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### **SPENT FOUNDRY SAND BENEFICIAL USE GUIDELINES**

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## SPENT FOUNDRY SAND BENEFICIAL USE GUIDELINES

### I. PURPOSE

These guidelines were developed to facilitate the beneficial use of spent foundry sand and to assure that such uses do not cause any adverse environmental or human health impacts.

Generators of foundry sand should actively pursue and implement all feasible alternatives to reduce the volume and toxicity of such waste, as well as explore on-site recycling, or recovery, before evaluating potential beneficial uses of the material.

### II. SCOPE

These guidelines set forth beneficial uses of spent foundry sand. These proposed guidelines describe reporting and notification requirements, sampling and analysis procedures, general requirements applicable to beneficial use projects, siting criteria and beneficial use approval process.

### III. APPLICABILITY

These guidelines apply to spent foundry sand (including molding sand and core sand) generated by metal casting foundries. Wastes not addressed by these guidelines, which cannot be beneficially reused under its terms and conditions, include the following wastes: Foundry Sands or Foundry Wastes which are Hazardous by Characteristic (as described in 40 CFR 261.24), or Listed Hazardous Wastes (described in 40 CFR 261.31, 261.32 and 261.33).

### IV. BENEFICIAL USE PLAN APPROVAL PROCESS

Beneficial use of spent foundry sand requires a plan approval from the WVDEP, Office of Waste Management, Solid Waste Management Section (SWMS). No activities relating to the proposed beneficial use of the spent foundry sand shall commence until written approval from the SWMS is issued. Written approval or denial shall be granted within thirty (30) days upon receipt of an administratively and technically completed application. If an application is denied, the reason(s) for such denial shall be so stated. Beneficial reuse of spent foundry sand covered by these guidelines shall not require a permit from the WVDEP.

At a minimum, the following information must be included in the submitted Beneficial Use Plan:

- A. Name, street address and telephone number of applicant.
- B. A chemical and physical description of the waste, which fully characterizes its composition and properties.
- C. Name, street address and telephone number of the generator of the waste.
- D. A description of the manufacturing and production processes which generate the waste that includes detailed information on the chemical constituents in all binders, coatings or other chemicals used in the production process.

- E. A completed Spent Foundry Sand Beneficial Use Proposal Form (see Section IX.)
- F. A spent foundry sand sampling and analysis plan (SAP) which includes procedures regarding the handling of waste foundry sand rejected for reuse.
- G. Description of method of processing and/or beneficial use.
- H. Signed statement by the person operating the facility, which states that the person accepts all the conditions of these guidelines.
- I. Proof that copies of the approved beneficial use plan have been submitted to each municipality, county, county planning agency and county health department in which beneficial use activities are to be located.
- J. Proof that the applicant has legal right to enter the land and operate the facilities approved under these guidelines.
- K. An irrevocable written consent from the landowner giving the WVDEP permission to enter upon land where the applicant will be conducting waste management activities.
- L. Information which identifies the applicant (i.e. individual, corporation, partnership, government agency, association, etc.), including names and addresses of every officer, which has a beneficial interest in or otherwise, controls the operation of the company.
- M. Proof that independent contractors retained by the applicant to perform any activities authorized under these guidelines are in compliance with the WVDEP's rules and policies.

V. FOUNDRY SAND SAMPLING AND ANALYSIS PLAN

The sampling and analysis plan (required under condition item F above) must be submitted to the SWMS prior to sample collection and testing. This SAP must be submitted to the SWMS for review. The approved SAP will be used by laboratory and facility personnel as a reference during all phases of sample collection and analysis.

A. Sample Methods

A representative sample of waste (from each source) shall be obtained by forming a composite of six (6) to twelve (12) discrete samples. The sampler should employ all reasonable measures to ensure that a representative sample is taken (such as: sampling at different times or conducting random sampling of a representative pile). If a small individual volume of waste is proposed to be beneficially used, the number of discrete samples required may be reduced, as appropriate, with the approval of the SWMS.

