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February 02, 2024

Mr. Brian Rath
Environmental Engineer Senior
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Iowa Department of Natural Resources
502 E. 9th Street
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2023 IDNR Template Tables
Walter Scott Jr. Energy Center (WSEC) CCR Monofill
Council Bluffs, Iowa
Permit 78-SDP-26-06P

Dear Brian:

As recently discussed, GHD has prepared Table 7 and Table 9 using the general format provided in the Iowa Department of Natural Resources' (IDNR's) *Annual Water Quality Report Template for Non-Municipal Landfills*. Table 7 and Table 9, provided in Attachment 1, are modified as approved in your January 31, 2024 email to Kevin Armstrong of GHD and Josh Love of MidAmerican Energy Company. Additionally, in Attachment 2, the 2023 groundwater monitoring results are compared to the Maximum Contaminant Level (MCL) or Health Advisory Lifetime (HAL) as described in 567 Iowa Administrative Code Chapter 103, paragraph 103.1(4)d.

Attachment 3 provides a crosswalk table to reference the items provided in the Annual Groundwater Monitoring and Corrective Action Report prepared under the Federal CCR rule with the IDNR's *Annual Water Quality Report Template for Non-Municipal Landfills*.

If you have any questions regarding these tables, please contact Kevin Armstrong.

Sincerely,

A handwritten signature in black ink that reads "Kevin G. Armstrong".

Kevin G. Armstrong, C.P.G., P.M.P.
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KA/lg/LTR-1

A handwritten signature in black ink that reads "Michael Alowitz".

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Copy to: Scott Burns, MidAmerican Energy Company
Josh Love, MidAmerican Energy Company

Attachments

Attachment 1

IDNR Template Table 7 and Table 9

Table 7

Summary of Ongoing and Newly Identified Control Limit Exceedances
2023 Annual Water Quality Report
Walter Scott Jr. Energy Center - CCR Monofill
Permit No. 78-SDP-26-06P

Well	Constituent	Units	Most recent result	Background Standard	Groundwater Protection Standard 40 CFR §257.95(h)
MW-34 (Background)	None	--	--	--	--
MW-105	Chloride	mg/L	24.0	17.7	None
	Total Dissolved Solids (TDS)	mg/L	768	723	None
MW-108	None	--	--	--	--
MW-133	Boron	mg/L	0.524	0.200 U	None
	Chloride	mg/L	104	6.57 - 21	None
MW-156 ^a	None	--	--	--	--
MW-157 ^b	Chloride	mg/L	63.7	7.25 - 41.1	None
MW-158	None	--	--	--	--
MW-159	None	--	--	--	--
MW-190	None	--	--	--	--
MW-191 ^b	Sulfate	mg/L	196	168	None
MW-227 ^a	None	--	--	--	--
MW-240R	None	--	--	--	--
MW-244	None	--	--	--	--
MW-245	None	--	--	--	--
MW-246	None	--	--	--	--
MW-247	None	--	--	--	--
MW-248	None	--	--	--	--
MW-250 (Background)	Calcium	mg/L	211	194	None
	Chloride	mg/L	9.32	7.6	None
	Sulfate	mg/L	211	106	None
	Total Dissolved Solids (TDS)	mg/L	928	712	None
MW-307 (Background) ^a	None	--	--	--	--
TW-1 (Background)	None	--	--	--	--
TW-2 (Background)	None	--	--	--	--

Comments:

^a Well has not been sampled in 2022 to 2023 due to low water levels.

^b Well has been sampled twice in 2022 to 2023 due low water levels. Both events exceeded background standards for selected constituent.

Table 9

**Historic Control Limit & GWPS Exceedances
2023 Annual Water Quality Report
Walter Scott Jr. Energy Center - CCR Monofill
Permit No. 78-SDP-26-06P**

