grade *circle/check one*				
Refer to images & text found in this Field Guide to grade items 1 thru 6.	*Individual grades lower than A should be remedied immediately.*				
1. Construction Exit	A	B	C	D	F
a. Is Dirt being tracked into road?	☐ no			☐ yes	
b. Are construction materials or equipment being stored on the construction exit or stone pad?	☐ no			☐ yes	
2. Sediment Barriers (Silt Fence, Hay Bale, etc.)- Are they	A	B	C	D	F
a. Falling down?	☐ no			☐ yes	
b. Are the Silt Fences Not properly trenched?	☐ no			☐ yes	
c. Creating a point source conduit for the water?	☐ no			☐ yes	
d. Over half full of sediment?	☐ no			☐ yes	
3. Sediment Traps/Filters	A	B	C	D	F
a. Check Dam - Is check dam placed in State/US waters?	☐ no			☐ yes	
b. Rock Filter Dam - Is not installed according to approved plan?	☐ no			☐ yes	
c. Curb Inlets - Inlet is not protected from runoff with curb protection?	☐ no			☐ yes	
4. Sediment Basins	A	B	C	D	F
a. Is structure placed in waters of State/US?	☐ no			☐ yes	
b. Is sediment reaching outlet/outfall pipe?	☐ no			☐ yes	
c. Is it missing a stone filter & trash rack?	☐ no			☐ yes	
d. Is a stone outlet protection missing?	☐ no			☐ yes	
e. Is the basin without vegetation stabilization?	☐ no			☐ yes	
5. Storm Drain Outlet Protection	A	B	C	D	F
a. Is filter fabric missing between soil and riprap/stones?	☐ no			☐ yes	
b. Are riprap/stones missing or too small?	☐ no			☐ yes	
c. Have rains dislodged riprap/stones?	☐ no			☐ yes	
6. Soil Cover (Mulch, Temp. or Perm. Vegetation)	A	B	C	D	F
a. Has the soil been disturbed and inactive for 14 days?	☐ no			☐ yes	
b. Is the straw/hay mulch spread unevenly < 2.4" depth?	☐ no			☐ yes	
c. Has site been left unstabilized & without vegetation?	☐ no			☐ yes	
Based on your observations grade the following:					
7. Encroachment on Stream Buffer	A	B	C	D	F
a. Has vegetation been removed adjacent to any streams?	☐ no			☐ yes	
b. Have any structures been placed within the buffer?	☐ no			☐ yes	
Trout Stream = 50 ft. *[Refer to Trout Stream Map for designation.]*					
Other Stream = 25 ft. *[Contact local authority for specific stream ordinances.]*					
8. Sediment Contained on the Site Complete Containment = A	A	B	C	D	F
9. Stream Color Before & After Rain No difference = A	A	B	C	D	F
10. Pavement Clear of Sediment (Washed or Tracked) Clear Pavement = A	A	B	C	D	F

Overall Grade

Upper Chattahoochee Riverkeeper
916 Joseph Lowery Blvd · 3 Puritan Mill · Atlanta, GA 30318
www.chattahoochee.org

®Registered Trademark of Waterkeeper Alliance. Copyright © 1998 - 2006 Upper Chattahoochee Riverkeeper Atlanta, Ga 30318. All Rights Reserved.
Design and Production by: Dominie Studios, Inc. www.dominie-inc.com

Also effective: courtesy inspections

- Sponsored by non-governmental organizations
- Provides non-regulatory comprehensive inspection
- Inspector can offer technical assistance on BMPs
- Can be coupled with training referrals & certification programs
- Helps contractors understand inspection process

Questions?

