

classification in order to satisfy the requirements of ch. NR 720. A groundwater use restriction must be required if groundwater enforcement standards are attained or exceeded.

(3) CLOSURE UNDER CH. NR 726. If the agency with administrative authority for a site determines that the site does not comply with the requirements of sub. (1) or (2), closure may still be granted on a case-by-case basis in compliance with the requirements of ch. NR 726.

(4) ADDITIONAL REMEDIAL ACTION. If closure is not granted, the responsible person shall conduct additional remedial action in compliance with chs. NR 140 and 700 to 726.

(5) REMEDIATION FUNDING. (a) Paragraphs (b) and (c) shall apply to sites that meet any of the following conditions:

1. Sites where groundwater contaminant concentrations attain or exceed enforcement standards, but closure could be granted under sub. (2) if the owners of the properties where enforcement standards are attained or exceeded sign and record a groundwater use restriction, and a deed restriction or deed notice, if required.

2. Sites where remediation targets have been achieved, and the site could be closed under sub. (2) if a required groundwater use restriction, deed restriction or deed notice that complies with ch. NR 726 is signed and recorded.

3. Sites that have been closed with a required groundwater use restriction, deed restriction or deed notice.

(b) Additional remedial action, other than natural attenuation, may not be required at such sites, unless the agency with administrative authority for the site determines that an actual or potential risk to public health, safety or welfare or the environment exists.

(c) Funding under s. 101.143, Stats., shall be terminated by Commerce for sites that are eligible for closure under sub. (1) or (2), even if a groundwater use restriction, deed restriction or deed notice is not signed and recorded for one or more properties, and the site shall be ineligible for additional reimbursement except for post-closure costs that are otherwise eligible for reimbursement under ch. Comm 47.

(d) Sites requiring no action under this chapter other than the signing and recording of a groundwater use restriction or deed restriction shall be classified for tracking purposes as "conditionally closed," which means that a closure application has been submitted and the site will be closed when the conditions are satisfied.

(6) TRACKING OF REMEDIATION PROGRESS. By no later than January 1, 2001, and annually thereafter, responsible persons shall submit an annual report to the agency with administrative authority for the site, as required by s. 101.143 (2) (i) 2., Stats., with a summary of all monitoring data that has been collected, the status of remediation that has been conducted to date and an estimate of the additional costs that must be incurred to achieve site closure.

**NR 746.08 Classification and transfer of sites.** (1) **GENERAL.** The classification of a site as high-risk, or medium or low risk shall be determined by applying the definitions in s. 101.144 (1)(aq), Stats., and s. NR 746.03 (7), (9) and (10), to the data that has been collected during the site investigation. Until this determination is made, DNR has administrative authority for the site.

(2) **SUBMITTAL OF SITE INVESTIGATION REPORTS TO THE APPROPRIATE AGENCY.** Site investigation reports submitted after May 18, 2000 shall include a statement as to whether a site is believed to be high-risk, or medium or low risk and shall be submitted directly to the agency with administrative authority for the site under s. NR 746.04 (1). If a site falls under the authority of Commerce, the responsible person shall provide DNR with a copy of the letter that transmits the site investigation report to Commerce. The DNR shall transfer the site file to Commerce within 14 days after receipt of a copy of the transmittal letter that indicates that the site falls under the authority of Commerce.

(3) **SUBMITTAL OF CLOSURE REPORTS TO THE APPROPRIATE AGENCY.** If the submittal of a site investigation report is not required or the site investigation report was submitted without a determination of whether the site is believed to be high-risk, or medium or low risk, the closure report shall be submitted directly to the agency that is believed to have administrative authority for the site under s. NR 746.04 (1). If a site falls under the authority of Commerce, the responsible person shall provide DNR with a copy of the letter that transmits the closure report to Commerce. The DNR shall transfer the site file to Commerce within 14 days after receipt of a copy of the transmittal letter that indicates that the site falls under the authority of Commerce.

(4) **CHANGES IN CLASSIFICATION.** If a site is classified as high-risk, or medium or low risk, and the agency receiving the site investigation report or closure report determines that the classification is incorrect and the site, as reclassified, falls under the other agency's administrative authority, the agency making the determination shall transfer the site file and all related data to the other agency within 14 days after making the determination that the site was incorrectly classified.

**NR 746.09 Interagency staff training.** In order to ensure that employees understand the requirements of this chapter and the NR 700 rule series, and to ensure that the agencies will issue approvals when the requirements of this chapter and the NR 700 rule series are satisfied, Commerce and DNR shall:

(1) Identify interagency staff training needs at least once each year. Each agency shall list interagency staff training needs that have been identified in order of priority and shall provide that list to the other agency by May 1 of each year.

(2) Agree by July 1 of each year on the staff training that is to be jointly conducted before July 1 of the following year. This agreement is to include the subject of the training, the

approximate date on which it will be conducted, the preferred training provider, and the estimated cost of training.

(3) Develop procedures to receive recommendations on interagency staff training needs from interested parties outside the agencies before finalizing training plans.

**NR 746.10 Dispute resolution.** Any disputes between Commerce and DNR under this chapter shall be subject to the following dispute resolution process:

(1) Project managers shall discuss their differences, and the basis for them, in an attempt to resolve the dispute.

(2) If the dispute is not resolved by the project managers, the decision shall be referred to the project managers' supervisors.

(3) If the dispute is not resolved by the project managers' supervisors, the decision shall be referred to the appropriate division administrators or deputy administrators.

(4) If the dispute still remains unresolved at the division administrator level, the department secretaries shall make the final decision.

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## Appendix A

### Nonparametric Statistical Tests for Determining the Effectiveness of Natural Attenuation

Two nonparametric statistical tests are described here: the Mann-Kendall (S) and Mann-Whitney (U) statistical tests. These tests can be used to show whether groundwater contaminant concentrations in a monitoring well are increasing, stable or decreasing. However, neither test is able to determine the rate in which the concentrations are changing over time. The Mann-Kendall Test can be used with a minimum of four (4) rounds of sampling results; however, the Mann-Kendall Test is not valid for data that exhibit seasonal behavior. The Mann-Whitney U Test is applicable to data that may or may not exhibit seasonal behavior, but the test requires eight (8) consecutive rounds of quarterly or semi-annual sampling results. To demonstrate that natural attenuation is effective, the chosen statistical test must show decreasing contaminant concentrations at an appropriate confidence level, given in the test methodologies that follow.

