

Guidance for Asphalt Shingle Sorters and Grinders

PUB-WA-1880 2019



Waste & Materials Management
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Background and Intent

This document is to assist shingle sorting and grinding operations with:

- understanding the requirements of their facility type,
- how to obtain approval for their facility,
- how to request modifications for their facility,
- asbestos testing, and
- annual reporting.

For more information on operating a shingle hauling, storage or transfer facility or on compliance at a worksite, please consult [WA 1228, Recycling Residential Asphalt Shingles - Roofing Contractors and Waste Hauler Responsibilities](#).

Definitions

In this document, definitions are generally used to assist with compliance. Definitions that are specified in law will be noted.

- **Shingle grinding facilities** are facilities that process asphalt shingles into a fine material suitable for an end market, typically for use in hot mix asphalt.
- **Shingle sorting facilities** are facilities that process mixed roofing materials by separating asphalt shingles from contaminants. Contaminants may include flashing, roofing paper, and wood. It does not include roofing contractors who keep asphalt shingles separate from other roofing materials at the source.

Facility Types and Their Requirements

For the purpose of compliance with Wisconsin's solid waste requirements (s. 289.05 (1), Wis. Stats. and s. NR 502.08, Wis. Adm. Code), the shingle sorting and grinding operations will be divided into the following two categories:

Category A shingle management facilities are facilities that may meet the conditions of s. NR 502.08(2)(i), Wis. Adm. Code, because they are grinding facilities or combination sorting and grinding facilities that are able to demonstrate to the Department of Natural Resources that the use or conversion of all their shingles for at least the next year will be done at a facility under shared ownership or through a contract or contracts. The company using the ground shingle material must be using the ground shingles in a structural material such as concrete or asphalt or converting it into a

consumer product or using it as a raw material in a commercial or industrial process, such as a hot mix asphalt plant.

Category A facilities are eligible for a streamlined approval under s. NR 502.08(2)(i), Wis. Adm. Code. Category A facilities require written approval of their specific process flow diagram to operate.

Alternatively, Category A facilities may choose to be considered Category B facilities if they want to be exempt from statutory tonnages fees when disposing of processing residuals under Category 31 (as created by s. 289.63(6)(d), 289.64(4)(d), 289.645(4)(h), and 289.67(1)(fj), Wis. Stats.). To read more about Category 31 fees, please see [WA-1755, Guidance for landfill tonnage fee exemptions for Wisconsin Act 301](#).

Category B shingle management facilities are facilities that require approval and licensing under s. NR 502.08(1), Wis. Adm. Code, because they are sorting facilities that do not grind shingles or are grinding facilities, or combination sorting and grinding facilities that cannot demonstrate to the DNR that they are able to use or convert all of their shingles for at least the next year either at a facility under shared ownership or through a contract/contracts with another facility. Category B also includes any facility that cannot demonstrate that the company obtaining the ground shingle material is using the ground shingles in a structural material such as concrete or asphalt or converting it into a consumer product or using it as a raw material in a commercial or industrial process, such as a hot mix asphalt plant.

Category B facilities must obtain a plan of operation approval and a license to operate under s. NR 502.08(1), Wis. Adm. Code. In addition, they must provide assurance of financial responsibility for potential clean-up of the facility site because they cannot demonstrate the ability to use all materials coming in to the site.

Submittals for Approval

Category A facilities may request a streamlined approval as a solid waste processing facility for material being incorporated into a structural material under s. NR 502.08(2)(i), Wis. Adm. Code. The structural material exemption allows a facility to apply for written approval with reduced submittal and approval requirements, to operate without Owner Financial Responsibility (OFR), and does not require the facility to maintain a license. This streamlined approval is an option because these facilities are creating an output that is for incorporation in a structural material and they have guaranteed end markets.

To request approval, these facilities should submit the following information to the [Environmental Program Associate](#) for their region. The primary submittal document is a process flow for the facility that shows shingles through any storage, transport, processing, and testing procedures as well as complete end markets. The process flow diagram must contain all methods for meeting the s. NR 502.08(2)(i), Wis. Adm. Code, requirements. An example process flow diagram that meets these code-based requirements is shown in the process flow template in Appendix A.

