



MidAmerican Energy Company
Louisa Generating Station
8602 172nd Street
Muscatine, Iowa 52761-9066
563 262-8020 Telephone
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February 12, 2026 (EMAIL)

Iowa Department of Natural Resources
Attn: Chad Stobbe
Land Quality Bureau
6200 Park Avenue
Suite 200
Des Moines, IA 20321

SUBJECT: Solid By-Product Management Plan

Please find the attached Solids By-Product Management Plan for the Louisa Generating Station monofill (70-SDP-16-04P). Attached to this plan are the following laboratory tests and cumulative risk calculator outputs:

Louisa Generating Station, Boiler 101:

- SPLP analyses of fly ash composited:
 - October 2024 to April 2025
 - April 2025 to October 2025
- SPLP analyses of fly ash and bottom ash:
 - April 22, 2025 (Bottom Ash, Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Bottom Ash)
- TCLP analyses of fly ash and bottom ash:
 - April 22, 2025 (Bottom Ash, Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Bottom Ash)
- Total Metals analysis of fly ash and bottom ash:
 - April 22, 2025 (Bottom Ash, Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Fly Ash Composited and Fly Ash)
 - October 17, 2025 (Bottom Ash)
- Cumulative Risk Calculator Output

If you have any questions regarding this transmittal, please feel free to call me at 563-288-2801 or Josh Love 712-277-6367.

Sincerely,

Jamie Murphy
Senior Environmental Analyst
CC: Josh Love
Field Office #6

Solid By-Product Management Plan

Louisa Generating Station

Louisa Generating Station
8602 172nd Street
Muscatine, IA 52761
Telephone: 563-262-2860

I. Introduction

This management plan is prepared for coal combustion residue (CCR) generated at the Louisa Generating Station (Louisa) in accordance with 567 Iowa Administrative Code, Chapter 108.6(2), which establishes requirements for the beneficial use of solid by-products.

II. Facility Information

The facility is a pulverized coal-fired steam electric plant with one operational unit. Coal burned at this facility is the sub-bituminous type mined in Wyoming's Powder River Basin. MidAmerican Energy Company (MidAmerican) is the majority owner and operator of the facility. MidAmerican retains a contractor to manage and market coal combustion residue generated at this location.

Louisa's unit uses an electrostatic precipitator to collect fly ash. Fly ash is then conveyed pneumatically to a storage silo where it is loaded into trucks by the ash contractor. Fly ash is transported off-site for immediate beneficial re-use or is transported to the Louisa monofill for disposal.

Louisa's unit also operates a dry flue gas desulfurization (FGD) scrubber and baghouse after the electrostatic precipitator. Louisa continues to operate the electrostatic precipitator upstream of the FGD scrubber and baghouse in order to collect fly ash for sale as beneficial re-use material. The FGD waste material (waste ash) is collected in the baghouse and sent to the monofill, as is any unsold fly ash collected from the precipitator.

Louisa's unit uses a submerged drag chain conveyor system to transport bottom and economizer ash along with coal mill rejects. The drag chain takes bottom ash from the bottom of the boiler, economizer ash from the economizer hoppers and coal mill rejects (pyrites) and conveys all ash from the wet bottom up an incline section where the ash dewater before being deposited in a bunker. Economizer ash is transported dry via dry flight conveyors to the wet section of the drag chain where it is deposited. Coal mill rejects are conveyed to the wet section of the drag chain.

The dewatered ash is collected in an enclosed bunker from which it is then loaded in a haul truck, weighed, and transported to the Louisa monofill.

III. Periodic Testing Procedures

As per IAC 567 Chapter 108, Louisa will conduct semi-annual TCLP, SPLP and total metals testing of each coal combustion residue material (fly ash and bottom ash) to confirm compliance

with Iowa's beneficial use regulations and Louisa's monofill permit. Records of all tests will be retained in the Louisa files.

IV. Coal Combustion Residue Management and Storage Procedures

1. Storage and disposal

CCR moved off-site is weighed, and a record of the scale ticket is filed by the ash contractor along with a reference to the customer receiving the coal combustion residue. The ash contractor will provide copies of the following records to the facility manager and MidAmerican's Environmental Services department:

- Scale tickets showing weight of coal combustion residue moved off-site;
- Customers, addresses and tons moved per customer; and
- Analytical records.

CCR is marketed primarily to the construction industry, and sale of product typically occurs during the warm months. Fly ash is primarily utilized as a concrete supplement. Sales reflect construction trends in the region of the generating facility. MidAmerican continues to explore additional beneficial re-use markets for ash generated at the facility. All unsold ash from Louisa is disposed in the Louisa monofill.

2. Measures to minimize uncontrolled dispersion of CCR

MidAmerican's ash contractor takes appropriate precautions to minimize dust created during fly ash loading and unloading activities. The unloading process involves the use of a double spout (constructed as a pipe within a pipe) that is inserted into the fill port of the receiving ash truck. The inner spout drops ash into the truck and the outer spout pulls a vacuum to collect and transport dust back into the fly ash silo. Monofill disposal trucks are the end-dump or belly-dump type. These trucks are loaded via the pin mixers, which spray water on the ash as it is loaded into the trucks. Additionally, a water truck is used at the monofill to spray the ash after it is graded. A street sweeper is used on a daily basis to clean the haul road of CCR material when CCR is being hauled to the monofill to minimize fugitive dust as specified in Louisa Generating Station's Fugitive Dust Control Plan.

3. Maximum anticipated inventory

The estimated remaining inventory of the monofill is approximately 15 to 20 years. In 2020, MidAmerican closed the west monofill. All ash is managed within the eastern lined expansion cells.

4. Run-on and run-off controls

Surface water is diverted around the fill area of the monofill. Louisa manages CCR stockpiles within the monofill boundaries with storm water controls pursuant to Louisa's Storm Water Pollution Prevention Plan. Louisa operates a leachate control system at the active monofill in accordance with permit requirements.

V. Record Keeping and Reporting

Louisa maintains a copy of all records related to the solid by-product management plan for a minimum of five years, as mandated in 567 IAC 108.7(2).

A copy of this plan, and subsequent revisions, will be provided to the Iowa Department of Natural Resources and Field Office #6 whenever the plan is revised or within 60 days of the end of the calendar year, whichever is earlier.

VI. Summarization of Beneficial Use – January 1, 2025 through December 31, 2025

Facility	Cement Replacement (tons)	Direct Soil Stabilization (tons)	Total tons Beneficially Reused (tons)
Louisa	86,538		86,538

VII. Facility Contacts and Responsibilities

Name	Title	Responsibilities	Telephone
Todd Horchem	General Manager, Louisa	Safe and efficient operation of Louisa.	563-333-4144
Jamie Murphy	Senior Environmental Analyst	Maintain coal combustion residue records, including beneficial use and analytical records; daily operation and maintenance of LGS surface impoundment, monitoring and inspection of LGS CCR monofill.	563-288-2801
Josh Love	Environmental Programs and Compliance Manager – Supply	Point of contact between the plants and agencies. Provides updates to facilities concerning changes in regulatory requirements.	712-277-6367

PREPARER

Preparer Name	Site Name	Address	City	State	Zip	Comment
	MidAmerican Energy Company - Louisa Generating Station	8602 172nd Street	Muscatine	IA	52761	Fall 2025 Bottom Ash

PREPARER INPUT

Chemical	CASRN	Exposure	
		Point Concentration for Soil(mg/kg)	Site-Specific Background Soil Level* (mg/kg)
Antimony	007440-36-0	0.396	
Arsenic, Inorganic	007440-38-2	3.14	
Barium	007440-39-3	2050	
Beryllium (soil/water)	007440-41-7	1.57	
Boron And Borates Only	007440-42-8	225	
Cadmium (soil)	007440-43-9	0.518	
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3	19.9	
Cobalt	007440-48-4	8.96	
Copper	007440-50-8	53.1	
Fluoride	007681-49-4	0.595	
Lead and Compounds	007439-92-1	7.27	
Lithium	007439-93-2	15.9	
Manganese	007439-96-5	106	
Mercury	007439-97-6	0.00796	
Molybdenum	007439-98-7	3.5	
Nickel	007440-02-0	18.6	
Selenium	007782-49-2	1.4	
Silver	007440-22-4	0.167	
Thallium	007440-28-0	0.167	
Vanadium	007440-62-2	78.7	
Zinc	007440-66-6	23.7	

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compounds	007439-92-1	NQ	NQ
TOTALS:	∑	0.08	0.02

Cumulative
Cancer Risk Site
Resident: 0.08

Cumulative
Cancer Risk Site
Worker: 0.02
All cancer risk
values are x 10⁻⁴

SITE RESIDENT -
NON CANCER
OUTPUT BY
TARGET ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Â Soil			0.01									0.01			
Arsenic, Inorganic	007440-38-2	Â Soil		0.73			0.73										
Barium	007440-39-3	Â Soil		0.14		0.14											
Beryllium (soil/water)	007440-41-7	Â Soil														0.01	
Boron And Borates Only	007440-42-8	Â Soil										0.01			0.01		
Cadmium (soil)	007440-43-9	Â Soil				0.01						0.01		0.01			
Chromium (III)	016065-83-1	Â Soil															
Chromium (VI)	018540-29-9	Â Soil															
Chromium, total	007440-47-3	Â Soil												0.1			
Cobalt	007440-48-4	Â Soil			0.38												
Copper	007440-50-8	Â Soil		0.02		0.02										0.02	
Fluoride	007681-49-4	Â Soil												0			
Lead and Compounds	007439-92-1	Â Soil		0.02		0.02									0.02		
Lithium	007439-93-2	Â Soil												0			
Manganese	007439-96-5	Â Soil									0.01						
Mercury	007439-97-6	Â Soil				0											
Molybdenum	007439-98-7	Â Soil			0.01							0.01		0.01			
Nickel	007440-02-0	Â Soil												0.01			
Selenium	007782-49-2	Â Soil		0				0						0			
Silver	007440-22-4	Â Soil					0										
Thallium	007440-28-0	Â Soil			0.21	0.21	0.21	0.21								0.21	
Vanadium	007440-62-2	Â Soil			0.22												
Zinc	007440-66-6	Â Soil			0												
		Sum:		0.89	0.23	0.83	0.4	0.94	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITE WORKER -
NON CANCER
OUTPUT BY
TARGET ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Â Soil				0									0		
Arsenic, Inorganic	007440-38-2	Â Soil		0.14				0.14									
Barium	007440-39-3	Â Soil		0.03			0.03										
Beryllium (soil/water)	007440-41-7	Â Soil														0	
Boron And Borates Only	007440-42-8	Â Soil										0			0		
Cadmium (soil)	007440-43-9	Â Soil					0					0		0			
Chromium (III)	016065-83-1	Â Soil															
Chromium (VI)	018540-29-9	Â Soil															
Chromium, total	007440-47-3	Â Soil													0.02		
Cobalt	007440-48-4	Â Soil				0.08											
Copper	007440-50-8	Â Soil			0		0									0	
Fluoride	007681-49-4	Â Soil													0		
Lead and Compounds	007439-92-1	Â Soil		0			0									0	
Lithium	007439-93-2	Â Soil													0		
Manganese	007439-96-5	Â Soil										0					
Mercury	007439-97-6	Â Soil					0										
Molybdenum	007439-98-7	Â Soil				0						0		0			
Nickel	007440-02-0	Â Soil													0		
Selenium	007782-49-2	Â Soil		0				0							0		
Silver	007440-22-4	Â Soil						0									
Thallium	007440-28-0	Â Soil															
Vanadium	007440-62-2	Â Soil			0.04	0.04	0.04	0.04								0.04	
Zinc	007440-66-6	Â Soil				0.04											
		Sum:		0.17	0.04	0.16	0.07	0.18	0	0	0	0	0	0	0.02	0	0.04

