

# INTRODUCTION TO NR 528

## *MANAGEMENT OF SEDIMENT FROM STORM WATER MANAGEMENT STRUCTURES*

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# Overview

- What is NR 528?
- Why is there a need for NR 528?
- Development of NR 528
- Who is responsible?
- How does the rule work?
- Sampling analysis
- Other applicable permits and local requirements
- Resources and Contacts

# *What is NR 528?*

A **No-fee, self-regulating** code compliance process for the removal and management of accumulated sediment in storm water management structures

Innovative regulatory approach designed to address a large number of sediment management projects in a manner that is:

- Efficient
- **Protective** of public health & the environment
- **Clear and flexible** requirements
- **Consistent** in its implementation

# What is NR 528?

Not applicable to sediment removed from:

- **underground structures**
- **material collected through street sweepings, dredging projects**
- **hazardous waste regulated under NR 660 to 679**  
**solid waste regulated under chs. NR 518 and 538**
- **contaminated soils regulated under chs. NR 700 to 722**
- **sediment removed from temporary sediment control practices during the construction phase of a project**



# *What is NR 528?*

Applies to permanent storm water best management practices such as detention basins, infiltration basins, and swales receiving runoff from urban development



# *Why do we need it?*

Storm water BMPs are designed to collect and detain suspended solids and 'attached' pollutants



Some of these BMPs are getting old, and are past due for maintenance



Sediment loading from a low-density residential neighborhood = **170 lbs/acre/year**

It could take around **18 years** to fill this **60 cubic yard** dump truck!



Where do we put it all?





There has to be a better way...



## *Development of NR 528*

Sediment removed during maintenance of storm water management structures **requires sound management**

Considered a **solid waste** & regulated by the WDNR's Bureau of Waste & Materials Management

# Development of NR 528

## Stakeholders represented during rule-making:

- WI Builders Association
- Consulting Industry
- Rivers Alliance
- Government units and agencies:

*Wisconsin Towns Association*

*Municipal Environmental Group*

*City & County Engineering Departments*

*Department of Administration*

*Department of Commerce*



**RIVER ALLIANCE**  
*of Wisconsin*

*We Save Rivers*

## *Development of NR 528*

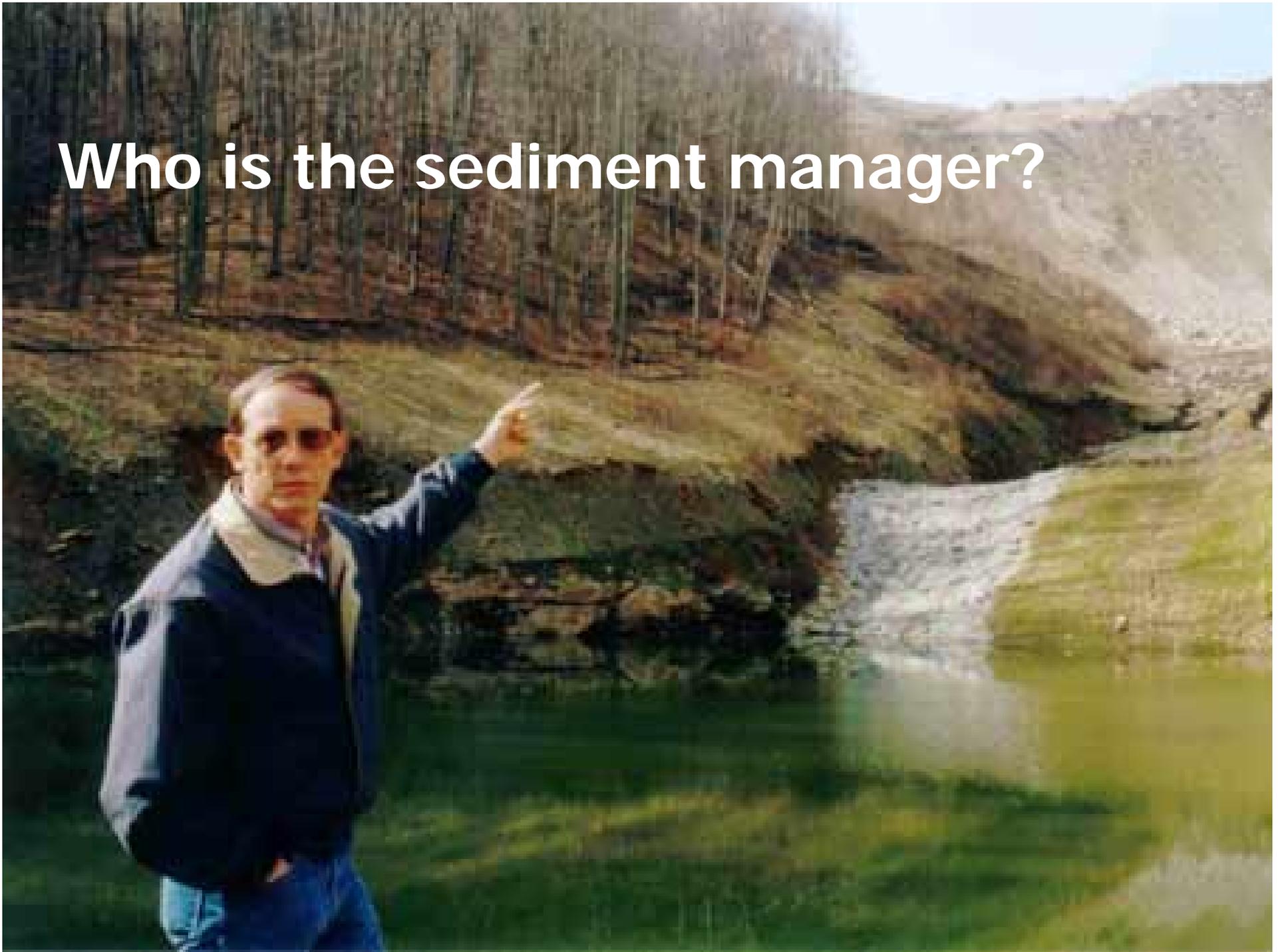
- Technical Advisory Committee (TAC) met 5 times over the course of 2 years
- Public and Natural Resource Board Review
- Approved by the NR Board in June 2009
- Effective December 2009