#### Mann-Kendall Test

1. Assemble well data for at least four (4) sampling events for each contaminant in the order in which the data was collected. Include all contaminants that have exceeded the ES at one or more monitoring wells. Include data from:
  - a. One or more contaminated monitoring wells near the downgradient plume margin, which may include piezometers,
  - b. A monitoring well near the source zone, and
  - c. At least one monitoring well along a flow line between the source zone well and plume margin well.
  
2. For purposes of the Mann-Kendall test, all non-detect data values should be assigned a single value that is less than the detection limit, even if the detection limit varies over time.
  
3. Tests for Seasonality in Data. For seasonally affected data, either remove the seasonality in the data (e.g., by only testing data from the seasons with the highest contaminant concentrations) or use a statistical test that is unaffected by seasonality, such as the Mann-Whitney U Test. To test for data seasonality:
  - a. Determine if groundwater flow direction changes with season by comparing a water table map from each season that the contaminant concentrations are measured. If the flow direction changes from one sampling period to another and shifts the plume away from the wells being used in the statistical test, then data from those season(s) that are shifted away from the centerline monitoring wells can not be used in the Mann-Kendall Test.
  - b. Determine if groundwater elevation and contaminant concentration change seasonally. Plot contaminant concentration versus groundwater level for each well to be assessed by the Mann-Kendall Test. If groundwater concentrations change as water level changes, then the data is seasonally affected. The seasons with the highest contaminant concentrations should be included in the Mann-Kendall Test.
  
4. Calculate the Mann-Kendall Statistic (S) using a manual method or a DNR supplied spreadsheet. Assess all contaminants in the plume for the selected wells being assessed with the Mann-Kendall Test. Enter data for each contaminant in the order it was collected.
  - a. Manual Method to Calculate Mann-Kendall Statistic. Compare data sequentially, comparing sampling event 1 to sampling events 2 through n, then sampling event 2 to sampling events 3 through n, etc. Each row is filled in with a 1, 0 or -1, as follows:

Along row 2, if:

- Concentration of event  $x_i >$  event 1: Enter +1
- Concentration of event  $x_i =$  event 1: Enter 0
- Concentration of event  $x_i <$  event 1: Enter - 1

Where:  $n$  = total number of sampling events  
 $x_i$  = value of given sample event, with  $i = 2$  to  $n$

Continue for the remaining rows. Sum each row and enter result at the end of the row. Add the sum of each row down to obtain the Mann-Kendall Statistic (S). See Table A as an example.

**Table A**  
**Mann-Kendall Statistic**

	Sampling Event 1	Sampling Event 2	Sampling Event 3	Sampling Event 4	Sampling Event 5	Sum Rows
Contaminant concentration →	100	50	85	75	50	
Compare to Event 1 →		-1	-1	-1	-1	-4
Compare to Event 2 →			+1	+1	0	+2
Compare to Event 3 →				-1	-1	-2
Compare to Event 4 →					-1	-1
						Mann Kendall Statistic (Total) = -5

b. Manual Mann-Kendall Statistic Look up Table. Table B gives the maximum S statistic ( $S_{max}$ ) to accept a declining trend alternative at an  $\alpha$  level of significance. If the computed S is greater than  $S_{max}$  (or S is a smaller negative number than  $S_{max}$ ), then there is either a no-trend or an increasing trend in the data.

**Table B**  
**Mann-Kendall Statistic Look Up Table**

N	Range of S	$S_{max}$ $\alpha = 0.2^*$
4	- 6 to + 6	- 4
5	- 10 to + 10	- 5
6	- 15 to + 15	- 6
7	- 21 to + 21	- 7
8	- 28 to + 28	- 8
9	- 36 to + 36	-10
10	- 45 to +45	-11

\* The probability that the computed Mann-Kendall statistic  $S \leq S_{max}$  is at most  $\alpha$ .

5. Test for a declining trend. Evaluate data trends for each contaminant identified in the plume. Evaluate the null hypothesis of no trend against the alternative of a decreasing trend. The

null hypothesis can be rejected in favor of a decreasing trend if both of the following conditions are met:

- a. S is a large negative number (see Table B for magnitude of S)
  - b. The probability value, given n (number of data) and the absolute value of S, is LESS than the a priori significance level,  $\alpha$ , of the test. An  $\alpha \leq 0.2$  is acceptable.
6. Test for an increasing trend. An increasing trend alternative (i.e., an advancing plume) is shown if both of the following conditions are met:
- a. S is positive.
  - b.  $S \geq |S_{\max}|$  at a given  $\alpha$  level of significance (see Table B). If the computed S is equal to or greater than the absolute value of  $S_{\max}$ , then it can be concluded the plume is advancing at an  $\alpha$  level of significance. An  $\alpha \leq 0.2$  is acceptable for this test.
7. Test for Plume Stability. If the Mann-Kendall Test indicates no-trend is present, perform the coefficient of variation test. As a non-parametric test, the Mann-Kendall Test does not take into account the magnitude of scatter in the data. A data set with a great deal of scatter may return a Mann-Kendall test indicating there is no trend, when, in fact, no conclusion can be drawn regarding trend because of data variability. In this case, additional data collection may be necessary to determine that the plume is stable, declining or advancing. As a simple test, the coefficient of variation can assess the scatter in the data:

$$CV = \frac{\text{standard deviation}}{\text{arithmetic mean}}$$

Where: CV = coefficient of variation

CV should be  $\leq 1$  to say that the no-trend hypothesis also indicates a stable plume configuration.

Mann-Whitney U Test. This test is equivalent to the Wilcoxon Rank Sum Test.

1. Assemble well data for the most recent eight (8) consecutive quarterly or semi-annual sampling events for each contaminant that has exceeded the ES at one or more monitoring wells. Include data from:
  - a. One or more contaminated monitoring wells near the downgradient plume margin, which may include piezometers,
  - b. A monitoring well near the source zone, and
  - c. At least one monitoring well along a flow line between the source zone well and plume margin well.