PREPARER

Preparer Name	Site Name	Address	City	State	Zip	Comment
	MidAmerican Energy Company - Louisa Generating Station	8602 172nd Street	Muscatine	IA	52761	Fall 2025 Bottom Ash

PREPARER

INPUT

Chemical	CASRN	Exposure Point Concentration for Soil (mg/kg)	Site-Specific Background Soil Level* (mg/kg)
Antimony	007440-36-0	0.396	
Arsenic, Inorganic	007440-38-2	3.14	
Barium	007440-39-3	2050	
Beryllium (soil/water)	007440-41-7	1.57	
Boron And Borates Only	007440-42-8	225	
Cadmium (soil)	007440-43-9	0.518	
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3	19.9	
Cobalt	007440-48-4	8.96	
Copper	007440-50-8	53.1	
Fluoride	007681-49-4	0.595	
Lead and Compounds	007439-92-1	7.27	
Lithium	007439-93-2	15.9	
Manganese	007439-96-5	106	
Mercury	007439-97-6	0.00796	
Molybdenum	007439-98-7	3.5	
Nickel	007440-02-0	18.6	
Selenium	007782-49-2	1.4	
Silver	007440-22-4	0.167	
Thallium	007440-28-0	0.167	
Vanadium	007440-62-2	78.7	
Zinc	007440-66-6	23.7	

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compound s	007439-92-1	NQ	NQ
TOTALS:	Å	0.08	0.02

Cumulative
Cancer
Risk Site
Resident:
0.08

Cumulative
Cancer
Risk Site
Worker:
0.02

All cancer
risk values
are x 10⁻⁴

SITE
 RESIDENT -
 NON
 CANCER
 OUTPUT BY
 TARGET
 ORGAN
 Chemical

Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro
Antimony	007440-36-0	Soil			0.01									0.01		
Arsenic, Inorganic	007440-38-2	Soil	0.73				0.7									
Barium	007440-39-3	Soil	0.14			0.14										
Beryllium (soil/water)	007440-41-7	Soil														0.01
Boron And Borates Only	007440-42-8	Soil										0.01			0.01	
Cadmium (soil)	007440-43-9	Soil				0.01						0.01		0.01		
Chromium (III)	016065-83-1	Soil														
Chromium (VI)	018540-29-9	Soil														
Chromium, total	007440-47-3	Soil													0.1	
Cobalt	007440-48-4	Soil				0.38										
Copper	007440-50-8	Soil		0.02		0.02										0.02
Fluoride	007681-49-4	Soil													0	
Lead and Compounds	007439-92-1	Soil	0.02			0.02										0.02
Lithium	007439-93-2	Soil													0	
Manganese	007439-96-5	Soil										0.01				
Mercury	007439-97-6	Soil					0									
Molybdenum	007439-98-7	Soil				0.01						0.01		0.01		
Nickel	007440-02-0	Soil													0.01	
Selenium	007782-49-2	Soil	0					0						0		
Silver	007440-22-4	Soil						0								
Thallium	007440-28-0	Soil			0.21	0.21	0.21	0.2								0.21
Vanadium	007440-62-2	Soil				0.22										
Zinc	007440-66-6	Soil			0											
Sum:			0.89	0.23	0.83	0.4	0.9	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITE
 WORKER -
 NON
 CANCER
 OUTPUT BY
 TARGET
 ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Soil			0									0			
Arsenic, Inorganic	007440-38-2	Soil	0.14				0.1										
Barium	007440-39-3	Soil	0.03			0.03											
Beryllium (soil/water)	007440-41-7	Soil														0	
Boron And Borates Only	007440-42-8	Soil										0			0		
Cadmium (soil)	007440-43-9	Soil					0					0		0			
Chromium (III)	016065-83-1	Soil															
Chromium (VI)	018540-29-9	Soil															
Chromium, total	007440-47-3	Soil												0.02			
Cobalt	007440-48-4	Soil			0.08												
Copper	007440-50-8	Soil		0		0										0	
Fluoride	007681-49-4	Soil												0			
Lead and Compounds	007439-92-1	Soil	0			0										0	
Lithium	007439-93-2	Soil													0		
Manganese	007439-96-5	Soil									0						
Mercury	007439-97-6	Soil					0										
Molybdenum	007439-98-7	Soil				0						0		0			
Nickel	007440-02-0	Soil													0		
Selenium	007782-49-2	Soil		0				0						0			
Silver	007440-22-4	Soil						0									
Thallium	007440-28-0	Soil			0.04	0.04	0.04	0								0.04	
Vanadium	007440-62-2	Soil				0.04											
Zinc	007440-66-6	Soil			0												
Sum:			0.17	0.04	0.16	0.07	0.2	0	0	0	0	0	0	0	0.02	0	0.04

PREPARER

Preparer Name	Site Name	Address	City	State	Zip	Comment
	MidAmerican Energy Company - Louisa Generating Station	8602 172nd Street	Muscatine	IA	52761	Fall 2025 Bottom Ash

PREPARER INPUT

Chemical	CASRN	Exposure Point Concentration for Soil(mg/kg)	Site-Specific Background Soil Level* (mg/kg)
Antimony	007440-36-0		0.396
Arsenic, Inorganic	007440-38-2		3.14
Barium	007440-39-3		2050
Beryllium (soil/water)	007440-41-7		1.57
Boron And Borates Only	007440-42-8		225
Cadmium (soil)	007440-43-9		0.518
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3		19.9
Cobalt	007440-48-4		8.96
Copper	007440-50-8		53.1
Fluoride	007681-49-4		0.595
Lead and Compounds	007439-92-1		7.27
Lithium	007439-93-2		15.9
Manganese	007439-96-5		106
Mercury	007439-97-6		0.00796
Molybdenum	007439-98-7		3.5
Nickel	007440-02-0		18.6
Selenium	007782-49-2		1.4
Silver	007440-22-4		0.167
Thallium	007440-28-0		0.167
Vanadium	007440-62-2		78.7
Zinc	007440-66-6		23.7

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compounds	007439-92-1	NQ	NQ
TOTALS:	Å	0.08	0.02

Cumulative
Cancer Risk
Site Resident:
0.08

Cumulative
Cancer Risk
Site Worker:
0.02

All cancer risk
values are x
 10^{-4}

SITE RESIDENT -
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Å Soil				0.01									0.01		
Arsenic, Inorganic	007440-38-2	Å Soil		0.73				0.73									
Barium	007440-39-3	Å Soil		0.14			0.14										
Beryllium (soil/water)	007440-41-7	Å Soil														0.01	
Boron And Borates Only	007440-42-8	Å Soil											0.01			0.01	
Cadmium (soil)	007440-43-9	Å Soil					0.01						0.01		0.01		
Chromium (III)	016065-83-1	Å Soil															
Chromium (VI)	018540-29-9	Å Soil															
Chromium, total	007440-47-3	Å Soil													0.1		
Cobalt	007440-48-4	Å Soil				0.38											
Copper	007440-50-8	Å Soil			0.02		0.02									0.02	
Fluoride	007681-49-4	Å Soil													0		
Lead and Compounds	007439-92-1	Å Soil		0.02			0.02									0.02	
Lithium	007439-93-2	Å Soil													0		
Manganese	007439-96-5	Å Soil										0.01					
Mercury	007439-97-6	Å Soil					0										
Molybdenum	007439-98-7	Å Soil				0.01							0.01		0.01		
Nickel	007440-02-0	Å Soil													0.01		
Selenium	007782-49-2	Å Soil		0				0							0		
Silver	007440-22-4	Å Soil							0								
Thallium	007440-28-0	Å Soil			0.21	0.21	0.21	0.21								0.21	
Vanadium	007440-62-2	Å Soil				0.22											
Zinc	007440-66-6	Å Soil				0											
		Sum:		0.89	0.23	0.83	0.4	0.94	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITE WORKER -
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Å Soil				0									0		
Arsenic, Inorganic	007440-38-2	Å Soil		0.14				0.14									
Barium	007440-39-3	Å Soil		0.03			0.03										
Beryllium (soil/water)	007440-41-7	Å Soil														0	
Boron And Borates Only	007440-42-8	Å Soil											0			0	
Cadmium (soil)	007440-43-9	Å Soil					0						0		0		
Chromium (III)	016065-83-1	Å Soil															
Chromium (VI)	018540-29-9	Å Soil															
Chromium, total	007440-47-3	Å Soil													0.02		
Cobalt	007440-48-4	Å Soil				0.08											
Copper	007440-50-8	Å Soil			0		0									0	
Fluoride	007681-49-4	Å Soil													0		
Lead and Compounds	007439-92-1	Å Soil		0			0									0	
Lithium	007439-93-2	Å Soil													0		
Manganese	007439-96-5	Å Soil										0					
Mercury	007439-97-6	Å Soil					0										
Molybdenum	007439-98-7	Å Soil				0							0		0		
Nickel	007440-02-0	Å Soil													0		
Selenium	007782-49-2	Å Soil		0				0							0		
Silver	007440-22-4	Å Soil						0									
Thallium	007440-28-0	Å Soil			0.04	0.04	0.04	0.04								0.04	
Vanadium	007440-62-2	Å Soil				0.04											
Zinc	007440-66-6	Å Soil				0											
		Sum:		0.17	0.04	0.16	0.07	0.18	0	0	0	0	0	0	0.02	0	0.04



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 10/17/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscatine State: IA Zip: 52761
 By-Product Name: Fall 2025 Bottom Ash Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0200 mg/L	31 mg/kg	<0.396	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0110 mg/L	17 mg/kg	3.14	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	1.02 mg/L	15,000 mg/kg	2050	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0066 mg/L	110 mg/kg	1.57	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	225	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0020 mg/L	70 mg/kg	0.518	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	<0.0360 mg/L	** (Total)	19.9	mg/kg
					(Hexavalent - VI)	210 mg/kg	mg/kg
					(Trivalent - III)	97,000 mg/kg	mg/kg
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	8.96	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.0640 mg/L	15,000 mg/kg	53.1	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	<0.079 mg/L	4,700 mg/kg	<0.595	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0066 mg/L	400 mg/kg	7.27	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	15.9	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	106	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0012 mg/L	23 mg/kg	<0.00796	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	3.50	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	18.6	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0280 mg/L	390 mg/kg	1.40	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	<0.167	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	<0.0110 mg/L	0.78 mg/kg	<0.167	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	78.7	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	23.7	mg/kg

*Required contaminant

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

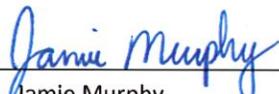
Toxicity Characteristic Leaching Procedure (EPA Test Method 1311) - Regulatory Limits

Metals					Volatile Organic Compounds				
*	Contaminant	Regulatory Limit	Test Result		*	Contaminant	Regulatory Limit	Test Result	
<input checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.0300	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	0.434	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.0039	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	0.00680	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.0370	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.0012	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	<0.0290	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" 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 (and 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
Herbicides					<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 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 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:  Date: 2-10-26
 Printed Name: Jamie Murphy Title: Senior Environmental Analyst



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 10/17/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscataine State: IA Zip: 52761
 By-Product Name: Fall 2025 Fly Ash Composite Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0200 mg/L	31 mg/kg	0.672	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0110 mg/L	17 mg/kg	13.4	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	2.56 mg/L	15,000 mg/kg	1140	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0066 mg/L	110 mg/kg	2.93	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	536	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0020 mg/L	70 mg/kg	1.21	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.168 mg/L	** (Total)	53.2	mg/kg
(Hexavalent - VI)						mg/kg	
(Trivalent - III)						mg/kg	
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	18.8	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.0640 mg/L	15,000 mg/kg	115	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	1.05 mg/L	4,700 mg/kg	9.57	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0066 mg/L	400 mg/kg	22.5	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	27.9	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	192	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0012 mg/L	23 mg/kg	0.00967	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	8.74	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	40.8	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0280 mg/L	390 mg/kg	6.10	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	0.246	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	<0.011 mg/L	0.78 mg/kg	0.755	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	161	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	91.3	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 checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.0600	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	0.288	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.0078	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	0.263	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.0740	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.0012	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	0.0975	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Silver	5.0 mg/L	<0.0320	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 (and 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
Herbicides					<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 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 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: *Jamie Murphy* Date: 2-10-26
 Printed Name: Jamie Murphy Title: Senior Environmental Analyst