B. Toxicity Testing and Analysis

Representative samples of waste should be characterized using the Toxicity Characteristic Leaching Procedure (TCLP, USEPA Method 1311). The TCLP acid extraction test, or a modified TCLP extraction test (water solution specified in ASTM D 3987-85), or other EPA approved hazardous waste toxicity measurement may be used.

C. Total Metals Testing and Analysis

In addition to TCLP testing referenced in B above, representative samples of waste should be characterized for total metals (Using Method SW-846-6010). The individual metals analyzed for total metals analysis include the following: Copper, Molybdenum, Nickel and Zinc (See Table II for Ceiling analytical thresholds for total Metals).

D. Number of Samples

Three initial test results for each parameter (listed below in item E.) are required to demonstrate compliance with the nontoxic criteria, where applicable. (The testing should be performed on three different composites).

An alternative statistical method (specified in SW-846, USEPA's TEST METHODS FOR EVALUATING SOLID WASTES), may be used where a larger database is available that is representative of the material (e.g. monthly analysis from the preceding 12 months), and where the testing and analysis criteria from the above paragraphs were used. The concentration of a parameter shall then be based on the upper limit of the 80% confidence interval for the test results.

E. Parameters

Each sample must be analyzed for the following (TCLP) parameters: arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver. TCLP Analysis for Phenol, Cyanide, Fluoride and the total metals Copper, Molybdenum, Nickel and Zinc are also required for spent foundry sands.

F. Additional Testing For Continued Beneficial Use

At a minimum, annual tests must be performed on the spent foundry sand. In addition to submitting the annual analyses to the SWMS, the analyses shall be kept at the generating facility for at least 5 years. The results shall be available to the WVDEP upon request. Whenever the production process, or raw materials used in the production process change, an analyses shall be conducted and the results shall be submitted to the SWMS.

**Any result which exceeds the ceiling analytical thresholds listed in Table I or Table II for spent foundry sand must be reported to the SWMS. In addition, any significant changes that occur between annual analysis data must be reported immediately to the SWMS.**

VI. CEILING ANALYTICAL RESULT LIMITS FOR BENEFICIAL USE OF SPENT FOUNDRY SAND

Spent foundry sand shall not be beneficially used for any purpose if any of the following analytical result limits are exceeded.

TABLE I

Ceiling TCLP Analytical Result Limits For Beneficial Use Of Spent Foundry Sand

<b>Parameter</b>	<b>Concentration (mg/l)</b>
Arsenic	0.05
Barium	1
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Phenol	10.5
Cyanide	0.6
Fluoride	12

TABLE II

Ceiling Total Metals Analytical Result Limits For Beneficial Use Of Spent Foundry Sand

<b>Parameter</b>	<b>Concentration (mg/l)</b>
Arsenic	0.05
Barium	1
Cadmium	0.01
Copper	1500

## VII. BENEFICIAL USES OF SPENT FOUNDRY SAND PERMITTED WITHIN THESE GUIDELINES

Once the spent foundry sand has been properly analyzed and the subsequent parameter results are found to be below the ceiling concentrations listed in Table I and Table II; the generator has the following options for beneficial uses of the waste:

### A. Manufacturing Another Product

This category comprises the use of spent foundry sand as a raw material in manufacturing another final product including, but not limited to, the following: grout, cement, concrete, asphalt, roofing materials, plastics, paint, glass, fiberglass, ornamental ceramics, rock wool, mineral wool, brick, plaster and other similar products.

### B. Stabilization/Solidification Of Other Wastes (For Disposal Purposes)

The use of spent foundry sand as a stabilization/solidification agent, singly or in combination with other additives or agents, for other wastes which will be disposed of at an approved disposal facility.

### C. Anti-Skid Agent/Road Surface Preparation Material

The use of spent foundry sand as an anti-skid material (i.e. snow/ice control) or road surface preparation material, if such use is consistent with WV Dept. Of Highways specifications or other applicable specifications.

### D. Daily Cover for Landfills

The use of spent foundry sand as daily cover at municipal solid waste landfills, if all technical specifications of the material is met for this intended use-

### E. Protective Cover for Landfill Leachate Collection System

The use of spent foundry sand as the protective cover material located above the drainage layer of a municipal solid waste landfill if all technical specifications of the material is met for this intended use.

