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## WISCONSIN LEGISLATIVE COUNCIL RULES CLEARINGHOUSE

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### CLEARINGHOUSE REPORT TO AGENCY

[THIS REPORT HAS BEEN PREPARED PURSUANT TO S. 227.15, STATS. THIS IS A REPORT ON A RULE AS ORIGINALLY PROPOSED BY THE AGENCY; THE REPORT MAY NOT REFLECT THE FINAL CONTENT OF THE RULE IN FINAL DRAFT FORM AS IT WILL BE SUBMITTED TO THE LEGISLATURE. THIS REPORT CONSTITUTES A REVIEW OF, BUT NOT APPROVAL OR DISAPPROVAL OF, THE SUBSTANTIVE CONTENT AND TECHNICAL ACCURACY OF THE RULE.]

#### CLEARINGHOUSE RULE 02-099

AN ORDER to create chapter NR 328, relating to department standards for erosion control of inland lakes and impoundments.

Submitted by **DEPARTMENT OF NATURAL RESOURCES**

07-08-2002 RECEIVED BY LEGISLATIVE COUNCIL.

08-05-2002 REPORT SENT TO AGENCY.

RS:MCP

**LEGISLATIVE COUNCIL RULES CLEARINGHOUSE REPORT**

This rule has been reviewed by the Rules Clearinghouse. Based on that review, comments are reported as noted below:

## 1. STATUTORY AUTHORITY [s. 227.15 (2) (a)]

Comment Attached

YES NO 

## 2. FORM, STYLE AND PLACEMENT IN ADMINISTRATIVE CODE [s. 227.15 (2) (c)]

Comment Attached

YES NO 

## 3. CONFLICT WITH OR DUPLICATION OF EXISTING RULES [s. 227.15 (2) (d)]

Comment Attached

YES NO 

## 4. ADEQUACY OF REFERENCES TO RELATED STATUTES, RULES AND FORMS [s. 227.15 (2) (e)]

Comment Attached

YES NO 

## 5. CLARITY, GRAMMAR, PUNCTUATION AND USE OF PLAIN LANGUAGE [s. 227.15 (2) (f)]

Comment Attached

YES NO 

## 6. POTENTIAL CONFLICTS WITH, AND COMPARABILITY TO, RELATED FEDERAL REGULATIONS [s. 227.15 (2) (g)]

Comment Attached

YES NO 

## 7. COMPLIANCE WITH PERMIT ACTION DEADLINE REQUIREMENTS [s. 227.15 (2) (h)]

Comment Attached

YES NO



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### CLEARINGHOUSE RULE 02-099

#### Comments

**[NOTE:** All citations to “Manual” in the comments below are to the Administrative Rules Procedures Manual, prepared by the Revisor of Statutes Bureau and the Legislative Council Staff, dated September 1998.]

#### 1. Statutory Authority

The statement of purpose in s. NR 328.01 attributes an opinion to the Legislature. This opinion is not expressed in specific statutory language, although the opinion can reasonably be inferred from the current statutes. Because this is a rule promulgated by the department, it might be more appropriate for the statement of purpose to describe the department’s interpretation of its mandate from the Legislature.

#### 2. Form, Style and Placement in Administrative Code

- a. In the note to s. NR 328.01, a colon should conclude the introduction to sub. (2).
- b. In s. NR 328.02, the first sentence should be renumbered as sub. (1) and the remaining subsections should be renumbered accordingly.
- c. The first sentence of the note after s. NR 328.03 (3) contains substantive requirements that should be part of the rule. Also, use of the term “vertical” in that definition is somewhat confusing, because the definition as continued in the note includes structures that are not vertical. It might be better to substitute “upright” for “vertical” in this definition.
- d. The note to s. NR 328.03 (1) provides that public notice under s. 30.02 (3) and (4), Stats., is required. The placement of this note after sub. (10) is questionable. Also, if this is a new requirement created by the department, the provision is substantive and should be placed in the body of the rule. [See also the definition of the word “fetch” in the note to s. NR 328.05 (1).]

e. In s. NR 328.05 (2), the word "following" in the first sentence should be deleted. Also, it appears that Table 1 should be placed following s. NR 328.05 rather than s. NR 328.06.

f. Section NR 328.06 (1) should be rewritten in the following format:

(1) **LOW ENERGY SITES.** At low energy sites all of the following apply:

(a) Permit applications may be made for all . . . breakwaters. Short-form permits shall be used.

