



Remediation and Redevelopment Program

Wednesday, Oct. 5, 2016
12:00 p.m. – 1:00 p.m.

Dial: 1-855-947-8255
Passcode: 6612 745#

**Questions will be taken during breaks in the presentation or
can be submitted to DNRRRComments@wisconsin.gov**

Maintenance Plans: Designing for Compliance after Site Closure

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Maintenance Plan GOAL

clearly identify and explain maintenance requirements

for current and future property owners

to ensure case closure requirements are met and site conditions are protective of human health, safety, welfare and the environment



Maintenance Plans

- Covers and barriers
- Vapor mitigation systems
 - Dewatering systems
- Monitoring wells
(kept for continued sampling)



Guidances Available

RR 980 - Maintenance Plan for a Straightforward Site

- Covers and other barriers
- Monitoring wells

<http://dnr.wi.gov/files/PDF/pubs/rr/RR980.docx>

RR 981 - Maintenance Plans for Vapor Mitigation Systems/VI/Vapor Barriers

<http://dnr.wi.gov/files/PDF/pubs/rr/RR981.pdf>

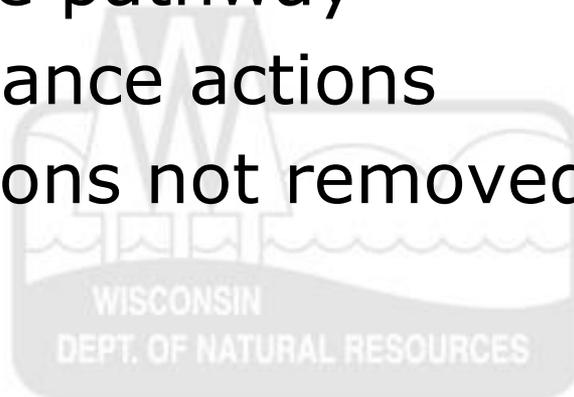


Importance of Maintenance Plans

- Protection of human health, safety, welfare and the environment depends on compliance with the conditions of closure.
- Audits shows general compliance with COs, but very little compliance with inspection requirements.

Common Problems

- Map does not show the extent of the soil contamination in relation to the extent of the covered areas
- Template is not changed or is incorrect:
 - site and contact information
 - exposure pathway
 - maintenance actions
 - instructions not removed



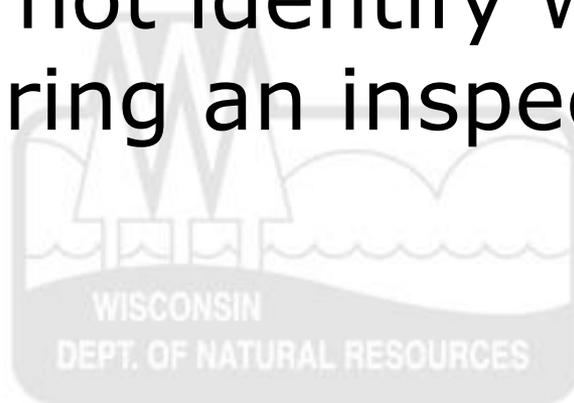


Common Problems

- Features requiring maintenance are not labeled on photos or maps
- Failure to provide construction documentation for soil and engineered covers
- No person identified as responsible for conducting maintenance or inspections
- No location provided for inspection reports

Common Problems

- No photos or poor quality photos
- Lack of descriptions for photos
- More SI info provided than maintenance related info
- Plan does not identify what passes or fails during an inspection





Reminders

Covers for Vegetated Areas:

- Maintain vegetation, gravel, bark, etc.
- Prevent deep-rooted plants by mowing
- Promptly repair areas of deterioration to prevent exposure to contamination

Reminders

Monitoring Well Maintenance:

- Check integrity of well labels, lock and seal
- Determine if the well is providing a conduit for contamination
- Repair as needed
- Abandon when necessary
 - NR 141, Form 3300-005



Personalize the Template

- A template and checklist are provided, but these only provide a platform
- Personalize the plan for the site, the property and the property owner
- Consider who will be doing inspections and maintenance, and their likely level of comfort with the required actions