### F. Structural Fill

The use of spent foundry sand as an engineered use of the waste as a building or equipment supportive base or foundation. This category does not include valley fills or filling of open pits from coal or industrial mineral mining.

G. Pipe Bedding

The use of spent foundry sand as pipe bedding.

H. Roads and Parking Lots, Capped Embankment, Ground and Site Barriers

The use of spent foundry sand as a construction material (sub-base) for roads or parking lots. The use of spent foundry sand as a "capped embankment" (an embankment supporting a roadway or other structure, whose side slopes are covered with soil suitable for the growth of normal vegetation). The use of spent foundry sand as "ground and site barriers" (capped embankments for use as ground or site barriers are long, low, narrow structures lying above the existing ground surface). These structures do not support roadways or other structures and are capped with 24 inches of vegetative cover over their entire surface (where applicable). All the activities listed in section H must be performed under the supervision of a Professional Engineer or the personnel from the WV Dept. of Highways (where applicable).

VIII. GENERAL REQUIREMENTS APPLICABLE TO BENEFICIAL USE PROJECTS

A. General Storage, Maintenance, And Runoff Control

The beneficial use of spent foundry sand shall not create a nuisance such as excessive dust, improper storage or disrupting traffic flow. The waste may not be used in a manner that would cause an adverse impact to public health or the environment.

Storage piles at the site or facility where the material will be used or stored prior to use shall not create a nuisance. Erosion control practices shall be used for each pile. Runoff shall be eliminated or handled properly.

Spent foundry sand may not be beneficially used in projects which would include placing the waste in a stream bed, wetland, leach field or well. However, manufactured products (e.g. concrete) may be used for engineered construction projects (e.g. bridge building), where the product might be placed in a stream.

B. Isolation Distances

Unless otherwise approved by the WVDEP, spent foundry sand may not be placed within:

1. 100 feet of any intermittent or perennial streams, unless the waste is otherwise protected by a properly engineered diversion or structure.
2. 500 feet of any drinking water well, including a well used for livestock watering.

3. A regulatory floodplain unless a properly engineered dike, levee or other structure that can protect the structural fill from a 100 year flood is permitted.
4. 500 feet of a public or private water source including sources used for livestock watering.
5. Areas where seasonal high depth of groundwater is less than 2 feet.

C. Use Restrictions

Unless otherwise approved by the WVDEP spent foundry sand may not be used in the following applications:

1. Spent foundry sand may not be mixed and/or stored or beneficially used with hazardous wastes, special wastes, residual wastes or municipal solid wastes, except as an agent for the stabilization/solidification of other waste for disposal purposes (see VII B).
2. Spent foundry sand shall not be stored for more than one (1) year unless specifically approved by the WVDEP.
3. Spent foundry sand or products manufactured using spent foundry sand as an ingredient shall not be used as a valley fill material, to fill open pits from coal or other fills, or to level an area or bring an area to grade where the construction activity is not completed properly after the placement of the material.
4. The storage, transportation or use of the spent foundry sand shall be in a manner which will not create a nuisance or be harmful to the public health, safety or the environment

IX. REPORTING AND NOTIFICATION REQUIREMENTS

A. Spent Foundry Sand Beneficial Use Proposal Form

Attachment I (Spent Foundry Sand Beneficial Use Proposal Form) is to be completed and submitted for review by the SWMS with the Beneficial Use Plan described in Section IV.

B. Notification Requirements

It is a condition of these guidelines that the generator and the recipient of the spent foundry sand wishing to beneficially use the waste shall authorize and consent to allow authorized employees or agents of the WVDEP, without advance notice or search warrant, upon presentation of appropriate credentials and without delay, to have access to and to inspect all areas on which beneficial use activities are being, will be, or have been conducted. This authorization and

consent shall include consent to collect samples of waste, soils, water or gases; take photographs; to perform measurements, surveys, and other tests; inspect any monitoring equipment; to inspect the methods of operation and to inspect and/or copy documents, books, and papers required by the WVDEP to be maintained. The generator shall maintain records describing the location(s) where spent foundry sand has been beneficially used, which shall be made available for inspection by the WVDEP upon request. These locations are not required to be included in the annual report.