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 10/17/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscatine State: IA Zip: 52761
 By-Product Name: Fall 2025 Fly Ash Grab Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0200 mg/L	31 mg/kg	0.951	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0110 mg/L	17 mg/kg	14.6	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	3.52 mg/L	15,000 mg/kg	565	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0066 mg/L	110 mg/kg	3.20	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	635	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0020 mg/L	70 mg/kg	1.43	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.147 mg/L	** (Total)	59.0	mg/kg
(Hexavalent - VI)						mg/kg	
(Trivalent - III)						mg/kg	
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	22.6	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.0640 mg/L	15,000 mg/kg	129	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	0.204 mg/L	4,700 mg/kg	1.10	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0066 mg/L	400 mg/kg	24.4	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	30.8	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	194	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0012 mg/L	23 mg/kg	<0.00726	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	9.87	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	42.8	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0280 mg/L	390 mg/kg	6.62	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	0.251	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	<0.0110 mg/L	0.78 mg/kg	1.96	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	238	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	90.7	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 checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.0600	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	0.379	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.0078	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	0.279	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.0740	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.0012	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	<0.0580	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Silver	5.0 mg/L	<0.320	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 (and 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
Herbicides					<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 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 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: _____

Jamie Murphy

Date: _____

2-10-26

Printed Name: _____

Jamie Murphy

Title: _____

Senior Environmental Analyst

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Kayla Swope
MidAmerican Energy Company
8602 172nd Street
Muscatine, Iowa 52761-9066

Generated 1/20/2026 2:21:34 PM Revision 1

JOB DESCRIPTION

Semi Annual Ash Analysis

JOB NUMBER

310-304744-1

Eurofins Cedar Falls

Job Notes

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Authorization



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Revision 1

Authorized for release by
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Conner.Calhoun@et.eurofinsus.com
(319)277-2401

Case Narrative

Client: MidAmerican Energy Company
Project: Semi Annual Ash Analysis

Job ID: 310-304744-1

Job ID: 310-304744-1

Eurofins Cedar Falls

Job Narrative 310-304744-1

REVISION

The report being provided is a revision of the original report sent on 5/7/2025. The report (revision 1) is being revised due to Client requested additional SPLP metals list.

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt

The samples were received on 4/23/2025 8:20 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.6°C.

Metals

Method 6010D - SPLP West: The continuing calibration verification (CCV) associated with batch 310-453929 recovered above the upper control limit for beryllium and copper. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 6010D - TCLP: The following sample was diluted due to the presence of an interferent: Waste Ash (310-304744-4). Elevated reporting limits (RLs) are provided.

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

General Chemistry

Method 9045D - Soluble: Samples Fly Ash #1 (310-304744-1), Fly Ash #2 (310-304744-2), Bottom Ash (310-304744-3) and Waste Ash (310-304744-4) were over the top standard for pH.

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

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Sample Summary

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-304744-1	Fly Ash #1	Solid	04/22/25 08:00	04/23/25 08:20	Iowa
310-304744-2	Fly Ash #2	Solid	04/22/25 08:00	04/23/25 08:20	Iowa
310-304744-3	Bottom Ash	Solid	04/22/25 08:10	04/23/25 08:20	Iowa
310-304744-4	Waste Ash	Solid	04/22/25 09:30	04/23/25 08:20	Iowa

- 1
- 2
- 3
- 4
- 5
- 6
- 7

Client Sample Results

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Fly Ash #1

Lab Sample ID: 310-304744-1

Date Collected: 04/22/25 08:00

Matrix: Solid

Date Received: 04/23/25 08:20

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0300		0.100	0.0300	mg/L		04/28/25 10:17	1	ZRI4
Barium	3.62		0.200	0.0400	mg/L		04/28/25 10:17	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		04/28/25 10:17	1	ZRI4
Chromium	0.333		0.0200	0.00600	mg/L		04/28/25 10:17	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		04/28/25 10:17	1	ZRI4
Selenium	0.139		0.100	0.0290	mg/L		04/28/25 10:17	1	ZRI4
Silver	<0.0160		0.0500	0.0160	mg/L		04/28/25 10:17	1	ZRI4

Method: 6010D - Metals (ICP) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Barium	8.04		0.200	0.0400	mg/L		05/06/25 15:42	1	ZRI4
Beryllium	<0.00120	^+	0.0100	0.00120	mg/L		05/06/25 15:42	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		05/06/25 15:42	1	ZRI4
Chromium	0.0512		0.0200	0.00600	mg/L		05/06/25 15:42	1	ZRI4
Copper	<0.200	^+	0.500	0.200	mg/L		05/06/25 15:42	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		05/06/25 15:42	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		05/06/25 15:42	1	ZRI4
Antimony	<0.0390		0.100	0.0390	mg/L		05/06/25 15:42	1	ZRI4
Arsenic	<0.0300		0.100	0.0300	mg/L		05/06/25 15:42	1	ZRI4

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/28/25 10:52	1	F5MW

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/29/25 13:17	1	F5MW

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		05/03/25 14:27	1	WZC8

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	11.9	HF	1.0	1.0	SU		04/25/25 17:10	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	0.166	J	0.200	0.0790	mg/L		05/02/25 12:59	1	WZC8

Client Sample ID: Fly Ash #1

Lab Sample ID: 310-304744-1

Date Collected: 04/22/25 08:00

Matrix: Solid

Date Received: 04/23/25 08:20

Percent Solids: 99.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.761	J F1	0.837	0.377	mg/Kg	☆	04/30/25 15:24	5	NFT2
Arsenic	12.7		0.837	0.352	mg/Kg	☆	04/30/25 15:24	5	NFT2
Barium	3470		8.37	3.85	mg/Kg	☆	05/01/25 12:55	50	NFT2
Beryllium	2.66		0.418	0.167	mg/Kg	☆	04/30/25 15:24	5	NFT2
Boron	422	F1	418	360	mg/Kg	☆	05/01/25 12:55	50	NFT2

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Client Sample Results

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Fly Ash #1

Lab Sample ID: 310-304744-1

Date Collected: 04/22/25 08:00

Matrix: Solid

Date Received: 04/23/25 08:20

Percent Solids: 99.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Cadmium	0.846		0.418	0.159	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Chromium	45.5	F1	1.26	0.435	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Cobalt	14.5		0.418	0.151	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Copper	107	F1	1.26	0.670	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Lead	20.8		2.09	0.653	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Lithium	27.6		2.09	0.829	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Manganese	154	F1	2.09	1.00	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Molybdenum	8.09		0.837	0.343	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Nickel	33.3		1.26	0.502	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Selenium	4.78		1.26	0.628	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Silver	0.240	J	0.418	0.159	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Thallium	1.66	J F1	4.18	1.59	mg/Kg	⊛	05/01/25 12:55	50	NFT2
Vanadium	148	F1	1.26	0.444	mg/Kg	⊛	04/30/25 15:24	5	NFT2
Zinc	78.2	F1	4.18	2.76	mg/Kg	⊛	04/30/25 15:24	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00785		0.0192	0.00785	mg/Kg	⊛	04/28/25 14:19	1	F5MW

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	2.08		0.980	0.480	mg/Kg	⊛	05/02/25 13:45	1	WZC8

Client Sample ID: Fly Ash #2

Lab Sample ID: 310-304744-2

Date Collected: 04/22/25 08:00

Matrix: Solid

Date Received: 04/23/25 08:20

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0300		0.100	0.0300	mg/L		04/28/25 10:18	1	ZRI4
Barium	4.32		0.200	0.0400	mg/L		04/28/25 10:18	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		04/28/25 10:18	1	ZRI4
Chromium	0.331		0.0200	0.00600	mg/L		04/28/25 10:18	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		04/28/25 10:18	1	ZRI4
Selenium	0.187		0.100	0.0290	mg/L		04/28/25 10:18	1	ZRI4
Silver	<0.0160		0.0500	0.0160	mg/L		04/28/25 10:18	1	ZRI4

Method: 6010D - Metals (ICP) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Barium	10.5		0.200	0.0400	mg/L		05/06/25 15:48	1	ZRI4
Beryllium	<0.00120	^+	0.0100	0.00120	mg/L		05/06/25 15:48	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		05/06/25 15:48	1	ZRI4
Chromium	0.0438		0.0200	0.00600	mg/L		05/06/25 15:48	1	ZRI4
Copper	<0.200	^+	0.500	0.200	mg/L		05/06/25 15:48	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		05/06/25 15:48	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		05/06/25 15:48	1	ZRI4
Antimony	<0.0390		0.100	0.0390	mg/L		05/06/25 15:48	1	ZRI4
Arsenic	<0.0300		0.100	0.0300	mg/L		05/06/25 15:48	1	ZRI4

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Fly Ash #2

Date Collected: 04/22/25 08:00

Date Received: 04/23/25 08:20

Lab Sample ID: 310-304744-2

Matrix: Solid

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/28/25 10:55	1	F5MW

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/29/25 13:19	1	F5MW

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		05/03/25 14:27	1	WZC8

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	12.6	HF	1.0	1.0	SU		04/25/25 17:12	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	0.153	J	0.200	0.0790	mg/L		05/02/25 13:16	1	WZC8

Client Sample ID: Fly Ash #2

Date Collected: 04/22/25 08:00

Date Received: 04/23/25 08:20

Lab Sample ID: 310-304744-2

Matrix: Solid

Percent Solids: 99.9

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.809	J	0.958	0.431	mg/Kg	✱	04/30/25 15:41	5	NFT2
Arsenic	10.9		0.958	0.402	mg/Kg	✱	04/30/25 15:41	5	NFT2
Barium	3090		9.58	4.41	mg/Kg	✱	05/01/25 13:07	50	NFT2
Beryllium	2.34		0.479	0.192	mg/Kg	✱	04/30/25 15:41	5	NFT2
Boron	<412		479	412	mg/Kg	✱	05/01/25 13:07	50	NFT2
Cadmium	0.740		0.479	0.182	mg/Kg	✱	04/30/25 15:41	5	NFT2
Chromium	43.2		1.44	0.498	mg/Kg	✱	04/30/25 15:41	5	NFT2
Cobalt	14.6		0.479	0.172	mg/Kg	✱	04/30/25 15:41	5	NFT2
Copper	100		1.44	0.767	mg/Kg	✱	04/30/25 15:41	5	NFT2
Lead	16.6		2.40	0.747	mg/Kg	✱	04/30/25 15:41	5	NFT2
Lithium	22.3		2.40	0.949	mg/Kg	✱	04/30/25 15:41	5	NFT2
Manganese	203		2.40	1.15	mg/Kg	✱	04/30/25 15:41	5	NFT2
Molybdenum	7.04		0.958	0.393	mg/Kg	✱	04/30/25 15:41	5	NFT2
Nickel	32.0		1.44	0.575	mg/Kg	✱	04/30/25 15:41	5	NFT2
Selenium	5.74		1.44	0.719	mg/Kg	✱	04/30/25 15:41	5	NFT2
Silver	0.214	J	0.479	0.182	mg/Kg	✱	04/30/25 15:41	5	NFT2
Thallium	<1.82		4.79	1.82	mg/Kg	✱	05/01/25 13:07	50	NFT2
Vanadium	140		1.44	0.508	mg/Kg	✱	04/30/25 15:41	5	NFT2
Zinc	66.2		4.79	3.16	mg/Kg	✱	04/30/25 15:41	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00650		0.0159	0.00650	mg/Kg	✱	04/28/25 14:21	1	F5MW