2. Enter the data into a DNR supplied spreadsheet or manually assemble the data into a table (e.g., Table C) in the order the data was collected. Assign a rank to each sample value, with the smallest value ranked #1 and the largest value ranked #8.
3. For purposes of the Mann-Whitney U test, all non-detect values should be assigned a data value of zero (0).

**Table C**  
**Example Data Set for the Mann-Whitney U Statistical Test**

Year/Date	Benzene Concentration (ug/l)	Rank	Rank Sum of 1 <sup>st</sup> Year (Wrs)
1 <sup>st</sup> Year, 1 <sup>st</sup> Quarter	160	8	} 25
1 <sup>st</sup> Year, 2 <sup>nd</sup> Quarter	130	7	
1 <sup>st</sup> Year, 3 <sup>rd</sup> Quarter	80	4	
1 <sup>st</sup> Year, 4 <sup>th</sup> Quarter	100	6	
2 <sup>nd</sup> Year, 1 <sup>st</sup> Quarter	89	5	
2 <sup>nd</sup> Year, 2 <sup>nd</sup> Quarter	0	1	
2 <sup>nd</sup> Year, 3 <sup>rd</sup> Quarter	53	3	
2 <sup>nd</sup> Year, 4 <sup>th</sup> Quarter	24	2	

**U = 26 - Wrs = 1**

4. Sum the ranks for the data in the 1<sup>st</sup> year. Denote this sum as Wrs (or the Wilcoxon rank sum).
5. Calculate the U Statistic.  $U = 26 - Wrs$
6. Interpreting U Statistic. For 2 groups of 4 samples, at  $U \leq 3$ , the probability that year 2 data show a decrease relative to year 1 data is at least 90%, and so  $U \leq 3$  will be acceptable to show that contaminant concentration is declining.
7. If there are ties in sample data, calculate an average rank value for the tied data and assign this average rank to the tied sample data. See example in Table D.

**Table D**  
**Example of Rank Sum Value for Tied Data**

Year/Date	Benzene Concentration (ug/l)	Check for Ties	Rank	Rank Sum of 1 <sup>st</sup> Year (Wrs)
1 <sup>st</sup> Year, 1 <sup>st</sup> Quarter	300		8	24.5
1 <sup>st</sup> Year, 2 <sup>nd</sup> Quarter	280		7	
1 <sup>st</sup> Year, 3 <sup>rd</sup> Quarter	105		4	
1 <sup>st</sup> Year, 4 <sup>th</sup> Quarter	110	*	5.5	
2 <sup>nd</sup> Year, 1 <sup>st</sup> Quarter	83		3	
2 <sup>nd</sup> Year, 2 <sup>nd</sup> Quarter	50	√	1.5	
2 <sup>nd</sup> Year, 3 <sup>rd</sup> Quarter	110	*	5.5	
2 <sup>nd</sup> Year, 4 <sup>th</sup> Quarter	50	√	1.5	
				<b>U = 26 - Wrs = 1.5</b>

8. Probability and the U Statistic. Table E shows the  $\alpha$  value and the confidence level for values of U calculated for 2 groups of 4 samples each.

**Table E**  
**Probability and U Statistic**  
 (For 2 Groups of 4 samples each)

U Statistic	Level of significance ( $\alpha$ )	Confidence Level (%)
0	0.014	98.6
1	0.029	97.1
2	0.057	94.3
3	0.100	90.0

9. If more than 8 consecutive rounds of data are available, a Mann-Whitney U statistic can be calculated similar to the method presented here. Each set of data to be compared should represent the same span of time (e.g. 1 year) and the same time interval between samples (e.g., quarterly). The test must be conducted at a level of significance ( $\alpha$ ) of  $\leq 0.10$ .

References:

Conover, W.J., Practical Nonparametric Statistics, 2<sup>nd</sup> Ed., John Wiley & Sons, 1971, pp. 216-223.

Gilbert, R.O., Statistical Methods for Environmental Pollution Monitoring, Van Nostrand Reinhold, 1987, pp. 204 - 240 and 272.

The foregoing rule was approved and adopted by the State of Wisconsin Natural Resources Board on April 26, 2000.

This rule takes effect on the first day following publication in the official state newspaper as provided in s. 227.24 (1) (c), Stats.

Dated at Madison, Wisconsin April 27, 2000

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

By George E. Meyer  
George E. Meyer, Secretary

(SEAL)

ORIGINAL     UPDATED  
 CORRECTED     SUPPLEMENTAL

LRB or Bill No./Adm. Rule No.

Amendment No. if Applicable

**FISCAL ESTIMATE**  
DOA-2048 N(R10/94)

Subject

Creation of NR 746 and revisions to NR 720, 722 and 726

Fiscal Effect

State:  No State Fiscal Effect

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

- Increase Existing Appropriation     Increase Existing Revenues
- Decrease Existing Appropriation     Decrease Existing Revenues
- Create New Appropriation

- Increase Costs - May be possible to Absorb Within Agency's Budget     Yes     No
- Decrease Costs

Local:  No local government costs

- 1.  Increase Costs  
 Permissive     Mandatory
- 2.  Decrease Costs  
 Permissive     Mandatory
- 3.  Increase Revenues  
 Permissive     Mandatory
- 4.  Decrease Revenues  
 Permissive     Mandatory

5. Types of Local Government Units Affected:

- Towns     Villages     Cities
- Counties     WTCS Districts
- School Districts     Others

Fund Sources Affected

- GPR     FED     PRO     PRS     SEG     SEG-S

Affected Ch. 20 Appropriations

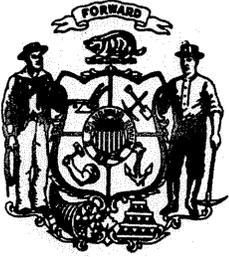
Assumptions Used in Arriving at Fiscal Estimate

SUMMARY OF BILL/RULE - Creation of NR 746 and related revisions to NR 700, General Requirements, NR 716, Site Investigations; NR 720, Soil Stanards; NR 722, Standards for Selection of Remedial Actions; and NR 726, Case Closure include new requirements for classification of sites, and create risk criteria to be used in selecting responses to contaminated sites. The changes allow clay-type sites to close after a site investigation if risk screening criteria are satisfied and for non-clay sites to close after demonstrating that natural attenuation is effective in reducing contaminant concentrations as well as satisfying the risk screening criteria. In clay-type sites, it is assumed that natural attenuation will eventually reduce groundwater contamination below enforcement standards, without any active remedies being implemented.

