



IOWA DEPARTMENT OF NATURAL RESOURCES

BENEFICIAL USE DETERMINATION  
APPLICATION FORM



Send completed applications with attached information to:

Iowa Department of Natural Resources  
Land Quality Bureau  
Solid Waste and Contaminated Sites Section  
6200 Park Ave Ste 200  
Des Moines IA 50321

For questions concerning this application please contact the Department at (515) 201-8272.

**SECTION 1. CONTACT INFORMATION [IAC 567-108.5]** Provide the name, address and telephone number for the following

**Address of the site where the project will be located**

Site Owner Name: Timber Home Land, Inc. (Owner: Leslie Lindner) Phone Number: 319-524-3455  
Site Address: 2387 Johnson St. Rd. County: Lee  
City: Keokuk State: IA Zip Code: 52632  
      $\frac{1}{4}$  of       $\frac{1}{4}$  of       $\frac{1}{4}$  Section 20 Township 65 N Range 5 ☒ East ☐ West  
(you may attach a legal description from your county assessor)

**Beneficial Use Determination Applicant**

Name: Brad Mills Phone Number: 319-526-8250  
Site Address: 240 Royal Rd.  
City: Keokuk State: IA Zip Code: 52632

**Individual responsible for operation of the project**

Name: Shawn Ferdig Phone Number: 319-520-1385  
Site Address: 240 Royal Rd.  
City: Keokuk State: IA Zip Code: 52632

**Professional engineer (P.E.) licensed in the state of Iowa and retained for the design of the facility, if any**

Name: N/A License #:       
Site Address:      Phone Number:       
City:      State:      Zip Code:     

**Agency to be served by the project, if any**

Name of Agency: N/A  
Responsible Official:      Phone Number:       
Site Address:       
City:      State:      Zip Code:

## SECTION 2. FACILITY OPERATIONAL INFORMATION

A description of the solid by-product under review and its proposed use:

Used foundry sand to be used to fill and level ravines. The site will be covered with 3' of clean top fill and seeded with grass/native vegetation that is suitable for grazing livestock.

The chemical and physical characteristics of the solid by-product:

Silica sand of varying sizes.

A demonstration that there is a known or reasonably probable market for the intended use of the solid by-product:

This sand has been used to level other locations. Car lots and buildings have been constructed on this product. It has also been used to establish good highway frontage property.

A demonstration that the proposed use of the solid by-product will not adversely affect human health and environment:

The sand is tested to assure it will not be harmful.

### SECTION 3. PERMIT APPLICATION CHECKLIST

Checking the appropriate boxes below certifies that the documents submitted in conjunction with this application form are complete and in compliance with the applicable chapters of the Iowa Administrative Code. If an application is found by the department to be incomplete, it may be denied and returned to the applicant.

#### **Required Documents**

- ☒ Solid By-product Management Plan [IAC 567 Chapter 108.5(6)]
- ☒ Site Map
- ☒ Solid By-product Analytical Results [IAC 567 Chapter 108.5]

### SECTION 4. APPLICANT CERTIFICATION

#### **Certification**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I further certify that the construction and operation of the above described project will be in accordance with the plans, specifications, reports and related communications accepted by the Iowa Department of Natural Resources and on file in its office; and in accordance with conditions imposed in the determination issued by the Iowa Department of Natural Resources.

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

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

Printed Name: Shawn Ferdig

Title: Quality and Compliance Director




March 12, 2025

Solid By-Product Management Plan  
For  
Keokuk Steel Castings  
2025

This management plan for Keokuk Steel Castings, a foundry subject to the "Beneficial Use Determination Rule", is for foundry sand generated at 240 Royal Road in Keokuk. Pending approval approximately 6,000 tons will be hauled to LCL Farms Inc's location at 2387 Johnson St. Rd. Keokuk, IA 52632. Another approximately 6,000 tons will be hauled to the same location in the 4<sup>th</sup> quarter of 2025. Approximately 6,000 tons will be added during the 2<sup>nd</sup> quarter of 2026. The estimated completion date of this project is June 2026. The following information is based on the requirements in Chapter 108 Beneficial Use Determination.