(b) Permit applications may not be made for . . . methods, except . . .

The entire section should be reviewed for this structure. Also in sub. (2) (c), the phrase "are required" should be replaced by the phrase "shall be used." Finally, in sub. (4) (intro.), the phrase "all of" should be inserted before the phrase "the following settings."

g. In s. NR 328.07 (intro.), the phrase "all of" should precede the phrase "the following factors."

#### **4. Adequacy of References to Related Statutes, Rules and Forms**

Section 227.14 (3), Stats., contains specific requirements regarding forms that are required by a proposed rule. Section NR 328.04 should comply with this requirement.

#### **5. Clarity, Grammar, Punctuation and Use of Plain Language**

a. In the analysis, the phrase "erosion intensity" should be inserted before the first occurrence of the notation "(ED)" in the third to last paragraph. The phrase then can be deleted in the second to last paragraph. In the second to last paragraph, the word "be" should be inserted before the phrase "used to determine appropriate shoreline erosion" in the third sentence.

b. A note might be appropriate after s. NR 328.02 (1), indicating that some shore erosion control measures, such as grading of more than 10,000 square feet of the bank, may require other permits under ch. 30, Stats.

c. The applicability provision of s. NR 328.02 (2) states that repair of structures is not subject to the rule. This applicability provision also refers to replacement of structures. However, the distinction between these two terms is not clear. The definition of "replacement" in s. NR 328.03 (17) shows that, under some circumstances, repairs may be considered replacement.

d. Section NR 328.02 (3) refers to "pre-existing" permits. The rule should indicate what constitutes a pre-existing permit. In most cases, rules refer to permits that existed prior to the effective date of the rule.

e. The rule refers to a calculated score in s. NR 328.03 (8), but the cross-referenced methodology for making this calculation describes it as an estimate. [See s. 328.05 (2).] The use of "calculation" and "estimate" should be clarified. See also, s. 328.03 (11) and (13).

f. Section NR 328.04 should clarify who needs to make the request to cause a meeting to occur.

ORDER OF THE STATE OF WISCONSIN  
NATURAL RESOURCES BOARD  
CREATING RULES

The Wisconsin Natural Resources Board proposes an order to create NR 328, subch. I relating to department standards for erosion control of inland lakes and impoundments.

FH-39-02

Analysis prepared by the Department of Natural Resources

Statutory authority: s. 30.2035, Stats.

Statutes interpreted: s. 30.12(2) and (3)(a)3., Stats.

Section 30.12(2) and (3)(a)3., Stats., allows the Department of Natural Resources (DNR) to issue permits to place materials or structures on the beds of navigable waters. This subchapter establishes standards for granting permits for projects that place materials or structures on the beds of inland lakes and impoundments in order to control erosion. The standards: (1) prevent projects from causing serious degradation of water quality, fish and wildlife habitat, public interests in recreation, and natural scenic beauty during and after construction; and (2) help the Department consistently and efficiently apply the law governing navigable waters to such projects. This order codifies the findings of a department study on shoreline protection measures as required under s. 30.2035, Stats..

Replacing natural shorelines with bare rock or walls causes habitat changes that have cumulative environmental side effects on fish and fishing. Bare rock or walls generally reduce complex natural nearshore habitats. Riprap replaces natural complex substrate elements with coarse substrates. Shorelines with erosion control structures generally lack woody cover, tree-falls and hanging bank cover. Shorelines with erosion control structures also have less emergent and floating vegetation than sites with no structures. Riprap, vegetated riprap and integrated toe protection cause less adverse effects upon waterways and adjoining property than bulkheads do, and accordingly are preferred over bulkheads as methods to protect shores from erosion in high-energy settings.