Topics for Today's Webcast

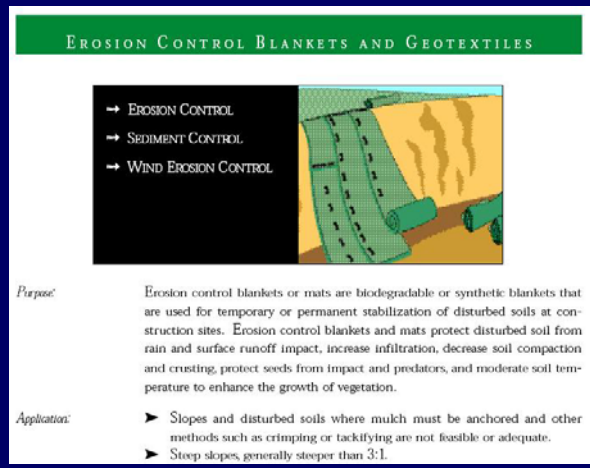
- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- Common elements of an effective municipal construction stormwater program
- Setting up a program to review construction site plans
- Developing an inspection program
- *Summary of key points*
- Case Study, "Douglas County, Colorado Construction Stormwater Program"

Documentation is vital!

- If it's not written down, it didn't happen . . .
- Keep records of all program activities
- Organize records by activity type
  - Ordinance/regulatory
  - Plan reviews
  - Inspections
  - Training
  - Enforcement
- Be ready!

Key program development questions

- Legal authority:
  - Grading permit need to be modified?
  - Do you have authority to require BMPs?
- Construction site inventory:
  - How are construction projects tracked?
  - How often is inventory updated?
  - Does inventory track inspection and enforcement information?
  - Do you prioritize sites for inspection?
- BMP requirements:
  - Do you have clear technical guidance?
  - Are there minimum BMP requirements?
  - Do developers/contractors understand your requirements?



Key program questions (cont.)

- Plan review and approval:
  - What standard conditions are attached to plans?
  - Does the review process follow a standard procedure (review criteria or a checklist)?
  - Does the MS4 require NOIs before projects are approved?
- Site inspections:
  - How many inspections are conducted? Frequency?
  - What type of inspector is used (building, grading, dedicated ESC inspector)?
  - How are inspection results documented?
  - Inspectors knowledgeable about stormwater, BMPs, regulations?
  - Inspectors familiar with State's Construction General Permit?
  - Inspectors check construction plans during inspections?
  - Inspectors use a checklist during site visits?
  - Do inspectors walk entire site?
- Enforcement:
  - What types of enforcement actions are available?
  - Are actions progressive, increasing in severity?

What are some measurable goals?

- Number of construction sites inspected
- Enforcement actions taken
- Number of construction operators attending training sessions
- Number of construction inspectors trained
- Number of construction plans reviewed/approved
- Revision of ordinance(s)

US EPA Resources on the Web:

http://www.epa.gov/npdes/stormwater

EPA
United States
Environmental Protection
Agency

Does Your Construction Site Need a Stormwater Permit?

A Construction Site Operator's Guide to EPA's Stormwater Permit Program

Stormwater and the Construction Industry

Protect Natural Features

Construction Phasing

Vegetative Buffers

Silt Fencing

Site Stabilization

Maintain your BMPs!

www.epa.gov/npdes/menuofbmps

Construction Entrances

Slopes

Dirt Stockpiles

Storm Drain Inlet Protection

United States Environmental Protection Agency | Office of Water (4203) | EPA 833-F-00-008 January 2000 Fact Sheet 2.6

EPA

Storm Water Phase II Final Rule

Construction Site Runoff Control Minimum Control Measure

Storm Water Phase II Final Rule
Fact Sheet Series

Overview

1.0 – Storm Water Phase II Final Rule: An Overview

Small MS4 Program

This fact sheet profiles the Construction Site Runoff Control minimum control measure, one of six measures that the operator of a Phase II regulated small municipal separate storm sewer system (MS4) is required to include in its storm water management program to meet the conditions of its National Pollutant Discharge Elimination System (NPDES) permit. This fact sheet outlines the Phase II Final Rule requirements and offers some general guidance on how to satisfy them. It is important to keep in mind that the small MS4 operator has a great deal of flexibility in choosing exactly how to satisfy the minimum control measure requirements.

of Construction Site Runoff Necessary?

off from construction sites often
mately is discharged into local
pollutants listed in Table 1,
n pollutant of concern. Sediment
ion sites are typically 10 to 20
agricultural lands, and 1,000 to
ose of forest lands. During a
uction sites can contribute
han can be deposited naturally
e resulting siltation, and the
tants from construction sites,
al, and biological harm to our
ple, excess sediment can quickly
ing dredging and destroying

