WISCONSIN DEPARTMENT OF NATURAL RESOURCES
NOTICE OF FINAL GUIDANCE & CERTIFICATION

Pursuant to ch. 227, Wis. Stats., the Wisconsin Department of Natural Resources has finalized and hereby certifies the following guidance document.

DOCUMENT ID

WA-19-1769-C

DOCUMENT TITLE

Guidance for the Beneficial Use of Industrial Byproducts Under Ch. NR 538, Wis. Adm. Code

PROGRAM/BUREAU

Waste and Materials Management

STATUTORY AUTHORITY OR LEGAL CITATION

Ch. 289, Wis. Stats.; ch. NR 538, Wis. Adm. Code

DATE SENT TO LEGISLATIVE REFERENCE BUREAU (FOR PUBLIC COMMENTS)

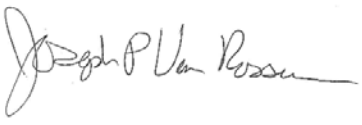
September 16, 2019

DATE FINALIZED

October 8, 2019

DNR CERTIFICATION

I have reviewed this guidance document or proposed guidance document and I certify that it complies with sections 227.10 and 227.11 of the Wisconsin Statutes. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is not explicitly required or explicitly permitted by a statute or a rule that has been lawfully promulgated. I further certify that the guidance document or proposed guidance document contains no standard, requirement, or threshold that is more restrictive than a standard, requirement, or threshold contained in the Wisconsin Statutes.



October 8, 2019

Signature | Date

Guidance for the Beneficial Use of Industrial Byproducts Under Ch. NR 538, Wis. Adm. Code

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March 2015

Waste & Materials Management
P .O. Box 7921
Madison, WI 53707-7921

Contact DNRWasteMaterials@wisconsin.gov for further information.

Disclaimer: *This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.*

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PREFACE

This revision made substantive changes to the guidance document titled "*Guidance for the Beneficial Use of Industrial byproducts, Ch. NR 538, Wis. Adm. Code, PUBL-WA-822-98"* approved in April 1998. This document has been updated to incorporate 2006 ch. NR 538 code revisions and to conform to the DNR Waste and Materials Management Program's most recent data quality assurance and quality control protocols. The guidance detailed herein applies to industrial byproduct generators, brokers and storage facilities. These guidelines supersede the guidelines issued in the April 1998 guidance and will be periodically reviewed by the DNR and revised as necessary to ensure the proper and appropriate beneficial use of industrial byproducts in Wisconsin.

I. Background on NR 538 Beneficial Use Rule

Chapter NR 538, Wis. Adm. Code (NR 538), was established as a result of 1996 Wisconsin Act 27 and more specifically Section 289.05(4), Wis. Stats., which directed the Department of Natural Resources (DNR) to develop rules with standards for the beneficial reuse of specific high-volume industrial wastes.

The goal of NR 538 is to encourage the beneficial use of industrial byproducts in a nuisance-free and environmentally sound manner. This largely self-implementing rule establishes standards for five categories of specifically defined industrial byproducts. The rule describes uses and project criteria appropriate for each category. The industrial byproduct being used must provide a functional benefit to ensure that use of the material is legitimate recycling. The rule addresses the storage and transportation of these materials, the notification of owners of properties where these materials are placed, and establishes a public participation process. The rule includes requirements for submittals of initial and annual certifications to the DNR, and a notification to the DNR for larger projects to allow for an evaluation of potential for impacts to human health or the environment. The rule also allows for DNR review and case specific approval for other uses or materials where appropriate.

The DNR believes that if the requirements of NR 538 are followed it is very unlikely that there will be environmental problems resulting from the beneficial use of these materials. The self-implementing nature of the rule requires a high level of competence and integrity among waste generators. If however, materials are improperly handled and environmental problems result, the DNR will assess the cause and address the situation appropriately using existing administrative code and statutory authority. Generators need to be aware that they are ultimately responsible for the disposition of all their industrial byproducts and waste materials.

Benefits of Using Industrial Byproducts

The DNR recognizes the benefits of re-using of industrial byproducts and encourages the use of the materials in order to preserve resources, conserve energy, and reduce or eliminate the need to dispose of industrial byproducts in landfills. Simply burying useful materials in landfills is expensive and shortens the useful life of landfills. Industrial byproducts can also replace virgin products, thereby reducing the need for new quarries and extending the lives of existing quarry operations. Additional benefits for companies participating in the beneficial use program may include improved environmental performance and reduced landfill operational and/or disposal costs.

Federal Regulations on Disposal of Coal Combustion Residuals from Electric Utilities

Generators should be aware that certain federal rules also apply to the beneficial use of certain coal combustion residuals (CCRs) including the industrial byproducts of bottom ash, fly ash and flue gas desulfurization waste generated from electric utilities. On December 19, 2014, the Environmental Protection Agency (EPA) finalized federal regulations on the disposal of CCRs defining them as a solid waste subject to 40 CFR Part 257, Subtitle D of the Resource Conservation and Recovery Act (RCRA). The federal regulations are self-implementing. To meet the federal definition of “beneficial use” a generator must demonstrate: (1) the CCR provides a functional benefit; (2) the CCR substitutes for the use of a virgin material, conserving natural resources that would otherwise be needed; (3) the use of CCR meets relevant product specifications, regulatory standards, and design specifications and if such standards are not available must not be used in excess quantities; and (4) the unencapsulated use of 12,400 tons or more of CCR placed on the land in non-roadway applications meets certain environmental protection criteria. Sand and gravel pits and quarries that receive CCR are defined as landfills and would not qualify as a beneficial use under the federal regulations. Please consult a copy of the federal rule for more details.

II. "Industrial Byproducts" as Defined in s. NR 538

Section NR 538.03(4), Wis. Adm. Code, defines the following high-volume materials as "industrial byproducts":

- papermill sludge,
- ash from energy recovery including coal ash and slag,
- material captured in flue gas desulfurization (FGD) systems,
- ferrous and steel foundry excess system sand and slag,
- lime kiln dust, and
- "other" non-hazardous solid waste with similar characteristics as determined by the DNR

Inclusion of "Other" Non-Hazardous Solid Waste with Similar Characteristics into NR 538
The code does allow the DNR authority to include materials not specifically defined as "industrial byproducts" to be part of the beneficial use program without a case specific exemption or approval requiring an application and review fee. In such a case, the generator should contact the DNR to discuss the potential for beneficial use of their material. To be eligible for inclusion into the beneficial use program, waste materials not otherwise specifically listed in s. NR 538.03(4) Wis. Adm. Code, must meet the following criteria:

1) Be generated as a byproduct of an industrial process (does not include post-consumer waste or the byproduct of combusting or processing post-consumer waste);
2) Possess consistent physical & chemical properties;
3) Will not require additional testing beyond the frequencies and compounds in Appendix I to verify its potential for appropriate uses;
4) Is a good candidate for one of the uses in NR 538.10 and will not require additional conditions to approve its use.

Examples:

- Crushed scrap toilets used for decorative stone in accordance with NR 538.10(12) Wis. Adm. Code.
- Spent sand blasting media from unpainted or uncoated clean iron or steel specific to byproducts produced as part of a foundry process used in accordance with NR 538.10(5) Wis. Adm. Code.

If the material needs to be mixed with another byproduct to render it fit for use, or to render it non-hazardous or reduce its use restrictions, then the material is not a good candidate for beneficial use under NR 538. The burden is on the generator to prove its potential for beneficial use to the DNR. If the Review staff agrees that the material is a good candidate for beneficial use under NR 538, approval will be documented in a letter to the generator and reference DNR authority to do so per s. NR 538.03(4) Wis. Adm. Code.

If the proposed industrial byproduct material would need conditions that fall outside of the requirements in ch. NR 538, (i.e. additional testing beyond the frequencies and compounds in Appendix, uses not listed in ch. NR 538.10 Wis. Adm. Code, or conditions restricting its use) then the generator may request a case specific exemption or approval with the applicable requirements of s. NR 538.08(7) Wis. Adm. Code and s. 289.43(7) Stats. If the waste material does not meet the definition of an "industrial byproduct", then any proposed use must be approved in accordance with ch. NR 500.08(5) Wis. Adm. Code and ss. 289.43(8) Stats.

Case-specific Exemption or Approval
Case-specific exemption and approvals are allowed under s. NR 538.08(7), Wis. Adm. Code, and allow the DNR to:

1) Assign a category to a high volume solid waste not included in the definition of industrial byproduct in s. NR 538.03(4) Wis. Adm. Code, or,.
2) Conditionally approve a beneficial use not specified in the rule at s. NR 538.10, Wis. Adm. Code. These approvals are based on statutory exemptions under s. 289.43(7), Wis. Stats.

Examples of non-NR 538 industrial byproducts approved for NR 538.10(1) – (13) beneficial uses:

- Spray dryer ash or spray dryer ash/fly ash mixtures from coal burning power plants,
- Foundry baghouse dust containing high percentage of foundry sand from molding / unmolding process,
- Non-ferrous foundry (i.e. aluminum, brass, stainless steel) spent foundry sand or slag.

Example of a NR 538 industrial byproduct approved for a non-NR 538.10 use:

- Beneficial use of material captured in flue gas desulfurization systems and papermill sludge used for agricultural soil amendment.

Per s. NR 538.06(1) Wis. Adm. Code, the DNR may require additional information prior to a case specific exemption or approval. In addition, the testing program must be approved by the DNR prior to characterization. Therefore, it is important that the generator contact the DNR prior to having the material tested to ensure that the testing program proposed is acceptable. See Appendix F for an example of a case specific approval request.

The plan review fee associated with a case specific exemption or approval request is $550 (s. NR 520.15 Table 2, Wis. Adm. Code). Upon receipt of the fee the DNR has 90 days to act on the request. If granted, the exemption or approval may contain conditions outlining specific requirements to ensure that the byproduct is used appropriately and placed in a safe manner.

Low-Hazard Waste Exemptions

If a material is not an industrial byproduct as defined in s. NR 538 and the proposed use is not specified in the rule at s. NR 538.10, the generator may wish to investigate a Low Hazard Exemption from the solid waste regulations as allowed in sub. 289.43(8), Wis. Stats. For more information see DNR Publication WA-1645 Exempting Low-Hazard Wastes from Solid Waste Regulations.

