



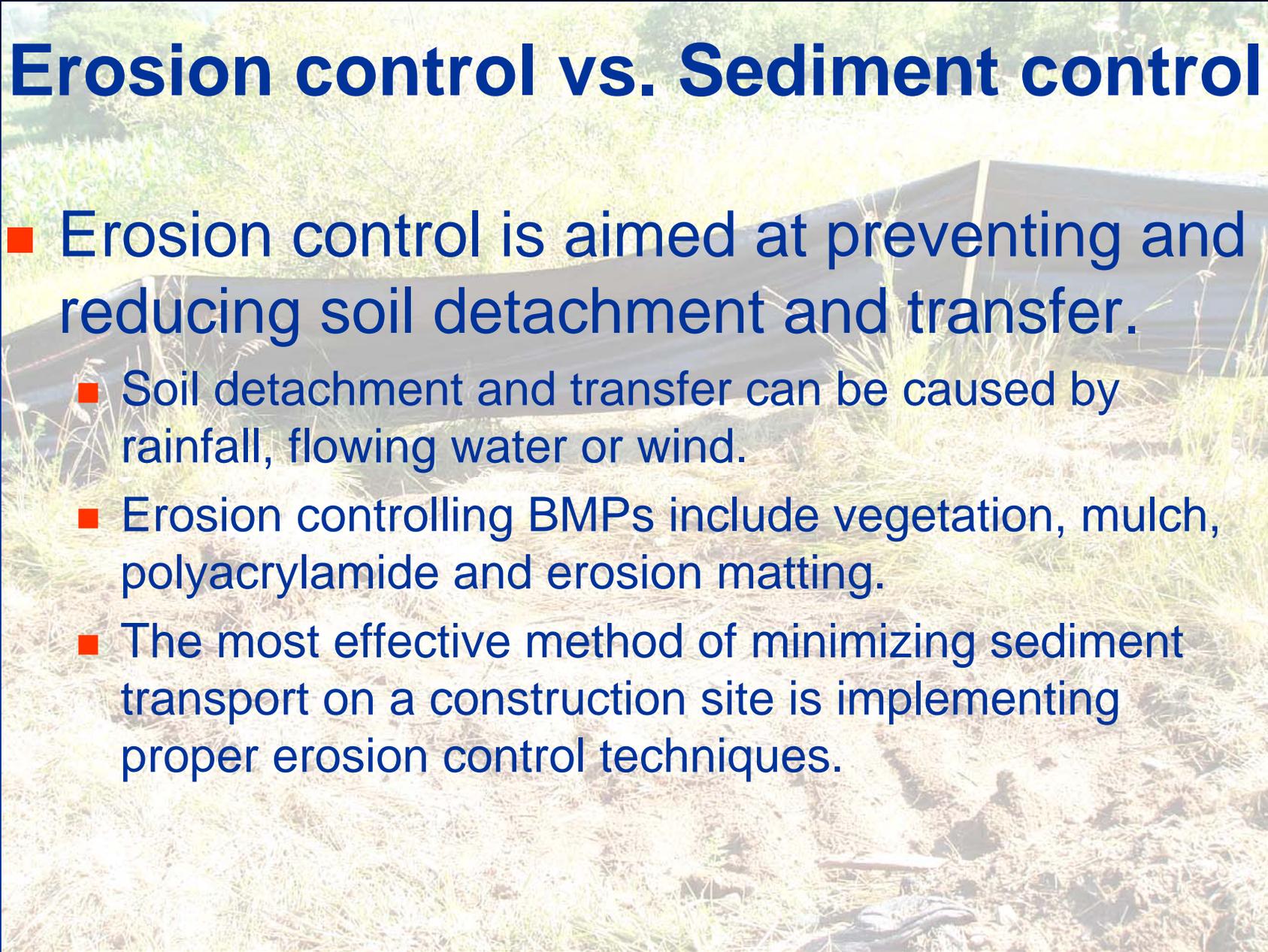
Plan Implementation

**Alan Barrows
Waukesha County
Land Resources Division**

In-Field Performance Objectives

- 80% total suspended solid removal on an annual average basis, as compared to no controls
- Plans that comply with the Ordinance are determined by the LRD as meeting the TSS removal goal.
- Execute the approved plan
- Inspect and maintain BMPs
- Stabilize soils as soon as possible
- Provide engineer oversight