The rule improves the consistency and speed of permit decisions and protects near shore fish habitats more effectively by simplifying regulation of erosion control practices that benefit fish and wildlife, while prohibiting practices that severely degrade near shore habitats at site where erosion can be controlled by other methods. The rule reduces the need for case-by-case analysis in two ways: 1) it identifies effective and appropriate erosion control practices (particularly restoration of nearshore vegetation and bioengineering approaches) in settings where permits are either not needed or short-form permits will be used; and 2) it prohibits erosion control practices that severely degrade nearshore habitats in settings where erosion control can be accomplished by more appropriate techniques.

Subchapter I of the rule uses 3 easily obtainable measures to group shorelines exposed to similar erosive force. Chin Wu, (University of Wisconsin, Civil and Environmental Engineering) developed a method that estimates wave heights under various environmental settings using fetch, depth and wind speed as factors. (Young, 1997) Using a lake map, applicants can simply measure fetch at their site and average mean depth (5 evenly spaced points along the fetch line). Windspeed is provided to the applicant in the rule. Applicants use these 3 measures to calculate storm-wave height (feet) for their sites using either a worksheet provided by the Department or information provided on the Department's website. The rule uses the storm-wave heights resulting from this

calculation to categorize a site as either a low (<1foot), moderate ( $\geq 1$ foot and <2.3 feet), or high ( $\geq 2.3$  ft.) energy site, and specifies appropriate erosion control options for each category. Various erosion control treatments are identified for each site category as: 1) designs typically approved (short-form permit process); 2) designs generally discouraged and critically reviewed by the Department (long-form permit process); and 3) designs prohibited.

The subchapter also provides a more site-specific method (EI) that either the applicant or Department may use to assess erosion. The EI method uses additional site information (ie. bank height, bank soils, offshore depth, offshore and bank vegetation, shore orientation, shore geometry, boating activity, etc.) to more fully assess the severity of erosion at a site, and also groups sites according to scores as either low, moderate or high energy sites. If a site is classified differently by the 2 methods, the category determined by the EI method must be used.

After the rule takes effect the Bureau of Fisheries Management and Habitat Protection will develop a shoreline erosion web page providing information on erosion control topics. The web page will also provide calculators that persons accessing the web page can use to categorize sites by the wave height method and the Erosion Intensity (EI) method. From the web page a person will be able to input fetch, depth, and wind speed at a specific site into the wave height calculator, which will calculate a storm-wave height value that will be used to determine appropriate shoreline erosion control methods for that site from a table on the web page. The Bureau of Fisheries Management and Habitat Protection will also develop a rule implementation booklet entitled, A Waterfront Property Owners Guide to Controlling Erosion and Protecting Fish and Wildlife Habitat.

The Bureau will create new short form applications for the many biological and biotechnical shoreline erosion techniques authorized under the rule. The new short form applications, modeled after short form applications now used for certain regulated activities such as rip rap, will provide a quick method for permitting, while still providing technical standards for construction.

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SECTION 1. Chapter NR 328, subch. 1 is created to read:

**CHAPTER NR 328  
STANDARDS FOR SHORE EROSION CONTROL  
OF INLAND LAKES AND IMPOUNDMENTS**

**Subchapter 1 – Shore Protection Structures**

**NR 328.01 Purpose** Section 30.12(2) and (3)(a)3., Stats., allows the department to issue permits to place materials or structures on the beds of navigable waters. The legislature recognizes that, if unregulated, erosion control structures can be detrimental to public rights or interests in navigable waterways. This subchapter establishes standards for granting permits for such structures that will avoid serious degradation of water quality, fish and wildlife habitat, public interests in recreation, and natural scenic beauty caused during and after their construction.

Note: In establishing energy levels, categorizing erosion control treatments and making decisions on long form permits the department recognizes the following:

(1) The reasonable right of riparians to control shore erosion under Wisconsin law. Where erosion control measures or structures enter public waters, the riparian right to protect the shore is subject to the public rights (Doemel v. Jantz, 180 Wis. 225, 193 N.W., 393 (1923)). Public rights include navigation in all its forms - swimming, fishing, boating, passive enjoyment of natural scenic

beauty - in waters of appropriate quality and quantity (Muench v. PSC, 261 Wis. 492 (1952) and others).