Table 1

Pollutants Commonly Discharged From Construction Sites
Sediment
Solid and sanitary wastes
Phosphorous (fertilizer)
Nitrogen (fertilizer)
Pesticides
Oil and grease
Concrete truck washout
Construction chemicals
Construction debris

requires an operator of a regulated small MS4 to develop, implement,

7) Would you say that, overall, compliance with the construction site stormwater permitting requirements in your jurisdiction is:

A) Excellent
B) Very good
C) Fair to good
D) Somewhat poor
E) Very poor

Topics for Today's Webcast

- Overview of federal requirements
  - Construction minimum measure
  - Qualifying Local Programs
- Common elements of an effective municipal construction stormwater program
- Setting up a program to review construction site plans
- Developing an inspection program
- Summary of Key Points
- *Case Study, "Douglas County, Colorado Construction Stormwater Program"*

DOUGLAS COUNTY
COLORADO

Grading,

Erosion, and

Sediment

Control (GESC) Program

Douglas County

- 844 Square Miles of Mountains, Foothills and Plains
- 238,000 Residents of Which 73% Live in the Unincorporated Portions of the County
- 191% Increase in Population from 1990-2000

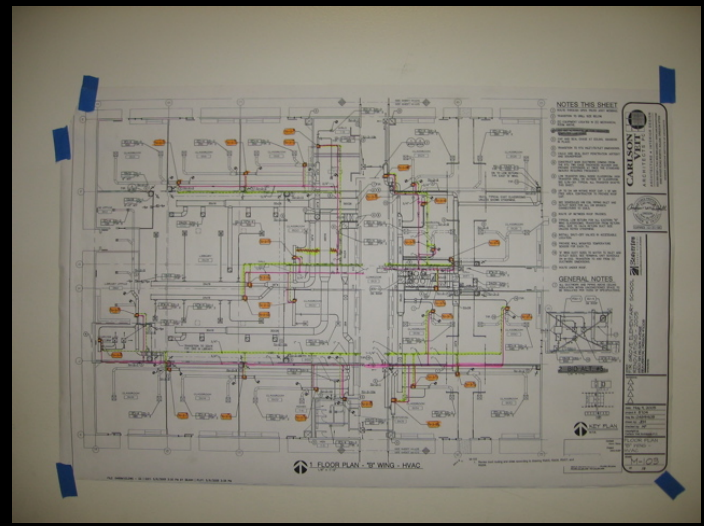
3 Important Parts to Douglas County's Grading, Erosion and Sediment Control (GESC) Program