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	14.9		0.938	0.460	mg/Kg	✱	05/02/25 14:02	1	WZC8

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Client Sample Results

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Bottom Ash

Lab Sample ID: 310-304744-3

Date Collected: 04/22/25 08:10

Matrix: Solid

Date Received: 04/23/25 08:20

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0300		0.100	0.0300	mg/L		04/28/25 10:20	1	ZRI4
Barium	0.695		0.200	0.0400	mg/L		04/28/25 10:20	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		04/28/25 10:20	1	ZRI4
Chromium	0.0117	J	0.0200	0.00600	mg/L		04/28/25 10:20	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		04/28/25 10:20	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		04/28/25 10:20	1	ZRI4
Silver	<0.0160		0.0500	0.0160	mg/L		04/28/25 10:20	1	ZRI4

Method: 6010D - Metals (ICP) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Barium	0.952		0.200	0.0400	mg/L		05/06/25 15:49	1	ZRI4
Beryllium	<0.00120	^+	0.0100	0.00120	mg/L		05/06/25 15:49	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		05/06/25 15:49	1	ZRI4
Chromium	0.0399		0.0200	0.00600	mg/L		05/06/25 15:49	1	ZRI4
Copper	<0.200	^+	0.500	0.200	mg/L		05/06/25 15:49	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		05/06/25 15:49	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		05/06/25 15:49	1	ZRI4
Antimony	<0.0390		0.100	0.0390	mg/L		05/06/25 15:49	1	ZRI4
Arsenic	<0.0300		0.100	0.0300	mg/L		05/06/25 15:49	1	ZRI4

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/28/25 10:57	1	F5MW

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/29/25 13:21	1	F5MW

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		05/03/25 14:27	1	WZC8

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	11.5	HF	1.0	1.0	SU		04/25/25 17:14	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	<0.0790		0.200	0.0790	mg/L		05/02/25 13:19	1	WZC8

Client Sample ID: Bottom Ash

Lab Sample ID: 310-304744-3

Date Collected: 04/22/25 08:10

Matrix: Solid

Date Received: 04/23/25 08:20

Percent Solids: 61.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.618		1.37	0.618	mg/Kg	☆	04/30/25 15:43	5	NFT2
Arsenic	4.41		1.37	0.577	mg/Kg	☆	04/30/25 15:43	5	NFT2
Barium	2740		5.49	2.53	mg/Kg	☆	05/01/25 13:10	20	NFT2
Beryllium	1.98		0.687	0.275	mg/Kg	☆	04/30/25 15:43	5	NFT2
Boron	300		275	236	mg/Kg	☆	05/01/25 13:10	20	NFT2

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Client Sample Results

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Bottom Ash

Lab Sample ID: 310-304744-3

Date Collected: 04/22/25 08:10

Matrix: Solid

Date Received: 04/23/25 08:20

Percent Solids: 61.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Cadmium	0.418	J	0.687	0.261	mg/Kg	☼	04/30/25 15:43	5	NFT2
Chromium	29.9		2.06	0.714	mg/Kg	☼	04/30/25 15:43	5	NFT2
Cobalt	10.2		0.687	0.247	mg/Kg	☼	04/30/25 15:43	5	NFT2
Copper	57.0		2.06	1.10	mg/Kg	☼	04/30/25 15:43	5	NFT2
Lead	5.92		3.43	1.07	mg/Kg	☼	04/30/25 15:43	5	NFT2
Lithium	20.3		3.43	1.36	mg/Kg	☼	04/30/25 15:43	5	NFT2
Manganese	189		3.43	1.65	mg/Kg	☼	04/30/25 15:43	5	NFT2
Molybdenum	4.07		1.37	0.563	mg/Kg	☼	04/30/25 15:43	5	NFT2
Nickel	22.4		2.06	0.824	mg/Kg	☼	04/30/25 15:43	5	NFT2
Selenium	1.20	J	2.06	1.03	mg/Kg	☼	04/30/25 15:43	5	NFT2
Silver	<0.261		0.687	0.261	mg/Kg	☼	04/30/25 15:43	5	NFT2
Thallium	<1.04		2.75	1.04	mg/Kg	☼	05/01/25 13:10	20	NFT2
Vanadium	117		2.06	0.728	mg/Kg	☼	04/30/25 15:43	5	NFT2
Zinc	28.3		6.87	4.53	mg/Kg	☼	04/30/25 15:43	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.0131		0.0318	0.0131	mg/Kg	☼	04/28/25 14:28	1	F5MW

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	<0.777		1.58	0.777	mg/Kg	☼	05/02/25 14:09	1	WZC8

Client Sample ID: Waste Ash

Lab Sample ID: 310-304744-4

Date Collected: 04/22/25 09:30

Matrix: Solid

Date Received: 04/23/25 08:20

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0900		0.300	0.0900	mg/L		04/28/25 10:35	3	ZRI4
Barium	3.55		0.600	0.120	mg/L		04/28/25 10:35	3	ZRI4
Cadmium	<0.0117		0.0600	0.0117	mg/L		04/28/25 10:35	3	ZRI4
Chromium	0.0509	J	0.0600	0.0180	mg/L		04/28/25 10:35	3	ZRI4
Lead	<0.111		0.300	0.111	mg/L		04/28/25 10:35	3	ZRI4
Selenium	<0.0870		0.300	0.0870	mg/L		04/28/25 10:35	3	ZRI4
Silver	<0.0480		0.150	0.0480	mg/L		04/28/25 10:35	3	ZRI4

Method: 6010D - Metals (ICP) - SPLP West

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Barium	2.20		0.200	0.0400	mg/L		05/06/25 15:50	1	ZRI4
Beryllium	<0.00120	^+	0.0100	0.00120	mg/L		05/06/25 15:50	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		05/06/25 15:50	1	ZRI4
Chromium	0.0712		0.0200	0.00600	mg/L		05/06/25 15:50	1	ZRI4
Copper	<0.200	^+	0.500	0.200	mg/L		05/06/25 15:50	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		05/06/25 15:50	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		05/06/25 15:50	1	ZRI4
Antimony	<0.0390		0.100	0.0390	mg/L		05/06/25 15:50	1	ZRI4
Arsenic	<0.0300		0.100	0.0300	mg/L		05/06/25 15:50	1	ZRI4

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

Client Sample ID: Waste Ash

Date Collected: 04/22/25 09:30

Date Received: 04/23/25 08:20

Lab Sample ID: 310-304744-4

Matrix: Solid

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/28/25 09:57	1	F5MW

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		04/29/25 13:23	1	F5MW

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		05/03/25 14:27	1	WZC8

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	12.8	HF	1.0	1.0	SU		04/25/25 17:16	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	2.51		0.200	0.0790	mg/L		05/02/25 13:22	1	WZC8

Client Sample ID: Waste Ash

Date Collected: 04/22/25 09:30

Date Received: 04/23/25 08:20

Lab Sample ID: 310-304744-4

Matrix: Solid

Percent Solids: 98.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.797	J	0.918	0.413	mg/Kg	✱	04/30/25 15:45	5	NFT2
Arsenic	6.61		0.918	0.386	mg/Kg	✱	04/30/25 15:45	5	NFT2
Barium	172		3.67	1.69	mg/Kg	✱	05/01/25 13:12	20	NFT2
Beryllium	0.831		0.459	0.184	mg/Kg	✱	04/30/25 15:45	5	NFT2
Boron	193		184	158	mg/Kg	✱	05/01/25 13:12	20	NFT2
Cadmium	0.423	J	0.459	0.174	mg/Kg	✱	04/30/25 15:45	5	NFT2
Chromium	17.2		1.38	0.477	mg/Kg	✱	04/30/25 15:45	5	NFT2
Cobalt	5.77		0.459	0.165	mg/Kg	✱	04/30/25 15:45	5	NFT2
Copper	45.6		1.38	0.734	mg/Kg	✱	04/30/25 15:45	5	NFT2
Lead	11.9		2.30	0.716	mg/Kg	✱	04/30/25 15:45	5	NFT2
Lithium	11.0		2.30	0.909	mg/Kg	✱	04/30/25 15:45	5	NFT2
Manganese	308		2.30	1.10	mg/Kg	✱	04/30/25 15:45	5	NFT2
Molybdenum	3.33		0.918	0.376	mg/Kg	✱	04/30/25 15:45	5	NFT2
Nickel	16.5		1.38	0.551	mg/Kg	✱	04/30/25 15:45	5	NFT2
Selenium	14.0		1.38	0.689	mg/Kg	✱	04/30/25 15:45	5	NFT2
Silver	<0.174		0.459	0.174	mg/Kg	✱	04/30/25 15:45	5	NFT2
Thallium	<0.698		1.84	0.698	mg/Kg	✱	05/01/25 13:12	20	NFT2
Vanadium	61.6		1.38	0.487	mg/Kg	✱	04/30/25 15:45	5	NFT2
Zinc	39.4		4.59	3.03	mg/Kg	✱	04/30/25 15:45	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	2.47		0.191	0.0782	mg/Kg	✱	04/28/25 15:52	10	F5MW

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	32.0		0.935	0.458	mg/Kg	✱	05/02/25 14:12	1	WZC8

Eurofins Cedar Falls

Accreditation/Certification and Definitions Summary

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

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	07-10-25

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
D92		Solid	Flashpoint
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Qualifiers

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
F1	MS and/or MSD recovery 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
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
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
MRL	Method Reporting Limit
NC	Not Calculated

Accreditation/Certification and Definitions Summary

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1



Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
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
SDL	Sample Detection Limit
SDL	Sample Detection Limit
SDL	Sample Detection Limit
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method Summary

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-304744-1

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
D92	Flashpoint	ASTM	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



310-304744 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Midamerican</u>			
City/State:	<u>Muscatoine</u> <small>CITY</small> <u>IA</u> <small>STATE</small>	Project:	
Receipt Information			
Date/Time Received:	<u>4/23/25</u> <small>DATE</small> <u>0820</u> <small>TIME</small>	Received By: <u>[Signature]</u>	
Delivery Type: <input checked="" type="checkbox"/> UPS <input 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: _____			
Condition of Cooler/Containers			
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 checked="" type="checkbox"/> Yes <input 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? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>R</u>	Correction Factor (°C): <u>0.0</u>	
• Temp Blank Temperature – if no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		Corrected Temp (°C):	
• Sample Container Temperature			
Container(s) used:	<u>PL 250 Sulfuric</u> <small>CONTAINER 1</small>	<small>CONTAINER 2</small>	
Uncorrected Temp (°C):	<u>1.6</u>		
Corrected Temp (°C):	<u>1.6</u>		
Exceptions Noted			
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			
Additional Comments			



Cedar Falls, IA 50613 phone 319 277 2401 fax 319 277 2425

Regulatory Program: DW NPDES RCRA Other

Project Manager: Jamie Murphy
Email: jamie.murphy@midamerican.com
Email: yusuf.setiawan@midamerican.com

Site Contact: Jamie Murphy
Lab Contact: Yusuf Setiawan

Carrier: 4/22/2025
COC No: 1 of 1 COCs

Client Contact
MidAmerican Energy / Louisa Generating Station
8602 172nd Street
Muscatine, IA, 52761
Phone: 563-288-2801
FAX: 563-262-2892
Project Name: Semi annual ash analysis
Site: Fly Ash/Bottom Ash/Waste Ash areas
P O #

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	TCLP	GLP	Total Metals	TH	Trash Point	Sample Specific Notes
Fly Ash	04/22/25	0800	G	WST	1	N	N	X	X	X	X	X	Unpre
Fly Ash	04/22/25	0800	C	WST	1	N	N	X	X	X	X	X	Unpre
Bottom Ash	04/22/25	0810	G	WST	1	N	N	X	X	X	X	X	Unpre
Waste Ash	04/22/25	0930	G	WST	1	N	N	X	X	X	X	X	Unpre

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

Non-Hazard Flammable Skin Irritant Poison B Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Please contact Jamie Murphy with any questions @ 563-288-2801.