(2) The following findings in department studies and other scientific literature: X

(a) Natural shoreline features provide erosion control in various ways. Nearshore shoals, bars and beach slopes form as erosion uncovers or sorts out sand, gravel, cobbles, boulders and bedrock from beneath glacial till and other fine soils. These more energy resistant materials are formed into wave-breaking, energy-absorbing barriers that eliminate, or slow, further erosion. Natural vegetation provides erosion control in several ways. Plants form a network of roots that hold soil particles together and stabilize the bank. Exposed stalks, stems, branches and foliage dampen waves, reduce local flow velocities, and dissipate energy against the plant rather than eroding the soil. Vegetation also acts as a buffer to trap suspended sediment and induce its deposition.

(b) Natural vegetation improves conditions for fisheries and wildlife, improves water quality, and can protect natural scenic beauty and cultural or archeological resources. Natural shorelines contain a rich mosaic of habitats and the fauna that inhabit them. An accumulation of hard structures along shorelines changes habitat and reduces the diversity of this mosaic.

(c) Vertical surfaces of bulkheads reflect wave energy in ways that may increase beach erosion. The incoming and reflected waves create standing waves with higher amplitudes and higher velocities that re-suspend and transport erodible sediment from in front of the structures. This scouring prevents aquatic vegetation from becoming established in front of the bulkhead. Retaining walls may also prevent waterfowl broods and other species from accessing nearshore habitats that are critical for breeding, nesting, feeding, and basking.

<sup>(1)</sup>  
**NR 328.02 Applicability.** Except as provided in s. 30.12(3)(bt), Stats., this subchapter applies to all applications for a permit pursuant to s. 30.12(2) or (3)(a)3., Stats., to construct shore erosion control structures on the bed and bank of an inland lake or impoundment.

Note: This subchapter does not apply to the Great Lakes. *or more than?*

(1) Shore erosion control measures such as grading of less than 10,000 square feet of the bank and adjoining upland to a stable slope, revegetation or other bioengineering methods that do not involve the placement of structures on the bed of a waterway, do not require state permits under s. 30.12(2) or (3), Stats.

*what is?*  
(2) All of the provisions of this subchapter apply to the replacement of erosion control structures. Repair of structures is not subject to the provisions of this subchapter. Planting or replanting of vegetation is considered repair of the structure. For revetments and toe protection structures, redistribution of rock material and minor additions of rock is considered repair. Placement of additional rock must be within the footprint of the existing structure, either as shown in a permit or as physically evident at the site. Repair does not involve excavation of material.

*repair*  
*state*  
*30.03(2)*  
*30.12(2)*  
*30.12(3)*  
*30.12(4)*  
*30.12(5)*  
(3) Conditions of pre-existing issued permits remain in force unless amended by action of the department. *tie to 30.12(2)* X

**NR 328.03 Definitions.** In this subchapter and in s. 30.12(2) or (3)(a)3., Stats.:

(1) "Bank" means the land surface abutting the bed of any navigable waterway which, either prior to any project or alteration of land contours or as a result of the proposed project or alteration, slopes or drains without complete interruption into the waterway.

(2) "Biological erosion control" means a technique that relies on biological components as the structural elements in a shoreline protection system.

Note: Biological components are living or organic materials that are biodegradable such as native grasses, sedges and forbs; live stakes and posts; non-treated wood; jute netting; fiber rolls and mats. Temporary breakwaters, with non-biodegradable elements, are considered a permissible element during the plant establishment phase of a biological erosion control project.

(3) "Bulkhead" means a <sup>an upright</sup> vertical structure that is installed parallel to the shore to prevent the sliding or slumping of the land and to protect the adjacent upland from wave action. <sub>from vertical</sub>

Note: Structures steeper than one foot horizontal distance for every 1.5 feet vertical distance are considered vertical. Bulkheads are commonly constructed of timber, rock (gabions), concrete, steel or aluminum sheet piling, and may incorporate biological components. <sub>must not be mte</sub>

(4) "Department" means the department of natural resources.

(5) "Erosion intensity" or "EI" means the degree of erosion as estimated under s. NR 328.05(2).

(6) "Grade" means the physical disturbance of the bank by the addition, removal or redistribution of topsoil.

(7) "Hard armoring" means a designed structure based on engineering principles that relies solely on inert components.