Materials Regulated Elsewhere

The following materials may have the potential to be reused or recycled, but are regulated elsewhere. Materials not included in the definition of industrial byproducts are:

- hazardous waste [ch. NR 600.03(98)],
- metallic mining waste [ch. NR 182.02(30)],
- wastewater treatment waste [ch. NR 214], and
- solid waste exempted from all requirements of chs. NR 500 to 538 per ch. NR 500.08 Wis. Adm. Code.

III. Regulatory Requirements for Industrial Byproduct Generators and Storage Facilities

Industrial Byproduct Generators

Requirement	Code
1. Determine if the facility generates an industrial byproduct as defined in NR 538.	NR 538.03(4)
2. Characterize and determine the category of the industrial byproduct	NR 538.06 & 538.08
3. Complete and submit the Initial Certification form and characterization test data to the DNR and review for approval.	NR 538.14
4. Notify DNR of proposed project utilizing industrial byproducts, request concurrence if required.	NR 538.14
5. Use the industrial byproduct for an approved beneficial use and in accordance with project-specific requirements.	NR 538.10
6. Store, handle and use industrial byproducts in accordance with performance standards.	NR 538.04
7. Construct and operate an industrial byproduct storage facility in accordance with requirements.	NR 538.16
8. Transport industrial byproduct in accordance with requirements.	NR 538.16
9. Fulfill public participation requirements for large volume projects	NR 538.18
10. Conduct environmental monitoring for large volume projects	NR 538.20
11. Fulfill property owner notification requirements if required.	NR 538.22
12. Complete and submit Annual Certification forms by April 1 each year with information for the prior calendar year	NR 538.14
13. Maintain records	NR 538.14
14. Recharacterize industrial byproduct based on volume of industrial byproduct used or stored, and submit results to the DNR	NR 538.06

Industrial Byproduct Storage Facilities

Requirement	Code
1. Submit the Initial Certification form and test data for each industrial byproduct that will be stored. If the Generators have already submitted test data, it does not have to be included with the storage facility certification form.	NR 538.14
2. Store, handle and use industrial byproducts in accordance with the performance standards.	NR 538.04
3. Construct and operate an industrial byproduct storage facility in accordance with requirements.	NR 538.16
4. Complete and submit Annual Certification forms by April 1 each year with information for the prior year.	NR 538.14

IV. Industrial Byproduct Characterization and Assigning a Category

Prior to use, each individual industrial byproduct produced at the facility must be characterized to determine their appropriate use category. The byproduct category dictates how and where the industrial byproduct may be used. Characterization consists of a chemical analysis of a representative sample of the industrial byproduct. In addition, byproducts and uses must meet applicable structural and physical specifications and generally accepted engineering practices for the use. Byproducts must also provide a functional benefit to ensure that the use of the material meets the definition of legitimate recycling (s. 289.43(1), Wis. Stats.).

Related to this section:
- Appendix A and B
- NR 538.06 and NR 538.08

Beneficial use categories range from 1 through 5. The more stringent the test standard that a byproduct can meet the lower the category assigned to the byproduct. In general, the uses allowed for Category 1 byproducts are the least restrictive and those allowed for Category 5 are the most restrictive. Industrial byproduct categories as defined in NR 538.08 Wis. Adm. Code were developed based on their potential risk to human health and the environment. The numeric standards are based on direct contact limits (inhalation and ingestion) and ground water quality standards that already exist in regulations (i.e. ch. NR 140, Wis. Adm. Code).

Unless approved by the DNR, recharacterization, (retesting) of an industrial byproduct must be performed according to a schedule based on the industrial byproduct category and the volume of material used in the previous year. Recharacterization is also required if the process generating the industrial byproduct has changed.

Commingled Industrial Byproducts

Generators sometimes mix industrial byproducts, including those with different categories, to facilitate storage and use. The resulting mixture will carry the most restrictive category present in the mix and can only be used for those approved uses. In addition to meeting chemical requirements, in order to ensure that legitimate recycling is taking place, each industrial byproduct in the mixture must meet physical and geotechnical specifications for the proposed end uses. Recharacterization must be performed on each individual byproduct in the mix at the frequency specified in the original schedule for that byproduct. Recharacterization cannot be performed on a sample of the byproduct mixture in lieu of sampling each individual byproduct.

Example for beneficial use of commingled industrial byproducts:

- A foundry mixes Category 2 spent green sand with Category 4 spent resin sand. This mixture can only be used for the most restrictive Category 4 approved projects. The Category 2 spent green sand must still be recharacterized in accordance with s. NR 538.06(4) (c) Wis. Adm. Code and the Category 4 spent resin sand must be recharacterized in accordance with s. NR 538.06(4) (e) Wis. Adm. Code, even though the two byproducts are mixed.

V. Industrial Byproduct Initial and Annual Certifications

Initial Certification

After chemical testing of an industrial byproduct, generators must complete the initial certification process per NR 538.14 Wis. Adm. Code and submit the information to the DNR for certification that the byproduct is eligible for inclusion into the beneficial use program. This process requires a formal submittal from the generator or storage facility operator and must be completed prior to utilizing the industrial byproduct for any beneficial use.

Related to this section:
- Appendix A
- Appendix C
- Beneficial Use of Industrial Byproducts Initial Certification (Form 4400-197)
- Beneficial Use of Industrial Byproducts Annual Certification (Form 4400-198)
- NR 538.06(1) to (3)
- NR 538.14(1) to (3)

The initial byproduct certification submittal consists of:

1) A completed Initial Certification Form (4400-197) and
2) Analytical test results from the Initial Characterization performed in accordance with s. NR 538.06(1-3) Wis. Adm. Code along with a proposed classification of the industrial byproduct (see Appendix A). Testing includes both a water leach test and a total elemental analysis for the parameters listed in Table 1A and 1B (Appendix I, s. NR 538) for the appropriate byproduct column.

Once the form and analytical results have been submitted, the DNR will review the results and either assign or concur with the categorization proposed by the generator of the byproduct. Any byproducts not specifically listed in the NR 538 Appendix I Tables must submit a testing program to the DNR for approval prior to initial characterization per s. NR 538.06(1) Wis. Adm. Code.

Per NR 538.14, an initial certification form must be submitted to the DNR:

1) For any industrial byproduct not previously categorized,
2) For an industrial byproduct previously categorized, but for which the process generating the material has changed,
3) For any industrial byproduct for which the category has changed, and
4) Prior to the establishment of a storage facility for industrial byproducts.

Annual Certification

Generators and storage facilities must submit an annual certification form (Form 4400-198) which summarizes the estimated volume of the industrial byproduct available for use on an annual basis and the volume beneficially used in the previous year. Annual certifications are due by April 1 of the year following the reporting period. A separate form should be used for each industrial byproduct and for each storage facility. Per NR 538.14(3) Wis. Adm. Code, industrial byproduct annual certifications are not required if the volume of the generator's industrial byproducts beneficially used or stored during the reporting period was less than 1000 cubic yards.

Please note that failure to comply with the requirements of either the Initial Certification or Annual Certification may result in the beneficial use or storage of industrial byproducts being subject to licensing under s. 289.31, Wis. Stats., and the regulatory requirements in NR 500 to 536, Wis. Adm. Code.

Examples:

1. Company A generated 2000 cubic yards of an industrial byproduct. 800 cubic yards was beneficially used as bonded surface course per NR 538.10 Wis. Adm. Code, and the remaining 1200 cubic yards was stored onsite at their industrial byproduct storage facility. Company A is required to submit an annual certification.

2. Company B generated 2000 cubic yards of an industrial byproduct. 800 cubic yards was used as geotechnical fill per NR 538.10 Wis. Adm. Code, and the remaining 1200 cubic yards was disposed in a landfill. Company B is not required to submit an annual certification.

3. Foundry C generated 2000 cubic yards of spent foundry sand. 800 cubic yards was beneficially used for utility trench backfill per NR 538.10(5) (d) Wis. Adm. Code, and the remaining 1200 cubic yards was used for landfill daily cover per NR 538.10(4) Wis. Adm. Code. Foundry C is required to submit an annual certification.

VI. Approved Uses for Industrial Byproducts

Once an industrial byproduct has been assigned to an appropriate category, acceptable uses for those materials are set in s. NR 538.10(1) to (13) Wis. Adm. Code. Uses of the industrial byproducts are based on the category and the ability of the material to meet specific project requirements for each use. Note that as the category of the material increases, the permitted uses become more restrictive and limited.

Related to this section:
- NR 538.10(1) to (13)

Beneficial Use Methods		**Industrial Byproduct Category**				
NR 538.10		**5**	**4**	**3**	**2**	**1**
(1)	Raw Material for Manufacturing a Product	x	x	x	x	x
(2)	Waste Stabilization / Solidification	x	x	x	x	x
(3)	Supplemental Fuel Source / Energy Recovery	x	x	x	x	x
(4)	Landfill Daily Cover / Internal Structures at landfills having a leachate collection system	x	x	x	x	x
(5)	Confined Geotechnical Fill **(a)** commercial, industrial or institutional building subbase **(b)** paved lot base, subbase & subgrade fill **(c)** paved roadway base, subbase & subgrade fill **(d)** utility trench backfill **(e)** bridge abutment backfill **(f)** tank, vault or tunnel abandonment **(g)** slabjacking material **(h)** soil and pavement base stabilization for structural improvements listed in (5)(a) - (c) **(i)** controlled low strength material (flowable fill) for structural improvements listed in (5)(a), (d), (e) and (f)		x	x	x	x
(6)	Encapsulated Transportation Facility Embankment		x	x	x	x
(7)	Capped Transportation Facility Embankment			x	x	x
(8)	Unconfined Geotechnical Fill			x	x	x
(9)	Unbonded Surface Course				x	x
(10)	Bonded Surface Course				x	x
(11)	Bonded Surface Course (Federal, state or municipal roadways)			x	x	x
(12)	Decorative Stone				x	x
(13)	Cold Weather Abrasive				x	x

In addition to the specific requirements of each use as described in s. NR 538.10(1) to (13) Wis. Adm. Code, all industrial byproduct storage facilities and projects must be operated in a manner that minimizes windblown dust, odor, tracking and spillage of the industrial byproduct. The use must also not result in nuisance conditions or environmental pollution as defined under s. 289.01(8), Wis. Stats. and must comply with the performance standards listed in NR 538.04 Wis. Adm. Code. All construction-related uses, especially geotechnical fill, must be utilized in accordance with best management and engineering practices including any applicable ASTM, NRCS or DOT standards.