Long-Range Fiscal Implications

In some cases, State monies may be needed to cleanup sites where natural attenuation does not perform as expected. This rule will decrease the average remediating sites over the next 10 years, i.e., more sites will be cleaned at any given level of PECFA funding being available.

Agency	Prepared By	Phone No.	Authorized Signature	Phone No.	Date
DNR	Joe Polasek	(608) 266-2794		(608) 266-2794	04/04/2000



# STATE OF WISCONSIN

February 11, 2000

The Honorable Judith Robson  
Senate Chair  
Joint Committee for the Review  
Of Administrative Rules  
118 North, State Capitol  
Madison, WI 53702

The Honorable Glenn Grothman  
Assembly Chair  
Joint Committee for the Review  
Of Administrative Rules  
125 West, State Capitol  
Madison, WI 53702

*Judy* *Glenn*  
Dear Senator Robson and Representative Grothman:

The Department of Commerce and the Department of Natural Resources are sending this letter pursuant to section 227.24 (2), Stats., to request that the Joint Committee for Review of Administrative Rules extend emergency rule ch. Comm 46 /NR 746 for 60 days. This emergency rule pertains to the classification of petroleum contamination sites and the application of risk screening criteria. Chapter Comm 46/NR 746 took effect on October 20, 1999 and will expire on March 18, 2000 unless an extension is granted.

The extension of the emergency rule is needed so that the emergency rule will remain in effect for another 60 days while the Departments of Commerce and Natural Resources work to finalize a permanent rule for adoption by the two agencies.

If you have any questions about this request, please contact John Alberts of the Department of Commerce at (608) 266-9403 or Jay Hochmuth of the Department of Natural Resources at (608) 267-9521. Thank you.

Sincerely,

Brenda J. Blanchard, Secretary  
Department of Commerce

George E. Meyer  
Dept. of Natural Resources

Cc: John Alberts - Commerce  
Jay Hochmuth - DNR

**ORDER OF THE STATE OF WISCONSIN  
NATURAL RESOURCES BOARD  
CREATING RULES**

The Wisconsin Natural Resources Board proposes to create NR 746 relating to sites contaminated with petroleum products from petroleum storage tanks.

RR-31-99 (E)

Analysis prepared by the Department of Natural Resources

Statutory authority: Sections 227.11 (2)(a), 227.24 and 227.26 (2)(b), Stats.

Statutes interpreted: Sections 101.143, 101.144, 292.11 and 292.31 and ch. 160, Stats.

The proposed NR 746 is identical to the version of emergency rule Comm 46 that was in effect until September 27, 1999 and is identical to the version of Comm 46 that is being recreated by the Department of Commerce.

Chapter NR 746 defines "high priority site", "medium priority site" and "low priority site", and provides that the Department of Natural Resources shall have authority for high priority sites and the Department of Commerce shall have authority for low and medium priority sites. If adopted by the Natural Resources Board, the rule will require the transfer of sites with petroleum contamination in the groundwater below the enforcement standard in ch. NR 140 from the Department of Natural Resources to the Department of Commerce.

Chapter NR 746 requires the two agencies to work cooperatively to develop the following:

1. A system of joint decision-making for the selection of remedial bids and the setting of remediation targets for sites which are competitively bid or bundled with another site or sites.
2. An agreed-upon methodology for determining if there is evidence of an expanding plume and the actions to take if the data provided through the site investigation is not adequate.
3. A process for taking into account the impact of error of measurement, repeatability of results and statistical significance, when determining whether a site is above or below the enforcement standard or any other contaminant level or target.
4. A system for electronically tracking the achievement of remediation targets.
5. A reconciled list of sites in remediation.

Chapter NR 746 also establishes procedures for transferring sites from one agency to the other when information relevant to their classification becomes available.

SECTION 1. NR 746 is created to read:

**CHAPTER NR 746  
Petroleum Environmental Cleanup Fund  
Interagency Responsibilities**

**NR 746.01 Purpose.** The purpose of this rule is to identify the roles, processes and procedures that guide the departments of commerce and natural resources in the administration of their respective responsibilities for high, medium and low priority petroleum-contaminated sites under ss. 101.143, 101.144, 292.11 and 292.31, and ch. 160,

Stats. This rule codifies portions of a memorandum of understanding that has been signed by the two agencies, as required by s. 101.144 (3m), Stats.

**NR 746.02 Applicability.** This chapter only applies to sites where petroleum products have discharged from petroleum storage tanks.

**NR 746.03 Definitions.** In this chapter:

- (1) "Commerce" means the department of commerce.
- (2) "Discharge" has the meaning specified in s. 292.01 (3), Stats.

**Note:** Under s. 292.01 (3), Stats., "discharge" means, but is not limited to, "spilling, leaking, pumping, pouring, emitting, emptying or dumping."

- (3) "DNR" means the department of natural resources.
- (4) "Enforcement standard" means a numerical value expressing the concentration of a substance in groundwater which is adopted under s. 160.07, Stats., and s. NR 140.10 or s. 160.09, Stats., and s. NR 140.12.
- (5) "Groundwater" has the meaning specified in s. 160.01 (4), Stats.

**Note:** Section 160.01 (4), Stats., defines "groundwater" to mean "any water of the state, as defined in s. 281.01 (18), occurring in a saturated subsurface geological formation of rock or soil. Section 281.01 (18), Stats., defines "waters of the state" to include "those portions of Lake Michigan and Lake Superior within the boundaries of this state, and all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, watercourses, drainage systems and other surface water or groundwater, natural or artificial, public or private, within this state or its jurisdiction."

(6) "High priority site" means a site that is contaminated with a petroleum product and meets one or more of the following criteria:

- (a) One or more hazardous substances other than petroleum products from a petroleum storage tank are present at the site.
- (b) Contamination from the site discharges to a sensitive environment as defined in s. NR 700.03 (55).