The DNR will review a process flow for compliance with the following items:

- A. Management that results in processed shingle use as a structural material such as a hot mix asphalt plant:
 1. Operation that ensures the final product does not contain asbestos or non-asphalt contaminants.
 2. Operation that keeps the material in a marketable condition.

3. Operation that ends with a guaranteed end market for reuse as a structural material, such as a hot mix asphalt plant, with the capacity to accept all of the material generated at the facility.
 4. Submittal of records to the DNR demonstrating that the processed shingles are going for reuse in a structural material.
- B. Management that ensures the facility operates in accordance with its written approval from the DNR as required in s. NR 502.08(2)(i), Wis. Adm. Code:
1. Operation that requires someone familiar with the code requirements and approval to be managing the site.
 2. Submittal of changes to the facility's operation or approval to the DNR for an approval modification prior to the change taking place, including changes in end markets.
- C. Management that allows for compliance with the closure requirements in s. NR 502.04(3)(a) &(b), Wis. Adm. Code, including removing all waste within 60 days of ceasing to accept waste at the facility, but excluding containerizing all non-putrescible waste within 5 calendar days:
1. Operation that keeps shingle volumes below what the facility could properly move to end markets within 60 days.
 2. Operation that keeps sorted shingle volumes to the amounts guaranteed by the end market(s).
- D. Management that results in the facility operating in a nuisance free and aesthetic manner in accordance with s. NR 502.08(2)(i)1., Wis. Adm. Code:
1. Operation that prevents windblown litter.
 2. Operation that ensures the storage of non-scrap metal residual wastes (in conformance with s. NR 502.08(5), Wis. Adm. Code) in lugger boxes or roll offs.
- E. Management that guarantees the specific waste types would not release quantities of contaminants into the environment such that a potential hazard to public health or the environment would be created in accordance with s. NR 502.08(2)(i)2., Wis. Adm. Code:
1. Operation that requires residuals generated to be properly salvaged, recycled or disposed.
 2. Operation that requires record keeping showing that residuals from the processing to be properly salvaged, recycled or disposed.
 3. Operation that requires record keeping of the amount of shingles on-site.

The DNR will also be reviewing the following items:

- A. The facility's compliance with the s. NR 502.08(2)(i) 1. and 502.04(1), Wis. Adm. Code, performance standards. These standards require a solid waste facility to be established, constructed, operated or maintained in an area where there is reasonable probability that the facility will be compliant with the performance standards. The performance standards include not causing: a detrimental effect on surface water, a significant adverse impact on wetlands as provided in ch. [NR 103](#), a detrimental effect on groundwater quality, 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 take of an endangered or threatened species or other activity prohibited under s. [29.604](#), Wis. Stats., the migration and concentration of explosive gases in any facility structures, (excluding any leachate collection system or gas control or recovery system components) or in the soils or air at or beyond the facility property boundary in excess of 25% of the lower explosive limit for such gases at any time, or the emission of any hazardous air contaminant exceeding the limitations for those substances contained in s. [NR 445.07](#).

1. Operation at a location where all shingle management activities will be taking place in reference to distance from surface water, wetlands, groundwater, threatened and endangered species.
 2. Operation in compliance with the stormwater program to operate this type of facility.
- B. Submittal of the necessary laboratory and field tests to show that the specific waste types to be used would not release quantities of contaminants into the environment such that a potential hazard to public health or the environment would be created in compliance with s. NR 502.08(2)(i)2., Wis. Adm. Code.
1. Operation that requires asbestos testing on the ground shingle material for all shingle grinding facilities. The testing frequency will be based the amount of shingles being ground at a facility. For details on the asbestos testing please see the "[Asbestos Testing](#)" section below.
 2. Operation that minimizes the risk of releasing asbestos during grinding.

Category B facilities must submit a plan of operation for approval as a solid waste processing facility under s. NR 502.08(1)(a), Wis. Adm. Code. As described in detail below, solid waste processing facilities are required to meet the requirements of s. NR 502.08(3), (4), (6) and (8) and with s. NR 502.04(1)-(4) and (6). If the facility will be undergoing construction, compliance with s. NR 502.08(5) will also be required. To operate, a facility should submit a [Chapter NR 502 Non-Landfill Solid Waste Facility Initial Site Inspection \(ISI\) application \(form 4400-209\)](#), a plan of operation, and an initial license application (sent to the applicant after plan of operation approval) to the [Environmental Program Associate](#) for their region.

