

## Chapter NR 347

SEDIMENT SAMPLING AND ANALYSIS, MONITORING PROTOCOL AND DISPOSAL  
CRITERIA FOR DREDGING PROJECTS

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**Note:** Chapter NR 347 as it existed on February 28, 1989 was repealed and new chapter NR 347 was created effective March 1, 1989.

**NR 347.01 Purpose and policy.** (1) The purpose of this chapter is to protect the public rights and interest in the waters of the state by specifying definitions, sediment sampling and analysis requirements, disposal criteria and monitoring requirements for dredging projects regulated under one or more of the following statutes: s. 30.20, Stats., which requires a contract or permit for the removal of material from the beds of waterways; s. 281.41, Stats., which establishes a wastewater treatment facility plan approval program; ch. 289, Stats., which establishes the solid waste management program; ch. 291, Stats., which establishes the hazardous waste program; and ch. 283, Stats., which establishes the Wisconsin pollutant discharge elimination system (WPDES) program.

(2) It is department policy to encourage reuse of dredged material and to minimize environmental harm resulting from a dredging project.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; corrections in (1) made under s. 13.93 (2m) (b) 7., Stats., Register January 2002 No. 553.

**NR 347.02 Applicability.** The provisions of this chapter apply to the removal and disposal of material from the beds of waterways except where exempted by statute.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89.

**NR 347.03 Definitions.** (1) "Analyte" means the chemical substance or physical property being tested for in a sample.

(2) "Bathymetry" means the measurement of depth of water in lakes or rivers to determine lake or river bed topography.

(3) "Beach nourishment disposal" means the disposal of dredged material on the beaches or in the water landward from the ordinary high-water mark of Lakes Michigan and Superior for the purpose of adding, replenishing or preventing erosion of beach material.

(4) "Bioassay" means a method for determining the acute or chronic toxicity of a material by studying its effects on test organisms under controlled conditions.

(5) "Bulk sediment analysis" means a test to measure the total concentration of a specific constituent in a sample being analyzed.

(6) "Carriage water" means the water portion of a slurry of water and dredged material.

(7) "Carriage water return flow" means the carriage water which is returned to a receiving water after separation of the dredged material from the carriage water in a disposal, rehandling or treatment facility.

(8) "Connecting waterways" means a portion of a navigable lake or stream which is directly joined to Lake Michigan or Lake Superior and which contains a navigation channel providing access for commercial or recreational watercraft to Lake Michigan or Lake Superior.

(9) "Contamination" means a solid, liquid or gaseous material, microorganism, noise, heat, odor, or radiation, alone or in any combination, that may harm the quality of the environment in any way.

(10) "Contract" means a binding written agreement between the department and a dredging applicant authorizing the removal of material from the bed of a natural navigable lake or outlying water.

(11) "Department" means the department of natural resources

(12) "Disposal facility" means a site or facility for the disposal of dredged material.

(13) "Dredged material" means any material removed from the bed of any waterway by dredging.

(14) "Dredging" means any part of the process of the removal of material from the beds of waterways; transport of the material to a disposal, rehandling or treatment facility; treatment of the material; discharge of carriage or interstitial water; and disposal of the material.

(15) "Grain size analysis" means a method to determine dredged material and disposal site sediment particle size distribution.

(16) "Hazardous waste", as defined in s. 291.01 (7), Stats., means any solid waste identified as a hazardous waste under ch. NR 661.

(17) "Interstitial water" means water contained in the interstices or voids of soil or rock in the dredged material.

(18) "Limit of detection" means the lowest concentration level that can be determined to be statistically different from a blank sample for that analytical test method and sample matrix.

(19) "Limit of quantitation" (LOQ) means the concentration of an analyte at which one can state with a stated degree of confidence for that analytical test method and sample matrix that an analyte is present at a specific concentration in the sample tested.

(20) "Parent material" means the native unconsolidated material which overlies the bedrock.

(21) "PCBs" means those materials defined in s. 299.45 (1) (a), Stats.

(22) "Particle size distribution" means a cumulative frequency distribution or frequency distribution of percentages of particles of specified diameters in a sample.

(23) "Rehandling facility" means a temporary storage site or facility used during the transportation of dredged material to a treatment or disposal facility.

(24) "Treatment facility" in this chapter means a natural or artificial confinement facility used for the separation of dredged material solids from the interstitial or carriage water.

(25) "Upland disposal" means the disposal of dredged materials landward from the ordinary high-water mark of a waterway or waterbody.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; correction in (16) made under s. 13.93 (2m) (b) 7., Stats., Register, October, 1995, No. 478; correction in (16) made under s. 13.93 (2m) (b) 7., Stats.