VII. Restrictions on Placement of Industrial Byproducts

Related to this section:
- NR 538.12

To limit potential impact to surface water and groundwater, byproducts in any quantity or category may not be placed below the ground water table, into permanent standing water, or in areas that need to be dewatered prior to placement. Placement of materials in a floodplain in a manner that would cause an obstruction to flood flows or an increase in regional flood event or adverse effect upon a drainage course is regulated under NR 116 and is generally discouraged.

Fill projects greater than 5000 cubic yards: With the exception of Category 1 materials, industrial byproduct fills greater than 5000 cubic yards that are used as base course, subbase or subgrade fill for the construction of buildings and parking lots require a minimum separation distance of 3 feet between the groundwater table at the time of placement of the material and the industrial byproduct fill per s. NR 538.12(2) (b) Wis. Adm. Code. The generator or their designee must determine the best methods to determine the ground water table based on soil and groundwater conditions at the site, but site observation, test pits and nearby available water well logs can all be used to determine the relevant groundwater depth. Significant observed or suspected fluctuations in the water table should also be noted. The DNR will evaluate evidence indicating the presence of a perched water table (unconfined groundwater held above the regional water table by a layer of impermeable rock or sediment) in its determination of whether or not the 3 foot groundwater separation distance has been met. These projects also require a minimum separation distance of 200 feet between the fill and a private or public water supply well unless written consent is obtained from the well owner(s) located within this separation distance.

Residential areas: The most significant opportunities for use of industrial byproducts are in commercial or industrial construction. Except for Category 1 industrial byproducts, use in residential settings is very limited. The definition of a residential area is found in ch. NR 538.03(6), Wis. Adm. Code, and includes areas zoned residential or within 100 feet of a human residence. An exception is for certain uses of Category 1 and 2 materials for roadways that are designed with a rural type cross-section. This includes mostly rural, unincorporated roads that lack curbs or gutters.

VIII. Beneficial Use Project Notification

Related to this section:
- Appendix D
- NR 538.14(4)

In accordance with NR 538.14(4), each industrial byproduct generator or a person designated by the generator, such as a broker, must submit written notification to the DNR requesting project concurrence prior to initiating a project where required in s. NR 538.10(5), (8), (9), (10) or (11) as shown in the table below. If multiple projects are planned for a property, total volume of the multiple projects must be used to determine notification requirements. Notification should be made to the regional DNR Beneficial Use staff contact.

The notification and concurrence request requirement allows the DNR time to review proposed projects to evaluate the potential for impacts to human health and the environment. Based on the submittal, the DNR has the

option to either: 1) concur with the proposal, 2) object to the proposal or 3) grant an automatic approval if the DNR does not respond to the notification within 10 business days. Objections or denial of concurrence will result from the proposal either lacking enough information to make a decision or the proposal not meeting the Code requirements. Applicants receiving a notice of non-concurrence may make changes to address any deficiencies and resubmit the proposed project.

	Beneficial Use	**Notification and DNR Concurrence Required Prior to Beginning Project**
NR 538.10(5)	**Confined Geotechnical Fill** **(a)** commercial, industrial or non-residential institutional buildings base, subbase or subgrade fill	Projects over 5,000 cy *
	(b) paved lot base, subbase & subgrade fill	Projects over 5,000 cy or any size project that does not meet specifications outlined in s. NR 538.(10)(b) *
	(c) paved roadway base, subbase & subgrade fill	Projects over 5,000 cy *
	(d) utility trench backfill	
	(e) bridge abutment backfill	
	(f) tank, vault or tunnel abandonment	
	(g) slabjacking material	
	(h) soil and pavement base stabilization for structural improvements listed in (5)(a) - (c)	
	(i) controlled low strength material (flowable) fill for structural improvements listed in (5)(a), (d), (e) and (f)	
NR 538.10(6)	Encapsulated Transportation Facility Embankment	Projects using more than 100,000 cy or with a max thickness of greater than 20 feet
NR 538.10(7)	Capped Transportation Facility Embankment	
NR 538.10(8)	Unconfined Geotechnical Fill	All projects *
NR 538.10(9)	Unbonded Surface Course	Projects using more than 1,000 cy or more than 6 inches to be used in individual surface course application *
NR 538.10(10)	Bonded Surface Course	Projects using more than 10,000 cy*
NR 538.10(11)	Bonded Surface Course (Federal, state or municipal roadways)	

*** If the DNR does not respond within 10 business days, concurrence is considered to be granted.**

IX. Generator and Storage Facility General Performance Standards

Ch. NR 538.04, Wis. Adm. Code, outlines specific performance standards that must be met by all generators, storage facilities, and industrial byproduct beneficial reuse projects. It is generally assumed that projects following the NR 538, Wis. Adm. Code requirements and best management practices will not cause a violation of these standards. However, it is incumbent upon the applicant to provide the DNR with documentation of any circumstances that may result in a potential violation of a performance standard, along with any preventative measures proposed to address the situation.

Related to this section:
- NR 538.04

Following are the restrictions on where and under what circumstances industrial byproducts may be used or stored:

A generator, storage facility or byproduct project may <u>not</u>:	**As determined by:**
adversely impact wetlands	DNR review of property based on project notification
cause a take of an endangered or threatened species	DNR review of Natural Heritage Inventory database (NHI Database)
cause a detrimental effect on surface water	Generator / designee submitting notification
cause a detrimental effect on groundwater quality	Generator / designee submitting notification
create an explosive gas migration hazard	Generator / designee submitting notification
emit hazardous levels of contaminants into the air	Generator / designee submitting notification

X. Industrial Byproduct Storage and Transportation Requirements

Facilities storing industrial byproducts are exempt from solid waste licensing and plan approval under s. NR 502.05 Wis. Adm. Code, if the industrial byproduct storage facility requirements listed in s. NR.538.16, Wis. Adm. Code, are met. All storage locations must meet performance standards described in NR 538.04 Wis. Adm. Code, (see above); must be operated in a manner that minimizes windblown dust, odor and tracking; and must not cause nuisance conditions. Industrial byproducts that have been categorized must be kept segregated from other waste materials or byproducts which have not been categorized.

Storage locations
Storage of industrial byproducts generally occurs at 3 types of locations:

1. At the facility generating the industrial byproduct;
2. At a long-term (permanent) off-site storage facility before being used for beneficial use projects; <u>or</u>
3. Temporarily at or near a beneficial use project site.

Exempt storage facilities
The following industrial byproduct storage facilities are exempt from the design and operational requirements of NR 538.16(1) (b) Wis. Adm. Code:

1. Storage of industrial byproduct within enclosed structures such as buildings, silos or green boxes,
2. Storage within a lined area at a licensed engineered landfill that is owned or operated by the user, generator of the product or a person designated by the generator, such as a broker,
3. Facilities that store only Category 1 byproducts,
4. Storage of Category 1, 2, or 3 byproducts at storage facilities for less than 2 years. This exemption

primarily applies to a short-term facility located at or near the beneficial use project. The 2 year storage threshold refers to the timeframe for the storage area, regardless of the turnover within the site. Prior to industrial byproduct storage, the generator must notify the DNR of the storage location, the date which the storage of materials began, and total volume stored. , or

5. Storage per exemption issued by the DNR on a case-specific basis.

Non-exempt storage facilities

Non-exempt storage facilities must meet the design and operational criteria outlined in s. NR 538.16(1) (b) Wis. Adm. Code, listed below. This typically includes outdoor storage of industrial byproducts at the generating facility or other long-term byproduct storage sites (greater than 2 years) such as county or municipal yards. It also includes all Category 4 and 5 byproduct storage sites.

1. Incorporation of a lined low-permeability asphalt, concrete or clay pad, surrounded by curbs or berms to control surface water run-on and run-off. If a clay pad is used, the design must include a layer of gravel or other protective material over the clay surface.

2. Means for collecting, containing and treating the volume of run-off expected from a 25-year, 24-hour storm event. Water contact must be minimized, such as by covering with a tarp, where practical.

   If required, run-off water should be treated in accordance with appropriate water regulations. Treatment may include:

   Stormwater or surface water treatment ponds - Contact DNR Regional Stormwater Program staff for more information about obtaining the appropriate permit or updating your Stormwater Pollution Prevention Plan (SWPPP) for your facility.

   Wastewater treatment plant - Comply with your facilities' existing agreement with the waste water treatment plant (WWTP) serving your facility. If no agreement exists, contact the WWTP to determine what approvals or permits are needed.

3. A setback must be maintained between the stored materials and the edge of the pad sufficient to prevent spillage of materials off the pad and allow vehicle movement completely around the stored materials.

4. Closure of a storage facility must include removal of all visible residues from the storage area.

To meet the above standards, the following features are recommended for the design and operation of the industrial byproduct storage facility:

1. The storage pad and associated runoff containment structure low permeability liner should be:

   a. A minimum of three inches of asphalt or concrete; or

   b. A minimum of one foot of compacted clay, with at least 2 feet of cover materials, preferably a drainage material, to protect the clay and route water away from the stored material; or

   c. Any other liner design (i.e. geomembrane) must be approved by the DNR.

2. The storage pad should have a slope of at least 2% toward the runoff containment structure.

3. The storage pad should be maintained, including regular inspections for and sealing of cracks.

4. Storage piles that need to be covered with a tarp to minimize dust or water infiltration should use a tarp large enough to extend past side curbs or berms to reduce the amount of contact water that must be collected and treated.

5. The height of the curbs or berms to control surface water run-on and run-off should take into account the size of the pad and how often the setback area from the curb is cleaned. For larger storage facilities a minimum three foot high berm is recommended.