The DNR will be reviewing plan of operations for compliance with the following items:

- A. General submittal requirements in accordance with s. NR 500.05, Wis. Adm. Code, including cover letter, review fee, and maps.
- B. Locational criteria in compliance with s. NR 502.08(3), Wis. Adm. Code, confirming that the location is within the footprint provided for the Initial Site Inspection and to confirm setback distances from water supply wells, navigable waters, and others.
- C. Answers to each of the items required under s. NR 502.08(4), Wis. Adm. Code. As guidance, plan of operation submittals that the DNR would accept specifically for shingle processing operations are described below. Other ways of meeting the requirements may also be proposed.
- D. Agreement with each of the operating requirements in s. NR 502.08(6), Wis. Adm. Code, including signage, staffing, and fire control.
- E. An asbestos testing plan as described in the "[Asbestos Testing](#)" section of this guidance under the requirements of s. NR 502.08(8)(b), Wis. Adm. Code.
- F. Written agreement to maintain Owner Financial Responsibility for the cost of cleaning up and closure of the facility at the maximum approved amount of waste materials onsite in accordance with s. NR 502.04(6), Wis. Adm. Code. Appendix B is a template that can be used for determining the amount of Owner Financial Responsibility a facility should maintain.
- G. If construction is planned for this type of facility, a plan of operation should also include engineering plans in accordance with s. NR 502.08(5), Wis. Adm. Code.
- H. Solid waste processing code is written to cover a wide range of different materials and operations. The DNR will approve the following plan of operation exemptions for most shingle processors due to the nature of this type of operation. Additional exemption requests will also be considered if the facility can demonstrate that protection to human health and the environment will not be a concern or will be met in an alternative manner. Facilities may request exemptions in their plan of operation submittals from the following:

1. Section NR 502.08(4)(e), Wis. Adm. Code; The consistency of facility development with county solid waste plans and land use plans.
2. Section NR 502.08(4)(j), Wis. Adm. Code; The estimated quantities and characteristics of wastes containing free liquids resulting from facility operation and methods of their treatment or disposal. All wastewater resulting from the process shall be discharged into a sanitary sewer or other system approved by the DNR.
3. Section NR 502.08(4)(L), Wis. Adm. Code; A proposed design providing enclosure for all installed processing equipment. Explosion-prone equipment such as primary shredders shall be placed in a separate room with explosion venting or explosion suppression equipment.
4. Section NR 502.08(4)(m), Wis. Adm. Code; A proposed design providing for shrouding and dust collection and removal equipment for the receiving area and all dry processing units such as shredders, screens, air classification devices, magnetic separators and similar equipment and all conveyor transfer points where dust is generated. Any air collected in this manner shall be directed through appropriate air pollution control equipment before being discharged.
5. That part of s. NR 502.08(4)(p), Wis. Adm. Code, which requires runoff from these areas [all processing, receiving or storage areas not enclosed by a building] shall be directed to a sanitary sewer or other system approved by the DNR.
6. Section NR 500.05(4), Wis. Adm. Code; Certification (if there is no planned construction).
7. Section NR 500.05(6)(g)-(i), Wis. Adm. Code, inclusion of survey grid.
8. The part of s. NR 502.04(3)(a), Wis. Adm. Code, which requires that within 5 calendar days after ceasing to accept waste at the facility, containerize, properly utilize or dispose of all non-putrescible waste.

Renewals and Modification Approvals

Category A facilities: Category A facility approvals are based on the process flow diagram submitted. If a facility wants to change a process that is reflected in the approved process flow or past approvals, a new process flow will need to be submitted to the DNR for review and written approval is required to maintain compliance with s. NR 502.08(2)(i), Wis. Adm. Code. Approval from the DNR is needed prior to implementing the change. Facilities that are currently approved can maintain their approval and operation as is. Facilities that have approvals that are expiring will need to submit a process flow that covers all of the items described in the [“submittals for approval”](#) section of this guidance.

Category B facilities: Category B facility approvals are based on the information submitted to the DNR in the plan of operation and any plan modification submittals, as well as any previous approvals. If a facility wants to change a process that is reflected in those submittals and approvals, then a plan modification will need to be submitted to the DNR for review. Approval from the DNR is needed prior to implementing the change. Facilities that are currently approved can maintain their approval and operation as is. Facilities that have approvals that are expiring will need to submit plan modifications that covers all of the items described in the [“submittals for approval”](#) section of this guidance.