1. The source of the solid by-product, foundry sand, is the foundry at 240 Royal Road, Keokuk, IA.
2. Every quarter a sample of the sand is sent for testing to ensure that the chemical, pH and physical composition has not changed significantly.
3. A description of the storage procedures follows:
  - a. Sand not reclaimed is temporarily stored on the west side of the foundry.
  - b. The anticipated inventory will be 6000 tons.
  - c. The run-on and run-off controls are covered under our NPDES Permit with the addition of silt screen, rock and oil booms to prevent run-off.
  - d. To minimize the uncontrolled dispersion of the foundry sand, storage is isolated to two areas on the west side of the foundry.
  - e. Maximum storage will not exceed 6 months without authorization in writing from the DNR.
  - f. By-Product management will be in accordance with 567 IAC 108.6(1), (2) and 108.7(1), (2) and (3).

  
Shawn Ferdig

Date: 3/12/25





# Beneficial Use Determination: Analytical Testing Report

DNR Certified Lab: Eurofins TestAmerica, Cedar FallsLab Report Date: 2/7/2025By-Product Generator: Keokuk Steel CastingsCity: Keokuk, State: IA, Zip: 52632By-Product Name: Foundry Sand

Send completed report form(s) and associated laboratory analytics to:

Iowa Department of Natural Resources  
Land Quality Bureau  
Solid Waste Section  
502 East 9<sup>th</sup> Street  
Des Moines, IA 50319-0034

For questions concerning this report form,  
please contact the DNR at (515) 725-8351.

## ANALYTICAL RESULTS

Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW-846).

Required		Synthetic Precipitation Leaching Procedure (EPA Test Method 1312)			Total Metals	
*	Contaminant	MCL	10 X MCL	Test Result	Regulatory Limit	Test Result
<input type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0324 mg/L	31 mg/kg	<0.415 mg/kg
<input type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0204 mg/L	17 mg/kg	<0.387 mg/kg
<input type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	<0.0640 mg/L	15,000 mg/kg	3.31 mg/kg
<input type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.00680 mg/L	110 mg/kg	<.0184 mg/kg
<input type="checkbox"/>	Boron				16,000 mg/kg	<92.1 mg/kg
<input type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.00280 mg/L	70 mg/kg	<0.175 mg/kg
<input type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	<0.0440 mg/L	** (Total)	96.4054 mg/kg
					(Hexavalent - VI) 210 mg/kg	mg/kg
					(Trivalent - III) 97,000 mg/kg	mg/kg
<input type="checkbox"/>	Cobalt				23 mg/kg	3.39 mg/kg
<input type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.0360 mg/L	15,000 mg/kg	10.4 mg/kg
<input type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	0.650 mg/L	4,700 mg/kg	9.09 mg/kg
<input type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<.00760 mg/L	400 mg/kg	0.972 mg/kg
<input type="checkbox"/>	Lithium				160 mg/kg	<0.663 mg/kg
<input type="checkbox"/>	Manganese				10,000 mg/kg	98.4 mg/kg
<input type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.00110 mg/L	23 mg/kg	<0.00627 mg/kg
<input type="checkbox"/>	Molybdenum				390 mg/kg	12.4 mg/kg
<input type="checkbox"/>	Nickel				1,500 mg/kg	31.2 mg/kg
<input type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0332 mg/L	390 mg/kg	<0.691 mg/kg
<input type="checkbox"/>	Silver				370 mg/kg	<0.203 mg/kg
<input type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	<0.0116 mg/L	0.78 mg/kg	<0.230 mg/kg
<input type="checkbox"/>	Vanadium				350 mg/kg	45.9 mg/kg
<input type="checkbox"/>	Zinc				23,000 mg/kg	8.36 mg/kg

(\*) Required contaminant

(\*\*) If Total Chromium ≥ 210 mg/kg, further analysis shall be conducted to determine hexavalent and trivalent results.



Toxicity Characteristic Leaching Procedure (EPA Test Method 1311) – Regulatory Limits

Metals				Volatile Organic Compounds			
*	Contaminant	Regulatory Limit	Test Result	*	Contaminant	Regulatory Limit	Test Result
<input type="checkbox"/>	Arsenic	5.0 mg/L	<0.0300 mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L	mg/L
<input type="checkbox"/>	Barium	100.0 mg/L	0.0609 mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L	mg/L
<input type="checkbox"/>	Cadmium	1.0 mg/L	<0.0039 mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L	mg/L
<input type="checkbox"/>	Chromium	5.0 mg/L	0.0875 mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L	mg/L
<input type="checkbox"/>	Lead	5.0 mg/L	<0.0370 mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L	mg/L
<input type="checkbox"/>	Mercury	0.2 mg/L	<0.0011 mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L	mg/L
<input type="checkbox"/>	Selenium	1.0 mg/L	<0.0290 mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L	mg/L
<input type="checkbox"/>	Silver	5.0 mg/L	<0.0160 mg/L	<input type="checkbox"/>	Tetrachloroethylene	0.7 mg/L	mg/L
				<input type="checkbox"/>	Trichloroethylene	0.5 mg/L	mg/L
				<input type="checkbox"/>	Vinyl chloride	0.2 mg/L	mg/L