**NR 347.04 Permits, approvals and reviews required.** (1) The following are the permit, approval and review requirements for dredging projects:

(a) Except where otherwise provided by law, all private and municipal dredging projects require a permit or contract under s.

30.20, Stats., and ch. NR 346. Dredging in portions of the Mississippi, St. Croix and Black rivers by the U.S. army corps of engineers is governed by s. 30.202, Stats.

(b) All dredging projects require review under ch. 289, Stats., and chs. NR 500 to 520 for disposal of dredged material under the solid waste management program.

(c) All dredging projects shall be reviewed under ss. 1.11 and 23.11 (5), Stats., and ch. NR 150 for compliance with the Wisconsin environmental policy act.

(d) All federally funded, permitted or sponsored dredging projects require water quality certification under ss. 281.11 to 281.22 and 283.001, Stats., and ch. NR 299.

(e) A Wisconsin pollutant discharge elimination system (WPDES) permit under ch. 283, Stats., is required for dredging projects with carriage water return flows to surface water or groundwater.

(f) Plan approval under s. 281.41, Stats., is required for dredging projects which include a dredged material treatment facility.

(g) Sites and facilities for the disposal of hazardous waste and PCBs require review under subch. IV of ch. 291, Stats., and s. 299.45, Stats., and chs. NR 500 to 520 and 600 to 685.

**(2)** The project application process shall be coordinated by the department. Except as otherwise provided by law, decisions on all applicable department approvals, permits, contracts and licenses relating to a dredging project shall be made concurrently and with the decision on:

(a) Water quality certification under ch. NR 299 for all federally funded, permitted or sponsored projects, or

(b) Permit or contract under s. 30.20, Stats., and ch. NR 346 for all other projects.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; corrections in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, October, 1995, No. 478; corrections in (1) (b), (d), (e), (f), and (g) made under s. 13.93 (2m) (b) 7., Stats., Register January 2002 No. 553.

**NR 347.05 Preliminary application and analytical requirements.** **(1)** Prior to submission of a formal application, anyone seeking to remove material from the beds of waterways shall provide the department with preliminary information including:

(a) Name of waterbody and location of project;

(b) Volume of material to be dredged;

(c) Brief description of dredging method and equipment;

(d) Brief description of proposed disposal method and location and, if a disposal facility is to be used, size of the disposal facility;

(e) Any previous sediment sampling (including field observations) and analysis data from the area to be dredged or from the proposed disposal site;

(f) Copy of a map showing the area to be dredged, the depth of cut, the specific location of the proposed sediment sampling sites and the bathymetry of the area to be dredged; and

(g) Anticipated starting and completion dates of the proposed project.

**(2)** An initial evaluation shall be conducted by the department within 30 business days after receipt of the information under sub. (1) to determine if there is reason to believe that the material proposed to be dredged is contaminated. This initial evaluation shall be used by the department in specifying sediment sampling and analysis requirements to the applicant under s. NR 347.06 and shall be accomplished with existing data. Factors which shall be considered by the department in its evaluation of the dredging site and, if appropriate the disposal site, include, but are not limited to, the following:

(a) Potential that contaminants may be present. Potential routes that may have introduced contaminants into the dredging site shall be identified by examining appropriate maps, aerial photographs, or other graphic materials that show surface water-

courses and groundwater flow patterns, surface relief, proximity to surface and groundwater movement, private and public roads, location of buildings, agricultural land, municipal and industrial sewage and stormwater outfalls, etc., or by making supplemental field inspections.

(b) Previous tests of the material at the dredging site or from other projects in the vicinity when there are similar sources and types of contaminants, water circulation and stratification, accumulation of sediments, general sediment characteristics, and potential for impact on the aquatic environment, as long as nothing is known to have occurred which would render the comparisons inappropriate.

(c) The probability of past introduction of contaminants from land runoff.

(d) Spills of toxic or hazardous substances.

(e) Introduction of contaminants from point sources.

(f) Source and previous use of materials used or proposed to be used as fill.

(g) Natural deposits of minerals and other natural substances.

(h) Any other relevant information available to the department.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89.

**NR 347.06 Sampling and analysis.** Upon completion of the initial evaluation, the department shall establish sampling and analysis requirements.

**(1) EXCEPTION.** Except as provided in subs. (3) (a) and (6), the applicant shall collect and analyze data on sediments to be dredged in the manner outlined in this section.

**(2) CORRECT METHODS.** Unless otherwise specified, sampling, sample handling and sample analysis to demonstrate compliance with this section shall be in accordance with methods from applicable sources enumerated in ch. NR 149.

