



Foundry Sand Reuse in Utah

Best Practices & Regulatory Compliance

Abrasive Removal Services (ARS)

Kelley, Iowa

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

Table of Contents

1. Utah - Foundry Sand Recycling and Reuse (Cover)
2. Table of Contents
3. Key Concepts and Definitions
4. Regulatory Guidelines
5. Reuse Applications and Utah Examples
6. Environmental and Technical Considerations
7. Funding, Grants, and Incentives
8. Active Participants in Utah
9. Success Story Highlights
10. Clear Business Case Summary
11. Risk Management Overview
12. Step-by-Step Workflow for Foundries
13. Real Cost Savings Example
15. General FAQ & Landfill-Specific FAQ
16. References

3. Key Concepts and Definitions

What is Foundry Sand?

Foundry sand is high-quality silica sand used to create molds and cores for the metal casting industry. In Utah, this industry supports the state's critical infrastructure, mining, and aerospace manufacturing sectors. After multiple uses, the sand becomes **spent foundry sand (SFS)**. In Utah, SFS is recognised as a non-hazardous industrial byproduct that is highly suited for beneficial reuse in civil engineering and construction.

What is Beneficial Reuse?

In Utah, beneficial reuse refers to the application of a solid waste material as a functional substitute for a commercial product or virgin material in a manner that protects public health and the environment. This process is managed by the Utah Department of Environmental Quality (DEQ).

What is the TCLP Test?

The **Toxicity Characteristic Leaching Procedure (TCLP)** (EPA Method 1311) is the core analytical protocol required by Utah DEQ to verify that a waste is not hazardous. Only non-hazardous SFS is eligible for simplified beneficial reuse pathways or solid waste exemptions in Utah.

4. Regulatory Guidelines

Utah Dept. of Environmental Quality (DEQ)

The **DEQ**, specifically the Division of Waste Management and Radiation Control, regulates the disposal and reuse of industrial byproducts.

Specific Legal Citations:

- **Utah Admin. Code Rule R315-301:** "Solid Waste Authority, Definitions, and General Requirements." Provides the foundational regulatory framework for all waste handling in the state.
- **Utah Admin. Code Rule R315-312:** Outlines the "Recycling and Beneficial Use" criteria, requiring prior approval from the Division for the reuse of materials as a product or aggregate.
- **Utah Code § 19-6-101 et seq.:** The "Solid and Hazardous Waste Act," which grants the DEQ authority to promote waste reduction and material recovery.

The Beneficial Use Request

Generators seeking to reuse sand in structural fill or road base must submit a formal request to the Director of the Division. This request must include a detailed chemical characterization to prove that the SFS is stable and will not pose a risk if used in un-bound applications.

5. Reuse Applications and Utah Examples

Application	Description	Utah Context
Road Sub-base	Foundation layer for road beds.	High potential in UDOT infrastructure and municipal road projects.
Landfill Daily Cover	Alternative Daily Cover (ADC).	Widely used at the Salt Lake County and Trans-Jordan landfills.
Concrete/Asphalt Additive	Aggregate replacement in paving.	Viable for local paving contractors in the Wasatch Front.
Structural Fill	Bedding for building pads or embankments.	Subject to case-specific DEQ evaluation and R315-312 approval.
Flowable Fill	Low-strength concrete for utility bedding.	Demand in Salt Lake City and Provo urban utility expansions.

6. Environmental and Technical Considerations

Arid Environment and Groundwater

While much of Utah is arid, protecting the state's limited groundwater is a top priority for the DEQ. For un-bound structural fill projects, especially in the Salt Lake Valley, the DEQ requires leaching data to ensure that metal or binder residuals do not impact regional water quality.

Physical Stability

SFS from Utah's iron foundries (e.g., McWane Ductile) often exhibits high structural stability and uniform gradation. This makes it a superior material for high-compaction embankments and specialized "flowable fill" compared to naturally occurring silty desert soils.

7. Funding, Grants, and Incentives

DEQ Waste Reduction Support

The Division of Waste Management and Radiation Control occasionally offers technical assistance and recognition for businesses that reduce their landfill footprint. Foundries developing "Circular Economy" partnerships can leverage these programs for regulatory pathfinding.