Pesticides				Semi-Volatile Organic Compounds			
*	Contaminant	Regulatory Limit	Test Result	*	Contaminant	Regulatory Limit	Test Result
<input type="checkbox"/>	Chlordane	0.03 mg/L	mg/L	<input type="checkbox"/>	o-Cresol	200.0 mg/L	mg/L
<input type="checkbox"/>	Endrin	0.02 mg/L	mg/L	<input type="checkbox"/>	m-Cresol	200.0 mg/L	mg/L
<input type="checkbox"/>	Heptachlor (& its epoxide)	0.008 mg/L	mg/L	<input type="checkbox"/>	p-Cresol	200.0 mg/L	mg/L
<input type="checkbox"/>	Lindane	0.4 mg/L	mg/L	<input type="checkbox"/>	Cresol	200.0 mg/L	mg/L
<input type="checkbox"/>	Methoxychlor	10.0 mg/L	mg/L	<input type="checkbox"/>	1,4-Dichlorobenzene	7.5 mg/L	mg/L
<input type="checkbox"/>	Toxaphene	0.5 mg/L	mg/L	<input type="checkbox"/>	2,4-Dinitrotoluene	0.13 mg/L	mg/L
				<input type="checkbox"/>	Hexachlorobenzene	0.13 mg/L	mg/L
				<input type="checkbox"/>	Hexachlorobutadiene	0.5 mg/L	mg/L
				<input type="checkbox"/>	Hexachloroethane	3.0 mg/L	mg/L
				<input type="checkbox"/>	Nitrobenzene	2.0 mg/L	mg/L
				<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L	mg/L
				<input type="checkbox"/>	Pyridine	5.0 mg/L	mg/L
				<input type="checkbox"/>	2,4,5-Trichlorophenol	400.0 mg/L	mg/L
				<input type="checkbox"/>	2,4,6-Trichlorophenol	2.0 mg/L	mg/L

(\*) Required contaminant

By-Product pH	
<input type="checkbox"/>	

BY-PRODUCT GENERATOR CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature: Shawn Ferdis

Printed Name: Shawn Ferdis

Date: 2/10/25

Title: Quality Manager

# BENEFICIAL SAND USE PLAN - LCL FARMS SITE 1

Andrew Spray

KEOKUK STEEL CASTINGS 3972 Main Street, Keokuk, IA 52632

## Contents

Project Scope .....	2
Overview: .....	2
Clean Fill: .....	2
Project Final Grades and Slopes:.....	2
Top Cover: .....	3
Expected Fill Volume: .....	3
Maps .....	4
Fill Boundaries.....	4
Water Table .....	5
Elevation Map .....	5
Expanded Elevation Map .....	6
Depth to Water Table .....	7



## Project Scope

### Overview:

Keokuk Steel Casting will be providing foundry sand to Timber Home Land, Inc. with the purpose of leveling approximately two acres of property for agricultural use. The elevation of the targeted area ranges from 596 – 568 ft. Currently, the targeted area cannot be used due to elevation changes. The foundry sand provided will help create additional acreage for livestock grazing while reducing the overall amount of fertile soil that would otherwise be used to level the area.

### Clean Fill:

Clean fill material will be used to maintain the minimum five feet of separation between the foundry sand and the water table. Needed clean fill material is expected to vary between one to five feet. The boundaries of the proposed fill site are to be delineated and flagged onsite. Photographs will be taken and sent to DNR of the required clean fill as proof of adherence to the minimum separation requirement.

### Project Final Grades and Slopes:

To facilitate drainage and prevent ponding of water, upon completion of the project, the area filled will have a slope of 2%-5%, created in such a way to prevent top cover movement. Additionally, any existing drainage structures will be preserved to prevent erosion.