Custody Seal No: _____
Relinquished by: _____
Relinquished by: _____
Relinquished by: _____

Received by: _____
Received by: _____
Received in Laboratory by: _____

Company: _____
Company: _____
Company: _____

Date/Time: 4/22/25 1300
Date/Time: _____
Date/Time: 4/23/25 0820



PREPARER

Preparer

Name	Site Name	Address	City	State	Zip	Comment
	MidAmerican Energy Company - Louisa Generating Station	8602 172nd Street	Muscatine	IA	52761	Fall 2025 Bottom Ash

PREPARER

INPUT

Chemical	CASRN	Site-Specific	
		Exposure Point Concentration for Soil (mg/kg)	Background Soil Level* (mg/kg)
Antimony	007440-36-0		0.396
Arsenic, Inorganic	007440-38-2		3.14
Barium	007440-39-3		2050
Beryllium (soil/water)	007440-41-7		1.57
Boron And Borates Only	007440-42-8		225
Cadmium (soil)	007440-43-9		0.518
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3		19.9
Cobalt	007440-48-4		8.96
Copper	007440-50-8		53.1
Fluoride	007681-49-4		0.595
Lead and Compounds	007439-92-1		7.27
Lithium	007439-93-2		15.9
Manganese	007439-96-5		106
Mercury	007439-97-6	0.00796	
Molybdenum	007439-98-7		3.5
Nickel	007440-02-0		18.6
Selenium	007782-49-2		1.4
Silver	007440-22-4		0.167
Thallium	007440-28-0		0.167
Vanadium	007440-62-2		78.7
Zinc	007440-66-6		23.7

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compounds	007439-92-1	NQ	NQ
TOTALS:	Å	0.08	0.02

Cumulative
Cancer Risk
Site Resident:
0.08

Cumulative
Cancer Risk
Site Worker:
0.02

All cancer risk
values are x
 10^{-4}

SITE RESIDENT
 -NON
 CANCER
 OUTPUT BY
 TARGET
 ORGAN
 Chemical

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Å Soil				0.01									0.01		
Arsenic, Inorganic	007440-38-2	Å Soil		0.73				0.73									
Barium	007440-39-3	Å Soil		0.14			0.14										
Beryllium (soil/water)	007440-41-7	Å Soil														0.01	
Boron And Borates Only	007440-42-8	Å Soil											0.01		0.01		
Cadmium (soil)	007440-43-9	Å Soil					0.01					0.01			0.01		
Chromium (III)	016065-83-1	Å Soil															
Chromium (VI)	018540-29-9	Å Soil															
Chromium, total	007440-47-3	Å Soil													0.1		
Cobalt	007440-48-4	Å Soil				0.38											
Copper	007440-50-8	Å Soil			0.02		0.02									0.02	
Fluoride	007681-49-4	Å Soil													0		
Lead and Compounds	007439-92-1	Å Soil		0.02			0.02									0.02	
Lithium	007439-93-2	Å Soil													0		
Manganese	007439-96-5	Å Soil										0.01					
Mercury	007439-97-6	Å Soil					0										
Molybdenum	007439-98-7	Å Soil				0.01						0.01			0.01		
Nickel	007440-02-0	Å Soil													0.01		
Selenium	007762-49-2	Å Soil		0				0							0		
Silver	007440-22-4	Å Soil						0									
Thallium	007440-28-0	Å Soil			0.21	0.21	0.21	0.21								0.21	
Vanadium	007440-62-2	Å Soil				0.22											
Zinc	007440-66-6	Å Soil				0											
		Sum:		0.89	0.23	0.83	0.4	0.94	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITE WORKER -
NON CANCER
OUTPUT BY
TARGET
ORGAN
Chemical

Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Å Soil				0									0		
Arsenic, Inorganic	007440-38-2	Å Soil		0.14				0.14									
Barium	007440-39-3	Å Soil		0.03			0.03										
Beryllium (soil/water)	007440-41-7	Å Soil														0	
Boron And Borates Only	007440-42-8	Å Soil											0			0	
Cadmium (soil)	007440-43-9	Å Soil					0						0		0		
Chromium (III)	016065-83-1	Å Soil															
Chromium (VI)	018540-29-9	Å Soil															
Chromium, total	007440-47-3	Å Soil													0.02		
Cobalt	007440-48-4	Å Soil				0.08											
Copper	007440-50-8	Å Soil			0		0									0	
Fluoride	007681-49-4	Å Soil													0		
Lead and Compounds	007439-92-1	Å Soil		0			0									0	
Lithium	007439-93-2	Å Soil													0		
Manganese	007439-96-5	Å Soil										0					
Mercury	007439-97-6	Å Soil					0										
Molybdenum	007439-98-7	Å Soil				0							0		0		
Nickel	007440-02-0	Å Soil													0		
Selenium	007782-49-2	Å Soil		0				0							0		
Silver	007440-22-4	Å Soil						0									
Thallium	007440-28-0	Å Soil			0.04	0.04	0.04	0.04								0.04	
Vanadium	007440-62-2	Å Soil				0.04											
Zinc	007440-66-6	Å Soil				0											
		Sum:		0.17	0.04	0.16	0.07	0.18	0	0	0	0	0	0	0.02	0	0.04

PREPARER

Preparer Name	Site Name	Address	City	State	Zip	Comment
	MidAmerican Energy Company - Louisa	8602 172nd Street	Muscatine	IA	52761	Fall 2025 Bottom Ash
Generating Station						

PREPARER
INPUT

Chemical	CASRN	Exposure Point Concentration for Soil(mg/kg)	Site- Specific Background Soil Level* (mg/kg)
Antimony	007440-36-0		0.396
Arsenic, Inorganic	007440-38-2		3.14
Barium	007440-39-3		2050
Beryllium (soil/water)	007440-41-7		1.57
Boron And Borates Only	007440-42-8		225
Cadmium (soil)	007440-43-9		0.518
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3		19.9
Cobalt	007440-48-4		8.96
Copper	007440-50-8		53.1
Fluoride	007681-49-4		0.595
Lead and Compounds	007439-92-1		7.27
Lithium	007439-93-2		15.9
Manganese	007439-96-5		106
Mercury	007439-97-6	0.00796	
Molybdenum	007439-98-7		3.5
Nickel	007440-02-0		18.6
Selenium	007782-49-2		1.4
Silver	007440-22-4		0.167
Thallium	007440-28-0		0.167
Vanadium	007440-62-2		78.7
Zinc	007440-66-6		23.7

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compounds	007439-92-1	NQ	NQ
TOTALS:	Å	0.08	0.02

Cumulative
Cancer Risk
Site Resident:
0.08

Cumulative
Cancer Risk
Site Worker:
0.02

All cancer risk
values are x
 10^{-4}

SITE RESIDENT
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro
Antimony	007440-36-0	Â Soil				0.01								0.01		
Arsenic, Inorganic	007440-38-2	Â Soil		0.73			0.7									
Barium	007440-39-3	Â Soil		0.14		0.14										
Beryllium (soil/water)	007440-41-7	Â Soil														0.01
Boron And Borates Only	007440-42-8	Â Soil										0.01			0.01	
Cadmium (soil)	007440-43-9	Â Soil				0.01					0.01		0.01			
Chromium (III)	016065-83-1	Â Soil														
Chromium (VI)	018540-29-9	Â Soil														
Chromium, total	007440-47-3	Â Soil												0.1		
Cobalt	007440-48-4	Â Soil				0.38										
Copper	007440-50-8	Â Soil		0.02		0.02										0.02
Fluoride	007681-49-4	Â Soil													0	
Lead and Compounds	007439-92-1	Â Soil		0.02		0.02										0.02
Lithium	007439-93-2	Â Soil													0	
Manganese	007439-96-5	Â Soil									0.01					
Mercury	007439-97-6	Â Soil				0										
Molybdenum	007439-98-7	Â Soil				0.01					0.01		0.01			
Nickel	007440-02-0	Â Soil													0.01	
Selenium	007782-49-2	Â Soil		0				0							0	
Silver	007440-22-4	Â Soil						0								
Thallium	007440-28-0	Â Soil			0.21	0.21	0.21	0.2								0.21
Vanadium	007440-62-2	Â Soil				0.22										
Zinc	007440-66-6	Â Soil				0										
Sum:			0.89	0.23	0.83	0.4	0.9	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITEWORKER -
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro	
Antimony	007440-36-0	Ã Soil				0									0		
Arsenic, Inorganic	007440-38-2	Ã Soil		0.14				0.1									
Barium	007440-39-3	Ã Soil		0.03		0.03											
Beryllium (soil/water)	007440-41-7	Ã Soil														0	
Boron And Borates Only	007440-42-8	Ã Soil											0		0		
Cadmium (soil)	007440-43-9	Ã Soil				0						0		0			
Chromium (III)	016065-83-1	Ã Soil															
Chromium (VI)	018540-29-9	Ã Soil															
Chromium, total	007440-47-3	Ã Soil												0.02			
Cobalt	007440-48-4	Ã Soil				0.08											
Copper	007440-50-8	Ã Soil			0	0										0	
Fluoride	007681-49-4	Ã Soil												0			
Lead and Compounds	007439-92-1	Ã Soil		0		0										0	
Lithium	007439-93-2	Ã Soil													0		
Manganese	007439-96-5	Ã Soil									0						
Mercury	007439-97-6	Ã Soil				0											
Molybdenum	007439-98-7	Ã Soil				0						0		0			
Nickel	007440-02-0	Ã Soil													0		
Selenium	007782-49-2	Ã Soil		0				0							0		
Silver	007440-22-4	Ã Soil						0									
Thallium	007440-28-0	Ã Soil			0.04	0.04	0.04	0								0.04	
Vanadium	007440-62-2	Ã Soil				0.04											
Zinc	007440-66-6	Ã Soil				0											
Sum:			0.17	0.04	0.16	0.07	0.2	0	0	0	0	0	0	0	0.02	0	0.04

PREPARER

Preparer Name	Site Name	Address	City	State	Comment
	MidAmerican Energy Company - Louisa	8602 172nd Street	Muscataine	IA	
	Generating Station				Fall 2025 Bottom Ash

PREPARER

INPUT

Chemical	CASRN	Exposure Point Concentration for Soil(mg/kg)	Site-Specific Background Soil Level* (mg/kg)
Antimony	007440-36-0	0.396	
Arsenic, Inorganic	007440-38-2	3.14	
Barium	007440-39-3	2050	
Beryllium (soil/water)	007440-41-7	1.57	
Boron And Borates Only	007440-42-8	225	
Cadmium (soil)	007440-43-9	0.518	
Chromium (III)	016065-83-1		
Chromium (VI)	018540-29-9		
Chromium, total	007440-47-3	19.9	
Cobalt	007440-48-4	8.96	
Copper	007440-50-8	53.1	
Fluoride	007681-49-4	0.595	
Lead and Compounds	007439-92-1	7.27	
Lithium	007439-93-2	15.9	
Manganese	007439-96-5	106	
Mercury	007439-97-6	0.00796	
Molybdenum	007439-98-7	3.5	
Nickel	007440-02-0	18.6	
Selenium	007782-49-2	1.4	
Silver	007440-22-4	0.167	
Thallium	007440-28-0	0.167	
Vanadium	007440-62-2	78.7	
Zinc	007440-66-6	23.7	