Note: Inert components are materials that slowly degrade, such as chemically treated wood, stone, concrete, brick, plastics and synthetic polymers.

(8) "High energy site" means a site where the storm-wave height is greater than or equal to 2.3 feet. Wherever erosion intensity score has been calculated, a score greater than 70 is high energy. <sub>Followed from estimate in 328.05(2)</sub>

(9) "Integrated toe protection" means a structure combining 2 separate treatments: toe protection at the base of the bank and vegetation establishment on the remaining upper portion of the bank.

Note: The maximum toe elevation is equal to the ordinary high water mark plus storm-wave height.

Note: The toe protection relies on materials, such as stone, armor units, fiber rolls or wattles to protect the base of the bank. Above the toe protection, the remainder of the bank is revegetated by installing a shoreland buffer or with brush layering, brush mattresses, fiber rolls, live stakes, vegetated geogrid, rolled erosion control products or wattles. Plant materials may also be incorporated as part of the shore protection design below the OHWM as well.

(10) "Long form permit" means any permit authorized under s. 30.12 (2), Stats., that requires submittal of site-specific plans and information as required by the department to make determinations under this subchapter and that results in a decision containing site-specific findings of fact and permit conditions.

Note: Public notice under s. 30.02 (3) and (4), Stats., is required.

*put in rule if not required elsewhere*

(11) "Low energy site" means a site where the storm-wave height is less than 1.0 foot. Wherever erosion intensity score has been calculated, a score of 50 or less is low energy.

(12) "Maximum toe elevation" means the elevation of the ordinary high water mark plus the storm-wave height estimated under s. NR 328.05(1)

(13) "Moderate energy site" means a site where the storm-wave height is greater than or equal to 1.0 foot and less than 2.3 feet. Wherever erosion intensity score has been calculated, a score greater than 50 and less than or equal to 70 is moderate energy.

(14) "Offshore" means located a minimum of 10 horizontal feet from the ordinary high water mark.

(15) "Ordinary high water mark" or "OHWM" means the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation or other easily recognized characteristics.

(16) "Permanent breakwater" means a structure constructed of stone, rock, concrete or other non-degradable materials and located offshore for the purpose of diminishing the force of the waves and protecting the shoreline.

Note: These structures can be designed to provide fish and wildlife habitat in addition to erosion control by incorporating vegetation on the breakwater and in the nearshore zone. Examples of permanent breakwaters include stone dikes, barrier islands, stone islands and submerged offshore shoals.

(17) "Replacement" means a degree of structural changes to the erosion control structure by which a section of the structure is being recreated.

Note: For bulkheads, any repairs down to or at the footing of the structure are considered replacement. For revetments, replacement of filter fabric or replacement of the base substrate is considered prima facie evidence of replacement.

(18) "Revetment" means a structure fitted to the slope and shape of the shoreline.

Note: Slopes steeper than 1.5 feet horizontal distance for every one foot vertical distance are generally unsuitable to revetments. Revetments may or may not incorporate plant material into their design. Revetments may exceed the maximum toe elevation. Examples of hard-armoring revetments include articulated concrete block systems and riprap. Examples of vegetated-armoring revetments include vegetated concrete block systems, vegetated geogrids and vegetated riprap.

(19) "Riprap" means a layer of rock, including filter material, placed on the bed and bank of a navigable waterway to prevent erosion, scour or sloughing of the existing bank. Riprap is another term for one type of revetment.

(20) "Short form permit" means any permit authorized under s. 30.12 (3)(a), Stats., that uses standard findings of fact, project plans, specifications and permit conditions.

Note: No site visit or public notice is required.

(21) "Similar material" in s. 30.12(3)(a)3., Stats., means material, such as concrete, masonry, steel or wood, which is designed and constructed for the purpose of protecting the bank and adjacent upland from erosion.

(22) "Storm-wave height" means the wave height estimated under s. NR 328.05(1).

(23) "Structure" means any artificial creation which has a defined shape, size, form and utility as opposed to a mere pile or dump of materials.

(24) "Temporary breakwater" means an offshore structure consisting of biological components, such as jute, fiber rolls, willow stakes, branchbox breakwater; or a structure consisting of inert components that will be removed after a set period of time.