## Top Cover:

Though the current plan is to use the newly leveled area for livestock grazing, clean topsoil will be used as top cover and meet a minimum of three feet of depth to protect from the foundry sand being used as a growing media. This top cover will be maintained with grass/native vegetation that is suitable for pasture use. Maintenance shall include reseeding as necessary to ensure erosion is prevented and necessary repairs in cases of settling, ponding, or other damaging events.

## Expected Fill Volume:

By levelling the land to an expected elevation of 596 feet, the total foundry sand fill amount has been estimated at 18,000 tons. This operation is expected to take 1.5 years to complete, with 6,000 tons of sand being hauled to the site every six months. The anticipated completion date for the project is June 2026.

## Maps

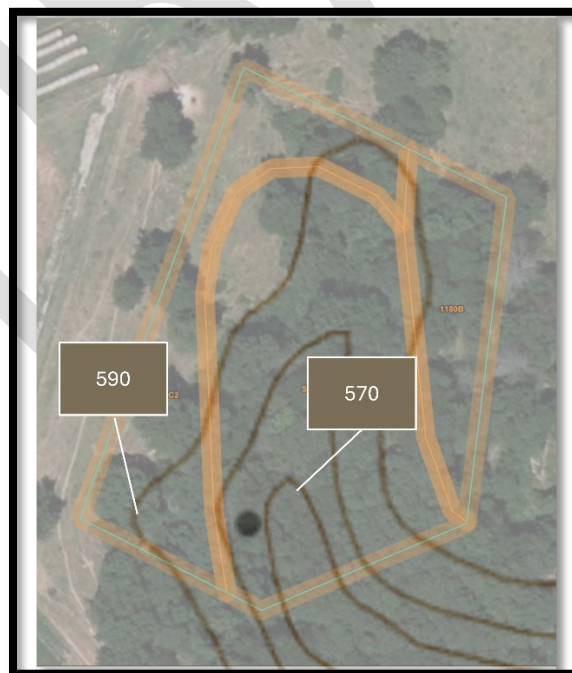
### Fill Boundaries



## Water Table



## Elevation Map





## Expanded Elevation Map



DRAFT

## Depth to Water Table



### Tables — Depth to Water Table — Summary By Map Unit

#### Summary by Map Unit — Lee County, Iowa (IA111)

Summary by Map Unit — Lee County, Iowa (IA111)

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
880C2	Clinton silt loam, terrace, 5 to 9 percent slopes, eroded	122	0.6	29.0%
1180B	Keomah silt loam, benches, 2 to 5 percent slopes	30	0.3	15.8%
S154G	Douds-Alvin-Tell Complex, 18 to 60 percent slopes	122	1.1	55.1%
<b>Totals for Area of Interest</b>			<b>2.0</b>	<b>100.0%</b>

#### Description — Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

#### Rating Options — Depth to Water Table

**Units of Measure:** centimeters

**Aggregation Method:** Dominant Component

**Component Percent Cutoff:** None Specified

**Tie-break Rule:** Lower

**Interpret Nulls as Zero:** No

**Beginning Month:** January

**Ending Month:** December

## 200ft Well Boundary





# ANALYTICAL REPORT

## PREPARED FOR

Attn: Shawn Ferdig  
Keokuk Steel Castings  
3972 Main Street  
Keokuk, Iowa 52632

Generated 2/7/2025 11:58:32 AM

## JOB DESCRIPTION

Beneficial ReUse Metals

## JOB NUMBER

310-299462-1



# Eurofins Cedar Falls

## Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

## Authorization



Generated  
2/7/2025 11:58:32 AM

Authorized for release by  
Bob Michels, Project Manager I  
[Bob.Michels@et.eurofinsus.com](mailto:Bob.Michels@et.eurofinsus.com)  
(319)277-2401



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Case Narrative . . . . .	4
Sample Summary . . . . .	5
Client Sample Results . . . . .	6
Chronicle . . . . .	8
Definitions . . . . .	9
Certification Summary . . . . .	10
Method Summary . . . . .	11
Chain of Custody . . . . .	12
Receipt Checklists . . . . .	14

## Case Narrative

Client: Keokuk Steel Castings  
Project: Beneficial ReUse Metals

Job ID: 310-299462-1

**Job ID: 310-299462-1**

**Eurofins Cedar Falls**

### **Job Narrative 310-299462-1**

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

#### **Receipt**

The sample was received on 1/30/2025 9:05 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 9.8°C.