## *Who is Responsible?*

**Sediment manager** evaluates drainage area characteristics, proposes an end use site, and determines if a sampling analysis will be required based on drainage area evaluation

**Environmental professional** performs sampling analysis and determines appropriate management option based on results

**Who is the sediment manager?**



The “**sediment manager**” is any person with responsibility for the management of accumulated sediment and may include those holding fee title, an easement or other interest in a property, or their agent including contractors or subcontractors and others required or authorized to undertake removal and subsequent management of accumulated sediment, including data gathering, reporting and recordkeeping.

**(Basically Anyone)**

Once identified, the **sediment manager** is responsible for:

- Overall compliance with the code
- Completing the *Certification Form*
- Retention of all forms, sampling and monitoring results, and site management records

**Who is the  
environmental  
professional?**



The **“environmental professional”** is a registered professional engineer, or a licensed professional soil scientist, licensed geologist or hydrogeologist

Responsible for determining appropriate end uses based on sampling analysis and risk-based sediment management considerations

## *How the rule works*

### Document Compliance through *Certification Form*

- **Guides** sediment manager through process of evaluating risk through form completion
- Relies on the sediment manager to accurately complete form & **attest to (certify)** compliance
- Documents **all elements of self-implementation process**

# Accumulated Sediment End Use Certification Form

Sediment manager is responsible for completing  
Sections 1, 2, and 3, Parts A, C, and D

Environmental professional is responsible for Part B

<http://dnr.wi.gov/org/aw/wm/solid/nr528>

**Notice:** This form must be completed and retained by the sediment manager prior to the initiation of the end use of accumulated sediment from a stormwater management structure, in accordance with ch. NR 528, Wis. Adm. Code. Completion of the worksheets included in this form directs the user to the appropriate level of certification necessary to comply with the requirements of ch. NR 528. Failure to accurately fill out this form or comply with the requirements of ch. NR 528 is subject to enforcement under ss. 289.06 and 299.07, Wis. Stats. The user may consult technical support materials provided by the department to assist in the management of accumulated sediment in a beneficial and safe manner. Personal information is not intended to be used for any other purpose, but may be made available to requesters under Wisconsin's Open Records laws (s. 19.35, Wis. Stats.).

