



Foundry Sand Reuse in Georgia

Best Practices & Regulatory Compliance

Abrasive Removal Services (ARS)

Kelley, Iowa

Phone: (515) 720-7081 | Email: team@abrasiveremovalservices.com

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3. Key Concepts and Definitions

What is Foundry Sand?

Foundry sand is high-quality silica sand used to create metal casting molds. In Georgia's extensive automotive, defense, and agricultural manufacturing sectors, this sand is typically high-grade quartz, often containing bentonite clay (Green Sand) or chemical binders. Once the sand can no longer be used for casting due to thermal fatigue or binder saturation, it is categorized as **spent foundry sand (SFS)**.

What is Beneficial Reuse?

In Georgia, beneficial reuse refers to the practice of diverting non-hazardous industrial byproducts—categorized as "Recovered Materials"—from landfills to productive applications where they serve as functional substitutes for virgin materials. This process is governed by the Georgia Environmental Protection Division (EPD).

What is the TCLP Test?

The **Toxicity Characteristic Leaching Procedure (TCLP)** (EPA Method 1311) is the standard required by Georgia EPD to determine if a waste is hazardous. Only SFS that passes TCLP for heavy metals is eligible for classification as a "Recovered Material" and simplified beneficial reuse pathways.

4. Regulatory Guidelines

Georgia Environmental Protection Division (EPD)

The **EPD**, within the Department of Natural Resources, oversees solid waste management and material recovery through its Land Protection Branch.

Specific Legal Citations:

- **Georgia Comprehensive Solid Waste Management Act (O.C.G.A. § 12-8-20):** Provides the statutory basis for waste management and resource recovery.
- **Rules and Regulations of the State of Georgia, Rule 391-3-4:** "Solid Waste Management." Governs the handling, transport, and disposal of industrial byproducts.
- **Rule 391-3-21.17:** "Recovered Materials." This is the critical provision for foundries, outlining the criteria for a material to be considered "recovered" rather than "waste."

The RMU Application Process

The **Recovered Materials Unit (RMU)** within EPD reviews beneficial reuse projects on a case-by-case basis. Foundries must demonstrate that their SFS has a known use, reuse, or return to a commercial process and that a legitimate market exists for the material.

5. Reuse Applications and Georgia Examples

Application	Description	Georgia Context
Road Sub-base	Foundation layer for road beds.	High potential in GDOT infrastructure projects; used in local county road beds.
Landfill Daily Cover	Alternative Daily Cover (ADC).	Widely used at DeKalb County (Seminole Road) and Columbus landfills.
Concrete/Asphalt Additive	Partial replacement of fine aggregate.	Utilized by major Georgia contractors like C.W. Matthews and Preferred Materials .
Cement Raw Material	Silica source for cement production.	Potential for delivery to Argos or Lehigh Hanson kilns in the region.
Manufactured Soil	Blending for landscaping/erosion control.	Regulated by RMU to ensure no adverse impact on Georgia's Piedmont soils.

6. Environmental and Technical Considerations

Clay Content (Green Sand)

A significant portion of Georgia's foundry output is "Green Sand" containing bentonite clay. This makes the material an excellent choice for low-permeability applications, such as landfill liners or embankment cores, but requires careful moisture control if used in asphalt.

State Disposal Surcharge

Georgia imposes a statewide solid waste disposal surcharge of **\$0.75 per ton**. While relatively low, this fee is in addition to local gate rates, and material classified as "Recovered" is typically exempt.

7. Funding, Grants, and Incentives

Solid Waste Trust Fund (SWTF)

The **Solid Waste Trust Fund Grant Program**, administered by the RMU, supports projects that reduce solid waste and recover valuable materials. Foundries can apply for these grants to fund the development of regional sand reuse hubs or to pilot innovative aggregate replacement technologies.

Georgia Dept. of Economic Development

The state offers tax credits for "Investment" and "Manufacturing" that can support foundries installing on-site thermal or mechanical reclamation systems. Projects that contribute to Georgia's "Circular Economy" goals are prioritized for regional development support.