6. The setback between stored materials and the edge of the pad should be at least 10 feet to prevent spillage of materials off the pad and allow for vehicle movement completely around stored material.

Additional requirements for non-exempt storage facilities:

1. Submit initial and annual certifications to DNR in accordance with NR 538.16(1) (c) Wis. Adm. Code.

2. Upon closure of the facility removal of all industrial byproduct residue in accordance with NR 538.16(1) (d) Wis. Adm. Code.

Transportation Requirements
Transportation of industrial byproducts for beneficial use does not require a special license, but all transport must be done in a nuisance free manner.

Vehicles used to transport industrial byproducts intended for beneficial use should be durable and leak proof. In addition, vehicles should be loaded and hauled in a manner so that the contents do not fall, spill or leak. Covers should be provided to prevent littering and spillage especially if the material is dusty or will be hauled long distances. Any spilled industrial byproducts must be properly recovered.

XI. Public Participation Requirements for Large Volume Beneficial Use Projects and Storage Facilities

Related to this section:
- NR 538.18

In accordance with s. NR 538.18 Wis. Adm. Code, unless exempt, no person may initiate a beneficial use project where the volume of the industrial byproduct to be used is greater than 30,000 cubic yards, or construct or operate a storage facility with a design capacity greater than 30,000 cubic yards, prior to the person giving notice to the affected public and providing opportunity for public participation. Please note that if a previously approved project will be contiguously expanded and the expansion results in the total volume exceeding 30,000 cubic yards, a public notification may be required at the time of the expansion request.

It is important to note that the responsibility for preparing and posting the public notice as well as arranging any subsequent public meeting is the responsibility of the generator or project broker. If required, documentation of completion of the public notice requirements must be submitted before the DNR can issue a concurrence for the project.

At a minimum, the notice and public participation process shall include the following:

1. Placing a public notice in the local newspaper at least 30 days prior to initiating an industrial byproduct project or storage facility. Public notice should include the following information concerning the nature of the beneficial use project or storage facility:

    a. Type and amount of industrial byproduct to be used or stored
    b. How and where the material will be used
    c. The time frame of the project or storage facility operation
    d. Contact person for interested parties to contact to request a public information meeting

2. If requested by the public, a public informational meeting must be held so details of the project can be discussed. DNR staff may participate in the meeting.

Project and Storage Facilities Exempt from Public Participation Requirements:

1. Projects and storage facilities utilizing only Category 1 industrial byproducts,
2. Wisconsin DOT beneficial use projects that were addressed in DOT's environmental review process,
3. Projects at solid waste facilities licensed under chs. NR 500 to 538,
4. Beneficial uses described under s. NR 538.10(1) to (4) Wis. Adm. Code,
5. Storage at licensed solid waste facilities under NR 502,
6. Storage facilities located on the property where the byproducts are generated.

Project and Storage Facilities Where Public Participation Requirements Apply

	Beneficial Uses	Public Participation Required
NR 538.10(5)	**Confined Geotechnical Fill** **(a)** commercial, industrial or institutional building subbase	Category 2 - 5 projects and storage facilities with volume > 30,000 cy
	(b) paved lot base, subbase & subgrade fill	
	(c) paved roadway base, subbase & subgrade fill	
	(d) utility trench backfill	
	(e) bridge abutment backfill	
	(f) tank, vault or tunnel abandonment	
	(g) slabjacking material	
	(h) soil and pavement base stabilization for structural improvements listed in (5)(a) - (c)	
	(i) controlled low strength material (flowable) fill for structural improvements listed in (5)(a), (d), (e) and (f)	
NR 538.10(6)	Encapsulated Transportation Facility Embankment	
NR 538.10(7)	Capped Transportation Facility Embankment	
NR 538.10(8)	Unconfined Geotechnical Fill	
NR 538.10(9)	Unbonded Surface Course	
NR 538.10(10)	Bonded Surface Course	
NR 538.10(11)	Bonded Surface Course (Federal, state or municipal roadways)	
NR 538.10(12)	Decorative stone	
NR 538.10(13)	Cold weather road abrasive	

XII. Environmental Monitoring Requirements for Select Beneficial Use Projects

Embankments installed at transportation projects utilizing large volumes of industrial byproducts should be designed and constructed to prevent water from contacting the byproducts. The purpose of the environmental monitoring requirement is to determine if water has infiltrated the embankments, and if so, evaluate the potential impacts to water.

Related to this section:
- NR 538.20

Beneficial Use Projects Requiring Environmental Monitoring

	Beneficial Uses	Environmental Monitoring Required
NR 538.10(6)	Encapsulated Transportation Facility Embankment	See s. NR 538.20(2) for specific requirements
NR 538.10(7)	Capped Transportation Facility Embankment	See s. NR 538.20(3) for specific requirements

The DNR may also require environmental monitoring for beneficial use projects other than those listed in s. NR 538.10 Wis. Adm. Code, on a Case Specific project under NR 538.08(7) Wis. Adm. Code.

General Monitoring Requirements

The generator of the industrial byproducts used in embankments is responsible for ensuring the monitoring is completed. Typically, the contractors installing the embankments will also install the head well or lysimeter, and a qualified consultant will be hired to collect the well or lysimeter samples.

Fully encapsulated embankments - One headwell must be installed if less than 50,000 CY of industrial byproducts are used in the embankment; a second headwell must be installed if 50,000 CY or more are used.

The liquid head elevation of each headwell must be monitored twice each year at least 4 months apart. If the head level on the liner exceeds 2 feet, the DNR must be notified. This notification must include an evaluation of the reason for the head level build up and a proposed response to reduce the liquid head level on the liner.

Capped embankments - One basin lysimeter must be installed with a collection area of 100 square feet. The lysimeter must be placed directly below the industrial byproduct, and located so that it is beneath the thickest placement of the byproduct.

The volume of the liquid collected must be monitored and recorded twice each year at least 4 months apart. If the volume of the liquid exceeds 375 gallons in one year, the DNR must be notified. This notification must include an evaluation as to the reason for the volume of liquid collected, an analysis of the liquid collected for all the parameters listed in NR 538 Appendix l, Table 2A, and a proposed response to reduce the volume of liquid infiltrating through the industrial byproduct.

Reporting
The generator is required to include all monitoring results in the annual certification per NR 538.14(2) (h) Wis. Adm. Code.

XIII. Property Owner Notification for Select Beneficial Use Projects

Property owner notification is intended to serve two purposes. First, it ensures that the property owner is aware that industrial byproducts are present and that appropriate institutional controls must be maintained. Second, it provides the property owner documentation that the industrial byproducts have been beneficially used in accordance with ch. NR 538, Wis. Adm. Code, rather than being improperly disposed as waste. This documentation serves to protect the property owner at the time of future sale of the property. Without such notification, these materials may be disturbed and mishandled in the future because the property owner was unaware of their presence. The generator of the industrial byproduct or a person designated by the generator is responsible for providing the notice to the property owner. The notice must be on a form provided by the DNR, or in an alternate form approved by the DNR. If multiple projects are planned for a property, the total volume of the multiple projects must be used to determine property owner notification requirements.

Related to this section:
- Appendix E
- Property Owner Notification – Page 1 (Form 4400-199a)
- Property Owner Notification – Page 2 (Form 4400-199b)
- Affidavit (Form 4400-200)
- NR 538.22

Any property owner receiving the notice must retain this information and provide this information to the next purchaser of the property. We suggest placing a copy of the notification on the property deed to help assure that all potential future land owners are aware of the presence of industrial byproducts on the property as well as any real estate agents marketing or brokering the sale of the property.

In accordance with NR 538.22 Wis. Adm. Code, written notice must be provided to the owners of properties on which industrial byproducts are used under situations identified under s. NR 538.10(5) to (9) Wis. Adm. Code, as described in the table on the following page.

Beneficial Use Projects Requiring Property Owner Notification

	Beneficial Uses	Property Owner Notification Required
NR 538.10(5)	**Confined Geotechnical Fill** **(a)** commercial, industrial or institutional building subbase	Category 2 byproduct projects > 2,500 cy All Category 3 - 5 byproduct projects
	(b) paved lot base, subbase & subgrade fill	
	(c) paved roadway base, subbase & subgrade fill	
	(d) utility trench backfill	
	(e) bridge abutment backfill	
	(f) tank, vault or tunnel abandonment	
	(g) slabjacking material	
	(h) soil and pavement base stabilization for structural improvements listed in (5)(a) - (c)	
	(i) controlled low strength material (flowable) fill for structural improvements listed in (5)(a), (d), (e) and (f)	
NR 538.10(6)	Encapsulated Transportation Facility Embankment	
NR 538.10(7)	Capped Transportation Facility Embankment	
NR 538.10(8)	Unconfined Geotechnical Fill	
NR 538.10(9)	Unbonded Surface Course	

In addition to the above property owner notification requirements, for projects that utilize more than 10,000 cubic yards of industrial byproducts, an affidavit must be recorded with the register of deeds for the county in which the project is located. The affidavit must be recorded within 60 business days of completing the placement of the byproduct, must indicate that industrial byproducts were used on the property, and must indicate where the property owner notification information may be obtained.

XIV. Industrial Byproduct Reporting and Recordkeeping Summary

Recordkeeping - The generator of an industrial byproduct, or their designee, must maintain records of where their industrial byproduct has been used for one or more of the beneficial uses described under s. NR 538.10 (5) to (8) Wis. Adm. Code, regardless of volume. These records must be maintained for 5 years after the use of the industrial byproduct and must be accessible to DNR staff upon request.

Related to this section:
- Appendix C and D
- NR 538.14

Industrial Byproduct Reporting and Recordkeeping Summary per NR 538.14

Report	Who	Report Due	Form / Documents
Initial Certification	Generators Storage Facility Operators or their designee	Before using or storing an industrial byproduct for beneficial use. When an industrial byproduct category has changed. When a significant change has occurred in the process generating the material.	Beneficial Use of Industrial Byproducts Initial Certification (Form 4400-197) Documentation, including test results supporting the classification, shall be included.
Annual Certification Not required if the volume of byproduct used or stored for future use during the reporting period was less than 1,000 cubic yards	Generators Storage Facility Operators or their designee	Before April 1 of the year following the reporting period.	Beneficial Use of Industrial Byproducts Annual Certification (Form 4400-196) Environmental monitoring data collected from projects
Project Notification	Generator or person designated by the generator such as a broker.	Before initiating projects that require concurrence from the DNR. See Appendix A.	No form. See specific requirements in s. 538.14(4)

Appendix A: Initial Byproduct Characterization Process

The following steps outline the responsibilities of the generator when characterizing an industrial byproduct.