GESC Plan Development and Review Process

Inspection Program

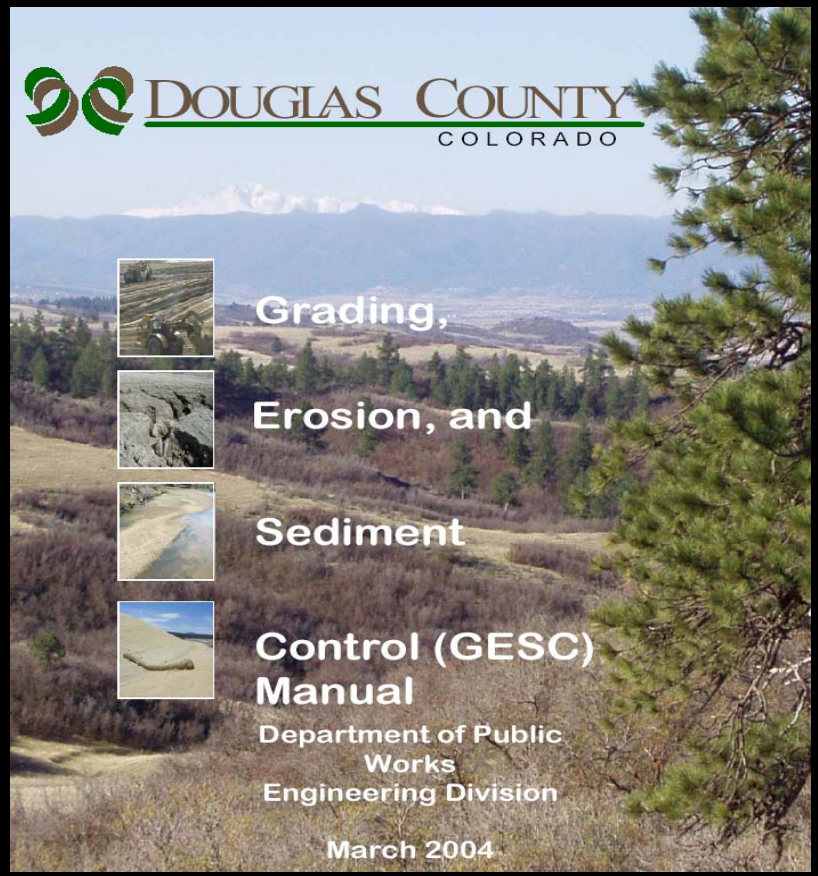
Enforcement Procedures

GESC Plan Development and Review Process



Douglas County's Grading, Erosion and Sediment Control (GESC) Manual

- Basis for all Grading, Erosion and Sediment Control Criteria and Guidance



Unique Features of the GESC Manual and Program

Permit Step 1: Confirm that a Temporary Batch Plant or Standard GESC Permit is Required.
Section 2.1 provides background information related to Step 1.

Projects that Require a Temporary Batch Plant or Standard GESC Permit

2.1

The first step in the process is to examine the information in Section 1.4 and 1.5 to confirm that a Temporary Batch Plant or Standard GESC Permit is required for the project. These GESC Permits apply to most land disturbing activities in the County other than small (less than 1 acre) projects with negligible negative impact (requiring a Low Impact GESC Permit) and most agricultural or emergency activities (exempt activities).

Information ***If a Low Impact GESC Permit is required, see Section 7 for applicable Permit Steps and information.***

The Douglas County Engineering Division can be contacted to clarify GESC Permit requirements and to help interpret which GESC Permit, if any, applies to a particular project. Contact information is provided in Appendix A.

Important! ***If a GESC Permit is not required, the process described herein is not applicable; however, BMPs shall still be required in accordance with the information shown in Sections 3 and 5.***

Permit Step ofessional Engineer to Prepare a GESC Plan.
Section 2.2 disc

Who Prepares GESC Plans?

2.2

Laying out erosion and sediment controls volve engineering design issues such as embankmen illway sizing (for sediment basins), pipe strength calculations (stream crossings), and peak discharge estimates and hydrau computations (for determination of flood elevations and velocities an sizing conveyance facilities).

Because of these issues, Colorado State Statutes require that GESC Plans be prepared by or under the responsible charge of, and signed and stamped by, a Professional Engineer registered in the State of Colorado (see Colorado State Engineering Law 12-25-101, General Provisions). For the purpose of this manual the Professional Engineer is referred to as the Design Engineer. Non-PEs with experience in erosion and sediment control may assist in the development of a GESC Plan, but they must conduct their work under the supervision of the Design Engineer.

GESC Plans are to be prepared under the responsible charge of a Professional Engineer.

It is the responsibility of the Design Engineer to use professional judgment in the development of the GESC plans. If the Design Engineer determines that any GESC requirements, as applied to their specific project, pose a safety hazard, it is the Design

20 GESC Permit Steps Identified throughout the GESC Manual

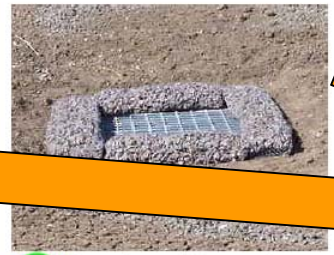
Color Coded Highlight Boxes

DO *Properly installed inlet protection for continuous-grade curb-inlets.*

Temporary Inlet Protection. *This interim configuration of blocks protects a street inlet prior to paving.*

DO

DON'T *This inlet protection is overdue for*



DO *Properly installed area inlet protection*

DON'T *No gaps shall exist between sections of reinforced rock berm.*

DON'T *Blocking the inlet opening or use of alternate materials for inlet protection is prohibited.*