Erosion control vs. Sediment control

The background image shows a construction site with a large, dark, rectangular structure, possibly a sediment trap or a temporary structure, situated in a field of tall grass. The ground in the foreground is uneven and appears to be a mix of dirt and grass, suggesting recent construction activity or erosion. The overall scene is outdoors with natural lighting.

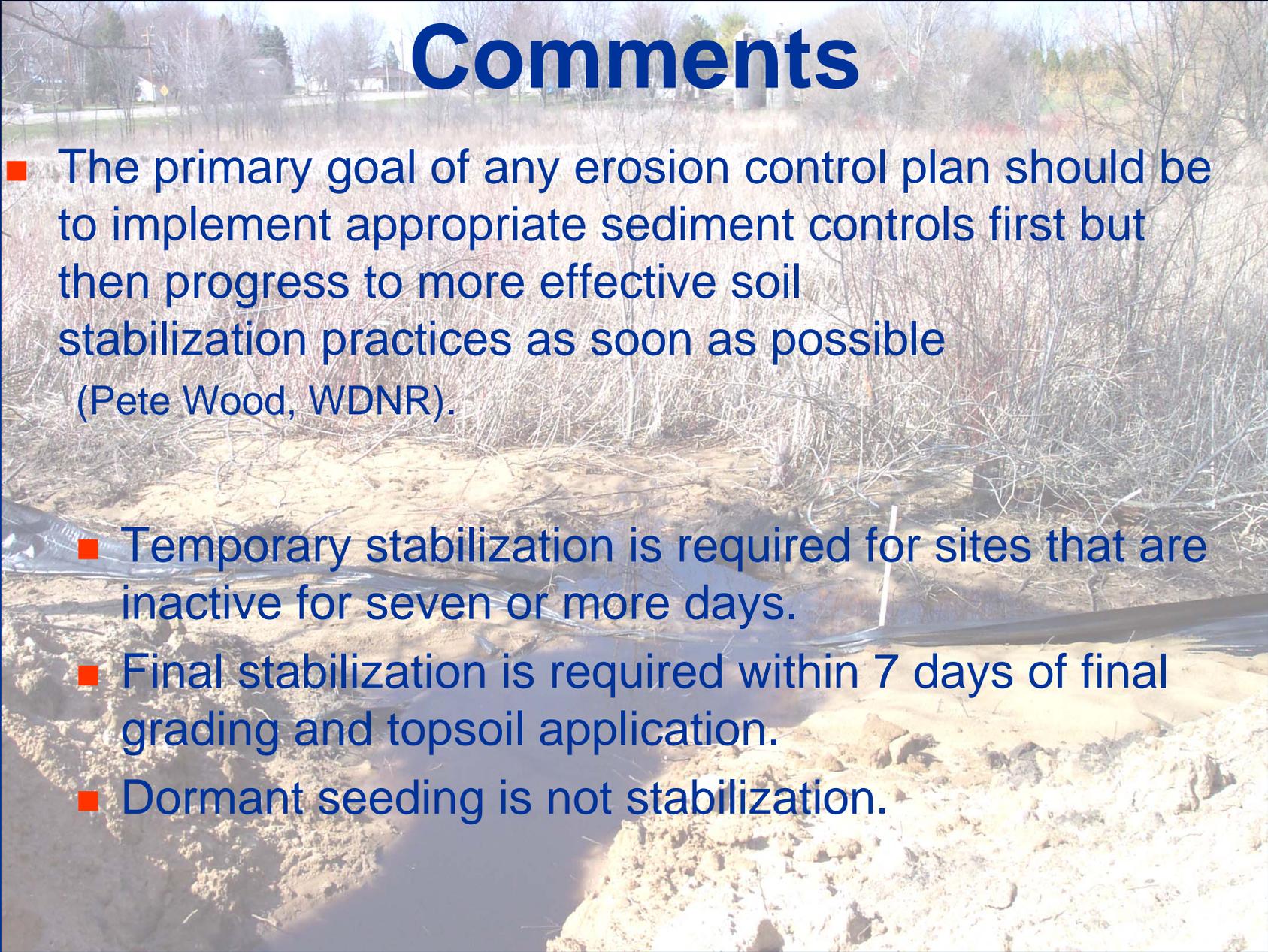
- Erosion control is aimed at preventing and reducing soil detachment and transfer.
 - Soil detachment and transfer can be caused by rainfall, flowing water or wind.
 - Erosion controlling BMPs include vegetation, mulch, polyacrylamide and erosion matting.
 - The most effective method of minimizing sediment transport on a construction site is implementing proper erosion control techniques.