8. Active Participants in Georgia

Major Foundries:

- **Goldens' Foundry and Machine Co.** (Columbus) - Gray and ductile iron castings for agriculture and defense.
- **Aludyne** (Columbus) - High-volume aluminum and iron automotive castings.
- **Vulcan Foundry, Inc.** (Cordele) - Specialty gray and ductile iron castings.
- **Kennedy Valve** (Savannah) - Iron foundry producing valves and fire hydrants.

- **Atlantic States Cast Iron Pipe** (Carrollton) - Major producer of ductile iron pipe.

Potential End-Users:

- **GDOT (Georgia Dept. of Transportation)** - Major infrastructure aggregate user.
- **C.W. Matthews Contracting Co.** (Marietta) - Large-scale paving and civil contractor.
- **Preferred Materials, Inc.** (Savannah/Atlanta) - Major asphalt and concrete producer.
- **Argos USA** (Regional) - Cement manufacturing and kilns.

9. Success Story Highlights

Columbus Industrial Loop: Foundries in the Columbus-Muscogee County area, such as **Goldens' Foundry and Machine Co.**, have successfully established long-term partnerships with municipal landfills and local paving companies. By maintaining "Recovered Material" certifications (Rule 391-3-21.17) through the Georgia EPD Recovered Materials Unit, these facilities divert over 90% of their spent sand for use in local road-base projects and alternative daily cover. These initiatives avoid municipal gate fees (currently around **\$85.00 per ton**) while providing high-quality, local aggregate that supports the regional manufacturing and transportation infrastructure.

10. Clear Business Case Summary

1. **Avoidance of Gate Fees:** Saving up to **\$100.00 per ton** in the Atlanta metro area.
2. **Reduced Virgin Material Costs:** Internal reclamation reduces the need to purchase specialty silica sand from out-of-state.
3. **Logistics Optimization:** Utilizing sand in local Piedmont region infrastructure rather than hauling to remote Subtitle D landfills.

11. Risk Management Overview

- **Environmental Performance Standards:** Failure to maintain the "Recovered Material" criteria (Rule 391-3-21.17) can result in the material being re-classified as solid waste, triggering retroactive disposal fees and penalties.
- **Leaching in Piedmont Soils:** Foundries must ensure that SFS used in un-bound landscaping applications does not impact the acidity or metallic profile of local soil systems.

12. Step-by-Step Workflow for Foundries

1. **Analytical Characterization:** Conduct a full TCLP and totals profile per Georgia EPD standards.
2. **RMU Application:** Submit a "Beneficial Reuse Project Application" to the EPD Recovered Materials Unit.
3. **Legitimate Market Verification:** Secure a letter of intent from an end-user (e.g., an asphalt plant).
4. **Logistics Documentation:** Maintain records of material weights and destinations for 5 years.
5. **Annual Compliance:** Review process inputs annually to ensure the material profile remains consistent with the approved RMU determination.

13. Real Cost Savings Example

Scenario: A Columbus-area foundry generating 4,000 tons of sand annually.

- **Disposal Cost (at \$85.75/ton incl. state surcharge):** \$343,000
- **Reuse Program (RMU Permitting + Testing + Local Logistics):** \$80,000
- **Annual Savings:** \$263,000

15. General FAQ & Landfill-Specific FAQ

Q: Do I need a solid waste permit to transport SFS for reuse?

A: No, if the material is classified as "Recovered Material," it is not regulated as a solid waste during transport.

Q: Are Columbus landfills cheaper than Atlanta?

A: Yes, Columbus rates are approximately **\$85/ton**, while DeKalb County (Atlanta) has reached **\$100/ton**, but both provide a massive ROI for sand reuse.

16. References

1. Georgia Comprehensive Solid Waste Management Act: [O.C.G.A. § 12-8-20](#).
2. Georgia EPD Rules for Solid Waste Management: [Rule 391-3-4](#).
3. Georgia EPD Recovered Materials Unit (RMU): [Beneficial Reuse Guidance](#).
4. DeKalb County (Atlanta): [2025-2026 Sanitation Fee Schedule](#).

5. **City of Columbus:** [Public Works Landfill Rate Sheet](#).
6. **EPA SMM Technical Guidance:** [Foundry Sand in Transportation Applications](#).