The generator of the spent foundry sand shall inform all persons or municipalities which propose to beneficially use spent foundry sands covered under these guidelines of all the conditions and limitations imposed on the use of spent foundry sand (described in these guidelines) by the WVDEP.

The generator shall record the name and address of each person who is given or purchases the spent foundry sand and shall record its intended use. This information shall be included in the annual report (discussed in the following section).

### C. Annual Report

Persons operating under the provisions of these guidelines shall submit annual reports (due on the anniversary date of the original beneficial use approval issued by the SWMS) to the SWMS, which contain the information outlined in paragraph 2 of section B. above (Notification Requirements). In addition, this annual report must contain a summary of the weight or volume of the spent foundry sand sold, traded or given away during the last 12 months. The annual report must also include the following:

1. A TCLP analysis (or other "leaching" analysis on analytes which are not toxicity characteristic parameters) and the total metals analysis on a representative sample of the spent foundry sand for all parameters in Table I and Table II of these guidelines; or a signed certificate from the generator of the spent foundry sand stating that the physical and chemical properties of the waste foundry sand has not changed. Analysis data submitted in compliance with this requirement must be from samples of the waste foundry sand collected within the past six (6) months; and, a signed certificate may be used for a maximum of (1) one year, from the date of last analysis, after which time the spent foundry sand must be reanalyzed.

B.F Smith, P.E., Chief  
Office of Waste Management

**ATTACHMENT 1**

**SPENT FOUNDRY SAND BENEFICIAL USE PROPOSAL FORM**

**General Information**

- 1) Name of Project: \_\_\_\_\_
- 2) Entity Requesting Review: \_\_\_\_\_
- 3) Proposed Generator: \_\_\_\_\_
- 4) Proposed Use: \_\_\_\_\_
- 5) Proposed Use Location (enclose a topographical map showing material placement boundaries if applicable. Include lowest elevation of material placement): \_\_\_\_\_  
\_\_\_\_\_
- 6) Amount of spent foundry sand to be used. (Include volume of waste and proportions when mixed with other non-waste materials. Also indicate acreage if applicable.)

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**Data**

- 1) Does the waste meet the criteria of being nontoxic? \_\_\_\_\_ Yes \_\_\_\_\_ No (Enclose TCLP analysis results.)
- 2) Do you have knowledge of other projects involving the same material and use? \_\_\_\_\_ Yes  
\_\_\_\_\_ No If yes, please indicate the location and name of the project(s): \_\_\_\_\_  
\_\_\_\_\_
- 3) Has a demonstration project been performed associated with this particular proposed use? \_\_\_\_\_ Yes  
\_\_\_\_\_ No If yes, please enclose any available results.
- 4) Has this generator's waste been beneficially used in other cases? \_\_\_\_\_ Yes \_\_\_\_\_ No If yes,  
please indicate location and name of project(s): \_\_\_\_\_  
\_\_\_\_\_

**Environmental Considerations**

- 1) Is the proposed use location subject to flooding? \_\_\_\_\_ Yes \_\_\_\_\_ No Attach map indicating floodplains.
- 2) Distance from proposed location to nearest intermittent or perennial streams; ponds; wetlands, etc. \_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3) Describe runoff/siltcontrol: \_\_\_\_\_  
\_\_\_\_\_

4) Indicate the presence of monitoring and/or potable water supply wells in the area, if applicable. Aquifer systems? \_\_\_\_\_Yes \_\_\_\_\_No. If yes indicate the approximate location of such wells on the map.

5) What is the project site's land use as well as the adjacent land uses?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6) Are you aware of any potential (attributable to this project) or existing public water supply or ground water quality degradation in the area? \_\_\_\_\_ Yes \_\_\_\_\_ No

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7) Indicate the area soil types, or describe its characteristics, if known: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This signature shall constitute personal affirmation that all statements or assertions of facts made in this proposal are true and complete and shall subject the signatory to liability under applicable state laws for false or misleading statements.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

Title: \_\_\_\_\_