**NOTE:** See last page of form for definitions and other information that may help complete this form.

**Instructions:** Anyone completing this form must complete Sections 1, 2 and 3. Unless otherwise directed, the sediment manager shall complete Part A, and if appropriate, ensure that Part B is completed. Complete Part C if the sediment will be used in a dedicated sediment management site and Part D if 100 cubic yards or less of coarse-grained sediment will be used. Please refer to WA1375 Management of Accumulated Sediment from Storm Water Structures at <http://dnr.wi.gov/org/aw/wm/publications/aneupub/wa1375.pdf> when completing this form.

**Section 1: Sediment Manager Information**

Sediment Manager's Name		Affiliation	
Title		Telephone Number	
Address		City	State ZIP Code
Email Address			

**Section 2: Site-specific Information**

Name of Storm Water Management Structure		Site/Property Identification No. (if known)	
Address		City	State ZIP Code
County	Township	Range <input type="checkbox"/> E <input type="checkbox"/> W N	Section ¼ ¼ ¼ Latitude (decimal degrees) Longitude (decimal degrees)
Construction Year	Volume Removed (in cubic yards)		Date Sediment Was Last Removed (if applicable)

**Section 3: End Use Site Information**

Name of End Use Site		Site/Property Identification No. (if known)	
Address		City	State ZIP Code
County	Township	Range <input type="checkbox"/> E <input type="checkbox"/> W N	Section ¼ ¼ ¼ Latitude (decimal degrees) Longitude (decimal degrees)

- List the type of use chosen for the accumulated sediment (check all that apply):
- General Fill
  - Confined Geotechnical Fill
  - Landspreading
  - Dedicated sediment management site
  - Small Quantity, Coarse Gained Sediment Mgnt
  - End use under other control

Briefly describe end use (e.g., subbase layer beneath parking lot)

**Accumulated Sediment End Use Certification**

Form 4400-348 (R 12/09)

Page 2 of 5

**Part A Sediment Manager Certification**

To be completed by the sediment manager to evaluate the drainage area from which the accumulated sediment was removed and determine if the certification criteria listed below have been met.

**Part A Worksheet**

**Information on Drainage Area to Storm Water Management Structure**

	Percent of Land Uses
Open space (parks, cemeteries, woodlands, golf courses)	
1- and 2-family residential	
Multi-family residential (3 or more)	
Institutional (schools, hospitals, churches, offices)	
Light industrial (no outdoor material storage)	
Commercial (malls, shopping centers)	
Heavy industrial (some outdoor material storage)	

	Presence of Areas of Suspected Contamination or Other Concerns Based on Site History (Yes or No)
Outside storage and loading areas of industries	<input type="radio"/> Yes <input type="radio"/> No
Vehicle fueling and maintenance areas (gas stations)	<input type="radio"/> Yes <input type="radio"/> No
Arterial roads (multi-lane, high traffic)	<input type="radio"/> Yes <input type="radio"/> No
Commercial with 40 or more stalls	<input type="radio"/> Yes <input type="radio"/> No
Leaking underground storage tanks currently or previously on property	<input type="radio"/> Yes <input type="radio"/> No
Spills of chemicals, oil or hazardous materials	<input type="radio"/> Yes <input type="radio"/> No
Dedicated snow storage areas	<input type="radio"/> Yes <input type="radio"/> No
Agriculture land use history suggests persistent pesticides may be in sediment	<input type="radio"/> Yes <input type="radio"/> No
Other?	<input type="radio"/> Yes <input type="radio"/> No

Refer to Part A Worksheet prior to certifying the information below. Based on Part A Worksheet and pursuant to s. NR 528.06(2) Wis. Adm. Code, I determine the drainage area to the storm water management structure meets the following criteria (check any that apply):

- 1. Has less than 15% commercial, multi-family residential, institutional and industrial land uses combined
- 2. Has no areas of suspected contamination.
- 3. Has no other existing conditions or known historical events that may affect the likelihood of safe sediment management.
- 4. Has no reported hazardous substance spills per s. 292.11, Wis. Stats. since construction or since accumulated sediment was last removed (provide date of last sediment removal in Section 2).

Based on whether the above four criteria are met, the following steps have been taken (check any which apply):

- The drainage area to the storm water management structure meets all 4 criteria listed above and in s. NR 528.06(2), Wis. Adm. Code so sampling under s. NR 528.06(3), Wis. Adm. Code is not required and I am certifying under Part A and do not have to complete Part B.
- The drainage area to the storm water management structure does not meet all four criteria so sampling under s. NR 528.06(3), Wis. Adm. Code is required and an environmental professional must certify under Part B.