Note: Temporary breakwaters are placed for the purpose of providing an area of quiescent water, when new erosion protection designs and shoreland plant installations are becoming established. Biological temporary breakwater designs degrade naturally and examples include branchbox breakwaters and fiber rolls.

(25) "Vegetated armoring" means a structure that combines biological and inert components.

Note: Inert components include wood, stone, concrete, plastics and synthetic polymers. Vegetated-armoring techniques fall into the following 4 categories: integrated toe protection, vegetated-revetment, vegetated-bulkhead and vegetated breakwater.

(26) "Wave height" means the vertical distance between the wave crest and wave trough.

**NR 328.04 Permit application.** A riparian property owner or duly authorized agent who proposes to install shore erosion control shall submit an application to the department on a form provided by the department. The department shall, upon request, meet with a project applicant and other interested persons to make a preliminary analysis of the potential for compliance with this subchapter. The permit application shall include a calculation of storm-wave height and may include a calculation of the erosion intensity score. The department may also require plan drawings, photographs and data to assess the erosion intensity at the site. *form*

**NR 328.05 Data requirements and site assessment methods.** Applicants and department staff shall adhere to the following data and methods:

(1) **CALCULATION OF STORM-WAVE HEIGHT.** The department shall provide applicants with worksheets and internet-based computer software for the purpose of estimating storm wave height. Computer software shall be mathematically designed based on Young and Verhagen (1996) and Young (1998). Storm-wave heights shall be estimated according to Young and Verhagen (1996) and Young (1997) by applying a storm wind speed of 35 miles per hour (51.45 ft/sec), fetch at the applicant's shore protection site, and the average depth along that fetch. To estimate average depth applicants shall examine a lake map, sum the reported depths along the fetch, and divide by the number of recorded values. At least 5 equally placed intervals along the fetch shall be used.

Note: The citation for Young (1997) is as follows: Young, I.R. 1997. The growth rate of finite depth wind-generated waves. Coastal Engineering, Vol. 32, pp. 181-195. The citation for Young and Verhagen (1996) is as follows: Young, I.R. and L.A. Verhagen. 1996. The growth of fetch limited waves in finite water depth. Coastal Engineering, Vol. 29, pp. 47-78.

Note: Statewide storm windspeeds are estimated from Naber Knox, P. 1996. Wind Atlas of Wisconsin. Wisconsin Geological and Natural History Survey, Bulletin No. 94.

Note: Fetch means the longest continuous linear distance originating from the shore protection site across the water surface to the opposite intersect with the shore or land.

*define*

(2) CALCULATION OF EROSION INTENSITY. Where an applicant or the department believes that, as a result of site conditions, storm-wave height may inaccurately predict the degree of erosion, the following erosion intensity score may be applied to determine erosion. The department shall provide applicants with worksheets and internet-based computer software for the purpose of estimating erosion intensity. When the department or applicants assess erosion at the shore protection site they shall apply methods outlined in Table 1 to calculate an erosion intensity score. Wherever EI and storm-wave height result in different energy categories, the site shall be placed in the category as determined by EI.

*X*

Note: Table 1 is adapted from Knutson, P. L., H. H. Allen, and J. W. Webb, 1990. "Guidelines for Vegetative Erosion Control on Wave-Impacted Coastal Dredged Material Sites," Dredging Operations Technical Support Program Technical Report D-90-13, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS 39180, 35 pp.

*why take after next section?*

**NR 328.06 Erosion control methods and permit process.** Eligible methods of erosion control and permit processing are as follows based on the erosion potential at the applicant's shore site:

*wind*

(1) LOW ENERGY SITES. At low energy sites:

*all of the rest apply*

(a) Permit applications for all biological erosion control methods, including fiber rolls and mats, live stakes, brush mattresses and layers, branchbox breakwaters, and temporary breakwaters are eligible. Short-form permits shall be used.

(b) Permit applications for vegetated armoring and hard-armoring methods are prohibited except as provided in sub. (4)(a) or subch. II.

*w.c.*

*see def.*

(2) MODERATE ENERGY SITES. At moderate energy sites:

(a) Permit applications for all biological erosion control methods as described in sub. (1)(a) and temporary breakwaters are eligible. Short-form permits shall be used.