CANCER
OUTPUT

Chemical	CASRN	Resident Soil	Site Worker Soil
Arsenic, Inorganic	007440-38-2	0.08	0.02
Chromium (VI)	018540-29-9		
Lead and Compounds	007439-92-1	NQ	NQ
TOTALS:	Å	0.08	0.02

Cumulative
Cancer Risk
Site Resident:
0.08

Cumulative
Cancer Risk
Site Worker:
0.02

All cancer risk
values are x
 10^{-4}

SITE
RESIDENT -
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro
Antimony	007440-36-0	Soil			0.01									0.01		
Arsenic, Inorganic	007440-38-2	Soil	0.73				0.7									
Barium	007440-39-3	Soil	0.14			0.14										
Beryllium (soil/water)	007440-41-7	Soil														0.01
Boron And Borates Only	007440-42-8	Soil										0.01			0.01	
Cadmium (soil)	007440-43-9	Soil				0.01						0.01		0.01		
Chromium (III)	016065-83-1	Soil														
Chromium (VI)	018540-29-9	Soil														
Chromium, total	007440-47-3	Soil												0.1		
Cobalt	007440-48-4	Soil			0.38											
Copper	007440-50-8	Soil		0.02		0.02										0.02
Fluoride	007681-49-4	Soil												0		
Lead and Compounds	007439-92-1	Soil	0.02			0.02									0.02	
Lithium	007439-93-2	Soil												0		
Manganese	007439-96-5	Soil									0.01					
Mercury	007439-97-6	Soil				0										
Molybdenum	007439-98-7	Soil			0.01							0.01		0.01		
Nickel	007440-02-0	Soil												0.01		
Selenium	007782-49-2	Soil	0				0							0		
Silver	007440-22-4	Soil					0									
Thallium	007440-28-0	Soil		0.21	0.21	0.21	0.2									0.21
Vanadium	007440-62-2	Soil			0.22											
Zinc	007440-66-6	Soil			0											
Sum:			0.89	0.23	0.83	0.4	0.9	0	0	0	0.01	0.03	0	0.14	0.03	0.24

SITEWORKER -
NON CANCER
OUTPUT BY
TARGET
ORGAN

Chemical Name	CASRN	Media	Heart	Liver	Blood	Kidney	Skin	Endoc	Eye	Immu	Nerve	GenUr	Respi	Other	Devel	Gastro
Antimony	007440-36-0	Soil				0									0	
Arsenic, Inorganic	007440-38-2	Soil	0.14				0.1									
Barium	007440-39-3	Soil	0.03			0.03										
Beryllium (soil/water)	007440-41-7	Soil														0
Boron And Borates Only	007440-42-8	Soil										0			0	
Cadmium (soil)	007440-43-9	Soil				0						0		0		
Chromium (III)	016065-83-1	Soil														
Chromium (VI)	018540-29-9	Soil														
Chromium, total	007440-47-3	Soil												0.02		
Cobalt	007440-48-4	Soil			0.08											
Copper	007440-50-8	Soil		0		0										0
Fluoride	007681-49-4	Soil												0		
Lead and Compounds	007439-92-1	Soil	0			0									0	
Lithium	007439-93-2	Soil													0	
Manganese	007439-96-5	Soil									0					
Mercury	007439-97-6	Soil				0										
Molybdenum	007439-98-7	Soil				0						0		0		
Nickel	007440-02-0	Soil													0	
Selenium	007782-49-2	Soil	0				0							0		
Silver	007440-22-4	Soil					0									
Thallium	007440-28-0	Soil		0.04	0.04	0.04	0									0.04
Vanadium	007440-62-2	Soil			0.04											
Zinc	007440-66-6	Soil			0											
Sum:			0.17	0.04	0.16	0.07	0.2	0	0	0	0	0	0	0.02	0	0.04



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 5/7/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscatine State: IA Zip: 52761
 By-Product Name: Spring 2025 Bottom Ash Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0390 mg/L	31 mg/kg	<0.618	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0300 mg/L	17 mg/kg	4.41	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	0.952 mg/L	15,000 mg/kg	2740	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0012 mg/L	110 mg/kg	1.98	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	300	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0039 mg/L	70 mg/kg	0.418	mg/kg
					** (Total)	29.9	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.0399 mg/L	(Hexavalent - VI)		mg/kg
					210 mg/kg		
					(Trivalent - III)		mg/kg
					97,000 mg/kg		
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	10.2	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.200 mg/L	15,000 mg/kg	57.0	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	<0.0790 mg/L	4,700 mg/kg	<0.777	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0370 mg/L	400 mg/kg	5.92	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	20.3	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	189	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0012 mg/L	23 mg/kg	<0.0131	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	4.07	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	22.4	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0290 mg/L	390 mg/kg	1.20	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	<0.261	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	mg/L	0.78 mg/kg	<1.04	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	117	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	28.3	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 checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.0300	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	0.695	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.0039	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	0.0117	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.0370	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.0012	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	<0.0290	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" 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 (and 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
Herbicides					<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 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 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: Jamie Murphy Date: 2-10-26
 Printed Name: Jamie Murphy Title: Senior Environmental Analyst



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 5/7/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscataine State: IA Zip: 52761
 By-Product Name: Spring 2025 Fly Ash Grab Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0390 mg/L	31 mg/kg	0.761	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.300 mg/L	17 mg/kg	12.7	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	8.04 mg/L	15,000 mg/kg	3470	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0012 mg/L	110 mg/kg	2.66	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	422	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0039 mg/L	70 mg/kg	0.846	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.333 mg/L	** (Total)	45.5	mg/kg
(Hexavalent - VI)						mg/kg	
(Trivalent - III)						mg/kg	
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	14.5	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	mg/L	15,000 mg/kg	107	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	0.166 mg/L	4,700 mg/kg	2.08	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0370 mg/L	400 mg/kg	20.8	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	27.6	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	154	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0120 mg/L	23 mg/kg	<0.00785	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	8.09	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	33.3	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0290 mg/L	390 mg/kg	4.78	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	0.240	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	mg/L	0.78 mg/kg	1.66	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	148	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	78.2	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 checked="" type="checkbox"/>	Arsenic	5.0 mg/L	<0.0300	mg/L	<input type="checkbox"/>	Benzene	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Barium	100.0 mg/L	3.62	mg/L	<input type="checkbox"/>	Carbon tetrachloride	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Cadmium	1.0 mg/L	<0.0039	mg/L	<input type="checkbox"/>	Chlorobenzene	100.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Chromium	5.0 mg/L	0.333	mg/L	<input type="checkbox"/>	Chloroform	6.0 mg/L		mg/L
<input checked="" type="checkbox"/>	Lead	5.0 mg/L	<0.0370	mg/L	<input type="checkbox"/>	1,2-Dichloroethane	0.5 mg/L		mg/L
<input checked="" type="checkbox"/>	Mercury	0.2 mg/L	<0.0012	mg/L	<input type="checkbox"/>	1,1-Dichloroethylene	0.7 mg/L		mg/L
<input checked="" type="checkbox"/>	Selenium	1.0 mg/L	0.139	mg/L	<input type="checkbox"/>	Methyl ethyl ketone	200.0 mg/L		mg/L
<input checked="" 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 (and 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
Herbicides					<input type="checkbox"/>	Nitrobenzene	2.0 mg/L		mg/L
*	Contaminant	Regulatory Limit	Test Result		<input type="checkbox"/>	Pentachlorophenol	100.0 mg/L		mg/L
<input type="checkbox"/>	2,4-D	10.0 mg/L		mg/L	<input type="checkbox"/>	Pyridine	5.0 mg/L		mg/L
<input type="checkbox"/>	2,4,5-TP (Silvex)	1.0 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 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: *Jamie Murphy* Date: 2-10-26
 Printed Name: Jamie Murphy Title: Senior Environmental Analyst



Beneficial Use Determination: Solid By-Product Management Plan Analytical Testing Report

Beneficial Use ID#: _____ -BUD- _____ - _____
 DNR Certified Lab: Eurofins
 Lab Report Date: 5/7/2025
 By-Product Generator: MidAmerican Energy-Louisa Generating
 City: Muscataine State: IA Zip: 52761
 By-Product Name: Spring 2025 Fly Ash Composite Ash Sample

Send completed report form(s), laboratory analytics, and supplemental Solid By-Product Management Plan (SBMP) documentation to:
 Iowa Department of Natural Resources
 Land Quality Bureau
 Solid Waste & Contaminated Sites Section
 6200 Park Ave Ste 200
 Des Moines, IA 50321
 For questions concerning this report form please contact the DNR at (515) 201-8272.

ANALYTICAL TESTING 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 checked="" type="checkbox"/>	Antimony	0.006 mg/L	0.06 mg/L	<0.0390 mg/L	31 mg/kg	0.809	mg/kg
<input checked="" type="checkbox"/>	Arsenic	0.010 mg/L	0.10 mg/L	<0.0300 mg/L	17 mg/kg	10.9	mg/kg
<input checked="" type="checkbox"/>	Barium	2.0 mg/L	20.0 mg/L	10.5 mg/L	15,000 mg/kg	3090	mg/kg
<input checked="" type="checkbox"/>	Beryllium	0.004 mg/L	0.04 mg/L	<0.0012 mg/L	110 mg/kg	2.34	mg/kg
<input checked="" type="checkbox"/>	Boron				16,000 mg/kg	<412	mg/kg
<input checked="" type="checkbox"/>	Cadmium	0.005 mg/L	0.05 mg/L	<0.0039 mg/L	70 mg/kg	0.740	mg/kg
<input checked="" type="checkbox"/>	Chromium	0.1 mg/L	1.0 mg/L	0.0438 mg/L	** (Total)	43.2	mg/kg
					(Hexavalent - VI)	210 mg/kg	mg/kg
					(Trivalent - III)	97,000 mg/kg	mg/kg
<input checked="" type="checkbox"/>	Cobalt				23 mg/kg	14.6	mg/kg
<input checked="" type="checkbox"/>	Copper	1.3 mg/L	13.0 mg/L	<0.200 mg/L	15,000 mg/kg	100	mg/kg
<input checked="" type="checkbox"/>	Fluoride	4.0 mg/L	40.0 mg/L	0.153 mg/L	4,700 mg/kg	14.9	mg/kg
<input checked="" type="checkbox"/>	Lead	0.015 mg/L	0.15 mg/L	<0.0370 mg/L	400 mg/kg	16.6	mg/kg
<input checked="" type="checkbox"/>	Lithium				160 mg/kg	22.3	mg/kg
<input checked="" type="checkbox"/>	Manganese				10,000 mg/kg	203	mg/kg
<input checked="" type="checkbox"/>	Mercury	0.002 mg/L	0.02 mg/L	<0.0012 mg/L	23 mg/kg	<0.00650	mg/kg
<input checked="" type="checkbox"/>	Molybdenum				390 mg/kg	7.04	mg/kg
<input checked="" type="checkbox"/>	Nickel				1,500 mg/kg	32.0	mg/kg
<input checked="" type="checkbox"/>	Selenium	0.05 mg/L	0.5 mg/L	<0.0290 mg/L	390 mg/kg	5.74	mg/kg
<input checked="" type="checkbox"/>	Silver				370 mg/kg	0.214	mg/kg
<input checked="" type="checkbox"/>	Thallium	0.002 mg/L	0.02 mg/L	mg/L	0.78 mg/kg	<1.82	mg/kg
<input checked="" type="checkbox"/>	Vanadium				350 mg/kg	140	mg/kg
<input checked="" type="checkbox"/>	Zinc				23,000 mg/kg	66.2	mg/kg

*Required contaminant

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

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Kayla Swope
MidAmerican Energy Company
8602 172nd Street
Muscatine, Iowa 52761-9066

Generated 11/5/2025 10:13:20 AM

JOB DESCRIPTION

Semi Annual Ash Analysis

JOB NUMBER

310-318648-1

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



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Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
(319)277-2401

Case Narrative

Client: MidAmerican Energy Company
Project: Semi Annual Ash Analysis

Job ID: 310-318648-1

Job ID: 310-318648-1

Eurofins Cedar Falls

Job Narrative 310-318648-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt

The samples were received on 10/23/2025 8:25 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.2°C.