#### **Receipt Exceptions**

The following sample(s) was received at the laboratory outside the required temperature criteria: "Sand Pile 1". There was no cooling media present in the cooler. The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis

#### **Metals**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### **General Chemistry**

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cedar Falls

Sample Summary

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-299462-1	Sand Pile 1	Solid	01/29/25 08:15	01/30/25 09:05





# Client Sample Results

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

Client Sample ID: Sand Pile 1

Lab Sample ID: 310-299462-1

Date Collected: 01/29/25 08:15

Matrix: Solid

Date Received: 01/30/25 09:05

## Method: SW846 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.0300		0.100	0.0300	mg/L		01/31/25 09:00	01/31/25 15:42	1
Barium	0.0609	J	0.200	0.0400	mg/L		01/31/25 09:00	01/31/25 15:42	1
Cadmium	<0.00390		0.0200	0.00390	mg/L		01/31/25 09:00	01/31/25 15:42	1
Chromium	0.0875		0.0200	0.00600	mg/L		01/31/25 09:00	01/31/25 15:42	1
Lead	<0.0370		0.100	0.0370	mg/L		01/31/25 09:00	01/31/25 15:42	1
Selenium	<0.0290		0.100	0.0290	mg/L		01/31/25 09:00	01/31/25 15:42	1
Silver	<0.0160		0.0500	0.0160	mg/L		01/31/25 09:00	01/31/25 15:42	1

## Method: SW846 6020B - Metals (ICP/MS) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.0324		0.0400	0.0324	mg/L		02/05/25 09:00	02/05/25 17:28	4
Arsenic	<0.0204		0.0400	0.0204	mg/L		02/05/25 09:00	02/05/25 17:28	4
Barium	<0.0640		0.200	0.0640	mg/L		02/05/25 09:00	02/05/25 17:28	4
Beryllium	<0.00680		0.0200	0.00680	mg/L		02/05/25 09:00	02/06/25 14:05	4
Cadmium	<0.00280		0.0100	0.00280	mg/L		02/05/25 09:00	02/05/25 17:28	4
Chromium	<0.0440		0.100	0.0440	mg/L		02/05/25 09:00	02/05/25 17:28	4
Copper	<0.0360		0.100	0.0360	mg/L		02/05/25 09:00	02/05/25 17:28	4
Lead	<0.00760		0.0200	0.00760	mg/L		02/05/25 09:00	02/05/25 17:28	4
Selenium	<0.0332		0.100	0.0332	mg/L		02/05/25 09:00	02/05/25 17:28	4
Thallium	<0.0116		0.0200	0.0116	mg/L		02/05/25 09:00	02/05/25 17:28	4

## Method: SW846 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00110		0.00200	0.00110	mg/L		01/31/25 09:55	01/31/25 15:27	1

## Method: SW846 7470A - Mercury (CVAA) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00110		0.00200	0.00110	mg/L		02/05/25 09:47	02/05/25 15:13	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture (EPA Moisture)	0.2		0.1	0.1	%			01/30/25 11:39	1
Percent Solids (EPA Moisture)	99.8		0.1	0.1	%			01/30/25 11:39	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.7	HF	1.0	1.0	SU			02/04/25 14:06	1

## General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride (SM 4500 F C-2011)	0.650		0.200	0.200	mg/L			02/05/25 16:09	1

Client Sample ID: Sand Pile 1

Lab Sample ID: 310-299462-1

Date Collected: 01/29/25 08:15

Matrix: Solid

Date Received: 01/30/25 09:05

Percent Solids: 99.8

## Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.415		0.921	0.415	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Arsenic	<0.387		0.921	0.387	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Barium	3.31		0.921	0.461	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5

Eurofins Cedar Falls

# Client Sample Results

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

Client Sample ID: Sand Pile 1

Lab Sample ID: 310-299462-1

Date Collected: 01/29/25 08:15

Matrix: Solid

Date Received: 01/30/25 09:05

Percent Solids: 99.8

## Method: SW846 6020B - Metals (ICP/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.184		0.461	0.184	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Boron	<92.1		184	92.1	mg/Kg	✱	02/03/25 09:00	02/04/25 12:16	20
Cadmium	<0.175	F1	0.461	0.175	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Chromium	30.7		1.38	0.599	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Cobalt	3.39	F1 F2	0.461	0.212	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Copper	10.4	F1	1.38	0.562	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Lead	0.972	J F1	2.30	0.718	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Lithium	<0.663	F1	2.30	0.663	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Manganese	98.4		2.30	1.11	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Molybdenum	12.4		0.921	0.497	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Nickel	31.2		1.38	0.626	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Selenium	<0.691		1.38	0.691	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Silver	<0.203	F1	0.461	0.203	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Thallium	<0.230		0.461	0.230	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Vanadium	45.9		1.38	0.424	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5
Zinc	8.36		4.61	2.21	mg/Kg	✱	02/03/25 09:00	02/03/25 15:28	5