Related to this section:
- NR 538.06 and NR 538.08

Step 1: Confirm that the material is not a hazardous waste.

To be eligible for beneficial use, the generator must first establish that the material is not a hazardous waste as defined in NR 660.10 (52) Wis. Adm. Code. For guidance on determining if the material is a hazardous waste, see "Is Your Waste Hazardous?" (Pub. WA-1152). For initial certification, the DNR may request verification that a proper hazardous waste determination has been made. This may be in the form of a TCLP analysis or a certification statement provided by the generator.

Step 2: Locate a certified laboratory that can perform the required chemical analysis.

For initial characterization of a new industrial byproduct, or if the process generating the byproduct changes, each byproduct must have an analysis performed for the parameters listed in the appropriate column for the byproduct type in s. NR 538, Appendix I, Table 1A and Table 1B Wis. Adm. Code, for Category 1 materials. Testing includes both a water leach test (ASTM D3987) and a total elemental analysis. All material sampling, total element analysis and analysis of elutriate from leach testing shall be performed using the latest version of EPA SW-846 methodologies with a limit of detection at or below the standards listed for parameters in Tables 1A and 1B by product type. The intent of the Code, is to use initial testing results to establish a baseline for an industrial byproduct new to the Beneficial Use program. Therefore, even if the facility wishes to use the material for projects other than Category 1, or believes the material is Category 2, 3, 4 or 5, all initial certification testing must be for those parameters specified in the Table 1A and 1B.

Generators with papermill sludge, material captured in flue gas desulfurization systems and limekiln dust, which are listed industrial byproducts but are not specifically listed on the tables 1A to 3, should contact DNR prior to characterization. The DNR may modify the list of chemical/physical parameters required to be analyzed for and may establish standards on material specific basis per s. NR 538.06(1) Wis. Adm. Code.

All laboratories performing initial certification analyses must be state-certified for the analytical protocols performed by the laboratory. Laboratories certified by the state of Wisconsin can be found at: dnr.wi.gov search "lab certificatoion"

Step 3: Collect a representative sample of industrial byproduct and send it to the lab for analysis.

To ensure that the industrial byproduct is properly categorized and appropriately used, it is important that the generator collect a representative sample of the material. In most cases, a composite sample may need to be collected from several locations or over a specific time period in order to accurately reflect the make-up of the industrial byproduct. To ensure that the industrial byproduct meets both waste regulations and end user material specification, the sample should be taken at the point of generation. The byproduct will need a case-specific approval per s. NR 538.08(7) Wis. Adm. Code, if it is subject to any post-generation conditioning or processing especially if it changes either the physical or chemical nature of the byproduct. This can include the addition of additives, hydration or oxidation by atmospheric exposure.

It is also very important that the sampling technique be adequately documented. This should help if questions arise regarding sample results and allows for the most consistent sampling technique and greater reproducibility. If not familiar with material sampling, ask the lab performing the analysis for instructions on sample size, preservation, hold time, and storage and transportation requirements. If these requirements are not met, the analysis may be invalid.

Step 4: Compare industrial byproduct sample results to standards listed in s. NR 538 Appendix I, Wis. Adm. Code.

Start with Table 1A and 1B, then move on to the other tables as appropriate. To facilitate both the Generator and the DNR's review of the characterization results, please fill out and submit the material appropriate template. Example templates are provided on the following pages, but facilities may develop their own spreadsheets.

If the sample is ferrous foundry excess system sand, ferrous foundry slag or coal ash, and	**Then, the byproduct is**
Contains less than the standard concentrations specified for parameters listed in Tables 1A and 1B	Category 1
Contains less than the standard concentrations specified for parameters in Tables 2A and 2B (and are not Category 1) If total polyaromatic hydrocarbons (PAHs) exceed 100 mg/kg, DNR concurrence is necessary prior to categorization as a Category 2 material.	Category 2
Contains less than the standard concentrations specified for parameters in Table 2A (and are not Category 1 or 2) Coal ashes are Category 3 if the concentration of boron is less than 3.4 mg/L and the concentration of all other parameters are less than those listed in Table 2A.	Category 3
Contains less than the standard concentrations specified for parameters in Table 3 (and are not Category 1, 2, or 3)	Category 4
Is not Category 1, 2, 3 or 4 and is not a hazardous waste	Category 5

Ferrous Foundry Slag Industrial Byproduct Characterization

Facility:_____ Date:_____

s. NR 538, Wis. Adm. Code, Appendix 1				
Water Leach Test (ASTM D3987)	**Table 1A Category 1**	**Table 2A Category 2 & 3**	**Table 3 Category 4**	**Slag Sample**
Parameter	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Aluminum	1.5	-	-	
Antimony	0.0012	0.012	-	
Arsenic	0.005	0.05	-	
Barium	0.4	4	-	
Beryllium	0.0004	0.004	-	
Cadmium	0.0005	0.005	0.025	
Chromium, Tot.	0.01	0.1	-	
Copper	0.13	-	-	
Total Cyanide	0.04	-	-	
Fluoride	0.8	-	-	
Iron	0.15	1.5	3	
Lead	0.0015	0.015	0.075	
Manganese	0.025	0.25	-	
Mercury	0.0002	0.002	0.01	
Nickel	0.02	-	-	
Selenium	0.01	0.1	-	
Sulfate	125	-	-	
Thallium	0.0004	-	-	
Zinc	2.5	-	-	
Total Elemental	**Table 1B Category 1**	**Table 2B Category 2 & 3**		
Parameter	**mg/kg**	**mg/kg**		**mg/kg**
Antimony	6.3	-		
Arsenic	0.042	21		
Barium	1100	-		
Beryllium	0.014	7		
Chromium, Hex.	14.5	-		
Lead	50	-		
Thallium	1.3	-		
Industrial Byproduct Category: _____				

Ferrous Foundry Excess System Sand Industrial Byproduct Characterization

Facility:_____ Date:_____

s. NR 538, Wis. Adm. Code, Appendix 1				
Water Leach Test (ASTM D3987)	**Table 1A Category 1**	**Table 2A Category 2 & 3**	**Table 3 Category 4**	**Sand Sample**
Parameter	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Aluminum	1.5	-	-	
Antimony	0.0012	0.012	-	
Arsenic	0.005	0.05	-	
Barium	0.4	4	10	
Beryllium	0.0004	0.004	-	
Cadmium	0.0005	0.005	0.025	
Chromium, Tot.	0.01	0.1	-	
Copper	0.13	-	-	
Total Cyanide	0.04	-	-	
Fluoride	0.8	8	-	
Iron	0.15	1.5	3	
Lead	0.0015	0.015	0.075	
Manganese	0.025	0.25		
Mercury	0.0002	0.002	0.01	
Nickel	0.02	-	-	
Phenol	1.2	12	-	
Selenium	0.01	0.1	-	
Sulfate	125	-	-	
Thallium	0.0004	-	-	
Zinc	2.5	-	-	

Continued next page

Ferrous Foundry Excess System Sand Industrial Byproduct Characterization

Facility:_____ Date:_____

Total Elemental	**Table 1B Category 1**	**Table 2B Category 2 & 3**		
Parameter	**mg/kg**	**mg/kg**		**mg/kg**
Antimony	6.3	-		
Arsenic	0.042	21		
Beryllium	0.014	7		
Chromium, Hex.	14.5	-		
Thallium	1.3	-		
Acenaphthene	900			
Acenaphthylene	8.8			
Anthracene	5000			
Benz(a)anthracene	0.088	44		
Benzo(a)pyrene	0.0088	4.4		
Benzo(b)fluoranthene	0.088	44		
Benzo(ghi)perylene	0.88			
Benzo(k)fluoranthene	0.88			
Chrysene	8.8			
Dibenz(ah)anthracene	0.0088	4.4		
Fluoranthene	600			
Fluorene	600			
Indeno(123-cd) pyrene	0.088	44		
1-methyl naphthalene	8.8			
2-methyl naphthalene	8.8			
Naphthalene	600			
Phenanthrene	0.88			
Pyrene	500			
Total PAHs		**100**		
			Industrial Byproduct Category	

Coal Ash Industrial Byproduct Characterization

Facility:_____ Date:_____

s. NR 538, Wis. Adm. Code, Appendix 1				
Water Leach Test (ASTM D3987)	**Table 1A Category 1**	**Table 2A Category 2 & 3**	**Table 3 Category 4**	**Coal Ash Sample**
Parameter	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Aluminum	1.5	-	-	
Antimony	0.0012	0.012	-	
Arsenic	0.005	0.05	-	
Barium	0.4	4	-	
Beryllium	0.0004	0.004	-	
Boron	0.19	3.4	4.8	
Cadmium	0.0005	0.005	0.025	
Chloride	125	-	-	
Chromium, Tot.	0.01	0.1	0.5	
Copper	0.13	-	-	
Iron	0.15	-	-	
Lead	0.0015	0.015	-	
Manganese	0.025	0.25	-	
Mercury	0.0002	0.002	-	
Molybdenum	0.05	-	-	
Nickel	0.02	-	-	
Nitrite & Nitrate	2	-	-	
Phenol	1.2	-	-	
Selenium	0.01	0.1	0.25	
Silver	0.01	0.1	0.25	
Sulfate	125	1250	2500	
Thallium	0.0004	0.004	-	
Zinc	2.5	-	-	