Erosion control vs. Sediment control

The background image shows a silt fence, a type of sediment control structure, installed in a field. The fence is made of a dark fabric or plastic material supported by wooden posts. In the background, there is a large, dark-colored building, possibly a barn or warehouse. The foreground is filled with dry, yellowish-brown grass and some scattered debris, suggesting a construction or agricultural site.

- Sediment control is aimed at removing solids suspended in runoff.
 - Sediment controlling BMPs include silt fence, sediment traps, sediment basins, ditch checks, inlet protection & flocculants.
 - These practices are expensive to maintain and have limited effectiveness.
 - They work by allowing some suspended solids to settle out in ponded water.

Comments



- The primary goal of any erosion control plan should be to implement appropriate sediment controls first but then progress to more effective soil stabilization practices as soon as possible (Pete Wood, WDNR).
- Temporary stabilization is required for sites that are inactive for seven or more days.
- Final stabilization is required within 7 days of final grading and topsoil application.
- Dormant seeding is not stabilization.

Under utilized BMPs

- Diversions – Keeping clean water clean and keeping dirty water separate.
- Site roughening – CPS 1067
- Triangular Silt Dikes – Reusable & Sturdy
- Compost filled wattles
- Blown-on compost blankets
- Temporary seeding

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Engineer Oversight & Construction Verification

- Permit holder is required to have a professional engineer licensed in WI to oversee and verify construction (“project engineer”)
- Project engineer responsible for achieving compliance with the approved plans including the inspection plan
- The construction verification letter from the project engineer references the inspection plan
- Warm season (native) and wetland plantings must be verified by a landscape architect or other qualified professional

Construction Inspection Plan (P.E.):

- Soil testing duties
 - Engineered soils, berm compaction, pond liners, etc.
- Surveying subgrades (before topsoil placement)
 - Berm base, safety shelf, pipes, spillways, rock channels, etc.
- Material & procedure inspections
 - Pipe placement, erosion matting, seed, rock, etc.
- Surveying final grades
- Erosion control compliance



During Construction (P.E. presence)

- Monitor progress & answer questions
- Check compliance
- Approve changes
- Keep communication open:
 - Prevents problems
 - Avoids enforcement



Example Construction Inspection Schedules

Project:

Inspector:

, PE –

, Inc.