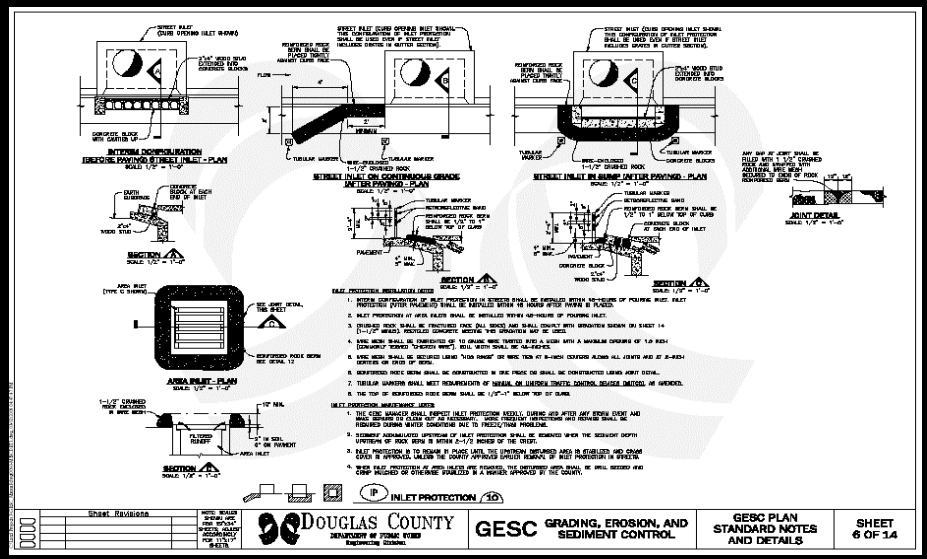
DON'T

Color Photographs to Clearly Show Proper and Improper Installation and Maintenance of BMPs

Stop Work Signs to Clearly Indicate what Actions will get you a Stop Work Order

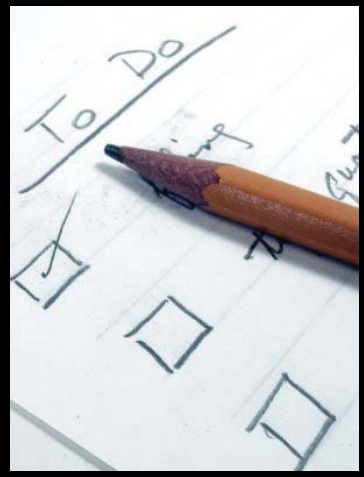
"DO" and "DON'T" Circles Assist with Distinguishing Good and Poor Practices

GESC Plan Standard Notes and Details



- A Set of the Standard GESC Notes and Details for the 25 Douglas County-Approved BMPs
- Must be Attached to all GESC Plans
- Designed to Save Time and Money in Development of GESC Plans and to Assist with Proper Installation and Maintenance of BMPs
- Only Available in Adobe Format

GESC Drawing and Report Checklist



- Provides a List of Required Information,
- Provides a Systematic Method of GESC Plan Development to Ensure Accurate Plan Sets
- Probably the Most Useful Tool Found in the GESC Manual

Presubmittal Meeting

- Prior to the Development of GESC Plans
- It is Recommended that the Owner and Engineer Attend
- Discuss Requirements of GESC Plan to Help Expedite Approval of GESC Plans