**Note:** Section NR 700.03 (55) defines "sensitive environment" to mean "an area of exceptional environmental value, where a discharge could pose a greater threat than a discharge to other areas, including but not limited to: wetlands; habitat used by state or federally designated endangered or threatened species; national or state fish and wildlife refuges and fish and wildlife management areas; state and federal designated wild and scenic rivers, designated state riverways and state designated scenic urban waterways; riparian areas; rookeries; cold water communities as defined in s. NR 102.04 (3)(b), Lakes Superior and Michigan and the Mississippi river, environmentally sensitive areas and environmental corridors identified in area-wide water quality management plans, special area management plans, special wetland inventory studies, advanced delineation and identification studies and areas designated by the U.S. EPA under section 404 (c), 33 USC 1344 (c); calcareous fens; state forests, parks, trails and recreational areas; state and federal designated wilderness areas; designated or dedicated state natural areas established under ss. 23.27 to 23.29, Stats.; wild rice waters as listed in s. NR 19.09; and any other waters identified as outstanding or exceptional resource waters in ch. NR 102."

(c) Groundwater contamination that is equal to or greater than an enforcement standard has been confirmed at the site.

(7) "Low permeability material" means subsurface material above bedrock, as defined in s. NR 141.05 (5), that is saturated with groundwater and has a hydraulic conductivity less than or equal to  $1 \times 10^{-5}$  centimeters per second as determined by a method specified in s. NR 746.05.

**Note:** Section NR 141.05 (5) defines "bedrock" to mean "the solid rock underlying any loose surficial material such as soil, alluvium or glacial drift. Bedrock includes but is not limited to limestone, dolomite, sandstone, shale and igneous and metamorphic rock."

(8) "Low priority site" means a site that is contaminated with a petroleum product and meets both of the following criteria:

(a) There is no confirmed petroleum product in groundwater equal to or greater than a preventive action limit, and

(b) There is no evidence of a hazardous substance on the site other than petroleum products that were discharged from a petroleum storage tank.

(9) "Medium priority site" means a site that is contaminated with a petroleum product and meets both of the following criteria:

(a) There is no evidence of a hazardous substance on the site other than petroleum products that were discharged from a petroleum storage tank; and

(b) There is no confirmed petroleum product in groundwater equal to or greater than an enforcement standard.

(10) "Monitoring well" means a groundwater monitoring well designed, installed, constructed and developed in accordance with the requirements of ch. NR 141, for the purpose of monitoring groundwater or obtaining geologic or groundwater related data. The term "monitoring well" includes piezometers and water table observation wells.

(11) "Natural attenuation" means the reduction in the concentration and mass of a substance and its breakdown products in groundwater due to naturally occurring physical, chemical, and biological processes without human intervention or enhancement. These processes include, but are not limited to, dispersion, diffusion, sorption and retardation, and degradation processes such as biodegradation, abiotic degradation and radioactive decay.

(12) "Permeable material" means a subsurface material that is saturated with groundwater and that is not a low permeability material.

(13) "Petroleum product" has the meaning specified in s. 101.143 (1)(f), Stats.

**Note:** Section 101.143 (1)(f), Stats., defines "petroleum product" to mean "gasoline, gasoline alcohol fuel blends, kerosene, fuel oil, burner oil, diesel fuel or used motor oil." The term "petroleum product" includes substances that are, or once were, constituents of a petroleum product.

(14) "Petroleum storage tank" has the meaning specified in s. 101.144(1)(bm), Stats.

**Note:** Section 101.144 (1)(bm), Stats., defines "petroleum storage tank" to mean "a storage tank that is used to store petroleum products together with any on-site integral piping or dispensing system." The term "petroleum storage tank" does not include a pipeline facility.

(15) "Preventive action limit" means a numerical value expressing the concentration of a substance in groundwater which is adopted under s. 160.15, Stats., and s. NR 140.10 or 140.12.

(16) "Property boundary" has the meaning specified in s. 160.01(6m), Stats.

**Note:** Section 160.01(6m), Stats., defines "property boundary" to mean "the boundary of the total contiguous parcel of land owned by a common owner, regardless of whether public or private roads run through the parcel."

(17) "Remedial action" means a response action taken to control, minimize or eliminate the discharge of petroleum products so that they do not present an actual or potential threat to public health, safety or welfare or the environment. The term "remedial action" includes actions taken to restore the environment to the extent practicable and to meet applicable environmental standards, and includes natural attenuation. Examples include containment, treatment, excavation, disposal, recycling or reuse, and any monitoring required to assure that such actions protect public health, safety and welfare and the environment.

(18) "Remediation target" means the contaminant concentration in groundwater or soil, or both, that must be achieved before a site can be granted, or is eligible for, closure under ch. NR 726.

(19) "Responsible person" has the meaning specified in s. 101.144(1)(d), Stats.

**Note:** Section 101.144(1)(d), Stats., defines "responsible person" to mean "a person who owns or operates a petroleum storage tank, a person who causes a discharge from a petroleum storage tank or a person on whose property a petroleum storage tank is located."

(20) "Site" means any area where a petroleum product has discharged.

(21) "Site closure" or "site closed" means a determination made pursuant to ch. NR 726 that applicable groundwater quality standards in ch. NR 140 have been met or will be met by relying on natural attenuation and that applicable soil cleanup standards in ch. NR 720 have been met or will be met by relying on a remedial action performance standard.

(22) "Source control" means actions taken to remove or treat soil or groundwater contamination, or both, actions taken to minimize the leaching of soil contamination to groundwater, and actions taken to prevent the migration of groundwater contamination. The term "source control" includes tank removal, the removal of free product and contaminant hot spot removal or treatment.

**Note:** The term "source control" does not include groundwater monitoring, soil sampling, recycling or reuse of contaminants, reliance on natural attenuation to address residual contamination, or changes to a facility's design, operation, construction or waste handling or disposal practices.

**NR 746.04 Site authority.** (1) **GENERAL.** The assignment of administrative authority for high, medium and low priority petroleum contaminated sites shall be determined according to the following:

(a) DNR shall have administrative authority for high priority sites.