Records are being maintained as follows (check if true):

- Record retention is being performed in accordance with s. NR 528.03, Wis. Adm. Code.

**Certification Statement**

I hereby certify that the accumulated sediment will be used in the manner specified in Section 3, the performance standards in s. NR 528.04(2), Wis. Adm. Code and locational criteria, if applicable, in s. NR 528.04(1), Wis. Adm. Code will be met, and the erosion control measures in s. NR 528.04(3), Wis. Adm. Code will be implemented. I certify that the information provided in sections 1, 2 and 3 and Part A on this form is true, accurate and complete to the best of my knowledge and I agree to retain this form and other data records in accordance with s. NR 528.03, Wis. Adm. Code. I am aware that violation of these requirements is subject to enforcement under ss. 289.96 and 289.97 Wis. Stats.

Sediment Manager	Title	Date Signed
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Part A is the drainage area evaluation that must be completed per NR 528.06(2)

If contributing drainage area has:

- Less than 15% commercial, multi-family residential, institutional and industrial land uses combined
- No areas of suspected contamination
- No other existing conditions or known historical events that may adversely affect the sediment management
- No reported hazardous substance spills since construction or since last removal of sediment

**NO SAMPLING IS REQUIRED for "CLEAN" Areas**

# *How the rule works*

## **Category I – “Clean” sediment by rule:**

- No sampling
- No *environmental professional*
- Maintain compliance with setbacks & performance standards

## **Category II – “Clean” sediment criteria not met:**

- Sampling required
- *Environmental professional* samples sediment & evaluates data
- Ceiling levels are not exceeded
- Determine sediment use per NR 528.07

## **Category III – Ceiling level(s) exceeded**

# How the rule works

Category I and Category II sediment can be disposed of in all end use options under NR 528.07

Sampling analysis must be performed for Category II sediment by an environmental professional to determine appropriate end use

End use sites must adhere to locational criteria:

Table E-1: Locational Criteria for Management of Accumulated Sediment

	Bedrock or Ground-water Table	Public Water Supply Well	Private Water Supply Well	Lake, Wetland, Pond, or Any Navigable Waterway or Sinkhole	Residence	School, Health –care Facility
Separation Distance in Feet	3	1,200	250	200	250	1,000 <sup>1</sup> surface spread 500 incorporated

<sup>1</sup> The 1,000 foot separation applies when the pathogen or indicator organism level exceeds the criteria specified in s. NR 204.07(6) and application to the surface of the land is the desired management option; if incorporated into the soil, then 500 feet is appropriate. However, if the pathogen or indicator organism level is below the criteria, the setback distance for a residence may be used.



Dispose **Category III** sediment in  
licensed landfill

**NR 528 NOT APPLICABLE**

*(Check with landfill for any specific requirements)*

# Sampling Analysis

## Parameters found under NR 528.06(3)(b)

**Table C-1: Testing Parameters**

Parameters required under s. NR 528.06				Additional parameters*
Physical	Nutrients***	Trace Elements**	Pathogens	Other**
pH Percent solids, Percent organic matter, Electrical conductivity (EC) as a saturated paste	Total Kjeldahl nitrogen, Total nitrate nitrogen, Total phosphorus, Total potassium	Arsenic Cadmium Copper Chromium Nickel Lead Zinc	Pathogen or indicator organism	<u>Inorganics and pathogens</u> Heavy metals/Trace elements (beyond routine). Additional pathogenic organisms as necessary (bacteria, viruses, helminth, protozoa, etc.)  <u>Organics</u> Volatiles, Acid extractable compounds, Base/neutral, Pesticides, Polynuclear aromatic hydrocarbons (PAH)s, Oil and grease

\* There may be other applicable and appropriate tests.

\*\* Indicates a parameter that must be run at a laboratory certified or registered in accordance with ch. NR 149.

\*\*\*In addition, the DNR recommends consulting the procedures employed by the University of Wisconsin Soil and Plant Analysis Laboratory or a soil testing lab certified by DATCP for tests that are nutrient in nature. The UW Soil Lab procedures are available at: <http://uwlab.soils.wisc.edu/madison/index.htm?..//fees.htm&contents.asp?menu=1>. The DATCP certified labs are available at: <http://www.datcp.state.wi.us/am/agriculture/land-water/conservation/nutrient-mngmt/pdf/Soil&ManureTestingLabs.pdf>.