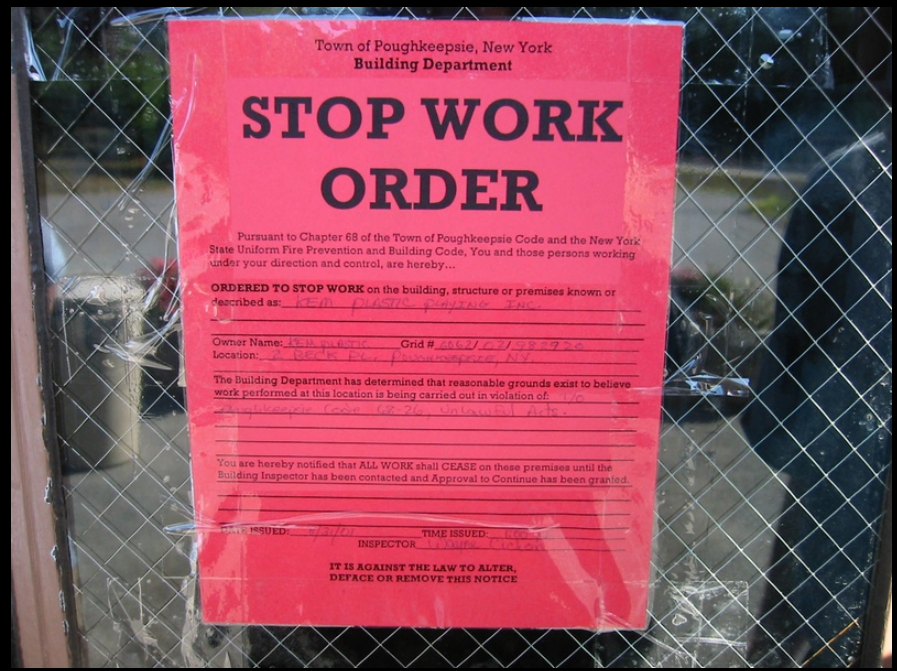
Completeness Check

- Every Friday Staff Reviews GESC Plans For “Completeness”
- Plans Submitted Before Friday will be Checked that week; Plans Submitted on Friday Will Not Be Checked Until the Following Friday
- GESC Plans Determined to be “Incomplete” by Review Staff Will Be Returned to Applicant without Comment
- This Process will be Repeated Until a Complete GESC Plan is Submitted

Fiscal Security

- Shall Be Posted Prior to Scheduling Preconstruction Meeting
- Shall be Letter of Credit or Cash Deposit
- Shall be Posted for a Minimum of 2-years*
- Held in Non-interest Bearing Account Until Revegetation Process is Complete and Accepted By County
- When Required, Security Shall Be Renewed at Least 14-Days Prior to Expiration Date or Security Shall Be Drawn Upon

GESC Inspection Program



County GESC Inspections

- Douglas County GESC Inspectors will Make Regular Inspections of Sites
- County Inspections are for Compliance Enforcement, Not Compliance Assistance
- Douglas County Tracks County Inspections

Mandatory County Inspections

- Mandatory Inspections that Shall be Scheduled by the GESC Manager:
  - Preconstruction Meeting
  - Topsoil Inspection
  - Anytime During Construction when GESC Managers Changes
  - Prior to Issuance of Right-of-Way Use and Construction Permits
  - Initial Close-out Inspection Prior to CO, TCO or Initial Acceptance
  - 2-years after Initial Acceptance/When Vegetation Has Met Required Coverage, Prior to Removal of BMPs
  - Final Close-out Inspection

The GESC Manager

- Designated by Owner and Contractor
- Contact Person for County regarding all GESC Matters
- Must be On-Site Majority of the Time and Available Via Phone 24-Hours a day
- Shall Have the Authority to Act on Behalf of Owner and Contractor
- Shall respond to Requests by Douglas County
- Owner and Contractor Still Legally Responsible
- Must inform DC within 7-Days if GESC Manager Changes