Key: gray =CL; black =GWPS		April	June	October	November	January	April	June	October	November
Well	Constituent	2022	2022	2022	2022	2023	2023	2023	2023	2023
MW-34 (Background)	None		ns	ns		ns		ns		ns
MW-105	Calcium		ns		ns			ns		na
	Chloride		ns		ns	na		ns		
	pH, lab		ns		ns	na		ns		
	Sulfate		ns		ns	na		ns		na
	Total Dissolved Solids (TDS)		ns		ns			ns		
MW-108	pH, lab		ns		ns	ns		ns		
MW-133	Boron					na				na
	Calcium					na				na
	Chloride					na		na		na
	pH, lab					na		na		
MW-156 ^a	None	ns	ns	ns	ns	ns	ns	ns	ns	ns
MW-157	Chloride	ns	ns		ns	ns	ns	ns		ns
MW-158	None		ns		ns	ns		ns		ns
MW-159	Boron				ns	ns		ns		na
	Calcium		na		ns	ns		ns		na
	pH, lab		na		ns	ns		ns		
MW-190	Calcium				ns	ns		ns		ns
MW-191	Calcium	ns	ns		ns	ns	ns	ns		ns
	Sulfate	ns	ns		ns	ns	ns	ns		ns
MW-227 ^a	None	ns	ns	ns	ns	ns	ns	ns	ns	ns
MW-240R	pH, lab		ns		ns	ns		ns		
MW-244	Calcium				ns	ns		ns		na
	pH, lab		na		ns	ns		ns		
	Sulfate		na		ns	ns		ns		na
MW-245	Boron	ns	ns		ns	ns		na		na
	Calcium	ns	ns		ns	ns				na
	pH, lab	ns	ns		ns	ns		na		
MW-246	Boron	ns	ns		ns	ns		ns		ns
MW-247	Boron				ns	ns		ns		na
	Calcium		na		ns	ns		ns		na
	pH, lab		na		ns	ns		ns		
MW-248	Calcium				ns	ns		ns		na
	pH, lab		na		ns	ns		ns		
MW-250 (Background)	Calcium		na		ns			na		na
	Chloride		na		ns	na				na
	pH, lab		na		ns	na		na		
	Sulfate		na		ns			na		na
	Total Dissolved Solids (TDS)		na		ns			na		na
MW-307 (Background) ^a	None	ns	ns	ns	ns	ns	ns	ns	ns	ns
TW-1 (Background)	None		ns	ns		ns		ns		ns
TW-2 (Background)	None		ns	ns		ns		ns		ns

Comments:

Groundwater Protection Standard (GWPS) established under 40 CFR §257.95(h).

ns - No sample collected during this sampling event.

na - Constituent not analyzed.

^a Well has not been sampled in 2022 to 2023 due to low water levels.

Attachment 2

MCL/HAL Comparison Table

2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa

Sample Location:
Sample ID:
Sample Date:

	MW-105	MW-105	MW-105	MW-105	MW-105	MW-105
	MW105-GW-0123	MW105-GW-0423	DP03-GW-0423	MW105-GW-1023	DP03-GW-1023	MW105-GW-1123
	01/17/2023	04/27/2023	04/27/2023 (Duplicate)	10/04/2023	10/04/2023 (Duplicate)	11/29/2023

Parameters	Units	MCL ^a	HAL ^b	SDWR ^c	MW-105 01/17/2023	MW-105 04/27/2023	MW-105 04/27/2023 (Duplicate)	MW-105 10/04/2023	MW-105 10/04/2023 (Duplicate)	MW-105 11/29/2023
Appendix III										
Boron	mg/L	--	6	--	--	0.161	0.155	0.189	0.206	--
Calcium	mg/L	--	--	--	156	173	174	159	164	--
Chloride	mg/L	--	--	250	--	18.3	18.2	22.7	22.9	24.0
Fluoride	mg/L	4.0	--	2.0	--	<1.00	<1.00	<1.00	<1.00	--
pH, lab	s.u.	--	--	6.5 - 8.5	--	7.3 J	7.2 J	7.9 J	7.9 J	7.2 J
Sulfate	mg/L	--	--	250	--	149 J-	148 J-	126	127	--
Total dissolved solids (TDS)	mg/L	--	--	500	692	700	710	730	730	768

Notes:

^a Maximum contaminant level (MCL) established under 40 CFR 257.95(h)(1).

^b Drinking Water Health Advisories - Life-time established in the 2018 Edition of the Drinking Water Standards and Health Advisories (EPA 822-F-18-001).

^c Secondary Drinking Water Regulation.

^d Action level for lead (treatment technique).

1.00

 Value exceeds the MCL, or HAL where MCL not established.

J - Estimated concentration.

< - Not detected at the associated reporting limit.

J- - Estimated concentration, result may be biased low

J+ - Estimated concentration, result may be biased high.