Metals

Method 6010D - TCLP: The low level continuing calibration verification (CCVL) associated with batch 310-471931 recovered above the upper control limit for Silver. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 6010D - TCLP: The low level continuing calibration verification (CCVL) associated with batch 310-472090 recovered above the upper control limit for Silver. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 6010D - TCLP: The following sample(s) was diluted due to the presence of an interferent. Fly Ash Grab (310-318648-1), Waste Ash (310-318648-3) and Fly Ash Composite (310-318648-4). Elevated reporting limits (RLs) are provided.

Method 6020B - SPLP West: The laboratory control sample (LCS) and CCV for preparation batch 310-471429 and 310-471564 and analytical batch 310-472466 recovered outside control limits for the following analytes: thallium. These analytes were biased high in the LCS and CCV and were not detected in the associated samples; therefore, the data have been reported.

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: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-318648-1	Fly Ash Grab	Solid	10/17/25 08:00	10/23/25 08:25	Iowa
310-318648-2	Bottom Ash	Solid	10/17/25 10:10	10/23/25 08:25	Iowa
310-318648-3	Waste Ash	Solid	10/17/25 09:30	10/23/25 08:25	Iowa
310-318648-4	Fly Ash Composite	Solid	10/17/25 08:00	10/23/25 08:25	Iowa



Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Fly Ash Grab

Lab Sample ID: 310-318648-1

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0600		0.200	0.0600	mg/L		10/31/25 14:27	2	ZRI4
Barium	0.379	J	0.400	0.0800	mg/L		10/31/25 14:27	2	ZRI4
Cadmium	<0.00780		0.0400	0.00780	mg/L		10/31/25 14:27	2	ZRI4
Chromium	0.279		0.0400	0.0120	mg/L		10/31/25 14:27	2	ZRI4
Lead	<0.0740		0.200	0.0740	mg/L		10/31/25 14:27	2	ZRI4
Selenium	<0.0580		0.200	0.0580	mg/L		10/31/25 14:27	2	ZRI4
Silver	<0.0320	^3+	0.100	0.0320	mg/L		10/31/25 14:27	2	ZRI4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.0200		0.0400	0.0200	mg/L		11/03/25 16:29	4	NFT2
Arsenic	<0.0110		0.0400	0.0110	mg/L		11/03/25 16:29	4	NFT2
Barium	3.52		0.200	0.0280	mg/L		11/03/25 16:29	4	NFT2
Beryllium	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:29	4	NFT2
Cadmium	<0.00200		0.0100	0.00200	mg/L		11/03/25 16:29	4	NFT2
Chromium	0.147		0.100	0.0360	mg/L		11/03/25 16:29	4	NFT2
Copper	<0.0640		0.200	0.0640	mg/L		11/03/25 16:29	4	NFT2
Lead	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:29	4	NFT2
Selenium	<0.0280		0.100	0.0280	mg/L		11/03/25 16:29	4	NFT2
Thallium	<0.0110	^+ *+ F1	0.0200	0.0110	mg/L		11/04/25 14:47	4	NFT2

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 13:12	1	RLT9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 12:08	1	RLT9

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		11/03/25 15:46	1	ENB7

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	11.6	HF	1.0	1.0	SU		10/28/25 21:10	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	0.204	F1	0.200	0.0790	mg/L		11/02/25 14:22	1	WZC8

Client Sample ID: Fly Ash Grab

Lab Sample ID: 310-318648-1

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 99.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.951		0.720	0.324	mg/Kg	✱	10/30/25 18:03	5	NFT2
Arsenic	14.6		0.720	0.302	mg/Kg	✱	10/28/25 15:54	5	NFT2
Barium	565		2.88	1.32	mg/Kg	✱	10/29/25 14:49	20	NFT2
Beryllium	3.20		0.360	0.144	mg/Kg	✱	10/28/25 15:54	5	NFT2

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Fly Ash Grab

Lab Sample ID: 310-318648-1

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 99.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Boron	635		36.0	31.0	mg/Kg	✳	10/28/25 15:54	5	NFT2
Cadmium	1.43		0.360	0.137	mg/Kg	✳	10/28/25 15:54	5	NFT2
Chromium	59.0		1.08	0.374	mg/Kg	✳	10/28/25 15:54	5	NFT2
Cobalt	22.6		0.360	0.130	mg/Kg	✳	10/28/25 15:54	5	NFT2
Copper	129		1.08	0.576	mg/Kg	✳	10/28/25 15:54	5	NFT2
Lead	24.4		1.80	0.562	mg/Kg	✳	10/28/25 15:54	5	NFT2
Lithium	30.8		1.80	0.713	mg/Kg	✳	10/28/25 15:54	5	NFT2
Manganese	194		1.80	0.864	mg/Kg	✳	10/28/25 15:54	5	NFT2
Molybdenum	9.87		0.720	0.295	mg/Kg	✳	10/28/25 15:54	5	NFT2
Nickel	42.8		1.08	0.432	mg/Kg	✳	10/28/25 15:54	5	NFT2
Selenium	6.62		1.08	0.540	mg/Kg	✳	10/28/25 15:54	5	NFT2
Silver	0.251	J	0.360	0.137	mg/Kg	✳	10/28/25 15:54	5	NFT2
Thallium	1.96		0.360	0.137	mg/Kg	✳	10/30/25 18:03	5	NFT2
Vanadium	238		4.32	1.53	mg/Kg	✳	10/29/25 14:49	20	NFT2
Zinc	90.7		3.60	2.38	mg/Kg	✳	10/28/25 15:54	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00726		0.0177	0.00726	mg/Kg	✳	11/03/25 10:24	1	RLT9

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	1.10		0.989	0.485	mg/Kg	✳	10/25/25 19:25	1	T5AC

Client Sample ID: Bottom Ash

Lab Sample ID: 310-318648-2

Date Collected: 10/17/25 10:10

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0300		0.100	0.0300	mg/L		10/30/25 15:50	1	ZRI4
Barium	0.434		0.200	0.0400	mg/L		10/30/25 15:50	1	ZRI4
Cadmium	<0.00390		0.0200	0.00390	mg/L		10/30/25 15:50	1	ZRI4
Chromium	0.00680	J	0.0200	0.00600	mg/L		10/30/25 15:50	1	ZRI4
Lead	<0.0370		0.100	0.0370	mg/L		10/30/25 15:50	1	ZRI4
Selenium	<0.0290		0.100	0.0290	mg/L		10/30/25 15:50	1	ZRI4
Silver	<0.0160	^3+	0.0500	0.0160	mg/L		10/30/25 15:50	1	ZRI4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.0200		0.0400	0.0200	mg/L		11/03/25 16:38	4	NFT2
Arsenic	<0.0110		0.0400	0.0110	mg/L		11/03/25 16:38	4	NFT2
Barium	1.02		0.200	0.0280	mg/L		11/03/25 16:38	4	NFT2
Beryllium	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:38	4	NFT2
Cadmium	<0.00200		0.0100	0.00200	mg/L		11/03/25 16:38	4	NFT2
Chromium	<0.0360		0.100	0.0360	mg/L		11/03/25 16:38	4	NFT2
Copper	<0.0640		0.200	0.0640	mg/L		11/03/25 16:38	4	NFT2
Lead	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:38	4	NFT2
Selenium	<0.0280		0.100	0.0280	mg/L		11/03/25 16:38	4	NFT2
Thallium	<0.0110	^+ *+	0.0200	0.0110	mg/L		11/04/25 14:53	4	NFT2

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Bottom Ash

Lab Sample ID: 310-318648-2

Date Collected: 10/17/25 10:10

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 12:44	1	RLT9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 12:12	1	RLT9

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		11/03/25 15:46	1	ENB7

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	11.2	HF	1.0	1.0	SU		10/28/25 21:10	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	<0.0790		0.200	0.0790	mg/L		11/02/25 14:46	1	WZC8

Client Sample ID: Bottom Ash

Lab Sample ID: 310-318648-2

Date Collected: 10/17/25 10:10

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 81.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.396		0.881	0.396	mg/Kg	✱	10/30/25 18:06	5	NFT2
Arsenic	3.14		0.881	0.370	mg/Kg	✱	10/28/25 16:02	5	NFT2
Barium	2050		6.16	2.84	mg/Kg	✱	10/29/25 14:54	35	NFT2
Beryllium	1.57		0.440	0.176	mg/Kg	✱	10/28/25 16:02	5	NFT2
Boron	225		44.0	37.9	mg/Kg	✱	10/28/25 16:02	5	NFT2
Cadmium	0.518		0.440	0.167	mg/Kg	✱	10/28/25 16:02	5	NFT2
Chromium	19.9		1.32	0.458	mg/Kg	✱	10/28/25 16:02	5	NFT2
Cobalt	8.96		0.440	0.159	mg/Kg	✱	10/28/25 16:02	5	NFT2
Copper	53.1		1.32	0.705	mg/Kg	✱	10/28/25 16:02	5	NFT2
Lead	7.27		2.20	0.687	mg/Kg	✱	10/28/25 16:02	5	NFT2
Lithium	15.9		2.20	0.872	mg/Kg	✱	10/28/25 16:02	5	NFT2
Manganese	106		2.20	1.06	mg/Kg	✱	10/28/25 16:02	5	NFT2
Molybdenum	3.50		0.881	0.361	mg/Kg	✱	10/28/25 16:02	5	NFT2
Nickel	18.6		1.32	0.528	mg/Kg	✱	10/28/25 16:02	5	NFT2
Selenium	1.40		1.32	0.660	mg/Kg	✱	10/28/25 16:02	5	NFT2
Silver	<0.167		0.440	0.167	mg/Kg	✱	10/28/25 16:02	5	NFT2
Thallium	<0.167		0.440	0.167	mg/Kg	✱	10/30/25 18:06	5	NFT2
Vanadium	78.7		1.32	0.467	mg/Kg	✱	10/28/25 16:02	5	NFT2
Zinc	23.7		4.40	2.91	mg/Kg	✱	10/28/25 16:02	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00796		0.0194	0.00796	mg/Kg	✱	11/03/25 10:26	1	RLT9

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	<0.595	F2 F1	1.21	0.595	mg/Kg	✱	11/03/25 13:02	1	WZC8

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Waste Ash

Lab Sample ID: 310-318648-3

Date Collected: 10/17/25 09:30

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0900		0.300	0.0900	mg/L		10/31/25 14:28	3	ZRI4
Barium	2.08		0.600	0.120	mg/L		10/31/25 14:28	3	ZRI4
Cadmium	<0.0117		0.0600	0.0117	mg/L		10/31/25 14:28	3	ZRI4
Chromium	0.0402	J	0.0600	0.0180	mg/L		10/31/25 14:28	3	ZRI4
Lead	<0.111		0.300	0.111	mg/L		10/31/25 14:28	3	ZRI4
Selenium	<0.0870		0.300	0.0870	mg/L		10/31/25 14:28	3	ZRI4
Silver	<0.0480	^3+	0.150	0.0480	mg/L		10/31/25 14:28	3	ZRI4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.0200		0.0400	0.0200	mg/L		11/03/25 16:41	4	NFT2
Arsenic	<0.0110		0.0400	0.0110	mg/L		11/03/25 16:41	4	NFT2
Barium	1.82		0.200	0.0280	mg/L		11/03/25 16:41	4	NFT2
Beryllium	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:41	4	NFT2
Cadmium	<0.00200		0.0100	0.00200	mg/L		11/03/25 16:41	4	NFT2
Chromium	0.0622	J	0.100	0.0360	mg/L		11/03/25 16:41	4	NFT2
Copper	<0.0640		0.200	0.0640	mg/L		11/03/25 16:41	4	NFT2
Lead	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:41	4	NFT2
Selenium	0.0512	J	0.100	0.0280	mg/L		11/03/25 16:41	4	NFT2
Thallium	<0.0110	^+ *+	0.0200	0.0110	mg/L		11/04/25 14:56	4	NFT2