Wet Detention Basin (per WDNR CPS 1001)

Date Inspector's
Initials

1. **Before berm material is placed**, verify that:
 - a. Topsoil, stumps, and vegetation are stripped in basin berm footprint
 - b. *A 2' x 8' keyway is excavated under berm (if permanent pool will pond >3 ft against embankment).*
 - c. The specified material is used to construct basin berm.
2. **Before a liner is placed**, verify that:
 - a. Basin interior slopes do not exceed maximum pitches (4:1 above water, 10:1 safety shelf, 2:1 below safety shelf)
 - b. Basin bottom and shelf elevations are correct; and
 - c. The safety shelf is at least 8 feet wide.
3. **Before the berm is re-compacted around outlet pipes** following installation, verify that:
 - a. The correct pipe diameter, drain hole diameter, and materials are used.
 - b. The outlet pipe and riser elevations are correct.
 - c. Anti-seep collars are installed on outlet pipes. Attach photos.
4. **Before topsoil is re-applied**, verify that:
 - a. *A compacted 1-foot clay liner* is installed up to the permanent pool elevation.
 - b. The **compaction requirement** of 90% Standard Proctor is met by laboratory testing a minimum of one sample of berm material and nuclear density testing at a minimum of *five* locations along the embankment. A copy of the test results will be attached to this schedule.
 - c. The berm elevation is 5% above design height (above existing grade) to allow for settling.
5. Verify that **topsoil is re-applied** to all surfaces above and including the safety shelf.
6. Basin bottom elevation, safety shelf elevation, berm elevation, outlet elevations, spillway elevations are correct (part of **as-built survey**). **Basin dewatering** is required to verify bottom elevation and to facilitate sediment removal following construction and site stabilization.

Text in *purple* is site-specific.

Erosion Control Inspection Report

**All BMPs within 24 hours after a 0.5 inch rain
or at least once/week**

- Name of inspector
- Date & time of inspection
- Description of present phase of construction
- Findings of the inspection
- Assessment of the condition of erosion and sediment control measures
- Status of installation of storm water BMPs
- Action needed to comply with the ordinance
- Record of maintenance or repairs
- Report must be available on-site or on the Internet

Construction Inspection Report

- Erosion control inspectors can use the WDNR report form available on the Internet
- Report is a fillable form
- Utilize the “Description of present phase of construction” space for status of storm water BMP installation
- Do not need to submit to Waukesha County unless specifically requested.

Regulatory oversight:

- Spot checks only
 - Not responsible for construction
- Checking on progress
 - Compare to permit expiration date
- Looking for violations
- Being available for questions
- Plan changes go through P.E.
 - May require permit amendment



Waukesha County Dept. of Parks & Land Use – Land Resources Division
1320 Pewaukee Road, Room 260
Waukesha, WI 53188-3868

Phone: 262-896-8300

Fax: 262-896-8298

Waukesha County Storm Water Permit Amendment Request

I, _____ hereby request:

(Applicant Name)

Extension of Permit

Transfer of Permit*

Plan Amendment

Office Use Only

Request:

- Approved
 Denied

Staff Initials: _____

Date: _____

Project Name: _____

Permit #: _____

For permit extension(s), explain the circumstances that prompted the request and provide a new construction timeline.

Explain:

*Permit transfers require the new applicant to submit an updated list of responsible parties and a new financial assurance. Use the appropriate **Storm Water Permit Application Form**.

Applicant Signature: _____

Date: _____

Received By (Staff Initials): _____

Date: _____

Fee:** _____

****Note:** Permit extension and transfer fees are set by the LRD and approved by the County Board through the annual budget process. See the current fee schedule for the appropriate fee.

Enforcement Triggers



- Land disturbance/develop. - no permit
- Not meeting any permit condition
 - Not following approved plan
 - Not employing PE oversight/inspection log
 - Not maintaining BMPs
- Not providing as-builts, verification, etc.
- Improper recording of plat/CSM/M.A.

Enforcement Options



- Notice of violation (warning)
- Citation (daily fines up to \$1,000)
- Stop work order
- Permit revocation
- Injunction/forfeiture/declared nuisance (court order)
- Emergency action (bill/financial assurance)

Seeding For Construction Site Erosion Control (1059)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Planting seed to establish temporary or permanent vegetation for erosion control.

II. Purpose

The purpose of *temporary seeding*¹ is to reduce runoff and erosion until permanent vegetation or other erosion control practices can be established. The purpose of *permanent seeding* is to permanently stabilize areas of exposed soil.