# Sampling Analysis

**Step 1:** Test sediment for exceedances of ceiling levels

**Table C-2: Ceiling Levels**

<b>Parameter</b>	<b>Ceiling Level</b>
Total Arsenic	8 ppm
Total Cadmium	10 ppm
Total Chromium	100 ppm
Total Lead	250 ppm
pH	< 5 or > 10 standard units
Electrical Conductivity	8 deciSiemens/meter(dS/m) at 25°C
Note: deciSiemens/meter(dS/m) is equivalent to mmho per cm.	

Remember that if there are any exceedances, then the accumulated sediment is Category III, and must be disposed of in a licensed landfill

# *Sampling Analysis*

**Step 2:** If there are no exceedances, proceed with evaluation of remaining parameters

**Step 3:** Compare background soil levels with detected levels of constituents in accumulated sediment. Determine if follow-up sampling is necessary (*for elevated levels*)

Other parameters may be evaluated if determined by the environmental professional

**Step 4:** Concur with proposed end use option in Section 3 of certification form, concur with proposed end use option with restrictions, or recommend alternative and change end use option in Section 3

# *Sampling Analysis*

Background levels determined in similar manner employed in determining NR 140 groundwater preventative action limits:

1. Collect background samples from drainage basin
2. Analyze samples for required parameters
3. Determine mean sample values
4. Establish "elevated level" as the mean sample value plus 2 standard deviations\*

Follow-up sampling is required for discovery of elevated level(s)

## *End Use Options per NR 528.07*

- Landfill – Daily or final cover
- Small Quantity
- General Fill
- Confined Fill
- Landspreading
- Dedicated Sites
- Other Control Authority (WDOT, NR 135)

# End Use Options

## Small Quantity

Management of coarse grained material

*≤15% passing no. 200 sieve*

- Promotes regular maintenance of forebays and inlet areas

*Total collected sediment < 100 cubic yards*

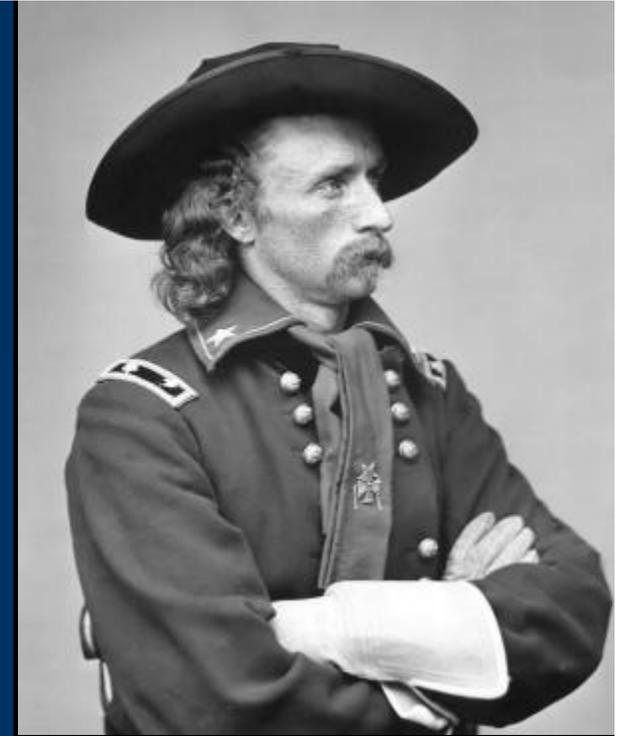
- **No sampling is required.** Even if drainage area criteria are not met.