(b) Commerce shall have administrative authority for low and medium priority sites.

(2) **ADMINISTRATIVE AUTHORITY.** The administrative authority of commerce and DNR for a site includes enforcement under ss. 101.02, 101.144 (2) or (3), or s. 292.11 (7), Stats., setting remediation targets, remediation supervision and direction, and decision making regarding granting or denying closure and deciding whether or not further remedial action is required.

(3) **JOINT DECISION-MAKING.** Commerce and DNR shall implement a system of joint decision-making for the setting of remediation targets for sites that are competitively bid or bundled with another site or sites pursuant to s. Comm 47.337 (4)(a)3. and 4., and the selection of remedial bids.

(4) **CLOSURE DECISIONS FOR SITES WITH GROUNDWATER CONTAMINATION.** At any time following completion of the site investigation, the following steps shall be taken for a site with confirmed groundwater contaminant levels equal to or greater than an enforcement standard:

(a) Where a closure request has been submitted by, or on behalf of, a responsible person with the appropriate fee, the DNR shall review the request, make a determination on closure, and if closure is granted, forward a copy of the closure determination to Commerce.

(b) Where a closure request has not been submitted, if Commerce or DNR identifies a site that either agency believes has met its remediation target, DNR may take action to solicit a closure request from the responsible person.

(5) **DISPUTE RESOLUTION.** Any disputes between Commerce and DNR under sub. (3) or (4) shall be subject to the following dispute resolution process:

(a) Project managers shall discuss their differences, and the basis for them, in an attempt to resolve the dispute.

(b) If the dispute is not resolved by the project managers, the decision shall be referred to the project managers' supervisors.

(c) If the dispute is not resolved by the project managers' supervisors, the decision shall be referred to the appropriate division administrators.

(d) If the dispute still remains unresolved at the division administrator level, the department secretaries shall be the final decision-makers.

**NR 746.05 Site investigation.** (1) **GENERAL.** In conducting an investigation of petroleum contaminated sites, the responsible person or a consultant retained by the responsible person shall meet applicable ch. NR 716 requirements and minimize costs while providing sufficient data necessary for risk assessment screening and decision-making under this section and ss. NR 746.06 and 746.07, ss. Comm 47.337 and 47.339, and chs. NR 720, 722 and 726.

(2) **GROUNDWATER PLUME EXPANSION DETERMINATION.** Commerce and DNR shall develop an agreed upon methodology for determining if there is evidence of a groundwater-contaminant plume margin expansion and the actions to take if the data provided in the site investigation report are not adequate to make this determination. This methodology shall be utilized in the site investigation process.

(3) **LOW PERMEABILITY DETERMINATION.** (a) *General.* If groundwater is contaminated with petroleum products, the responsible person or a consultant retained by the responsible person shall determine, as part of the site investigation, if the contaminant plume is completely contained within low permeability materials and does not extend into deposits of laterally extensive permeable material, into a water line or sewer line trench or other utility corridor, into a fracture in clay, or into another feature that acts or is anticipated to act as a migration pathway for groundwater contamination.

(b) *Evaluation of existing site data.* Existing site data shall be used to make the determinations required under par. (a), if existing site data are sufficient to make these determinations. Existing site data may include, but are not limited to, monitoring well development data, monitoring well purging and sampling data, rising and falling head test data, yield test data, pump test data, monitoring well and boring logs, grain size analysis, local and regional

geology, subsurface description, depositional environment, expected and actual degree and extent of contamination, or a combination of this data. If the responsible person's consultant finds groundwater contamination in low permeability materials, the responsible person or the consultant shall submit to the agency that has administrative authority for the site, for approval, the results of the evaluation of existing site data that is required by this paragraph, or an explanation of why the existing site data are not sufficient to make the determinations required in par. (a).

(c) *Standard hydraulic conductivity tests.* If the agency with administrative authority for the site determines that the existing site data are insufficient to make the determinations required under par. (a), the responsible person, or a consultant retained by the responsible person, shall then determine the hydraulic conductivity of the saturated materials at the site utilizing a method described in Appendix A, or a method that has been approved under par. (d), in conformance with the following requirements:

1. Hydraulic conductivity shall be determined for at least one monitoring well within the contaminant plume unless subd. 2 is applicable.

2. Notwithstanding the requirements in subd. 1, the agency with administrative authority for the site may determine that hydraulic conductivity test results for one or more monitoring wells outside of the plume are representative of the hydraulic conductivity of the saturated materials within the plume, based upon a comparison of the monitoring well logs for monitoring wells installed inside and outside of the plume, and that it is not necessary to conduct a hydraulic conductivity test for a monitoring well within the plume.

(d) *Alternative methods for determining hydraulic conductivity.* The agency with administrative authority for the site may approve an alternative method for determining the hydraulic conductivity of the saturated materials at a site if the method meets the objectives of this section. The responsible person, or a consultant retained by the responsible person, shall obtain approval from the agency before using an alternative method. If the agency grants approval for use of the alternative method, the responsible person or the consultant shall submit site data and test results, to the agency with administrative authority for the site, documenting that the objectives of this section have been met.

(4) **SUPPLEMENTAL SITE INVESTIGATION INFORMATION.** If the site investigation report for the site was submitted prior to the effective date of this rule, supplemental site information, evaluating existing site data to make the determinations required under par. (a), may be required by Commerce or DNR to be included as part of a submittal for approval of a remedial action, setting remediation targets or approving or denying closure. If the agency with administrative authority for the site determines that the existing site data are insufficient to make the determinations required in sub. (3)(a), the responsible person or a consultant retained by the responsible person, shall then determine the hydraulic conductivity of the saturated materials at the site in compliance with the requirements of sub. (3)(c).

**NR 746.06 Risk assessment screening.** (1) **GENERAL.** The risk criteria in sub. (2) for screening sites shall be used to measure the environmental, public health, safety and welfare risks associated with the discharge of petroleum products to determine whether a remedial action shall be required, which could include, but is not limited to, adequate source control and measures to address environmental factors listed in s. Comm 47.337 (3), to set remediation targets, and to determine whether the site may be closed as provided in s. NR 746.07.