Continued next page

Coal Ash Industrial Byproduct Characterization

Facility:_____ Date:_____

Total Elemental	**Table 1B Category 1**	**Table 2B Category 2 & 3**		
Parameter	**mg/kg**	**mg/kg**		**mg/kg**
Antimony	6.3			
Arsenic	0.042	21		
Barium	1100	-		
Beryllium	0.014	7		
Boron	1400	-		
Cadmium	7.8	-		
Chromium, Hex.	14.5	-		
Lead	50	-		
Mercury	4.7	-		
Molybdenum	78	-		
Nickel	310	-		
Thallium	1.3	-		
Vanadium	110	-		
Zinc	4700	-		
Acenaphthene	900			
Acenaphthylene	8.8			
Anthracene	5000			
Benz(a)anthracene	0.088	44		
Benzo(a)pyrene	0.0088	4.4		
Benzo(b)fluoranthene	0.088	44		
Benzo(ghi)perylene	0.88			
Benzo(k)fluoranthene	0.88			
Chrysene	8.8			
Dibenz(ah)anthracene	0.0088	4.4		
Fluoranthene	600			
Fluorene	600			
Indeno(123-cd)pyrene	0.088	44		
1-methyl naphthalene	8.8			
2-methyl naphthalene	8.8			
Naphthalene	600			
Phenanthrene	0.88			
Pyrene	500			
Total PAHs		**100**		
				Industrial Byproduct Category _____

Other[1] Industrial Byproduct Characterization

Facility:_____ Sample:_____ Date:_____

NR 538 Appendix I				
Water Leach Test (ASTM D3987)	**Table 1A Category 1**	**Table 2A Category 2 & 3**	**Table 3 Category 4**	**Your Sample**
Parameter	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Aluminum	1.5	-	-	
Antimony	0.0012	0.012	.03	
Arsenic	0.005	0.05	.25	
Barium	0.4	4	10	
Beryllium	0.0004	0.004	.02	
Boron	0.19	1.9	4.8	
Cadmium	0.0005	0.005	0.025	
Chloride	125	1250	2500	
Chromium, Tot.	0.01	0.1	.5	
Copper	0.13	1.30	6.5	
Total Cyanide	0.04	.40	1	
Fluoride	0.8	8	20	
Iron	0.15	1.5	3	
Lead	0.0015	0.015	0.075	
Manganese	0.025	0.25	0.5	
Mercury	0.0002	0.002	0.01	
Molybdenum	.05	-	-	
Nickel	0.02	.20	.5	
Nitrite & Nitrate	2.0	20	50	
Phenol	1.2	12	30	
Selenium	0.010	0.1	0.25	
Silver	0.010	.1	0.25	
Sulfate	125	1250	2500	
Thallium	0.0004	.004	0.01	
Zinc	2.5	25	50	

Continued on next 2 pages

1. As provided under s. NR 538.06(1), the testing program for materials other than ferrous foundry system sand, ferrous foundry slag and coal ash must be approved by the department prior to characterization. For other materials, the department may modify the list of parameters required to be analyzed for and may establish standards on a material specific basis for additional parameters. For these materials the total elemental analysis shall also include aluminum, antimony, barium, boron, cadmium, hexavalent chromium, cobalt, copper, lead, mercury, molybdenum, nickel, phenol, selenium, silver, strontium, thallium, vanadium and zinc, unless otherwise approved by the department. Also, for industrial byproducts not listed, department concurrence is necessary prior to classification as a Category 2 industrial byproduct.

Other[1] Industrial Byproduct Characterization

Facility:_____ Sample:_____ Date:_____

Total Elemental Analysis	Table 1B Category 1	Table 2B Category 2 & 3		Your Sample
Parameter	**mg/kg**	**mg/kg**		**mg/kg**
Aluminum				
Antimony	6.3	21		
Arsenic	0.042	7		
Barium	1100	-		
Beryllium	0.014	-		
Boron	1400	-		
Cadmium	7.8	-		
Chromium, Hex.	14.5	-		
Cobalt				
Copper				
Lead	50	-		
Mercury	4.7	-		
Molybdenum	78	-		
Nickel	310	-		
Phenol	9400	-		
Selenium	78	-		
Silver	9400	-		
Strontium	9400	-		
Thallium	1.3			
Vanadium	110	-		
Zinc	4700	-		
Acenaphthene	900			
Acenaphthylene	8.8			
Anthracene	5000			
Benz(a)anthracene	0.088	44		
Benzo(a)pyrene	0.0088	4.4		
Benzo(b)fluoranthene	0.088	44		
Benzo(ghi)perylene	0.88			
Benzo(k)fluoranthene	0.88			
Chrysene	8.8			
Dibenz(ah)anthracene	0.0088	4.4		
Fluoranthene	600			
Fluorene	600			
Indeno(123-cd)pyrene	0.088	44		
1-methyl naphthalene	8.8			
2-methyl naphthalene	8.8			
Naphthalene	600			

Phenanthrene	0.88			
Pyrene	500			
Total PAHs		100		
			Industrial Byproduct Category	

Appendix B: Industrial Byproduct Recharacterization Schedule and Process

To confirm that the initial characterization results are still valid and to confirm that the byproduct materials are properly categorized, industrial byproducts that are beneficially used under NR 538 must be recharacterized in accordance with the schedule outlined below, unless the DNR approves an alternative recharacterization method. Unless there is a change in the byproduct production process, recharacterization of Category 5 materials is not required. Recharacterization is also not required if less than the quantity specified in the Category was used or stored in the previous year.

Related to this section:
- NR538.06(4)

Industrial Byproduct Recharacterization Schedule per s. NR 538.06(4)

Industrial Byproduct	Representative Sample Analyzed
Category 1	Once per year, unless under 1,000 cubic yards of material were beneficially used or stored for use in the previous year
Category 2	Once every 2 years unless under 2,000 cubic yards of material were beneficially used or stored for use during the previous 2-year period.
Category 3	Once every 3 years for Category 3 materials, unless under 3,000 cubic yards of material were beneficially used or stored for use during the previous 3-year period
Category 4	Once every 5 years for Category 4 materials, unless under 5,000 cubic yards of material were beneficially used or stored for use during the previous 5-year period
Category 1, 2, 3, 4, 5	**Any** time there is a change in the byproduct production process, such as changes in raw materials going into the process or equipment or technology generating the byproduct that could potentially result in a change in the category assigned to the material, regardless of byproduct quantities used.

Recharacterization Following a Change in the Byproduct Production Process
Generators should apply their knowledge of the industrial byproduct and the byproduct production process in determining the need for a recharacterization. It may only take a small process modification or raw material change to alter the industrial byproduct's category. Please note that even generators that produce byproduct quantities too small to require routine recharacterization are required to recharacterize their material if a process modification could result in a category change.

Parameters Required for Recharacterization
For each new industrial byproduct, or when the process generating the byproduct changes, each byproduct must be analyzed for the parameters listed in NR 538 Appendix I, Table 1A and Table 1B, Wis. Adm. Code. For example, if the flue gas desulfurization process and associated pollution control equipment has changed at a coal burning power plant due to air pollution control requirements, the material generated by this process must be recharacterized by testing at the Category 1 level.

If the process generating the byproduct has not changed, the generator may choose to test only for those parameters for which the byproduct has historically been categorized. For example, the process generating spent

foundry system sand at Foundry A has not changed and the foundry sand has historically been Category 2. Foundry A may choose to test the spent system sand at the Category 2 level using parameters and standards in NR 538 Appendix I, Table 2A and Table 2B, Wis. Adm. Code.

Please note that Category 2 materials other than ferrous foundry sand, ferrous foundry slag and coal ash must also include a total elemental analysis for aluminum, antimony, barium, boron, cadmium, hexavalent chromium, cobalt, copper, lead, mercury, molybdenum, nickel, phenol, selenium, silver, strontium, thallium, vanadium and zinc unless otherwise approved by the DNR .

Change in Industrial Byproduct Category
If the results from recharacterization analysis are significantly different from the initial characterization, the generator should first evaluate all the variables that could have affected the sample results. If after evaluating the situation the generator believes the recharacterization does not accurately represent the industrial byproduct, contact DNR staff. Retention of an industrial byproduct's previous category may be allowed while a new analysis is completed, if adequate evidence can be provided to show that the new results were inaccurate. It may be necessary to analyze more than one sample to refute or confirm suspect recharacterization results.

Recharacterization of Industrial Byproduct Mixtures
Industrial byproducts which are part of a mixture to facilitate storage and use shall be recharacterized according to the recharacterization schedule in s. NR 538.06(4), Wis. Adm. Code. Example: A foundry mixes Category 2 spent green sand with Category 4 spent resin sand prior to storage and use. The spent green sand will be recharacterized every 2 years if > than 2000 cubic yards are used or stored and the Category 4 sand will be recharacterized every 4 years if > 5000 cubic years are used or stored.

Submittal of Recharacterization Data
If the recharacterization was performed due to a production process change, submit documentation including test results to your Regional Beneficial Use Contact as soon as feasible. Otherwise, submit recharacterization data along with your Annual Certification. (See Appendix C)

Appendix C: Initial and Annual Industrial Byproduct Certification Process

A separate form must be used for each industrial byproduct and each storage facility. Forms may be found on the Beneficial Use of Industrial Byproducts Program website.

- Beneficial Use of Industrial Byproducts Initial Certification (Form 4400-197)
- Beneficial Use of Industrial Byproducts Annual Certification (Form 4400-198)

Related to this section:
- NR 538.14(1) to (3)
- Form 4400-197
- Form 4400-198

For example, a ferrous foundry is both a generator of spent system sand and has a storage facility for the spent system sand. This foundry must submit two initial certification forms; one for the industrial byproduct and one for the storage facility.

Information needed to complete the initial certification includes:

a. Name and address of the generator or storage facility.
b. Name, address and telephone number of generator or storage facility contact.
c. Physical location of byproduct generation or storage facility (if different than mailing address)
d. Type of industrial byproduct. For "other," please give the industrial byproduct a unique name. Use this name in annual certifications and correspondence regarding that specific industrial byproduct.
e. Description of each industrial byproduct intended for beneficial use or storage that clearly identifies the specific process that generated it. The DNR may also request a process flow diagram illustrating inputs and outputs of the processes and, if necessary, Safety Data Sheets for materials used in process.
f. Estimate of the volume of byproduct that could be made available for beneficial use on an annual basis.
g. Classification of each industrial byproduct to be beneficially used and/or stored.