Asbestos Testing

Asbestos testing will be required for all shingle grinding facilities (under s. 502.08(2)(i)2. and 502.08(8)(b), Wis. Adm. Code). The necessary sample frequency is based on the weight of shingles being ground at a facility each calendar year. Samples shall be taken of the ground shingle material as the tonnages and time periods covered below are reached. Samples shall be submitted to the lab within two weeks of obtaining the sample. References to Asbestos Containing Material (ACM) refer to the definition found in s. NR 447.02(1), Wis. Adm.

Code, containing more than 1% asbestos as determined using the method specified in [Appendix E to Subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy](#).

Largest processors (>15,000 tons/year)

- A. Testing shall happen every 500 tons of ground material generated or once every 15 days that grinding has occurred, whichever is more.
- B. If an asbestos test result indicates that the ground shingle sample is ACM, testing shall increase to every 250 tons or once every 7 days of grinding, whichever is more. The increased testing frequency shall be implemented for at least the next 2,500 tons of ground shingle product or the next 70 days of grinding, whichever is more.
- C. If, at any time during the period of increased sampling, another asbestos test result indicates that the ground shingle sample is ACM, within 15 days, the facility must change the asbestos screening process for the shingles they accept in order to eliminate asbestos-containing shingles from its supply and submit a process flow or a plan modification documenting these changes to the DNR for approval. Sample testing frequency remains at heightened level for 20 samples after the new screening process is implemented.
- D. If, at any time during the period of increased sampling after the new screening process has been implemented, another asbestos test result indicates that the ground shingle sample is ACM the facility immediately stops accepting and processing shingles. The facility notifies the DNR and all customers that they are no longer operating within 5 business days of receipt of the asbestos test result. If no asbestos test results indicate that a ground shingle sample is ACM the facility shall add their new screening procedures into their process flow or plan of operation.

Medium processors (3,001 – 15,000 tons/year)

- A. Testing shall happen every 250 tons of ground material generated or once every 15 days that grinding has occurred, whichever is more.
- B. If an asbestos test result indicates that the ground shingle sample is ACM, testing shall increase to every 125 tons or once every 7 days of grinding, whichever is more. The increased testing frequency shall be implemented for at least the next 1,000 tons of ground shingle product or the next 70 days of grinding, whichever is more.
- C. If, at any time during the period of increased sampling, another asbestos test result indicates that the ground shingle sample is ACM, within 15 days, the facility must change the asbestos screening process for the shingles they accept in order to eliminate asbestos-containing shingles from its supply and submit a process flow or a plan modification documenting these changes to the DNR for approval. Sample testing frequency remains at heightened level for 20 samples after the new screening process is implemented.
- D. If, at any time during the period of increased sampling after the new screening process has been implemented, another asbestos test result indicates that the ground shingle sample is ACM the facility immediately stops accepting and processing shingles. The facility notifies the DNR and all customers that they are no longer operating within 5 business days of receipt of the asbestos test result. If no

asbestos test results indicate that a ground shingle sample is ACM the facility shall add their new screening procedures into their process flow or plan of operation.

Small processors (0 – 3,000 tons/year)

- A. Testing shall happen every 100 tons of ground material generated or once every 15 days that grinding has occurred, whichever is more.
- B. If an asbestos test result indicates that the ground shingle sample is ACM, testing shall increase to every 50 tons or once every 7 days of grinding, whichever is more. The increased testing frequency shall be implemented for the next 500 tons of ground shingle product or the next 70 days of grinding, whichever is more.
- C. If, at any time during the period of increased sampling, another asbestos test result indicates that the ground shingle sample is ACM, within 15 days, the facility must change the asbestos screening process for the shingles they accept in order to eliminate asbestos-containing shingles from its supply and submit a process flow or a plan modification documenting these changes to the DNR for approval. Sample testing frequency remains at heightened level for 20 samples after the new screening process is implemented.
- D. If, at any time during the period of increased sampling after the new screening process has been implemented, another asbestos test result indicates that the ground shingle sample is ACM the facility immediately stops accepting and processing shingles. The facility notifies the DNR and all customers that they are no longer operating within 5 business days of receipt of the asbestos test result. If no asbestos test results indicate that a ground shingle sample is ACM the facility shall add their new screening procedures into their process flow or plan of operation.

