

2025 Fall Site Inspection

Keokuk Ferro-Sil Monofill (Closed)

Permit No. 56-SDP-17-91P

Engineers Project No. 7252-1/21-2007

Prepared for

Glencore, Ltd.


Prepared by

Klingner & Associates, P.C.

610 North 4th Street, Suite 100
Burlington, Iowa 52601

Date Prepared

September 24, 2025

	I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA. 
	Jessica A. Coca
	MY LICENSE RENEWAL DATE IS DEC. 31, 2026 IOWA REGISTRATION NUMBER: 25623
	PAGES OR SHEETS COVERED BY THIS SEAL: ALL DATE OF ISSUANCE: 9/24/2025

LANDFILL GENERAL OBSERVATIONS

An engineering inspection was conducted at the landfill on September 5, 2025. Conditions were partly cloudy and the temperature was around 60 degrees Fahrenheit. The landfill entrance gate was locked and access roads were well maintained with rock. Signage was installed at the entrance gate that provided the site and contact information. Groundwater well locations were accessible and in good condition. The most recent mowing was completed in May of 2024 with supplemental mowing performed in September of 2024 around the leachate lagoon. Mowing is anticipated to be completed again in 2026. The vegetative cover is in good condition. Due to concerns regarding a potential release of leachate to groundwater from the lagoon area from laboratory results documented in the 2023 & 2024 AWQRs, observations were made around the slopes and base of the lagoon for any indication of leachate seepage. The area had not received any recent rains, so soils were very dry on the surface. No evidence of leachate seeps or moisture on the surface was observed.

The leachate pond level appeared to be slightly below normal levels, likely due to low amounts of precipitation in August and hot weather.

Permit Conditions

The site permit was issued on April 4, 2007, and permit amendments have been issued by letter. In a letter dated January 30th, 2018, the IDNR required a number of things including a) minor modifications to the sampling plan, b) regular sampling of the leachate pond, and c) a requirement to clean out the leachate collection lines every three years. These items were implemented in 2018.

The leachate collection lines were jetted in October of 2024 to confirm that the system is freely flowing into the leachate collection pond. Documentation of the jetting of the leachate collection lines was provided in the 2024 AWQR. Jetting of the lines is to be completed again in 2027.

Leachate System

An automatic pump system with a run timer and float system was installed on the site and has been operational since October 18th, 2017. The run time is checked periodically during site visits by CHEM-ECO Environmental and Klingner and recorded such that the leachate pumping quantities can be reported to the City of Keokuk and Iowa DNR in future reports.

The run time during the September 5, 2025 visit was 4892 hours and 15 minutes. The pump hours on March 26, 2025 were recorded to be 4800 Hours and 24 Minutes.

The total pumping between the Fall and Spring inspections was 320,960 gallons.

The run time readout is cumulative, so successive readings must be subtracted to find the difference at each period. The flow rate of the pump system is estimated to be approximately 64 GPM. Note that the estimated flow rate was decreased after flow measurements were taken using a doppler flow meter and additional flow calculations were performed at the request of the City of Keokuk during the Industrial Discharge Permitting process in 2023.

There currently is no plan to prepare a separate LCSPE report.

Month of Reading	Pump Hours	Elapsed Run Time (Hours)	Elapsed Run Time (Minutes)	Gallons Pumped (64 GPM)
April	4819.08	14.7	883	56,512
May	4857.35	34.0	2,038	130,432
June	4860.02	2.7	160	10,240
July	4881.43	21.4	1,285	82,240
August	4892.25	10.8	649	41,536
September (as of 9/5)	4892.25	0	0	0
Total Estimated Pumping April 2025 – September 2025			5,015	320,960

CLOSED LANDFILL INSPECTION CHECKLIST

KEOKUK FERRO-SIL MONOFILL

LANDFILL CONTACT: STEVEN DEMASI, TWIN RIVERS HOLDING CO.

PERMIT NUMBER 56-SDP-17-91P

PERMIT ISSUED APRIL 4, 2007, EXPIRES 4/4/2037

Weather Conditions: 60F, Partly Cloudy

GENERAL

1.) Landfill ID and contact info posted?	YES
2.) Is entrance gate locked?	YES
3.) Entrance Road Conditions	GOOD, some erosion on the slope toward the leachate lagoon

COVER

4.) Condition of Final Cover: Vegetation	GOOD
5.) Has topsoil been placed on the landfill?	YES.
6.) Has the landfill been properly graded and seeded?	YES.

EROSION

7.) Is drainage and erosion being controlled on the landfill?	YES
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LEACHATE

8.) Is there evidence of leachate on the surface of the landfill?	NO
9.) Are there any leachate flows leaving the site?	NONE OBSERVED
10.) Has the landfill submitted plans for a leachate collection/treatment system?	YES
11.) Has the approved leachate collection and treatment system been constructed?	YES
12.) Does the landfill have a permit to discharge leachate?	YES, TO SANITARY SEWER MANHOLE IN KINDUSTRY PARK. CITY OF KEOKUK.

LANDFILL GAS

13.) Is there evidence of landfill gas problems?	NO
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MONITORING WELLS

14.) Are monitoring wells in good condition?	YES
15.) Are monitoring wells marked and identified?	YES

MISCELLANEOUS

16.) Is there evidence of open burning?	NO
17.) Is there evidence of open dumping, litter?	NO
18.) Is there evidence of rodents or insects as a result of improper landfilling operations?	NO

Additional Comments:

		
Description	Looking north from south end of landfill	1
Date	9/5/2025	
		
Description	Looking northeast from south end of landfill	2
Date	9/5/2025	

		
Description	Looking east, toward southeast part of landfill	3
Date	9/5/2025	

		
Description	Leachate collection area	4
Date	9/5/2025	

		
Description	Southern slope of landfill	5
Date	9/5/2025	


		
Description	Looking south, along the east side of the landfill	6
Date	9/5/2025	



		
Description	Looking south along the east slope of the landfill	7
Date	9/5/2025	
		
Description	East slope of landfill	8
Date	9/5/2025	

		
Description	MW 11	9
Date	9/5/2025	
		
Description	MW 4	10
Date	9/5/2025	

		
Description	MW 12	11
Date	9/5/2025	
		
Description	MW 13	12
Date	9/5/2025	



		
Description	MW 9 and MW 8	13
Date	9/5/2025	

		
Description	Leachate collection area, looking north	14
Date	9/5/2025	

		
Description	MW 16	15
Date	9/5/2025	
		
Description	Southeast side of berm of leachate collection area	16
Date	9/5/2025	

		
Description	Southern slope of landfill	17
Date	9/5/2025	
		
Description	Southeast slope of landfill	18
Date	9/5/2025	

		
Description	East side of leachate lagoon berm	19
Date	9/5/2025	
		
Description	Area northeast of leachate lagoon	20
Date	9/5/2025	

		
Description	Looking south, along east berm of leachate lagoon	21
Date	9/5/2025	
		
Description	Looking south, along east berm of leachate lagoon	22
Date	9/5/2025	



Description	MW 14	23
Date	9/5/2025	



Description	Road to leachate collection area	24
Date	9/5/2025	

			
Description		MW 15	25
Date		9/5/2025	
			
Description		Road, west of landfill, minor erosion	26
Date		9/5/2025	

		
Description	Entrance gate, locked	27
Date	9/5/2025	