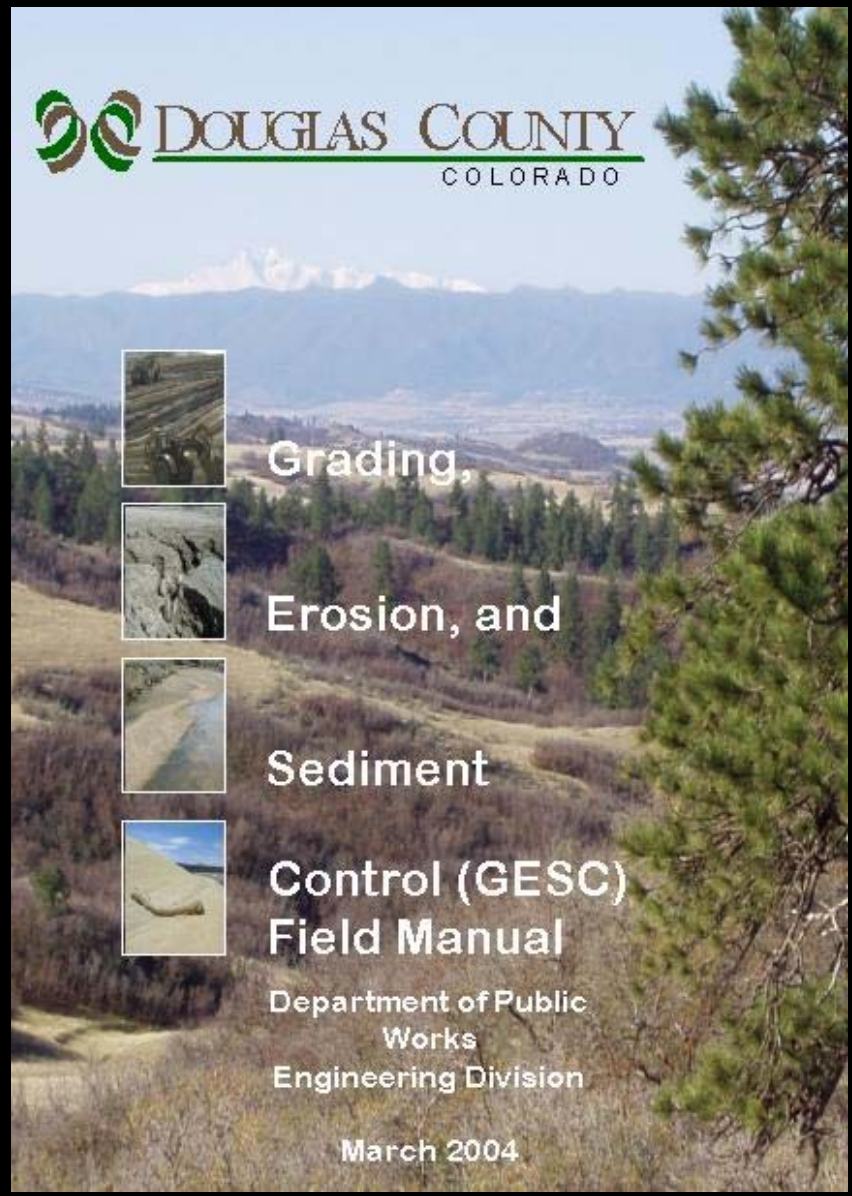
The Preconstruction Meeting

- Owner, Contractor, GESC Manager, Alternate GESC Manager, Subcontractors Must Attend
- Failure Will Result in Rescheduling and Reinspection Fee
- Highly Advisable that the Design Engineer Attend!
- Meeting Agenda –

  Meet and Greet, Contact Information, Review of Field Manual, Review of GESC Drawings, Inspection of BMPs and Acceptance or Denial of BMPs, and Q&A

GESC Field Manual

- “Smaller” Version of the GESC Manual
- Given to Permittees when they Schedule Preconstruction Meeting
- Reviewed with Permittees by GESC Inspector at Preconstruction Meeting
- Kept On-Site for Future Reference



Phased Grading Operations

- Requires all Grading Operations to be Conducted in 40-Acre Phases
- Allows Contractors 5-Days to Finish Stabilization of Previous Phases While Working on the Next Phase
- Allows for 70-Acres of Disturbance for Soil Mitigation
- We have Approved Variances for “Special” Sites Such as Golf Courses

Enforcement Procedures

Level III Violations - are viewed by Douglas County to Pose a Low but Immediate Risk to the Health, Safety, or Welfare of People and or the Environment; However, if not Corrected Quickly will Pose a More Serious Risk. Level III Violations Shall be Corrected with 48-Hours of Inspection Unless Otherwise Specified in Writing by the GESC Inspector.

Level II Violations - are Viewed by Douglas County to Pose a Moderate but Immediate Risk to the Health, Safety, or Welfare of People and or the Environment; However, if Not Immediately Corrected will Pose a Serious Risk. Level II Violations Shall be Corrected as Soon as the Owner/Contractor is Notified of the Violation(s).

Level I Violations - are Viewed by Douglas County to Pose an Immediate and Serious Risk to the Health, Safety, or Welfare of People and or the Environment. Level I Violations Result in an Immediate Issuance of a Stop Work Order and Revocation of GESC Permit.