Lab reports, including test results and QA/QC documentation supplied by the WI certified lab, must be included with the submittal. To facilitate both the Generator and the DNR's review of the characterization results, please utilize and submit the material appropriate template found at Beneficial Use of Industrial Byproducts internet site.

Storage facilities may provide the name and address of the generator of the industrial byproduct to be stored, if the storage facility is not the generator and the generator has already submitted test results for the byproduct.

By signing these forms, DNR is given permission to conduct inspections of the generating facility or storage facility, and to collect samples to verify compliance. The signature also certifies that information on the form is true and accurate.

Beneficial Use of Industrial Byproducts Annual Certification Submittal Process

Information needed to complete the annual certification includes:

a. Cover letter with statement of intent (this gives the DNR a quick reference to the type of review needed).
b. Name and address of the generator or storage facility.
c. Name, address and telephone number of generator or storage facility contact.
d. Physical location of byproduct generation or storage facility (if different than mailing address).
e. Reporting year.
f. The type of industrial byproduct. For "other," use the name indicated on the industrial byproduct's initial certification form. Use this same name in all correspondence regarding that specific industrial byproduct.
g. A description of the industrial byproduct intended for beneficial use or storage that clearly identifies the specific process that generated it.
h. The classification of the byproduct generated or stored. Documentation of any recharacterization test results supporting the classification shall be included if required. Storage facilities may provide the name and address of the generator(s) of the industrial byproduct(s) to be stored, provided the generator will also be submitting an annual report.

i. Volume of industrial by byproduct that is estimated to be available on an annual basis for beneficial use.
Generators: Total volume of each industrial byproduct that was available for use during the year.
Storage Facility: Total volume of each industrial byproduct available at the storage facility.

j. Volume beneficially used, or change in volume stored for beneficial use, over the past calendar year.
Generators: Volume of each industrial byproduct beneficially used over the past calendar year. Please note that this also includes spent foundry sand used for landfill daily cover.
Storage Facility: Change in volume stored over the past calendar year. Compare the amount stored at the beginning of the year and note the difference (either positive or negative) from the amount in storage at the end of the previous reporting year.

k. A summary of the performance, problems and maintenance associated with any storage areas.

l. Environmental monitoring data (if required).

m. Signature certification that information is true, accurate and complete, and that the performance standards in s. NR 538.04 Wis. Adm. Code, have been met.

Appendix D: Beneficial Use Project Notification and Concurrence Request Process

Basic information included in the written notification from the Applicant to the DNR must include:

Related to this section:
- NR 538.14(4)

- Name, address, phone number of the contact for the project.
- Location of the project and site description including a map of the project area. Be sure to highlight any potential conflicts with locational criteria (i.e. wetlands, surface water bodies, wells or residences) and how these resources were located. *Map must include latitude & longitude and/or GPS coordinates.*
- Approximate volume of byproduct anticipated to be used in the project.
- Anticipated project start and end date.
- Identification of the industrial byproducts to be used, their source, and the category of these materials.
- For beneficial use projects listed in NR 538.10(5)(a) & (b) that exceed 5,000 CY, where minimum groundwater separation of three feet between the industrial byproduct and groundwater table is required, include the method and data used to determine groundwater separation distance.
- For beneficial use projects or storage facilities that are greater than 30,000 cubic yards and not subject to the exemptions in s. NR 538.18(2) Wis. Adm. Code, evidence of the public notice and participation process required per s. NR 538.18 Wis. Adm. Code.

  Please note that if a previously approved project will be contiguously expanded and the expansion results in the total volume exceeding 30,000 cubic yards, a public notification may be required at the time of the expansion request.

Timeframe for Gaining Concurrence

1. If the notification submittal contains all the required information, the DNR will respond within 10 business days. If the DNR does not respond to the notification within 10 days, concurrence is considered granted.

2. If the notification submittal is missing information or it does not appear that compliance to the specific project requirements will be achieved, the DNR will contact the person making the submittal and inform them that a concurrence will not be granted until additional information is submitted. The project may not commence until concurrence is received from the DNR and the 10-day timeframe no longer applies.

3. For projects greater than 100,000 cubic yards or with a maximum thickness of greater than 20 feet as described in NR 538.10(6) and NR 538.10(7) Wis. Adm. Code, the 10 business day concurrence timeframe does not apply. DNR concurrence must be obtained prior to beginning the project.

See Appendix G for an Example Beneficial Use Project Notification and Concurrence Request Letter

Appendix E: Property Owner Notification Process

Forms associated with property owner notification may be found on the Beneficial Use of Industrial Byproducts Program website.

- Property Owner Notification – Page 1 (Form 4400-199a)
- Property Owner Notification – Page 2 (Form 4400-199b)
- Affidavit (Form 4400-200)

Related to this section:
- Property Owner Notification – Page 1 (Form 4400-199a)
- Property Owner Notification – Page 2 (Form 4400-199b)
- Affidavit (Form 4400-200)
- NR 538.22-NR 538.14(4)

Small-sized projects
For projects that use no more than 200 cubic yards of industrial byproduct, the property owner notification must identify the category, type, and volume of byproduct and describe where the materials were placed. Use Form 4400-199a.

Medium-sized projects
For projects that use more than 200 cubic yards but no more than 10,000 cubic yards of industrial byproduct, the property owner notification must include all the information required for small sized projects and shall also include a sketch or drawing showing the approximate boundaries of the areas where industrial byproducts were placed. Use Forms 4400-199a and 4400-199b.

Large-sized projects
For projects that utilize more than 10,000 cubic yards of industrial byproduct, the notification must include all the information required for the small and medium sized projects. In addition, an affidavit must be recorded with the register of deeds within 60 business days of completing the placement of the industrial byproduct. The affidavit must indicate that industrial byproducts were used and where the property owner notification information can be obtained. Use Forms 4400-199a, 4400-199b and 4400-200.

DNR review staff will determine if two projects are so closely related in time or purpose that they should be considered one project. If that is the case, the affidavit requirements will be applied to the total volume of the two projects.

Appendix F: Example Format for a Case Specific Material or Project Approval Request

Cover etter

The cover letter should provide a brief summary of key information relating to the request, including the following:

Related to this section:
- NR 538.08(7)

- Brief statement regarding a case specific review
- Desired DNR action
- Legal basis for the exemption i.e. s. 289.43(7), Wis. Stats.
- Name of waste generator and contact information
- Type, volume and rate of production of byproduct
- Location and type of use or disposal being proposed
- Expected start and end dates

Optional: If you feel the proposed management of the material will result in positive environmental or social impacts (i.e. replace virgin material, effectively replace a more expensive manufactured product, save a business money, create jobs, reduce the carbon foot print, etc.), please feel free to include a discussion of it in your submittal.

Report Content

The purpose of the report is to provide the DNR reviewer and, where applicable, the public, with a detailed description of the proposed project and to demonstrate that the material qualifies for a NR 538 case specific approval. The following information should be considered for inclusion in the report.

Contact information:

- *Owner and Generator Contact*
  Name, organizational affiliation, address, telephone number and e-mail address of the generator and owner who is responsible for the waste.

- *Reuse Site Contact*
  Name, organizational affiliation, address, telephone number and e-mail address of the owner and operator of the site where the waste will be disposed or utilized.

- *Project Contact Person*
  Name, title, organizational affiliation, address, telephone number and e-mail address of the person who will be working with the DNR on the proposed request.

Project Description

- Provide a detailed description of the process which generated the byproduct for which an exemption is being sought. Include a description and map indicating the location of the byproduct material.

- Provide a site map showing where the byproduct was generated, plotted on a USGS topographic contour map. Include the street address and legal description (to ¼ of ¼ section), where applicable, of the generation site.

- Describe any previous environmental or public health regulatory compliance or enforcement activities conducted by the DNR or other agency associated with the generation of the byproduct material.

- Discuss disposal of wastes not included within the exemption, such as rejects, off-specification waste, off-season disposal of waste, and alternative disposal plans.

- Describe any quality assurance procedures used to identify off-specification waste, reject materials or other indications of waste variability used to monitor the process generating the waste.

- Provide a detailed description of how the byproduct material will be managed, including plans for reuse. Include specific locations at which reuse is proposed.
    - Provide a project site map(s), drawn to scale not larger than 1 inch equal to 100 feet, of the location where the waste is to be managed indicating wetlands, surface water boundaries, USGS topographic contours, roads and buildings. Include the legal description (to ¼ of ¼ sections) of the proposed site. Global Positioning Satellite (GPS) coordinates are recommended if available.
    - Identify the depth of the ground water table and distance to and location of any water supply wells within ¼ mile.
    - Provide a description of the reuse site's current and historic land use including any available information regarding environmentally sensitive areas.
    - Describe any activities (i.e., regulatory, enforcement, or inspections) conducted by the DNR or any other agency at the waste's destination site.

Byproduct Description

- Provide a narrative description of the byproduct's characteristics and the process from which the byproduct was generated. Include any chemical reagents involved in the generation of the byproduct or other chemicals used at the generating facility that may come into contact with the byproduct material.

- Provide a narrative description of any other treatments which have been or will be performed on the byproduct such as hydration (conditioning), oxidation or mixing with other materials.

- The material description section should contain the following:
    - Tables summarizing the results of all chemical, physical or geotechnical analyses of the byproduct conducted to verify contaminants and hazardous characteristics. At a minimum, analysis should include all he parameters included in s. NR 538.22, Appendix I, Table 1A and 1B, Wis. Adm. Code, for the "Other" category. Include a scaled site map depicting all sample locations.
    - A determination that the byproduct is not a hazardous waste as defined under s. NR 660.12(52) Wis. Adm. Code, using a method specified under ch. NR 661 Wis. Adm. Code.
    - Technical data and information about the properties of the byproduct relevant to the proposed reuse.
    - The potential for the byproduct characteristics to change due to ingredient or process changes.
    - If warranted (such as for continuous waste generation), include an ongoing sampling plan for the byproduct, including sample parameters and sampling frequency.