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 13:14	1	RLT9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 12:18	1	RLT9

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		11/03/25 15:46	1	ENB7

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	12.5	HF	1.0	1.0	SU		10/28/25 21:10	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	2.91		0.200	0.0790	mg/L		11/02/25 14:49	1	WZC8

Client Sample ID: Waste Ash

Lab Sample ID: 310-318648-3

Date Collected: 10/17/25 09:30

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 98.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.739	J	0.830	0.374	mg/Kg	✳	10/30/25 18:08	5	NFT2
Arsenic	5.78		0.830	0.349	mg/Kg	✳	10/28/25 16:04	5	NFT2
Barium	132		0.830	0.382	mg/Kg	✳	10/28/25 16:04	5	NFT2
Beryllium	0.741		0.415	0.166	mg/Kg	✳	10/28/25 16:04	5	NFT2

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Waste Ash

Lab Sample ID: 310-318648-3

Date Collected: 10/17/25 09:30

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 98.2

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Boron	148		41.5	35.7	mg/Kg	✳	10/28/25 16:04	5	NFT2
Cadmium	0.359	J	0.415	0.158	mg/Kg	✳	10/28/25 16:04	5	NFT2
Chromium	17.4		1.25	0.432	mg/Kg	✳	10/28/25 16:04	5	NFT2
Cobalt	5.24		0.415	0.149	mg/Kg	✳	10/28/25 16:04	5	NFT2
Copper	49.6		1.25	0.664	mg/Kg	✳	10/28/25 16:04	5	NFT2
Lead	9.21		2.08	0.648	mg/Kg	✳	10/28/25 16:04	5	NFT2
Lithium	8.82		2.08	0.822	mg/Kg	✳	10/28/25 16:04	5	NFT2
Manganese	232		2.08	0.996	mg/Kg	✳	10/28/25 16:04	5	NFT2
Molybdenum	4.31		0.830	0.340	mg/Kg	✳	10/28/25 16:04	5	NFT2
Nickel	13.5		1.25	0.498	mg/Kg	✳	10/28/25 16:04	5	NFT2
Selenium	19.9		1.25	0.623	mg/Kg	✳	10/28/25 16:04	5	NFT2
Silver	<0.158		0.415	0.158	mg/Kg	✳	10/28/25 16:04	5	NFT2
Thallium	0.224	J	0.415	0.158	mg/Kg	✳	10/30/25 18:08	5	NFT2
Vanadium	48.8		1.25	0.440	mg/Kg	✳	10/28/25 16:04	5	NFT2
Zinc	52.5		4.15	2.74	mg/Kg	✳	10/28/25 16:04	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	0.316		0.0157	0.00644	mg/Kg	✳	11/03/25 10:28	1	RLT9

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	41.3		0.999	0.490	mg/Kg	✳	10/25/25 19:13	1	T5AC

Client Sample ID: Fly Ash Composite

Lab Sample ID: 310-318648-4

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 6010D - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Arsenic	<0.0600		0.200	0.0600	mg/L		10/31/25 14:38	2	ZRI4
Barium	0.288	J	0.400	0.0800	mg/L		10/31/25 14:38	2	ZRI4
Cadmium	<0.00780		0.0400	0.00780	mg/L		10/31/25 14:38	2	ZRI4
Chromium	0.263		0.0400	0.0120	mg/L		10/31/25 14:38	2	ZRI4
Lead	<0.0740		0.200	0.0740	mg/L		10/31/25 14:38	2	ZRI4
Selenium	0.0975	J	0.200	0.0580	mg/L		10/31/25 14:38	2	ZRI4
Silver	<0.0320	^3+	0.100	0.0320	mg/L		10/31/25 14:38	2	ZRI4

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	<0.0200		0.0400	0.0200	mg/L		11/03/25 16:44	4	NFT2
Arsenic	<0.0110		0.0400	0.0110	mg/L		11/03/25 16:44	4	NFT2
Barium	2.56		0.200	0.0280	mg/L		11/03/25 16:44	4	NFT2
Beryllium	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:44	4	NFT2
Cadmium	<0.00200		0.0100	0.00200	mg/L		11/03/25 16:44	4	NFT2
Chromium	0.168		0.100	0.0360	mg/L		11/03/25 16:44	4	NFT2
Copper	<0.0640		0.200	0.0640	mg/L		11/03/25 16:44	4	NFT2
Lead	<0.00660		0.0200	0.00660	mg/L		11/03/25 16:44	4	NFT2
Selenium	<0.0280		0.100	0.0280	mg/L		11/03/25 16:44	4	NFT2
Thallium	<0.0110	^+ *+	0.0200	0.0110	mg/L		11/04/25 14:58	4	NFT2

Eurofins Cedar Falls

Client Sample Results

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Client Sample ID: Fly Ash Composite

Lab Sample ID: 310-318648-4

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Method: 7470A - Mercury (CVAA) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 13:16	1	RLT9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	<0.00120		0.00200	0.00120	mg/L		10/31/25 12:21	1	RLT9

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
Flashpoint (D92)	>201		65.0	65.0	Degrees F		11/03/25 15:46	1	ENB7

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	RL	Unit	D	Analyzed	Dil Fac	Analyst
pH (9045D)	11.7	HF	1.0	1.0	SU		10/28/25 21:10	1	T5AC

General Chemistry - SPLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	1.05		0.200	0.0790	mg/L		11/02/25 14:53	1	WZC8

Client Sample ID: Fly Ash Composite

Lab Sample ID: 310-318648-4

Date Collected: 10/17/25 08:00

Matrix: Solid

Date Received: 10/23/25 08:25

Percent Solids: 99.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Antimony	0.672	J	0.799	0.359	mg/Kg	✱	10/30/25 18:11	5	NFT2
Arsenic	13.4		0.799	0.336	mg/Kg	✱	10/28/25 16:07	5	NFT2
Barium	1140		3.99	1.84	mg/Kg	✱	10/29/25 15:02	25	NFT2
Beryllium	2.93		0.399	0.160	mg/Kg	✱	10/28/25 16:07	5	NFT2
Boron	536		39.9	34.4	mg/Kg	✱	10/28/25 16:07	5	NFT2
Cadmium	1.21		0.399	0.152	mg/Kg	✱	10/28/25 16:07	5	NFT2
Chromium	53.2		1.20	0.415	mg/Kg	✱	10/28/25 16:07	5	NFT2
Cobalt	18.8		0.399	0.144	mg/Kg	✱	10/28/25 16:07	5	NFT2
Copper	115		1.20	0.639	mg/Kg	✱	10/28/25 16:07	5	NFT2
Lead	22.5		2.00	0.623	mg/Kg	✱	10/28/25 16:07	5	NFT2
Lithium	27.9		2.00	0.791	mg/Kg	✱	10/28/25 16:07	5	NFT2
Manganese	192		2.00	0.959	mg/Kg	✱	10/28/25 16:07	5	NFT2
Molybdenum	8.74		0.799	0.328	mg/Kg	✱	10/28/25 16:07	5	NFT2
Nickel	40.8		1.20	0.479	mg/Kg	✱	10/28/25 16:07	5	NFT2
Selenium	6.10		1.20	0.599	mg/Kg	✱	10/28/25 16:07	5	NFT2
Silver	0.246	J	0.399	0.152	mg/Kg	✱	10/28/25 16:07	5	NFT2
Thallium	0.755		0.399	0.152	mg/Kg	✱	10/30/25 18:11	5	NFT2
Vanadium	161		1.20	0.423	mg/Kg	✱	10/28/25 16:07	5	NFT2
Zinc	91.3		3.99	2.64	mg/Kg	✱	10/28/25 16:07	5	NFT2

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Mercury	0.00967	J	0.0166	0.00679	mg/Kg	✱	11/03/25 10:30	1	RLT9

General Chemistry - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac	Analyst
Fluoride (4500 F C-2011)	9.57		0.977	0.479	mg/Kg	✱	10/25/25 19:17	1	T5AC

Eurofins Cedar Falls

Accreditation/Certification and Definitions Summary

Client: MidAmerican Energy Company
 Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

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
D92		Solid	Flashpoint
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased
F1	MS and/or MSD recovery 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.
F2	MS/MSD RPD 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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
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

Accreditation/Certification and Definitions Summary

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
MQL	Method Quantitation Limit
MRL	Method Reporting 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
SDL	Sample Detection Limit
SDL	Sample Detection Limit
SDL	Sample Detection Limit
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Method Summary

Client: MidAmerican Energy Company
Project/Site: Semi Annual Ash Analysis

Job ID: 310-318648-1

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
D92	Flashpoint	ASTM	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



310-318648 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <i>Midamerican</i>			
City/State:	CITY	STATE	Project.
		<i>IA</i>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By
	<i>10/23/25</i>	<i>0825</i>	<i>[Signature]</i>
Delivery Type: <input checked="" type="checkbox"/> UPS <input 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: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes. Cooler ID</i>			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler # _____ of _____</i>			
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler custody seals intact?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Sample custody seals intact?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Which VOA samples are in cooler? ↓</i>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <i>R</i>		Correction Factor (°C): <i>+0.0</i>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		Corrected Temp (°C):	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
	<i>PL250 NT</i>		
Uncorrected Temp (°C):	<i>2.2</i>		
Corrected Temp (°C):	<i>2.2</i>		
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No a) <i>If yes:</i> 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			
Additional Comments			



Cedar Falls, IA 50613
phone 319 277 2401 fax 319 277 2425

Regulatory Program: DW NPDES RCRA Other

Eurofins Environment Testing America
COC No 1 of 1 COCs

Client Contact
MidAmerican Energy / Louisa Generating Station
8602 172nd Street
Muscatine IA 52761
Phone 563-288-2801
FAX 563-262-2892

Project Name Semi annual ash analysis
Site Fly Ash/Bottom Ash/Waste Ash areas
P O #

Project Manager: Jamie Murphy
Email jamie.murphy@midamerican.com
Email yusuf.setiawan@midamerican.com

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below _____
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Jamie Murphy
Lab Contact: Yusuf Setiawan
Carrier:

For Lab Use Only:
Walk-in Client
Lab Sampling
Job / SDG No

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	TCLP	SCLP	Total Metals	pH	Flash Point	Sample Specific Notes
						N	N	X	X	X	X	X	
Fly Ash	10/17/25	0800	G	WST	1	N	N	X	X	X	X		Unpre
Fly Ash	10/17/25	0800	C	WST	1	N	N	X	X	X	X		Unpre
Bottom Ash	10/17/25	1010	G	WST	1	N	N	X	X	X	X		Unpre
Waste Ash	10/17/25	0930	G	WST	1	N	N	X	X	X	X		Unpre

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4= HNO3; 5= NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample

Non-Hazard Flammable Skin Irritant Poison B Unknown

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments: Please contact Jamie Murphy with any questions @ 563-288-2801.

Custody Seal Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No MidAmerican Energy	Received by: Michelle Spiegel	Company Eurofins	Date/Time 10/22/25 10:00	Therm ID No
Relinquished by: Michelle Spiegel	Company Eurofins	Received by: Michelle Spiegel	Company	Date/Time 10/22/25 15:00	Date/Time 10/22/25 11:27
Relinquished by:	Company	Received in Laboratory by:	Company	Date/Time	Date/Time 10/23/25 08:25