(b) Permit applications for vegetated armoring are limited to integrated toe protection and vegetated revetments, such as vegetated block systems, vegetated riprap, and rock toe with bank revegetation, are eligible. Short-form permits shall be used.

(c) Permit applications for hard-armoring revetments, such as riprap or concrete block systems, are eligible. Long-form permits are required.

*shall be used*

(d) Permit applications for bulkheads and permanent breakwaters are prohibited except as provided in sub. (4) or subch. II.

(3) HIGH ENERGY SITES. At high-energy sites:

(a) Permit applications for all biological erosion control methods as described in sub. (1)(a) and temporary breakwaters are eligible. Short-form permits shall be used.

*may be made that*  
(b) Permit applications for vegetated armoring, ~~are~~ limited to integrated toe protection and vegetated revetments, such as vegetated block systems, vegetated riprap, rock toe with bank revegetation, ~~are eligible~~. Short-form permits shall be used.

(c) Permit applications for hard-armoring revetments, such as riprap or concrete block systems, are eligible. Short-form permits shall be used.

(d) Permit applications for bulkheads are eligible. Long-form permits shall be used.

(e) Permit applications for permanent breakwaters are prohibited, except as provided in subch. II.

(4) EXCEPTIONS. Permit applications for bulkheads are eligible in the following settings: *all of*

(a) Locations where vertical docking facilities are needed such as municipal or industrial harbor areas and boat marinas. Long-form permits shall be used.

(b) Navigational channels actively used as thoroughfares or for access, with slopes greater than one foot horizontal distance for every 1.5 feet vertical distance, showing evidence of erosion, where alternative methods of erosion control would impede navigation. Long-form permits shall be used.

(c) Locations where slopes are one foot horizontal distance for every 1.5 feet vertical distance or steeper, and where the applicant demonstrates that alternative measures are not practicable taking into consideration bank height and the location of permanent structures. Long-form permits shall be used.

**Table 1. Erosion Intensity (EI) Score Worksheet.** Applicants and department staff shall use this worksheet to calculate erosion intensity pursuant to s. NR 328.05(2).

SHORELINE VARIABLES	DESCRIPTIVE CATEGORIES						ASSIGNED EI	
	EROSION INTENSITY VALUE IS LOCATED IN PARENTHESIS ON LEFT SIDE OF EACH CATEGORY BOX							
<b>FETCH-AVERAGE</b> , longest continuous linear distance the site across the water surface to the opposite intersect with the shore or land	(0) <1/10	(2) 1/10 - 1/3	(4) 1/3-1	(7) 1-3	(10) 3-10	(13) 10-30	(16) >30	
<b>DEPTH AT 20 FEET</b> , Depth of water (feet) 20 feet from shoreline	(1) <1	(2) 1-3	(3) 3-6	(4) 6-12	(5) >12			
<b>DEPTH AT 100 FEET</b> , depth of water (feet) 100 feet from shoreline	(1) <1	(2) 1-3	(3) 3-6	(4) 6-12	(5) >12			
<b>BANK HEIGHT</b> , height of bank (feet) at the shoreline or just behind the sediment beach	(1) <1	(2) 1-5	(3) 5-10	(4) 10-20	(5) >20			
<b>BANK COMPOSITION</b> , composition and degree of cementation of the sediments	(0) Rock, marl, tight clay, well cemented sand (dig with a pick or swamp forest)		(7) soft clay, clayey sand, moderately cemented (easily dug with a knife)		(15) uncemented sands or peat (easily dug with you hand)			
<b>INFLUENCE OF ADJACENT STRUCTURES</b> , likelihood that adjacent structures are causing flank erosion at the site	(0) no hard armoring on either adjacent property	(1) hard armoring on one adjacent property	(2) hard armoring on both adjacent properties	(3) hard armoring on one adjacent property with measurable recession	(4) hard armoring on both adjacent properties with measurable recession			
<b>AQUATIC VEGETATION</b> , type and abundance of vegetation occurring in the water off the shoreline	(1) dense or abundant emergent, floating or submerged vegetation		(4) scattered or patchy emergent, floating or submerged vegetation		(7) lack of emergent, floating or submergent vegetation			
<b>SHORE VEGETATION</b> , type and abundance of the vegetation occurring between the bank and shoreline	(0) rocky substrates unable to support vegetation.	(1) dense continuous vegetation, marsh fringe and shrubs	(4) scattered or patchy vegetation, upland trees and shrubs		(7) lack of vegetation			
<b>BANK VEGETATION</b> , type and abundance of the vegetation occurring on the bank and immediately on top of the bank lip	(1) dense vegetation, upland trees, shrubs and grasses		(4) clumps of vegetation alternating with areas lacking vegetation		(7) lack of vegetation (cleared), crop or agricultural land			
<b>SHORELINE GEOMETRY</b> , general shape of the shoreline at the point of interest plus 200 yards on either side.	(1) coves		(4) irregular shoreline		(8) headland, point or straight shoreline			
<b>SHORELINE ORIENTATION</b> , general geographic direction the shoreline faces	(0) < 1/3 mile fetch	(1) south to east	(4) south to west		(8) west northwest to north to east-northeast			
<b>BOAT WAKES</b> , proximity to and use of boat channels	(1) no channels within 100 yards, broad open water body, or constricted shallow water body		(6) minor thoroughfare with 100 yards carrying limited traffic, or major channel 100 yards to 1/2 mile offshore		(12) major thoroughfare within 100 yards carrying intensive traffic.			
<b>EROSION INTENSITY SCORE (EI)</b>							→	