## Method: SW846 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.00627		0.0153	0.00627	mg/Kg	✱	02/03/25 09:40	02/03/25 12:23	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride (SM 4500 F C-2011)	9.09	F1	0.978	0.528	mg/Kg	✱		02/05/25 17:42	1

# Lab Chronicle

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

**Client Sample ID: Sand Pile 1**

**Lab Sample ID: 310-299462-1**

**Date Collected: 01/29/25 08:15**

**Matrix: Solid**

**Date Received: 01/30/25 09:05**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
TCLP	Leach	1311			445809	U8FK	EET CF	01/30/25 15:00 - 01/31/25 07:00 <sup>1</sup>
TCLP	Prep	3010A			445864	F5MW	EET CF	01/31/25 09:00
TCLP	Analysis	6010D		1	445988	ZRI4	EET CF	01/31/25 15:42
SPLP West	Leach	1312			446006	U8FK	EET CF	02/03/25 11:30 - 02/04/25 07:00 <sup>1</sup>
SPLP West	Prep	3010A			446129	QTZ5	EET CF	02/05/25 09:00
SPLP West	Analysis	6020B		4	446285	NFT2	EET CF	02/05/25 17:28
SPLP West	Leach	1312			446006	U8FK	EET CF	02/03/25 11:30 - 02/04/25 07:00 <sup>1</sup>
SPLP West	Prep	3010A			446129	QTZ5	EET CF	02/05/25 09:00
SPLP West	Analysis	6020B		4	446425	ZRI4	EET CF	02/06/25 14:05
SPLP West	Leach	1312			446006	U8FK	EET CF	02/03/25 11:30 - 02/04/25 07:00 <sup>1</sup>
SPLP West	Prep	7470A			446125	QTZ5	EET CF	02/05/25 09:47
SPLP West	Analysis	7470A		1	446263	QTZ5	EET CF	02/05/25 15:13
TCLP	Leach	1311			445809	U8FK	EET CF	01/30/25 15:00 - 01/31/25 07:00 <sup>1</sup>
TCLP	Prep	7470A			445865	QTZ5	EET CF	01/31/25 09:55
TCLP	Analysis	7470A		1	445939	QTZ5	EET CF	01/31/25 15:27
SPLP	Leach	1312			446005	U8FK	EET CF	02/03/25 11:30 - 02/04/25 07:00 <sup>1</sup>
SPLP	Analysis	4500 F C-2011		1	446280	WZC8	EET CF	02/05/25 16:09
Soluble	Leach	DI Leach			446119	T5AC	EET CF	02/04/25 11:39
Soluble	Analysis	9045D		1	446144	T5AC	EET CF	02/04/25 14:06
Total/NA	Analysis	Moisture		1	445789	W9YR	EET CF	01/30/25 11:39

**Client Sample ID: Sand Pile 1**

**Lab Sample ID: 310-299462-1**

**Date Collected: 01/29/25 08:15**

**Matrix: Solid**

**Date Received: 01/30/25 09:05**

**Percent Solids: 99.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3050B			445853	F5MW	EET CF	02/03/25 09:00
Total/NA	Analysis	6020B		20	446188	NFT2	EET CF	02/04/25 12:16
Total/NA	Prep	3050B			445853	F5MW	EET CF	02/03/25 09:00
Total/NA	Analysis	6020B		5	446069	NFT2	EET CF	02/03/25 15:28
Total/NA	Prep	7471B			445877	QTZ5	EET CF	02/03/25 09:40
Total/NA	Analysis	7471B		1	446018	NFT2	EET CF	02/03/25 12:23
Soluble	Leach	DI Leach			446209	WZC8	EET CF	02/05/25 09:21
Soluble	Analysis	4500 F C-2011		1	446280	WZC8	EET CF	02/05/25 17:42