Recommended Actions

- Add site-specific information about:
 - current land use
 - why the cover/barrier/system was required
 - why it needs to be maintained
- Use plain language for descriptions and directions



Recommended Actions

- Identify for which actions DNR notification and approval are needed
- Use maps which show where the features are located, and any important details
- Use the same feature description from maps on photos

Cover Map Example

LEGEND



LANDSCAPE/GREENSPACE CAP
(EXCAVATED 1.0' BELOW FINISH GRADE)



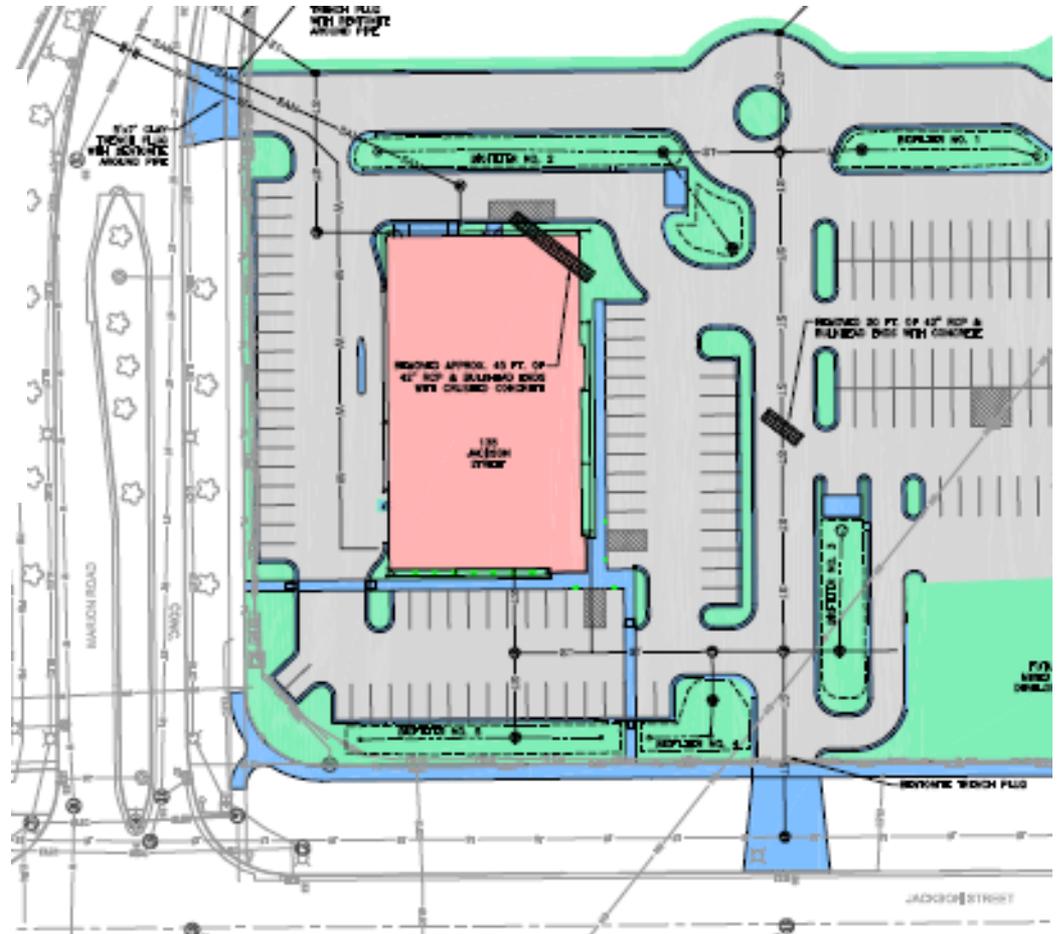
CONCRETE PAVEMENT CAP
(EXCAVATED 1.5' BELOW FINISH GRADE)



ASPHALT PAVEMENT CAP
(EXCAVATED 1.5' BELOW FINISH GRADE)



BUILDING AREAS
(EXCAVATED 1.5' BELOW FINISH GRADE)



Recommended Actions

- Include baseline photos:
 - clear, good quality photos of features to be maintained
 - include descriptions of exactly what needs to be inspected and maintained





Photo 5: Vapor mitigation at Lot 1, intake louvers for parking garage, south side of building, west of garage door. Make sure the louvers are free of obstructions and free to draw in air.