(2) **RISK CRITERIA FOR SCREENING SITES.** In making decisions under sub. (1), Commerce and DNR shall utilize, as provided in s. NR 746.07, the following risk criteria for screening sites:

(a) None of the environmental factors as listed in s. Comm 47.337 (3) are present at the site at the time of the completion of the site investigation;

(b) There is no contaminant concentration in any groundwater that has migrated outside of the property boundary, of the property where the source of the contamination is or was located, that is equal to or greater than enforcement standards, except in a public road or street right of way;

(c) No soil contamination exists within 4 feet of the ground surface that exceeds the direct contact soil concentrations listed in Table 1;

(d) No groundwater contamination, in a water sample collected from a monitoring well in low permeability material, which has been identified using the methods specified in s. NR 746.05, exceeds the groundwater concentrations listed in Table 1;

(e) 1. There is a vertical separation distance of 5 feet or more between any contaminants contained within low permeability material and any permeable material on the site, or the soil and groundwater contaminant concentrations are decreasing with depth within the low permeability material, and

2. No concentration of any contaminant in the groundwater contained within permeable material is equal to or greater than an enforcement standard;

(f) There is no impact to a water line or sewer line trench or other utility corridor along which vapors, free product or contaminated water may flow, or an interbedded permeable soil layer, and there is no impact or evidence of imminent impact to a basement;

(g) There is no enforcement standard exceedance in any groundwater within 1000 feet of a public well;  
and

(h) There is no enforcement standard exceedance in any groundwater within 100 feet of a private well.

**Table 1**

Substance	Direct-Contact Soil Contaminant Concentrations (Top 4 ft)	Basis	Contaminant Concentration in Groundwater within Low-Permeability Materials	Basis
	(mg/kg)		(µg/l)	
Benzene	1.10	Cancer risk	1,500.	Cleanup time
1,2-DCA	0.54	Cancer risk	1,500.	Cleanup time
Ethylbenzene	400.	Soil Saturation Limit	7,100.	Soil Saturation Limit
Toluene	670.	Soil Saturation Limit	20,000.	Soil Saturation Limit
Xylene	470.	Soil Saturation Limit	7,800.	Soil Saturation Limit

**NR 746.07 Site closure and approval and tracking of remedial actions.** (1) **SITE CLOSURE DECISIONS.** Commerce and DNR shall make site closure decisions based upon the following requirements:

(a) Sites where contaminant concentrations are below the enforcement standards at every point on site at which groundwater is monitored, and where all of the risk criteria in s. NR 746.06 (2) are satisfied, shall be closed

without reimbursement from Commerce for additional remedial actions except for post closure costs that are otherwise eligible for reimbursement under ch. Comm 47.

(b) Sites where contaminant concentrations within permeable material outside of the property boundary, of the property where the source of the contamination is or was located, are below enforcement standards and where contaminant concentrations within low permeability material outside of the property boundary, of the property where the source of the contamination is or was located, are below the groundwater concentrations listed in Table 1, but where contaminant concentrations above enforcement standards exist within the property boundary, of the property where the source of the contamination is or was located, shall be offered closure with institutional controls that satisfy the requirements of ch. NR 726, if all of the risk criteria in s. NR 746.06 (2), except ss. NR 746.06 (2)(b) or 746.06 (2)(e)2., are satisfied. If the owners of all properties on the site with enforcement standard exceedances sign and record a groundwater use restriction, as required under s. NR 726.05 (2)(b)4., the site shall be closed. If the owner of any property on the site with an enforcement standard exceedance does not sign and record a groundwater use restriction, additional remedial action, other than the utilization of natural attenuation, may not be required for areas where all contaminant concentrations that are equal to or greater than enforcement standards are found in low permeability material, except in situations where a risk or potential risk exists to public health, safety or welfare or the environment from the residual groundwater contamination in the low permeability material, and where a technically feasible and cost effective response is available. Funding under s. 101.143, Stats., shall be terminated by Commerce for sites that are offered closure under this paragraph, except for post closure costs that are otherwise eligible for reimbursement under ch. Comm 47.

**Note:** DNR is currently developing a geographic information system (GIS) registry as a means for tracking residual groundwater contamination which could replace the groundwater use restriction requirement in ch. NR 726. However, until the GIS registry is operable and ch. NR 726 is amended to allow registration on a GIS registry as a substitute for recording a groundwater use restriction, groundwater use restrictions will continue to be used as the method for notifying future property owners and other interested persons of the existence of the residual groundwater contamination.

(c) After an investigation that satisfies the requirements of ch. NR 716, the agency with administrative authority for the site may approve of site closure under ch. NR 726 for sites that do not meet all of the risk criteria in s. NR 746.06(2) if the requirements of ch. NR 726 are satisfied, or may determine that additional remedial action other than reliance on natural attenuation is not required even though all of the requirements for closure in ch. NR 726 have not been satisfied, without reimbursement from Commerce for additional remedial actions except for post closure costs that are otherwise eligible for reimbursement under ch. Comm 47.

(d) If the agency with administrative authority for a site determines that pars. (a), (b) and (c) do not apply to the site, the responsible person shall be required to conduct a remedial action, and shall be entitled to reimbursement under ch. Comm 47 for all eligible costs of the remedial action.

**Note:** In compliance with s. 160.21(2)(a), Stats., s. NR 140.22(2)(b) establishes the point of standards application to determine whether an enforcement standard has been attained or exceeded, for facilities, practices or activities that do not have an established design management zone, as "any point of present groundwater use and any point beyond the boundary of the property on which the facility, practice or activity is located and s. NR 140.22 (2)(c) establishes a point of standards application for "discharges, releases, sites or facilities" regulated under s. 292.11 or 292.31, Stats. (among other statutes) as "every point at which groundwater is monitored." The environmental factors in s. Comm 47.337 (3) and the other risk criteria in s. NR 746.06 (2) require an evaluation of groundwater contaminant concentrations at all of these points of standards application.

(2) CLOSURE BASED ON REMEDIATION TARGETS. When the remediation targets developed under s. NR 746.04 (3) are achieved, the site shall be closed utilizing an institutional control that satisfies the requirements of ch. NR 726, if required, without reimbursement from Commerce for additional remedial actions except for post closure costs that are otherwise eligible for reimbursement under ch. Comm 47.