III. Conditions Where Practice Applies

This practice applies to areas of exposed soil where the establishment of vegetation is desired. Temporary seeding applies to disturbed areas that will not be brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, and requires vegetative cover for less than one year. Permanent seeding applies to areas where perennial vegetative cover is needed.

IV. Federal, State and Local Laws

Users of this standard shall be aware of all applicable federal, state and local laws, rules, regulations or permit requirements governing seeding. This standard does not contain the text of federal, state or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Site and Seedbed Preparation

Site preparation activities shall include:

1. Temporary Seeding

- a. Temporary seeding requires a seedbed of loose soil to a minimum depth of 2 inches.
- b. Fertilizer application is not generally required for temporary seeding. However, any application of fertilizer or lime shall be based on soil testing results.
- c. The soil shall have a pH range of 5.5 to 8.0.

2. Permanent Seeding

- a. *Topsoil* installation shall be completed prior to permanent seeding.
- b. Permanent seeding requires a seedbed of loose topsoil to a minimum depth of 4 inches with the ability to support a *dense* vegetative cover.
- c. Application rates of fertilizer or lime shall be based on soil testing results.
- d. Prepare a tilled, fine, but firm seedbed. Remove rocks, twigs, foreign material and clods over two inches that cannot be broken down.
- e. The soil shall have a pH range of 5.5 to 8.0.

¹ Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Erosion Control

Product Acceptability Lists
for
Multi – Modal Applications

PAL



September 2007 Edition

Permit Issuance

- Plan implementation meeting with LRD
- Requires complete list of constr. contacts
- Need finalized construction schedule
- May delay issuing permit if:
 - Erosion control plan does not match timeline (late season construction seeding)
 - Other permits are needed that may change schedule and planning needs

Permit Duration

- Permit expiration date
 - Based on submitted construction timeline and approved BMPs
 - Can be extended upon request/fee & determination of need to comply
 - Must notify 2 weeks before expiration
 - May require additional BMPs/costs to extend the permit (late season, etc.)

Tips for erosion control inspectors

- Is the plan working
 - Minimize off-site sedimentation
 - Stabilization of inactive disturbed areas
 - Are any deadlines approaching?
 - Seeding
 - Snowfall expected
 - Frost
 - Stabilization materials available and on-site



Tips for erosion control inspectors

The background image shows a construction site with a silt fence made of burlap and wooden stakes. A yellow surveying pole is visible on the right. In the foreground, there is a sediment basin filled with rocks. The background features a field with some trees and a building in the distance under a cloudy sky.