Annual Reporting

Annual reporting of the tons of material accepted, processed, and sent off site as well as the asbestos testing results are required for all shingle sorting and grinding facilities. For Category A facilities the reporting specifics are based on the process flow submitted and the monitoring requirements determined by s. NR 502.08(2)(i)2., Wis. Adm. Code. For Category B facilities the reporting specifics are based on the information submitted in the plan of operation under s. NR 502.08(6)(L) and s. NR 502.08(8)(b), Wis. Adm. Code. This information can be reported in any format that meets the criteria of the approval. For assistance, an annual reporting form is attached in Appendix C for use by both categories of facilities.

Contact DNRWasteMaterials@wisconsin.gov for further information.

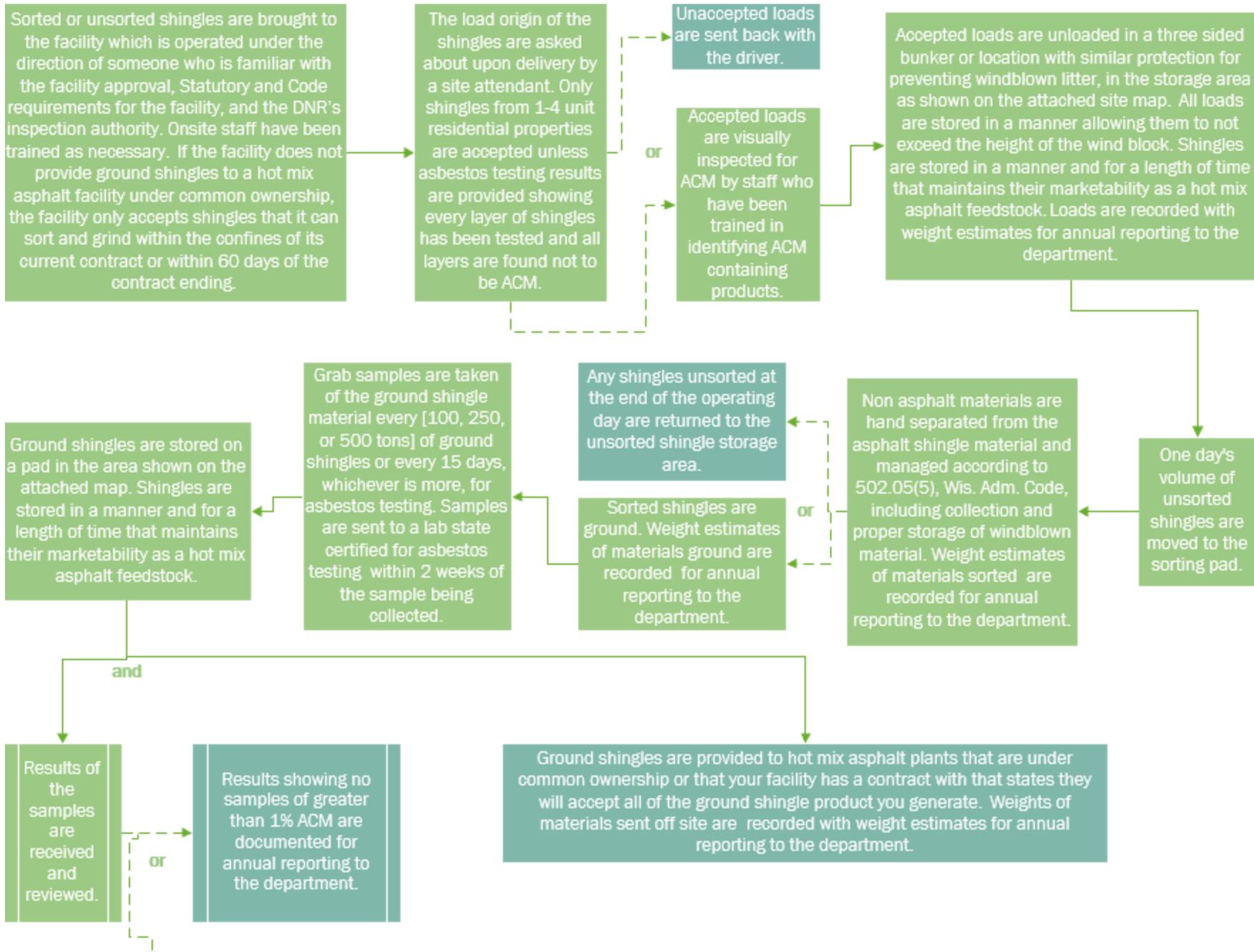
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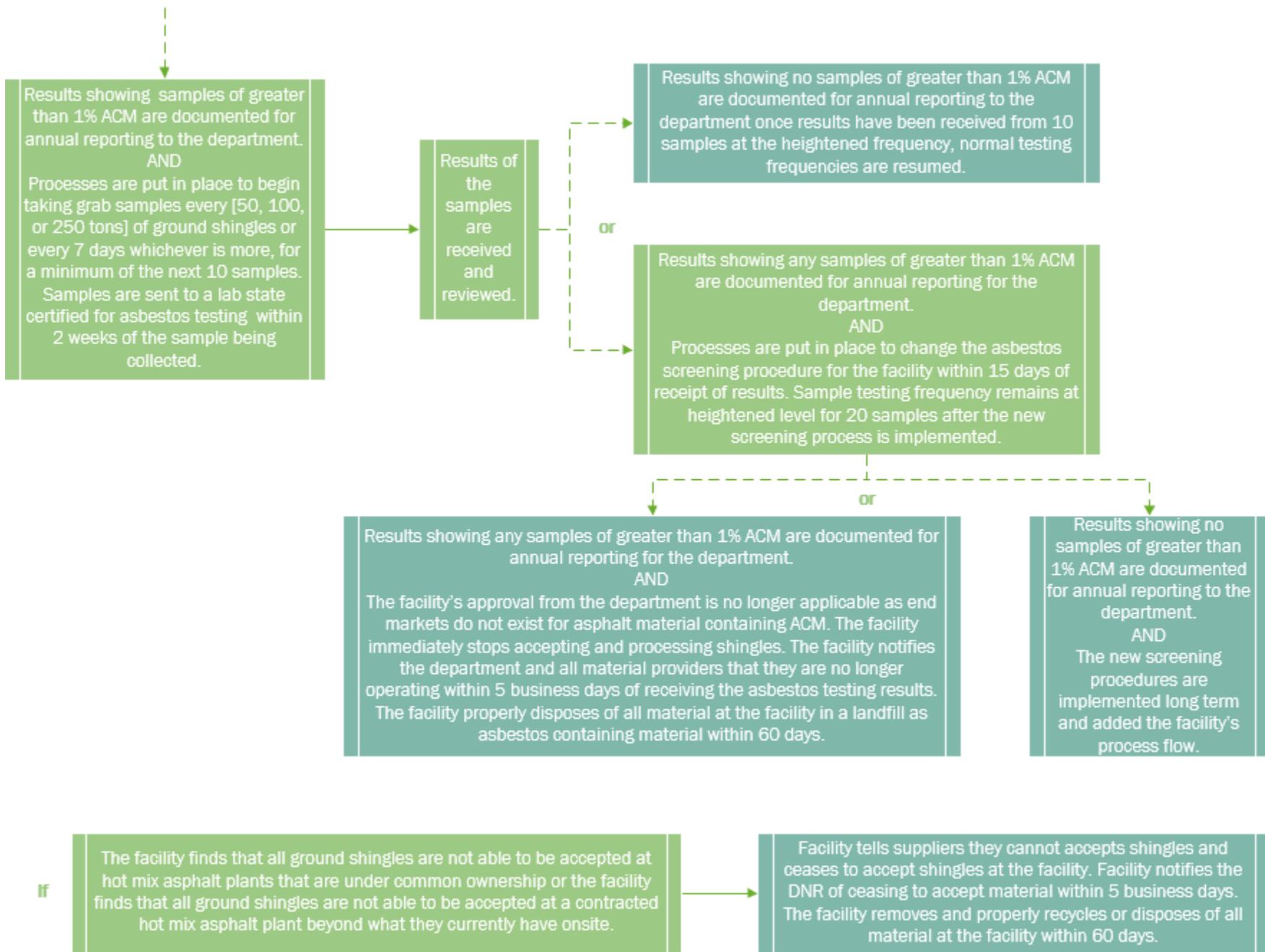
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Appendix A
Category A Process Flow Template for facilities that want approval under
s. NR 502.08(2)(i), Wis. Adm. Code.