**(Part D of certification form)**

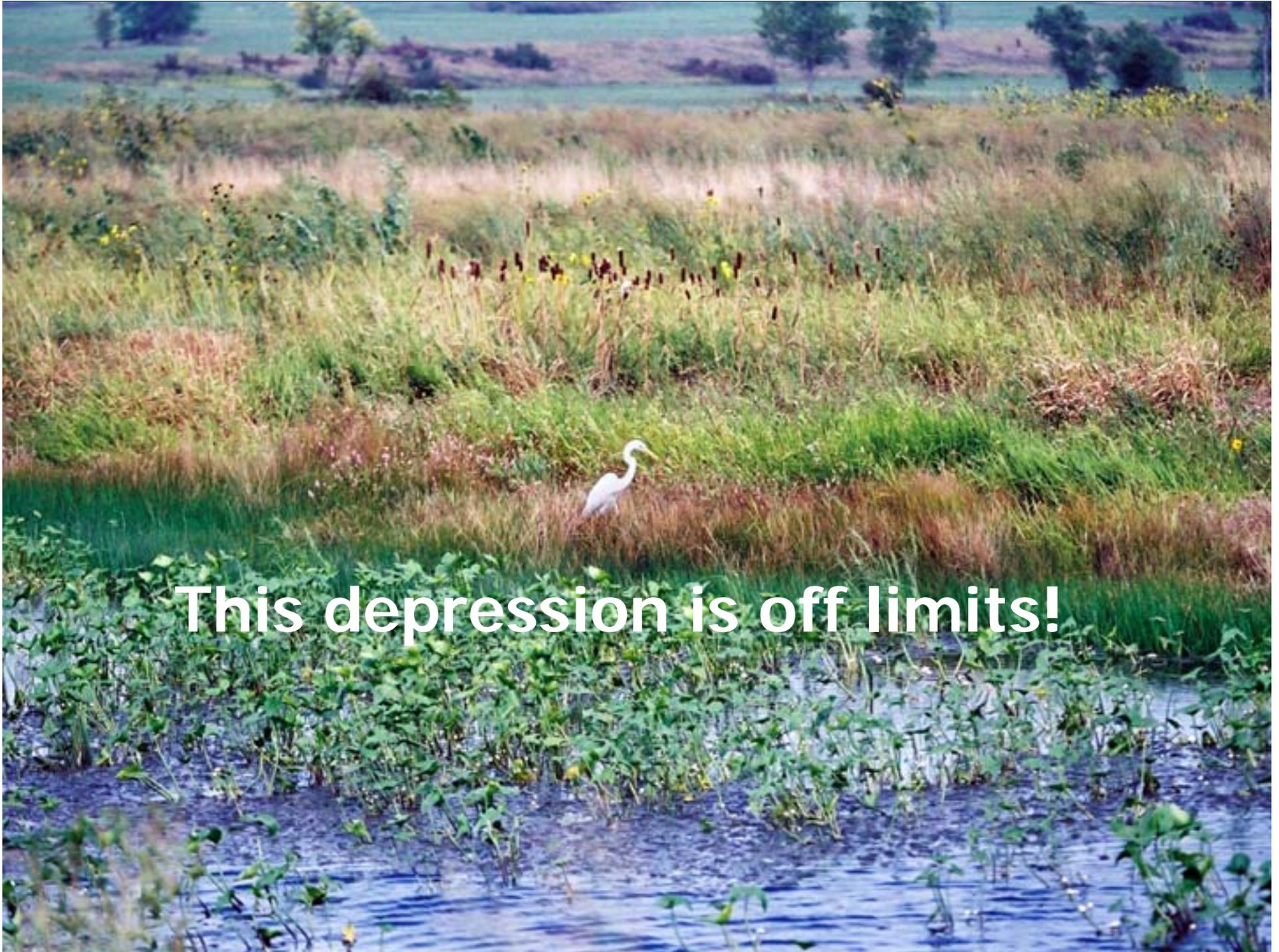
# End Use Options

## General Fill

- Any land disturbance improvement:
  - Enhance contours & drainage*
  - Filling depressions*
  - Stabilizing exposed borrow areas*
  - Berms*
- Placement must be completed within 6 months
- Revegetate prior to end of growing season
- Minimize exposure of sediment:
  - Place impermeable cover*
  - Place  $\geq 6''$  topsoil or,*
  - Amend existing topsoil cover*



**Must stabilize  
placed fill within  
48 hours of  
completing  
sediment disposal**



**This depression is off limits!**

# *End Use Options*

## Confined Geotechnical Fill (minimal exposure to environment)

- Includes construction and maintenance of non-Department of Transportation projects
  - Sub-base under paved lots or building construction*
  - Bridge abutment backfill*
  - Utility trench backfill*
- Must be covered by an impervious surface

# End Use Options

## Landspreading

Must meet site evaluation criteria in Table 3 based on soil pH and texture:

**Table 3**  
**Soil Factors for Site Evaluation**  
**Acceptability for Landspreading Accumulated Sediment**

Soil Factor <sup>1</sup>	Acceptability for Landspreading Accumulated Sediment			
	Unacceptable	Poor	Adequate	Preferred
pH standard units	Less than 5.3 or greater than 8.0	5.3 to 5.6 or 7.7 to 7.9	5.7 to 5.9 7.3 to 7.6	6.0 to 7.2
Texture		Silty clay <sup>2</sup> , clay <sup>2</sup> , sand <sup>3</sup> , loamy sand <sup>3</sup>	Sandy loam, silty clay loam, sandy clay	Loam, silt loam, silt, clay loam, sandy clay loam

<sup>1</sup> Obtain from soil survey, not in-field test

<sup>2</sup> Acceptable only when incorporated

<sup>3</sup> Acceptable only with increased site management determined by the sediment manager

5 dry ton/acre/year application rate

15 tons/acre total application

# End Use Options

## Landspreading

Rate and total tonnage may be exceeded if:

*Soil is sampled and all data necessary to justify exceedences and extended use is collected and evaluated*

Depth of application may not exceed 18"

Cannot apply on frozen soils or within 24 hours  
(before or after) of a precipitation event

May not apply on slopes  $> 6\%$

# End Use Options

## Dedicated Sediment Management Site (Municipal Yard)

- 5 dry ton/acre/year application rate
- 15 tons/acre total application
- Rate and total tonnage may be exceeded if:
  - Soil is sampled and all data necessary to justify exceedences and extended use is collected and evaluated*
- Sediment application must be 18" or less below the ground surface

**(Part C of certification form)**

# *End Use Options*

## **Dedicated Sediment Management Site (Municipal Yard)**

- Cannot apply on frozen soils or within 24 hours (before or after) of a precipitation event
- May apply on slopes > 6%

*Adjust erosion, sediment, and storm water BMPs*

- File an affidavit with the register of deeds in the county where the site is located

**(Part C of certification form)**

Document Number	Affidavit
State of Wisconsin DNR Department of Natural Resources PO Box 7921 Madison, WI 53707-7921	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Accumulated Sediment            Dedicated Site Affidavit</b>            Form 4400-xxxx (8/09)         </div>
<u>Legal Description</u>  	
State of Wisconsin DNR _____ County of _____, Parcel Identification Number (PIN) _____,	
_____, being first duly sworn, on oath deposes and says:	
<ol style="list-style-type: none"> <li>1. That affiant is the ___ of __, which is a generator of an accumulated sediment as defined under Section NR 528.03.</li> <li>2. This is for a dedicated end use site where the accumulated sediment was beneficially used under ch. NR 528, Wis. Adm. Code, on the above described property.</li> <li>3. That the information concerning characteristics, volume and management of the accumulated sediment and the location where the accumulated sediment was used may be obtained by contacting the owner of the property.</li> <li>4. That the purpose of this affidavit is to provide notification to subsequent purchasers that a dedicated site for the placement of accumulated sediment was operated under Chapter NR 528, Wis. Admin. Code, on the above described property.</li> </ol>	
<div style="text-align: right;">           Signature: _____,            Printed or Typed Name: _____         </div>	
<div style="text-align: right;">           Subscribed and sworn to before me this ___ day of _____, 20___.         </div>	
<div style="text-align: right;">           Signature: _____,            Notary Public, State of _____.         </div>	
<div style="text-align: right;">           My commission expires on _____         </div>	
<div style="border: 1px solid black; padding: 5px; width: fit-content;">           This document was drafted by the Wisconsin Department of Natural Resources         </div>	

Sample affidavit provided in technical guidance

# *End Use Options*

## **Other Control**

- Wisconsin Department of Transportation
- Mine Reclamation Sites (NR 135)

In both conditions:

Sampling is not required when there is another document (contract) or a permit that requires sampling encompassing the NR 528.06(3) sampling requirements

## *Other Regulations/Permits May Apply*

NR 216 Construction Site Erosion Control

NR 151 Agricultural Performance Standards

Ch.30 Waterway and Wetland Permit (*i.e. NR 341 - Grading*)

Waukesha County Storm Water Management and Erosion Control Ordinance, **Chapter 13, Article VIII**