<sup>1</sup> This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

## Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Eurofins Cedar Falls

## Definitions/Glossary

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

### Qualifiers

#### Metals

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

#### General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

## Accreditation/Certification Summary

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

### Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
4500 F C-2011		Solid	Fluoride
6020B	3050B	Solid	Lithium
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids



## Method Summary

Client: Keokuk Steel Castings  
Project/Site: Beneficial ReUse Metals

Job ID: 310-299462-1

Method	Method Description	Protocol	Laboratory
6010D	Metals (ICP)	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
7470A	Mercury (CVAA)	SW846	EET CF
7471B	Mercury (CVAA)	SW846	EET CF
4500 F C-2011	Fluoride (Ion-selective Electrode)	SM	EET CF
9045D	pH	SW846	EET CF
Moisture	Percent Moisture	EPA	EET CF
1311	TCLP Extraction	SW846	EET CF
1312	SPLP Extraction	SW846	EET CF
3010A	Preparation, Total Metals	SW846	EET CF
3050B	Preparation, Metals	SW846	EET CF
7470A	Preparation, Mercury	SW846	EET CF
7471B	Preparation, Mercury	SW846	EET CF
DI Leach	Deionized Water Leaching Procedure	ASTM	EET CF

### Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

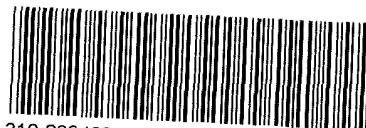
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

### Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401



Environment Testing  
America



310-299462 Chain of Custody

### Cooler/Sample Receipt and Temperature Log Form

<b>Client Information</b>			
Client: <u>Keokuk Steel Castings</u>			
City/State:	CITY	STATE	Project:
<b>Receipt Information</b>			
Date/Time Received:	DATE <u>1-30-25</u>	TIME <u>9:05</u>	Received By: <u>KL</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
<b>Condition of Cooler/Containers</b>			
Sample(s) received in Cooler?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____
Multiple Coolers?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # _____ of _____
Cooler Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Sample Custody Seals Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No
Trip Blank Present?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓
<b>Temperature Record</b>			
Coolant: <input type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input checked="" type="checkbox"/> NONE			
Thermometer ID: <u>R</u>		Correction Factor (°C): <u>0</u>	
• <b>Temp Blank Temperature</b> – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>9.8</u>		Corrected Temp (°C): <u>9.8</u>	
• <b>Sample Container Temperature</b>			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
<b>Exceptions Noted</b>			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
<b>Additional Comments</b>			

Address

Company Name <u>Winkels Hardware</u> Address <u>5124 New Street</u> City/State/Zip <u>Memphis TN 38133</u> Phone <u>(901) 276-1111</u> Fax _____ Project Name <u>Booth area under stairs</u> Site _____ P O # _____		Client Contact _____ Project Manager <u>B. B. Howard</u> Tel/Email <u>(901) 276-4011</u>		Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other _____		Site Contact _____ Lab Contact: _____ Date: _____ Carrier: _____		COC No _____ of _____ COCs Sampler _____ For Lab Use Only Walk-in Client Lab Sampling Job / SDG No _____			
Sample Identification <u>and 2111</u>		Sample Date _____		Sample Time _____		Sample Type (C=Comp G=Grab) _____		Matrix _____		# of Cont. _____	
		TAT if different from Below _____ <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day									
Preservation Used 1= Ice, 2= HCl; 3= H2SO4, 4=HNO3, 5=NaOH; 6= Other _____											
Possible Hazard Identification Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample											
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown											
Special Instructions/QC Requirements & Comments											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No <u>207515</u>		Cooler Temp (°C) Obs'd _____ Cor'd _____		Therm ID No _____					
Relinquished by <u>B. B. Howard</u>		Company _____		Date/Time <u>1/24/05</u>		Received by _____		Company _____		Date/Time _____	
Relinquished by _____		Company _____		Date/Time _____		Received by _____		Company _____		Date/Time _____	
Relinquished by _____		Company _____		Date/Time _____		Received in Laboratory by <u>RF</u>		Company _____		Date/Time <u>1-30-05 905</u>	

## Login Sample Receipt Checklist

Client: Keokuk Steel Castings

Job Number: 310-299462-1

**Login Number: 299462**

**List Source: Eurofins Cedar Falls**

**List Number: 1**

**Creator: Hirsch, Preston**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	