Stop Work Orders

- Issued to Sites With Level I Violations
- Stops ALL Work On Site
- Safety Related Items can be Completed With GESC Inspector's OK
- Revokes GESC Permit
- Fee for Working Without GESC Permit

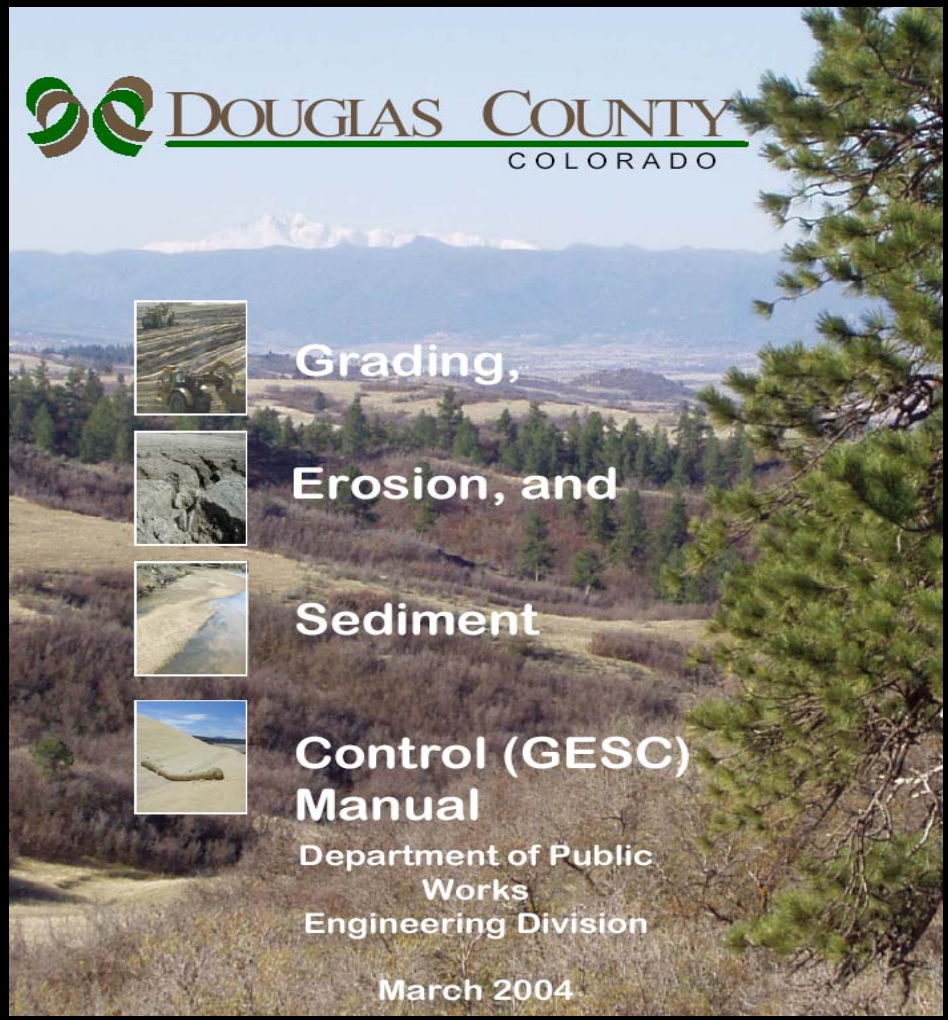
Removing Stop Work Orders

- Correct Deficient Items
- Reapply for GESC Permit and Pay Permit Fees
- Schedule Inspection through Permit Technician
- Obtain New GESC Permit After Approval of GESC Inspector
- Start Work

Re-Inspection Fees

- Charged to Sites that are Not in Compliance with GESC Requirements
- Must Be Paid at DC
- No Additional Inspections until Fee is Paid
- Designed to Offset the Increased Cost of Multiple Inspections for Non-Compliant Sites

GESC Manual Availability



- www.douglas.co.us
- CD's
- Hard Copies

Questions or Comments?

Erik Nelson
Stormwater Management Engineer
Douglas County Engineering Division
100 3rd Street
Castle Rock, Colorado 80104
(303) 660-7490

8) Does your program use (choose any/all that may apply):

A) Notice of Violation letters?
B) “Tickets” or small fines?
C) Larger fines, based on severity of the problem?
D) Stop work orders?

Questions?