Items in brackets [] are places where the template may not be applicable to your facility. Facilities should choose the appropriate size distinctions and whether they are accepting sorted or unsorted shingles if using the template. This process flow template meets the submittal requirements of s. NR 502.08(2)(i), Wis. Adm. Code. A facility may make edits or submit their own process flow however they will need to ensure that the requirements of s. NR 502.08(2)(i), Wis. Adm. Code, are met. See facility types and their requirements or contact your regional waste management specialist for additional information.





Appendix B

Shingle Processing Facility Estimated Closure Cost Worksheet

Owner Financial Responsibility for closure covers the removal, hauling, and ultimate disposal of all materials at the facility to meet the closure requirements of the facility's department issued approval. Maximum inventories are required to address a worst-case scenario.

	A	B	C	D	E	F	G	H	I	J
Material	Max Tons On-Site	Tons of Material/Semi Load ¹	# of Semi Loads (C = A/B)	Loading, Transportation and Unloading Hours per Load ²	Hours of Work (E=C*D)	Cost of Loading and Transportation Equipment and Labor per Hour ³	Cost of Equipment and Labor (G=E*F)	Gate Rate Tipping Fee per Ton ⁴	Tipping Fee (I=A*H)	OFR ⁵ (J=G+I)
Shingles that have not been sorted from roofing paper and flashing										
Sorted shingles that have not been ground										
Ground shingles										
Contaminants Removed for Disposal ⁶										
									Sum of Column J	
									10% Contingency	
									Total OFR	

¹ As a baseline estimate you can use 24 tons of shingles (unground or ground) per semi load due to highway weight limits.

² For a baseline estimate you can use 25 minutes loading time and 30 minutes unloading time plus round-trip travel

³ Unless a contract that extends to the department is provided, this should be estimated using operating costs provided to the department by third parties. As of 2017 these costs were \$100/hr for a front-end loader and operator and \$120/hr for a semi and driver

⁴ May honor a contract rate if the contract extends the rate to the Department of Natural Resources.

⁵ If the OFR for a specific material came out as a negative number the OFR should be changed to \$0

⁶ If waste stored in contracted dumpster or roll-off just enter collection fee in column J

Appendix C: Shingle Processing Facility Annual Report for Calendar Year 20__

Complete one report for each shingle processing facility location.

Please return the completed form to the Environmental Program Associate assigned to the region your facility is located in.

The contact information can be found or by going to DNR.wi.gov and searching "waste environmental program associate"

or [here.](#)

Section A - Background

Facility Name: _____

Facility Contact Name: _____

Facility Physical Address: _____

Facility Contact Phone: _____

Facility Contact Email: _____

Facility County: _____

Facility ID (FID) #: _____

Current Approval Issued Date: _____

Current Approval Expiration Date: _____

Section B - All Facilities

	Start 20__	End 20__
Tons unsorted material on site		
Tons sorted unground shingles on site		
Tons ground shingles on site		
Total		

Discuss any difficulties, complaints, and (for grinding facilities) positive asbestos tests and the steps taken to address them: _____

Section C - Facilities that Sort Shingles:

	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec	Total
Tons of material accepted					
Tons of Material rejected					
Tons of sorted shingles produced					
Tons of non-shingle material sent off site for landfilling					
Tons of non-shingle material sent off site for recycling					
If this facility is sort only:					
Tons of sorted shingles provided to a facility for grinding					

Shingle grinding facilities that accepted sorted shingle product: _____

Section D - Facilities that Grind Shingles:

	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec	Total
Tons of material accepted					
Tons of ground shingles produced					
Number of asbestos tests done					
Number of asbestos tests positive for ≥ 1% asbestos (please attach results)					
Tons of ground shingles sent off-site or used in a new product					

Hot mix asphalt plants that accepted ground shingle product: _____

_____,
(name and job title of person completing the report)

hereby acknowledges that I am a duly authorized representative of the shingle processing facility this report was completed for and that to the best of my knowledge and belief, the information contained in the report is correct, true, and complete.