**(3) NUMBER OF SAMPLES.** (a) Sediment sampling may be waived by the department if it determines from its review of available information under s. NR 347.05 (2) that sediment contamination is unlikely.

(b) If available information is either insufficient to determine the possibility for sediment contamination, or shows a possibility for sediment contamination, the department shall require the applicant to collect sufficient samples to describe the chemical, physical and biological properties of the sediment. The exact number and location of sediment samples required and analyses to be conducted shall be specified by the department, in consultation with the applicant, based on the initial evaluation and on other factors including, but not limited to, the potential for possibility of contamination, volume and aerial extent of material to be dredged, depth of cut and proposed method of disposal.

(c) For a project involving the disposal of dredged material at an upland disposal site, the department may require samples to be taken from the proposed disposal site and analyzed for parameters found to be elevated in the dredged material sediment samples. The number and location of disposal site samples required shall be specified by the department based on the size and other characteristics of the site.

(d) For a project to be conducted in the Great Lakes with beach nourishment disposal, at least one sample every 250 linear feet of beach with a minimum of 2 samples shall be taken from the proposed beach nourishment disposal site and analyzed for particle size and color. Core or grab samplers may be used.

**(4) METHOD OF TAKING SAMPLES.** (a) All samples shall be taken with a core sampler except as provided in sub. (3) (d). The department may approve other sampling methods if it finds them to be appropriate.

(b) All sampling equipment shall be properly cleaned prior to and following each sample collection.

(c) Samples collected for PCB, pesticide and other organic analyses shall be collected and processed using metallic (stainless steel preferred) liners, tubs, spoons and spatulas. Samples collected for other chemical analysis, including heavy metals, shall be collected and processed using non-metallic liners, tubs, spoons and spatulas.

(d) Core samples from the dredging site shall be taken to the proposed dredging depth plus 2 feet.

(e) Core samples shall be visually inspected for the existence of strata formation, and a written description including position, length, odor, texture and color of the strata shall be provided to the department.

**(5) SAMPLE HANDLING AFTER COLLECTION AND PRIOR TO ANALYSIS.** Sample handling and storage prior to analysis shall be in accordance with the maximum holding times and container types given in table F of ch. NR 219. Samples shall be preserved at the time of collection by cooling to 4°C.

**(6) ANALYSES TO BE PERFORMED ON SEDIMENT SAMPLES.** Analyses shall be done in accordance with methods from applicable sources enumerated in ch. NR 149. Analyses submitted to the department under this chapter shall be done by a laboratory certified or registered under ch. NR 149.

(a) Samples shall be analyzed from each distinct layer observed in the material to be dredged. If no strata formation exists, core samples shall be divided into 2-foot segments, and each segment shall be analyzed for the required chemicals and characteristics. For cores extending into parent material, analysis of only the top 2-foot segment of parent material is required. The department may approve other subsampling methods if it finds them to be appropriate.

(b) All samples shall be analyzed for those parameters listed in table 1 unless waived by the department as provided in par. (d). Elutriate testing may be required for all chemicals listed in Table 1 unless waived by the department as provided in par. (d).

(c) If previous sampling data or other adequate available information indicates the possibility of contamination by chemicals not listed in table 1, the department may require analysis for those chemicals.

(d) If previous sampling data or other adequate available information demonstrates that the possibility of contamination is negligible, analysis for any chemical may be waived, in writing, by the department.

(e) The department may require additional samples and analyses as specified by law or for other appropriate reasons.

TABLE 1  
ANALYSES TO BE PERFORMED ON SEDIMENT SAMPLES

	GREAT LAKES	INLAND WATERS
PCB (Total)	X	X
Total 2,3,7,8 TCDD	X	X
Total 2,3,7,8 TCDF	X	X
	GREAT LAKES	INLAND WATERS
Aldrin	X	X
Dieldrin	X	X
Chlordane	X	X
Endrin	X	X
Heptachlor	X	X
Lindane	X	X
Toxaphene	X	X
DDT	X	X
DDE	X	X
Arsenic	X	X
Barium	X	X
Cadmium	X	X
Chromium	X	
Copper	X	X
Cyanide	X	
Iron	X	
Lead	X	X
Manganese	X	
Mercury	X	X
Nickel	X	X
Selenium	X	X
Zinc	X	X
Oil and Grease	X	X
NO <sup>2</sup> , NO <sup>3</sup> , NH <sup>3</sup> -N, TKN	X	X
Total P	X	X
Grain-size	X	X

Percent Solids	X	X
Total Organic Carbon	X	X
Moisture Content	X	X
Settleability (if return water)	X	X

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; am. (5) and (6) (intro.), Register, November, 1992, No. 443, eff. 12-1-92.