(3) **DETERMINATION OF COMPLIANCE WITH ENFORCEMENT STANDARDS OR REMEDIATION TARGETS.** When determining whether contaminant concentrations at a site are above or below either an enforcement standard or a remediation target, recognition shall be made of the impact of error of measurement, repeatability of test results and statistical significance. Commerce and DNR shall develop, by June 30, 1999, a process for taking these considerations into account and then revise or adopt administrative rules as appropriate.

(4) **TRACKING OF REMEDIATION PROGRESS.** (a) Commerce and DNR shall establish a system for electronically tracking remediation progress and shall use the tracking system to determine if remediation funding under s. 101.143, Stats., should end or if a site closure request should be submitted.

(b) Commerce and DNR shall jointly require and enforce the use of the electronic reporting system by claimants for reimbursement under s. 101.143, Stats.

**NR 746.08 Transfer of sites.** (1) **GENERAL.** Except as provided in sub. (2) or (3), DNR shall determine whether Commerce or DNR has administrative authority for a site. Until that determination is made, DNR has administrative authority for the site. DNR shall make this determination within 60 days after receipt by DNR of the site investigation report, unless any of the following apply:

(a) DNR has requested additional information from a responsible person or a consultant retained by the responsible person after reviewing the site investigation report and the requested information has not been submitted to DNR.

(b) The site is the subject of an enforcement action under s. 292.11, Stats., initiated by DNR.

(c) Other circumstances over which DNR has no control have prevented DNR from making a site classification determination.

(2) **CONSULTANT DETERMINATION.** Consultants performing site investigations may determine, as part of a joint agency site classification pilot, whether a site is high, medium or low priority and submit the investigation report directly to the agency they determine to have administrative authority under s. NR 746.04 (1).

(3) **CHANGES IN CLASSIFICATION.** If a site is classified as high, medium or low priority, and DNR or Commerce determines that the classification is incorrect, the agency making the determination that a site has been incorrectly classified shall transfer the site file and all related data to the other agency within 14 days after making the determination, if the other agency has administrative authority for the reclassified site.

(4) **LIST OF SITES IN REMEDIATION.** Commerce and DNR shall develop and maintain a reconciled list of sites in remediation including data on remediation targets, risk criteria for screening sites, expected closure costs and other relevant data.

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#### FINDING OF EMERGENCY

The Wisconsin Natural Resources Board finds that an emergency exists and that the foregoing rule is necessary for the immediate preservation of the public peace, health, safety or welfare. A statement of the facts contributing to the emergency is: The Department of Commerce has adopted administrative rules under sections 101.143 and 101.144, Stats., to implement the Petroleum Environmental Cleanup Fund Act (PECFA). The purpose of PECFA is to reimburse responsible persons for the eligible costs incurred to investigate and remediate petroleum product discharges from a petroleum product storage system or home oil tank system. The recent emergency rule, Comm 46, was adopted by both the Department of Natural Resources and the Department of Commerce in January 1999, incorporating parts of a Memorandum of Understanding between the two agencies that relates to the classification of

contaminated sites and creating risk screening criteria for assessing petroleum contaminated sites. However, Comm 46, expired on September 27, 1999, prior to publication of the permanent rule. The foregoing emergency rule, NR 746, is being proposed in order to ensure rules continue in effect during the time period between now and when the permanent rule is published. This action is also in response to a resolution adopted by the Joint Committee for Review of Administrative Rules (JCRAR) which directed the Department of Commerce and the Department of Natural Resources to promulgate a new emergency rule for this interim time period.

The foregoing emergency rule was approved and adopted by the State of Wisconsin Natural Resources Board on September 29, 1999.

This rule takes effect upon publication in the official state newspaper as provided in s. 227.24, Stats. This rule shall expire 150 days after publication, unless an extension is granted under s. 227.24 (2), Stats.

Dated at Madison, Wisconsin October 6, 1999

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

By George E. Meyer  
George E. Meyer, Secretary

(SEAL)

- ORIGINAL       UPDATED  
 CORRECTED       SUPPLEMENTAL

**FISCAL ESTIMATE**  
DOA-2048 N(R10/94)

**Subject**

Creation of emergency rule NR 746

**Fiscal Effect**

State:  No State Fiscal Effect

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

- Increase Existing Appropriation       Increase Existing Revenues  
 Decrease Existing Appropriation       Decrease Existing Revenues  
 Create New Appropriation

- Increase Costs - May be possible to Absorb Within Agency's Budget       Yes       No  
 Decrease Costs

Local:  No local government costs

1.  Increase Costs  
 Permissive       Mandatory  
2.  Decrease Costs  
 Permissive       Mandatory

3.  Increase Revenues  
 Permissive       Mandatory  
4.  Decrease Revenues  
 Permissive       Mandatory

5. Types of Local Government Units Affected:  
 Towns       Villages       Cities  
 Counties       WTCS Districts  
 School Districts       Others

**Fund Sources Affected**

- GPR     FED     PRO     PRS     SEG     SEG-S

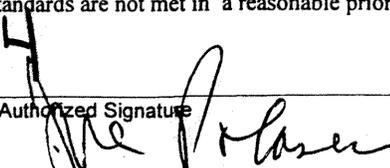
**Affected Ch. 20 Appropriations**

**Assumptions Used in Arriving at Fiscal Estimate**

**SUMMARY OF BILL/RULE** - Creation of emergency rule NR 746 allows for the continuation of rules dealing with petroleum site classification and application of risk screening criteria until such time as the permanent rule can be adopted by the Board and published. Emergency rule NR 746 is identical to the current existing emergency rule, Comm 46, which will expire on September 27, 1999, and cannot be extended beyond that date. Commerce is in the process of recreating the existing Comm 46 as an emergency rule, giving both agencies emergency rules with identical language.

**Long-Range Fiscal Implications**

Sites will be granted closure following completion of the site investigation, leaving contamination in-place, for possibly decades, until such time as natural attenuation reduces concentrations to below groundwater standards. If standards are not met in a reasonable priore of time, Environmental Fund monie. may be needed to address further remedies

Agency	Prepared By	Phone No.	Authorized Signature	Phone No.	Date
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