Recommended Actions

Include instructions for inspections

- Frequency - reference the closure letter
- Include photos, labeled with the location and the action that should be taken
- Identify what it means to pass an inspection vs. to fail
- Provide a location, contact and address where the inspection reports can be obtained



Inspection Log (cont.)

- Include an inspection checklist:
 - What parts to inspect?
 - What does the part do?
 - What to expect to see?
 - What and when to fix?

What you might want to know if you were given instruction on how to inspect a vapor mitigation system.

SYSTEM COMPONENT		WHAT DOES IT DO?	WHAT DO I CHECK?	WHAT SHOULD I SEE?	WHAT TO FIX?
NAME	PHOTO				
Fan		<p>Fan creates a vacuum and lowers pressure below foundation.</p> <p>The fan also removes soil gases from below foundation for discharge to atmosphere.</p>	<p>Fan Operation</p> <p>Fan Location</p> <p>Motor Noise</p>	<p>Fan is on</p> <p>Fan mounted outside & secure</p> <p>Fan motor is quiet (loud motor may indicate problem)</p>	<p>Fan may need to be replaced every 15 to 20 years.</p> <p>Replacement fan to have similar specifications as original with respect to flow and vacuum.</p> <p>ORIGINAL = <u>Insert Fan Spec and Name</u></p>
Sealed Sump w/Vent Pipe		<p>Sump Cover: Soil gases are collected in sump and the cover prevents soil gas from getting inside home.</p> <p>Vent Pipe: Pipe conveys the vacuum from the fan, and collects soil gases for discharge to the atmosphere.</p>	<p>Sump Cover Seal</p> <p>Vent Pipe Condition</p>	<p>Sump seal is air tight around edge and at pipe penetrations.</p> <p>Vent pipe is connected to fan, and is free of cracks or leaks.</p>	<p>Sump cover or vent pipe may need to be sealed or replaced if cracks or leaks appear.</p> <p>See NOTE below regarding pipe alternations. Have professional test pressures if pipes are modified</p>
Suction Drop Point w/Vent Pipe		<p>Suction Pit: Soil gases are collected in a pit below the foundation, and tight seal prevents soil gas from getting inside home.</p> <p>Vent Pipe: Pipe conveys the vacuum from the fan, and collects soil gases for discharge to the atmosphere.</p>	<p>Suction Pit Seal</p> <p>Vent Pipe Condition</p>	<p>Seal is air tight around pipe penetration.</p> <p>Vent pipe is connected to fan, has not cracked</p>	<p>Suction pit seal or vent pipe may need to be sealed or replaced if cracks or leaks appear.</p> <p>See NOTE below regarding pipe alternations. Have professional test pressures if pipes are modified</p>
Manometer or Differential Pressure Gauge		<p>Measures differential pressure between vacuum side of vent pipe and indoor space.</p> <p>This measurement confirms there is a vacuum being pulled by the fan.</p>	<p>Liquid Level on Manometer</p>	<p>Liquid level in manometer is between ___ and ___ on the ___-hand side.</p>	<p>A change in liquid level indicates a change in the vacuum below foundation. This could be caused by failure of fan, blockage of vent pipe, change in water level below building, or other conditions.</p> <p>Troubleshoot or hire professional to identify cause and repair if needed.</p>
Outdoor Vent Pipe		<p>Pipe carries soil gas outside and vents them to the atmosphere.</p>	<p>Vent Pipe Condition</p> <p>Vent Pipe Location</p>	<p>Vent pipe remains connected to fan.</p> <p>End of pipe free from obstructions.</p> <p>The exhaust is more than 15 feet from windows or air intakes.</p>	<p>Vent pipe may require replacement, or cleaning to remove ice or debris.</p> <p>See NOTE below regarding pipe alternations. Have professional test pressures if pipes are modified.</p>