**NR 347.07 Review procedures and review criteria.**

(1) When sediment sampling and analyses have been completed, the applicant shall submit a copy of the testing report to the department. This report shall include raw data for all analyses, a map of the project area showing the specific locations of sediment sampling sites and the name and address of the laboratory which performed the tests. All testing and quality control procedures shall be described and analytical methods, detection limits and quantification limits shall be identified.

(2) The department shall review the information submitted under sub. (1) within 30 business days after receipt and determine the applicable statutory and administrative rule provisions and any additional information required from the applicant under this section.

(3) Based on the submitted testing report the department may after consultation with the applicant require additional sediment sampling and analyses when there is evidence of contamination.

(4) For projects in the Great Lakes involving beach nourishment disposal, grain-size analysis results of the proposed dredged material and the beach shall be compared by the department.

(a) The department may allow beach nourishment disposal if:

1. The average percentage of silt plus clay (material passing a #200 sieve or less than .074 mm dia.) in the dredged material does not exceed the average percentage of silt plus clay in the existing beach by more than 15% and the color of the dredged material does not differ significantly from the color of the beach material.

**Note:** For example, if the silt plus clay content of the existing beach is 10%, suitable dredged material must have a silt plus clay content of less than 25%.

2. The criteria of any general permit regulating wastewater discharges under the Wisconsin pollutant discharge elimination system is not exceeded.

(5) For all projects where upland disposal is required or planned, the results of sediment sampling and analysis shall be compared by the department to the solid waste disposal standards and criteria specified in chs. NR 500 to 520.

(6) If the bulk sediment analysis criteria in sub. (4) is exceeded, the applicant shall have the option of demonstrating to the department through use of bioassay, or other methods approved by the department, that the dredging and sediment disposal operations will have minimum effects on the environment.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; correction in (5) made under s. 13.93 (2m) (b) 7., Stats., Register, October, 1995, No. 478.

**NR 347.08 Monitoring, reporting and enforcement.**

(1) **SURVEILLANCE.** (a) The permittee shall contact the department 5 business days prior to the commencement of dredging to provide an opportunity for the department to review all required

environmental safeguards to ensure they are in place and operable.

(b) The department may inspect the dredging project at any time during operation to determine whether requirements of permits and approvals are being met or to conduct effluent sampling.

(2) **MONITORING.** (a) For those projects authorized in part by a WPDES permit, monitoring, analyses and reporting shall be performed as specified in the WPDES permit.

(b) For all other projects, monitoring, analyses and reporting shall be performed as specified in ss. NR 347.06 (2) and 347.07 (1).

(c) Project characteristics to be monitored may include, but are not limited to, carriage water return flow, total suspended solids, dissolved oxygen concentrations, effluent and receiving water temperatures, receiving stream flow rates, effluent ammonia-nitrogen concentrations, and pH.

(3) **SUSPENSION OF WORK.** If the department determines that project performance is not in compliance with permit or contract conditions, the permittee shall suspend work upon written notification from the department. This shall be a condition of any permit or contract issued by the department. The permittee shall be accorded an opportunity for hearing in accordance with s. 227.51 (3), Stats. The issuance of a suspension order under this subsection shall not limit other enforcement actions or penalties. The department and permittee shall analyze operational deficiencies and the department shall prescribe changes necessary to bring project operation into conformance with permit or contract conditions.

(4) **PENALTIES.** (a) Each violation of the conditions of a permit or contract issued under s. 30.20, Stats., or this chapter, may result in a forfeiture of not less than \$100 nor more than \$10,000 for the first offense and shall forfeit not less than \$500 nor more than \$10,000 upon conviction of the same offense a second or subsequent time. The permit or contract may be rescinded and appropriate restoration orders may be issued as authorized by ss. 23.79, 30.03, 30.12, 30.15, 30.20, 30.292, 30.294 and 30.298, Stats.

(b) The enforcement provisions of s. 283.91, Stats., shall apply to any violations of WPDES permits associated with dredging projects.

(c) The enforcement provisions of ss. 289.97 and 299.97, Stats., and chs. NR 500 to 520 shall apply to violations of solid waste management approvals for this chapter.

(d) The enforcement provisions of ss. 291.95 and 291.97, Stats., shall apply to violations of any hazardous waste approvals for disposal activities associated with dredging projects authorized by this chapter.

**History:** Cr. Register, February, 1989, No. 398, eff. 3-1-89; corrections in (4) made under s. 13.93 (2m) (b) 7., Stats., Register, October, 1995, No. 478; corrections in (4) (b) to (d) made under s. 13.93 (2m) (b) 7., Stats., Register January 2002 No. 553.