Municipal Yard SWPPP

Other local ordinances

# *Resources and Contacts*

## On-line Tools:

NR 528 Rule

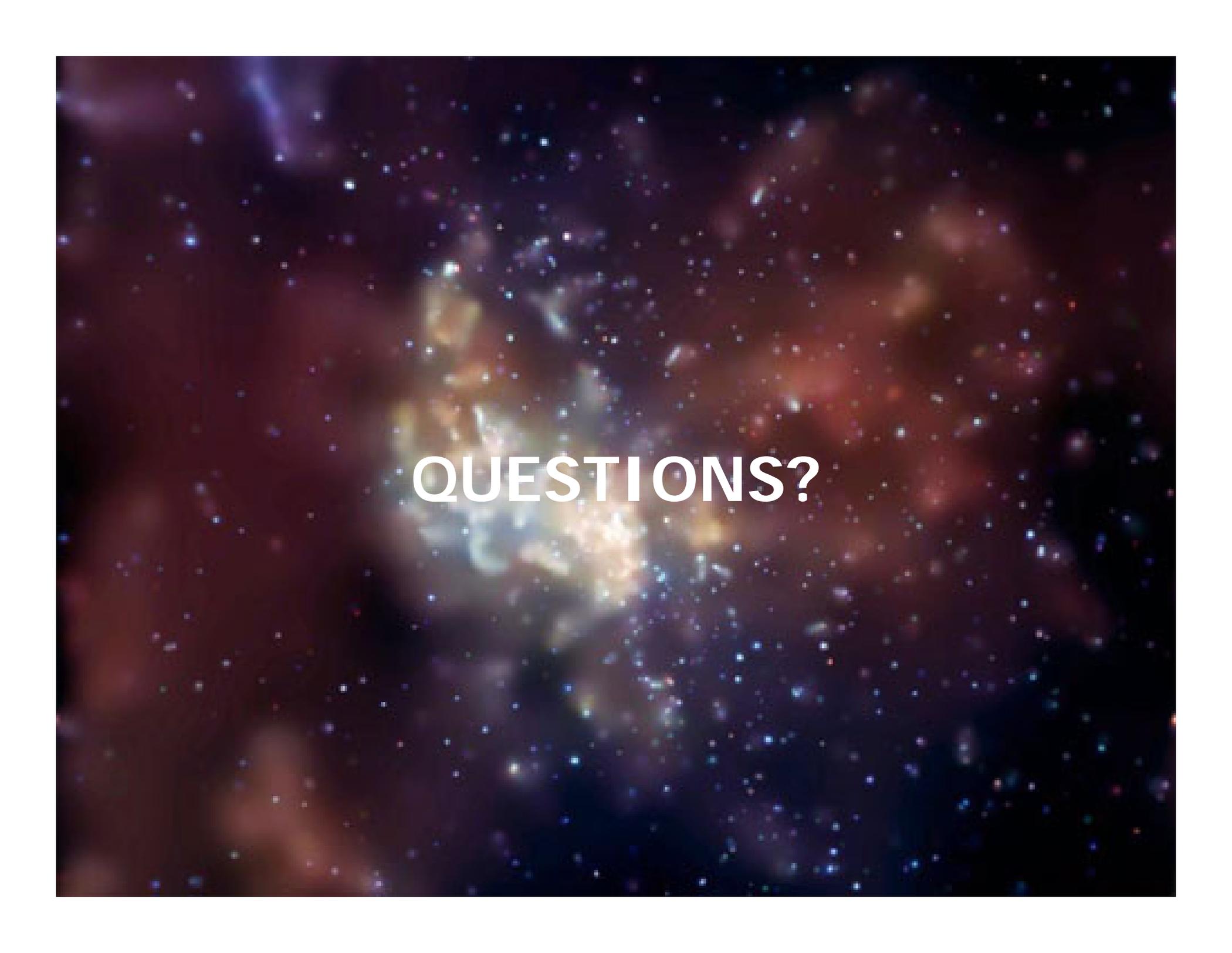
Certification Form (4400-248)

Technical Guidance, *Management of Accumulated Sediment from Storm Water Structures: A guide for sediment managers and environmental professionals*

<http://dnr.wi.gov/org/aw/wm/solid/nr528/>

Contact local Solid Waste Specialist/Engineer:

<http://dnr.wi.gov/staffdir/dynamic/wastemanagement.asp>



**QUESTIONS?**