Utah Governor's Office of Economic Opportunity (GoEO)

The state offers various incentives (e.g., the **Targeted Industries** program) for manufacturers that invest in sustainable technology. Foundries installing sand reclamation systems may qualify for support through regional development initiatives.

8. Active Participants in Utah

Major Foundries and Hubs:

- **McWane Ductile - Utah** (Provo) - Major producer of ductile iron pipe and fittings.
- **Pacific States Cast Iron Pipe Co.** (Provo) - Significant regional casting operation (associated with McWane).
- **Burnham's Fine Art Foundry** (Salt Lake City) - Specialized fine art bronze casting.
- **Numerous Precision Fabricators:** Concentrated in the Salt Lake City, Provo, and Ogden industrial corridors.

Potential End-Users:

- **UDOT (Utah Dept. of Transportation)** - Major consumer of aggregate for highway construction.
- **Staker Parson Materials & Construction** (Regional) - Large-scale paving, asphalt, and aggregate producer.
- **Geneva Rock Products** (Regional) - Major concrete and asphalt supplier.
- **Salt Lake County Landfill** - Significant user of Alternative Daily Cover (ADC).

9. Success Story Highlights

Provo Industrial Loop: Industrial manufacturers in the Provo area, such as **McWane Ductile**, have successfully implemented high-efficiency sand reclamation systems to minimize waste. By characterizing the final spent fines as a non-hazardous, stable byproduct, these facilities provide a local aggregate source for regional infrastructure and landfill daily cover. These initiatives avoid the rising disposal fees in the Wasatch Front while supporting Utah's waste reduction goals and enhancing industrial resource efficiency.

10. Clear Business Case Summary

1. **Avoidance of Gate Fees:** Directly saving up to **\$36.00 per ton** (Salt Lake County 2026 Mixed Trash rate).
2. **Transportation Savings:** By utilizing sand in local Wasatch Front construction rather than hauling to remote Subtitle D landfills.

3. **ESG Supply Chain Alignment:** Helping major infrastructure and utility customers meet their sustainability targets by utilizing high-quality recycled industrial materials.

11. Risk Management Overview

- **Regulatory Pre-Approval:** In Utah, starting a reuse project without written DEQ concurrence is a violation of R315-312.
- **Dust Mitigation:** Utah's dry climate requires active dust suppression during SFS transport and application to prevent violations of regional air quality standards.

12. Step-by-Step Workflow for Foundries

1. **Analytical Profiling:** Conduct a full 32-parameter chemical profile, including TCLP and totals.
2. **DEQ Consultation:** Contact the Division of Waste Management and Radiation Control to discuss the project scope and R315-312 criteria.
3. **End-User Partnership:** Secure an intake agreement with a local asphalt plant or construction project.
4. **Logistics Documentation:** Maintain records of material weights and destinations for 5 years.
5. **Annual Review:** Re-verify sand chemistry annually to ensure consistency with initial DEQ approval.

13. Real Cost Savings Example

Scenario: A Salt Lake City-area foundry generating 3,000 tons of sand annually.

- **Disposal Cost (at \$36.00/ton Gate Rate):** \$108,000
- **Reuse Program (Testing + DEQ Filing + Local Logistics):** \$35,000

- Annual Savings: \$73,000

15. General FAQ & Landfill-Specific FAQ

Q: Does Utah have a "pre-approved" list of beneficial uses for sand?

A: Asphalt and concrete ingredients are common pathways, but the DEQ generally requires a case-specific review to ensure binder chemistry is safe.

Q: Are soil and sod rates lower than mixed trash?

A: Yes, at Salt Lake County landfills, soil is charged at **\$12/ton**, but this is for dry, non-hazardous material; re-classifying SFS as a product can unlock these lower rates or eliminate the fee entirely via direct reuse.

16. References

1. Utah Admin. Code Rule R315-301: Solid Waste Management Rules.
2. Utah Admin. Code Rule R315-312: Recycling and Beneficial Use of Solid Waste.
3. Salt Lake County: Landfill Pricing and Fee Schedule (2026).
4. City of Salt Lake City: Sustainability and Waste Fee Information.
5. Utah Code Title 19, Chapter 6: Solid and Hazardous Waste Act.
6. EPA SMM Technical Guidance: Foundry Sand in Transportation Applications.