Inspection Logs

- Include a baseline inspection report
- Inspection Log (DNR Form 4400-305)
 - Allows for electronic documentation and submittal, can include photos
 - Make sure the property owner has a point of contact for questions
 - <http://dnr.wi.gov/files/PDF/forms/4400/4400-305.pdf>



DNR Form: Inspection Log

Directions: In accordance with s. NR 727.05 (1) (b) 3., Wis. Adm. Code, use of this form for Personal information collected will be used for administrative purposes and may be provided Wis. Stats.]. When using this form, identify the condition that is being inspected. See the closure letter from the Department of Natural Resources. A copy of this inspection log is required to be maintained and not delete previous inspection results. This form was developed to provide a continuous history of inspections in the closure letter. The project manager may also be identified from the database, BRRTS using the BRRTS ID number, and then looking in the “Who” section.

Activity (Site) Name

Inspections are required to be conducted (see closure approval letter):

- annually
- semi-annually
- other – specify _____

Inspection Date	Inspector Name	Item	Describe the condition of the item that is being inspected
		<input type="checkbox"/> monitoring well <input type="checkbox"/> cover/barrier <input type="checkbox"/> vapor mitigation system <input type="checkbox"/> other:	

Continuing Obligations Inspection and Maintenance Log

Form 4400-305 (2/14)

Page 1 of 2

documenting the inspections and maintenance of certain continuing obligations is required. Requesters to the extent required by Wisconsin's Open Records law [ss. 19.31-19.39, ensure approval letter for this site for requirements regarding the submittal of this form to the either on the property, or at a location specified in the closure approval letter. Do NOT of site inspection results. The Department of Natural Resources project manager is identified on the Web, at <http://dnr.wi.gov/botw/SetUpBasicSearchForm.do>, by searching for the site

		BRRTS No.	
When submittal of this form is required, submit the form electronically to the DNR project manager. An electronic version of this filled out form, or a scanned version may be sent to the following email address (see closure approval letter):			
	Recommendations for repair or maintenance	Previous recommendations implemented?	Photographs taken and attached?
		<input type="radio"/> Y <input type="radio"/> N	<input type="radio"/> Y <input type="radio"/> N

Vapor Mitigation System



Vent pipe and fan assembly; close-up of same.



Dedicated breaker switch (#1) on.



White PVC vent pipe along ceiling.





Recommended Actions

- Ease of “sub-dividing” the information in the plan in the case of property transactions
 - Provide a separate checklist of actions with labeled photos and inspection log for each parcel, so the MP can be easily transferred upon a typical property transaction
 - See BOTW, BRRTS # 0230561839 example



Recommended Actions

- Discuss the MP with the property owner
 - Do a walk-through
 - Identify the actions required for maintenance
 - Identify the parts of the system requiring maintenance or inspection
 - Provide an initial inspection report and fill it out with the property owner



Summary – Personalizing the MP

- Consider the site, the features to be maintained, and the person conducting the maintenance and inspections
 - Make sure site specifics are correct
- Make sure the plan is clear about which features to assess or maintain:
 - Maps with pertinent details
 - Photos: labeled with instructions and location of feature
 - Clear instructions/checklist



Summary – Personalizing the MP

- Format the plan for ease of information transfer in property transactions
- Provide contact name, phone, address
- Discuss how to conduct and document inspections
- Provide a baseline for inspections
- Do a walk-through whenever possible

Questions?





Issues & Trends 2016

Soil Management under NR 718

Nov. 9, 2016 | Noon

(Note the Date – Second Wednesday of the Month)

Audio and information from today's presentation and future *Issues & Trends Series* events can be found on the RR Program Training Webpage at:

[Http://dnr.wi.gov/topic/Brownfields/Training.html](http://dnr.wi.gov/topic/Brownfields/Training.html)

Questions/Comments/Suggestions regarding the *Issues & Trends Series* can be submitted to:

DNRRRComments@wisconsin.gov