**NR 328.07 Analysis criteria for long-form permits.** The department shall apply <sup>all of</sup> the following factors in evaluating long-form permit applications:

- (1) Whether shore protection measures allowed without permits or with a short-form permit would provide adequate erosion control.

(2) The cumulative and individual impact on public rights and interests including fish and wildlife habitat, physical, chemical and biological effects on the adjacent waterway and natural scenic beauty including all of the following:

(a) Interference with navigation and its incidents, including but not limited to swimming, boating, fishing and hunting.

(b) Impacts on natural scenic beauty.

Note: Less developed areas of the lake or less developed lakes in general will experience greater impacts on natural scenic beauty from the structure and its activity than other more developed areas or lakes.

(c) Development density.

(d) Impacts on threatened or endangered species.

Note: Survey information indicates that threatened or endangered species or their habitat are found near the site. ?

(3) Impacts on fish and wildlife habitat including all of the following:

(a) Reduced density of woody cover in shallow water.

(b) Reduced density, coverage and diversity of nearshore vegetation, such as terrestrial, emergent, floating-leafed and submerged zones.

(c) Designated sensitive areas, spawning or nursery habitat.

Note: The structure and its associated activity located in or near spawning/nursery habitats or designated sensitive areas.

(d) Change in nearshore substrate that reduces its suitability for habitat.

(4) The erosion exposure of the project site based on site-specific conditions, including ice and the presence of natural ice ridges.

(5) The effect of the project on the adjoining upland.

(6) Whether project designs can avoid or reduce impacts of the structure. Designs shall have high likelihood of success, and duration equal to the life-span of the structure.

(7) The effect of the project on unique cultural or archeological resources.

**NR 328.08 Short-form permits.** (1) The department shall grant an application for a short-form permit where the department determines the applicant has shown all the following:

(a) Based on the analysis criteria in this subchapter, the data used by the applicant in preparing the site assessment reasonably reflects actual site conditions.

(b) All proposed onshore structures intrude into the adjacent waterway only to the minimum extent necessary to provide a sound foundation and structural stability.

(c) The proposed erosion control project complies with the provisions of this chapter.

(2) Notwithstanding sub. (1), the department shall deny an application for a short form permit if the department determines any of the following:

(a) The erosion control project will result in extensive and unnecessary removal of dense natural bank vegetation, dense emergent vegetation or dense floating vegetation.

(b) The erosion control project materially obstructs navigation.

Note: Grading more than 10,000 square feet of the bank and adjoining upland requires a grading permit under s. 30.19, Stats.

The foregoing rules were approved and adopted by the State of Wisconsin Natural Resources Board on \_\_\_\_\_.

The rules shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin \_\_\_\_\_.

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

By \_\_\_\_\_  
Darrell Bazzell, Secretary

(SEAL)