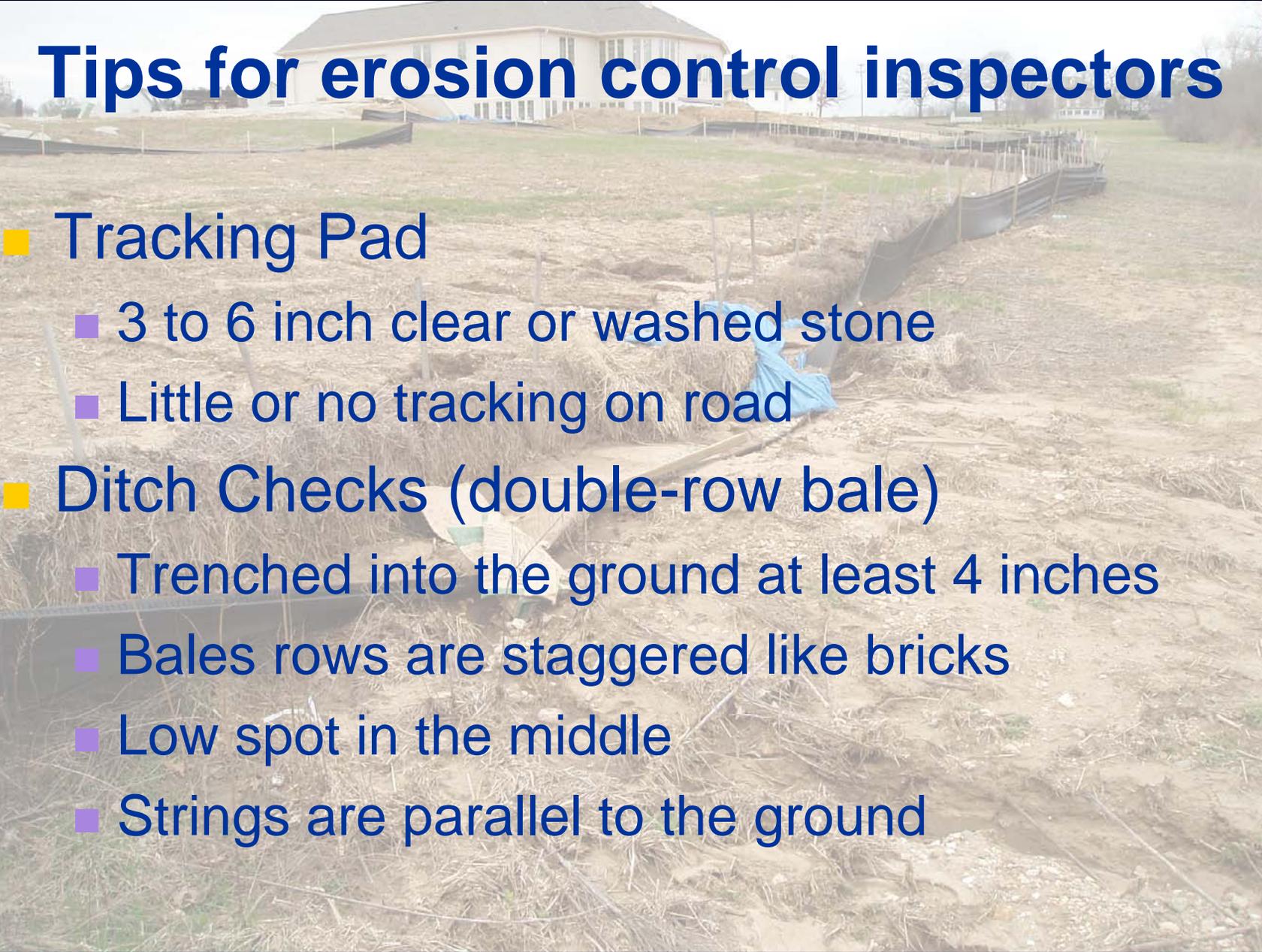
■ Silt Fence

- Top support cord
- 1 1/8 by 1 1/8 hardwood stakes, 8 feet apart.
- Trenched into the ground
- Cannot easily push your finger through fence
- Needs maintenance when sediment reaches 1/2 height