- If available, also include the following:
    - Any studies or analytical characterization, Safety Data Sheet, or contaminant risk assessments.
    - Documentation of contaminant profiles including test results and analyses of exposure or migration pathways.
    - The results of any trials, experiments, field tests, technical literature findings, staff observations and inspections related to the proposed action.

Additional Attachments

- Analytical Package for Contaminant Profile Testing
  Provide a copy of the analytical package for all sampling results submitted to the DNR. The package should include the chain of custody, sampling methods and QA/QC data along with the results. The package should also include documentation that the laboratory used for the testing is a Wisconsin certified laboratory. If more than one sample was analyzed, analytical results should be displayed in a table to help the DNR review your request in a timely manner.

Number of Paper and Electronic Copies: Unless otherwise specified, send the DNR two paper copies and one electronic copy of the report, plan sheets, or drawings.

Appendix G: Example Beneficial Use Project Notification and Concurrence Request

The following is a suggested format to aid in the review process.

Cover Letter

Related to this section:
- NR 538.14(4)

The cover letter should provide a brief summary of key information relating to the request, including the following:

- Brief statement regarding the project
- Desired DNR action (i.e. concurrence)
- Legal basis for the notification (i.e. NR 538.10(8), 538.14(4), etc.)
- Name of property or facility where the byproduct is being placed or reused
- Type, volume of byproduct anticipated to be used in the project
- Category of material being used and corresponding beneficial use method. See NR 538.10(1)-(13)
- Expected start and end dates

Optional: If you feel the proposed management of the material will result in positive environmental or social impacts (i.e. replace virgin material, effectively replace a more expensive manufactured product, save a business money, create jobs, reduce the carbon foot print, etc.), please feel free to include a discussion of it in your submittal.

Report Content

The purpose of the report is to provide the DNR reviewer and, where applicable, the public, with a detailed description of the proposed project and to demonstrate that the material qualifies for NR 538 concurrence. The following information is primarily set up in a format reflective of NR 538 requirements. The suggested format is intended to aid in the review of the project in a timely manner

Section 1: Contact information:

- *Owner and Generator Contact*
  Name, organizational affiliation, address, telephone number and e-mail address of the generator and owner who is responsible for the industrial byproduct.

- *Reuse Site Contact*
  Name, organizational affiliation, address, telephone number and e-mail address of the owner and operator of the site where the industrial byproduct will be disposed or utilized.

- *Project Contact Person*
  Name, title, organizational affiliation, address, telephone number and e-mail address of the person who will be working with the DNR on the proposed request and beneficial use method.

Section 2: NR 538.14(4) - Notification

For each industrial byproduct generator or person designated by the generator, such as a broker, provide the following information:

- The location of the project and a site description including:
  - A project site map(s); preferably drawn to scale not larger than 1 inch equal to 100 feet, of the location where the material is to be managed indicating wetlands, surface water boundaries, USGS topographic contours, roads and buildings.

    - The legal description (to ¼ of ¼ sections) of the proposed site. Global Positioning Satellite (GPS) coordinates are recommended if available.
    - If applicable, existing site contours and final project contours including both aerial and cross-sectional views illustrating proper slopes.
- The approximate volume of industrial byproduct anticipated to be used in the project.
- The anticipated start and end dates for the project.
- Identification of the industrial byproduct or byproducts to be used and the category of these materials including a copy of the most recent characterization notification from the generator, (i.e. form 4400-196 or 197).

Section 3: NR 538.04 - Performance Standards

Provide statements under each subsection indicating the beneficial use method will not result in any of the following:

- A significant adverse impact on wetlands.
    - A description of the surrounding area and location of nearest wetlands.
- A taking of an endangered or threatened species or other activity prohibited under s. 29.604, Wis. Stats.
- Detrimental effect on any surface water.
    - A description of the surrounding area, name, and location of nearest surface water bodies.
- A detrimental effect on groundwater quality or will cause or exacerbate an attainment or exceedance of any preventive action limit or enforcement standard at a point of standards application as defined in ch. NR 140.
    - A description of the depth to groundwater
    - The method and the data used to determine the groundwater separation distance (i.e. test pits, well logs, etc.)
- The migration and concentration of explosive gases in any structures, or in the soils or air at or beyond the project property boundary in excess of 25% of the lower explosive limit for the gases at any time.
- The emissions of any hazardous air contaminant exceeding the limitations for those substances contained in s. NR 445.03.

Section 4: NR 538.10 - Beneficial Uses & NR 538.12 – Beneficial Uses for Specific Categories of Industrial Byproduct

Provide confirmation statements that reflect requirements as outlined in the beneficial use methods in NR 538.10(1)-(13), Wis. Adm. Code, are addressed. Completed checklists such as those provided in **Appendix A** may be submitted to satisfy this section of the report.

- Beneficial use method applicable to material category
- Construction process including:
    - details of site prep work
    - construction milestones (provides the DNR timeframes in order to coordinate site visits)
    - cover material and thickness
    - site clean-up

Section 5: NR 538.16(2) – Transportation

Provide a statement demonstrating the following will be met:

- Vehicles or containers used to transport industrial byproducts are durable and leak−proof.
- Vehicles and containers are repaired on an as needed basis to prevent nuisance conditions from occurring.
- Vehicles or containers used to transport industrial byproducts are loaded and hauled in such a manner that the contents do not fall, spill or leak.

- Covers are provided to prevent littering and spillage as necessary. Any spilled industrial byproducts must be properly recovered.

Section 6: NR 538.18 – Public Participation

If the project requires public participation, provide a statement verifying the following:

- A public notice in the local newspaper was placed at least 30 business days prior to initiating an industrial byproduct beneficial use project or storage facility, specifying the nature of the beneficial use project or storage facility, including the type and amount of the material to be used or stored, how and where the material will be used, the time frame of the project or storage facility operation, that the person intending to initiate the beneficial use project or storage facility may hold a public informational meeting, and a contact person for the public to request a meeting.
- A public informational meeting, if requested by the public, was held (include date, place and time) at which details of the project were discussed.
- A copy of the notification in the newspaper with the publish date.

Section 7: NR 538.22 – Property Owner Notification

If the project requires property owner notification, provide the following:

- A copy of the notice by the generator of the industrial byproduct, or a person designated by the generator, in accordance with this section, unless the DNR approved an alternative notice procedure.

- A statement that any property owner receiving this notice was informed that they must retain this information and provide this information to the next purchaser of the property.

Number of Paper and Electronic Copies: Please send the DNR two (2) paper copies and one electronic copy of the report, plan sheets, or drawings. The documentation will aid in the DNR's review of the beneficial use project.

Appendix H: Guidelines for the Excavation of Industrial Byproducts

Guidelines contained in this appendix have been developed to assist those persons that encounter industrial byproducts while excavating. These guidelines provide information on how this material can be utilized or disposed of in compliance with solid waste laws.

Please be aware that these guidelines are to be used only when the material encountered in the excavation is an industrial byproduct material that has been previously characterized and approved for use under ch. NR 538, Wis. Adm. Code.

Options to determine if the byproduct material has been previously characterized and approved for use under Ch. NR 538:

1. Consult with the landowner. Persons who constructed projects using industrial byproducts after January 1, 1988 were required to have provided written notification to the landowner and this written notification is required to be passed to the next landowner.
2. Check with the county Register of Deeds. If the project was 10,000 cubic yards or more, the landowner would have received a sketch of where the byproduct is located and an affidavit would have been recorded with the registrar of deeds.
3. Consult with the local zoning office. A conditional use permit from the county or local municipality may have been issued and if the construction area was large enough, a stormwater permit might have been needed.
4. Check with the local highway department, public works or the local offices of the Department of Transportation as they may have information if the highway, street or utility trench was constructed with industrial byproducts.
5. Check with local DNR contact in the Beneficial Use of Industrial Byproducts program. For certain projects that DNR may have approved the project based on size or project type.
6. Talk with local businesses or residences in the area. There may be some information available on the business that constructed the project when it took place.

In any event, the applicant must provide the DNR with evidence that the excavated material was characterized and placed in accordance with the requirements of ch. NR 538, Wis. Adm. Code, if they wish to beneficially reuse the material in another project. That evidence must include information about the byproduct generator and the category (1 through 5) assigned to the byproduct material. If this information cannot be determined and verified, the site will be regulated as an unlicensed landfill or a historic fill.

Options for Byproduct Material Determined to Have Been Previously Characterized and Approved for Use Under Ch. NR 538:
The local DNR Beneficial Use of Industrial Byproduct contact must be notified prior to the excavation of any known previously approved industrial byproduct material to ensure proper management of the material.

1. If the industrial byproduct is going to remain at the excavation site and a surface the same or equivalent to the surface used in the original project will be used to cover the material, no further action beyond notification of the DNR is necessary.
2. If the excavated industrial byproducts are removed for an off-site beneficial use, the material may be stored and reused in the same manner from which it was excavated or any other use approved for that category of material subject to all other applicable storage, use, transportation and reporting requirements of ch. NR 538, Wis. Adm. Code. Depending on the industrial byproduct, the volume of material, homogeneity and the category originally assigned, recharacterization may be required to verify the industrial byproduct category and approve uses per NR 538.12(3) Wis. Adm. Code. Adjacent soils containing only incidental amounts of industrial byproduct may be used in accordance with s. NR 500.08(2)(a) Wis. Adm. Code.

3. Disposal at a licensed landfill or use as alternate daily cover, in which case the ch. NR 538, Wis. Adm. Code, requirements do not apply.

Options if the Origin of Material is Unknown

If the origin of the material is unknown, a determination must be made as to what type of waste is present. Any deposit of waste material, other than by homeowners on their own property, meets the statutory definition of a landfill. The following DNR Remediation and Redevelopment factsheets were developed to help in this circumstance and can be found at http://dnr.wi.gov/topic/Landfills/development.html:

- Development at Historic Fill Sites and Licensed Landfills: What You Need to Know (RR-683)
- Development at Historic Fill Sites and Licensed Landfills: Guidance for Investigation (RR-684)
- Development at Historic Fill Sites and Licensed Landfills: Considerations and Potential Problems (RR-685)
- Development at Historic Fill Site or Licensed Landfill - Exemption Application (Forms 4400-226 and 226A)