■ Sediment Basin

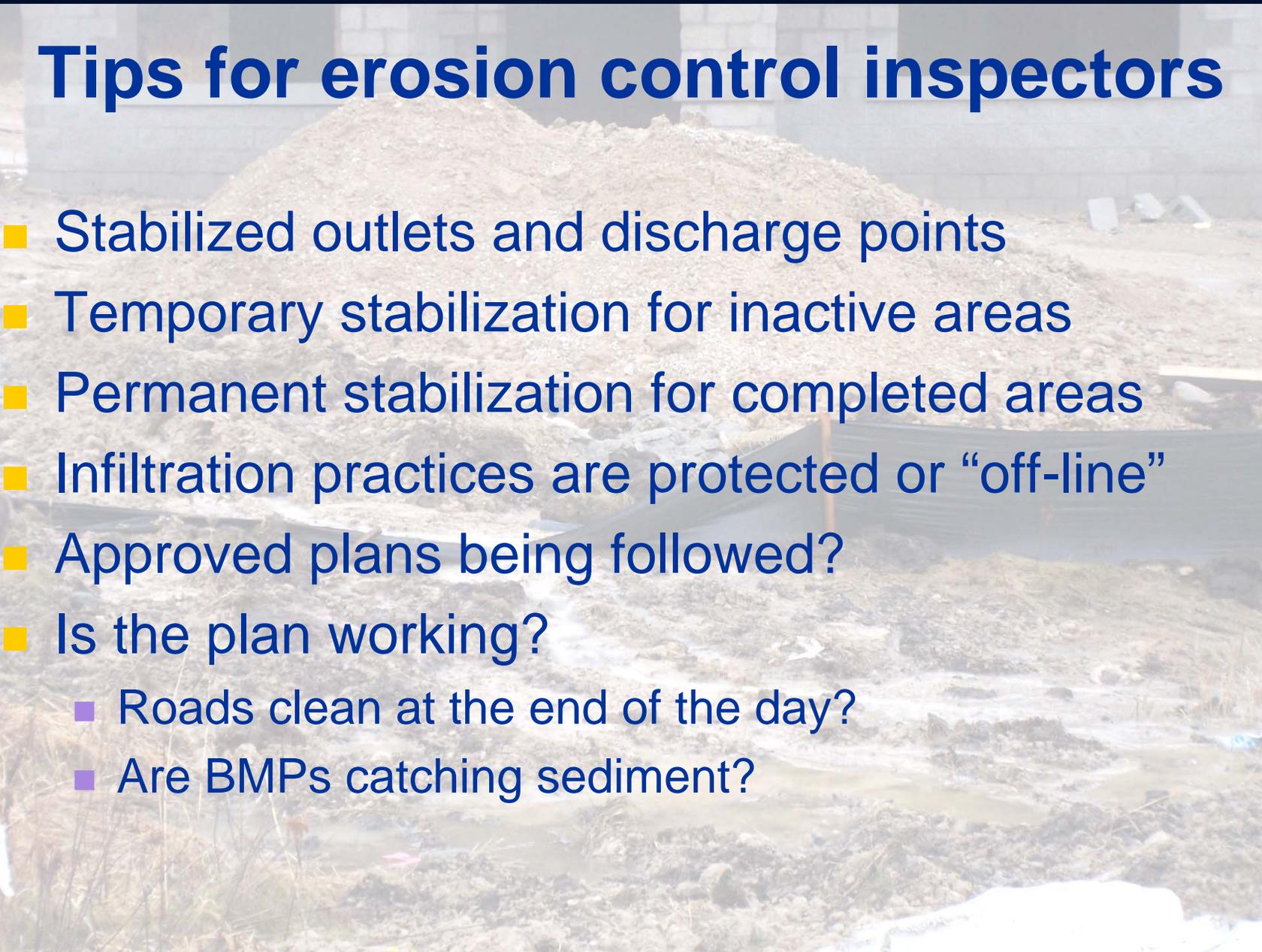
- Outlet structure is constructed before contributing areas is disturbed

Tips for erosion control inspectors

The background image shows a construction site with a large, multi-story building under construction in the distance. In the foreground, there is a dirt area with several erosion control measures. A black silt fence runs across the middle ground. In the foreground, there is a double-row straw bale check with a blue tarp covering a portion of it. The ground is uneven and appears to be a mix of dirt and sparse grass.

- Tracking Pad
 - 3 to 6 inch clear or washed stone
 - Little or no tracking on road
- Ditch Checks (double-row bale)
 - Trenched into the ground at least 4 inches
 - Bales rows are staggered like bricks
 - Low spot in the middle
 - Strings are parallel to the ground

Tips for erosion control inspectors



- Stabilized outlets and discharge points
- Temporary stabilization for inactive areas
- Permanent stabilization for completed areas
- Infiltration practices are protected or “off-line”
- Approved plans being followed?
- Is the plan working?
 - Roads clean at the end of the day?
 - Are BMPs catching sediment?



Thank you. Questions?