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-108	MW-108	MW-108	MW-133	MW-133	MW-133	MW-133	
Sample ID:	MW108-GW-0423	MW108-GW-1023	MW108-GW-1123	MW133-GW-0423	MW133-GW-0623	DP01-GW-0623	MW133-GW-1023	
Sample Date:	04/26/2023	10/04/2023	11/29/2023	04/26/2023	06/27/2023	06/27/2023 (Duplicate)	10/04/2023	
Parameters	Units							
Appendix III								
Boron	mg/L	0.221	0.224	--	0.289	0.451	0.418	0.524
Calcium	mg/L	139	109	--	232	192	194	162
Chloride	mg/L	18.0	16.7	--	107	--	--	104
Fluoride	mg/L	<1.00	<1.00	--	<1.00	--	--	<1.00
pH, lab	s.u.	7.1 J	7.9 J	7.1 J	7.4 J	--	--	7.8 J
Sulfate	mg/L	<5.00 J	<5.00	--	269 J-	--	--	148
Total dissolved solids (TDS)	mg/L	624	614	--	1070	--	--	810

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-133	MW-157	MW-158	MW-158	MW-159	MW-159	MW-159
Sample ID:	MW133-GW-1123	MW157-GW-1023	MW158-GW-0423	MW158-GW-1023	MW159-GW-0423	MW159-GW-1023	MW159-GW-1123
Sample Date:	11/29/2023	10/05/2023	04/26/2023	10/04/2023	04/27/2023	10/04/2023	11/29/2023

Parameters

Units

Appendix III

Boron	mg/L	--	0.355	0.407	0.406	0.356	0.289	--
Calcium	mg/L	--	211	234	237	183	194	--
Chloride	mg/L	--	63.7	39.2	40.1	16.8	18.6	--
Fluoride	mg/L	--	<1.00	<1.00	<1.00	<1.00	<1.00	--
pH, lab	s.u.	7.2 J	7.7 J	7.1 J	7.7 J	7.1 J	7.8 J	7.0 J
Sulfate	mg/L	--	212	303 J-	361	171 J-	219	--
Total dissolved solids (TDS)	mg/L	--	942	988	1130	688	864	--

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-190	MW-190	MW-191	MW-240R	MW-240R	MW-240R	MW-240R	
Sample ID:	MW190-GW-0423	MW190-GW-1023	MW191-GW-1023	MW240R-GW-0423	DP04-GW-0423	MW240R-GW-1023	DP04-GW-1023	
Sample Date:	04/26/2023	10/04/2023	10/04/2023	04/26/2023	04/26/2023 (Duplicate)	10/05/2023	10/05/2023 (Duplicate)	
Parameters	Units							
Appendix III								
Boron	mg/L	0.128	0.122	0.128	0.256	0.238	0.284	0.280
Calcium	mg/L	190	161	165	180	175	156	155
Chloride	mg/L	11.0	9.94	13.2	23.2	22.9	27.5	27.4
Fluoride	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
pH, lab	s.u.	7.2 J	7.9 J	7.9 J	7.2 J	7.1 J	7.9 J	7.9 J
Sulfate	mg/L	165 J-	169	196	218 J-	211 J-	194	195
Total dissolved solids (TDS)	mg/L	742	740	792	860	812	758	772

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-240R	MW-244	MW-244	MW-244	MW-245	MW-245	MW-245	
Sample ID:	MW240R-GW-1123	MW244-GW-0423	MW244-GW-1023	MW244-GW-1123	MW245-GW-0423	MW245-GW-0623	MW245-GW-1023	
Sample Date:	11/29/2023	04/27/2023	10/05/2023	11/29/2023	04/27/2023	06/27/2023	10/04/2023	
Parameters	Units							
Appendix III								
Boron	mg/L	--	0.176	0.170	--	0.349	--	0.334
Calcium	mg/L	--	132	132	--	205	179	180
Chloride	mg/L	--	9.93	11.8	--	10.6	--	9.34
Fluoride	mg/L	--	<1.00	<1.00	--	<1.00	--	<1.00
pH, lab	s.u.	7.2 J	7.2 J	7.9 J	7.1 J	7.2 J	--	7.7 J
Sulfate	mg/L	--	8.02 J-	79.6	--	190 J-	--	166
Total dissolved solids (TDS)	mg/L	--	526	580	--	936	--	952

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-245	MW-246	MW-246	MW-247	MW-247	MW-247	MW-248	
Sample ID:	MW245-GW-1123	MW246-GW-0423	MW246-GW-1023	MW247-GW-0423	MW247-GW-1023	MW247-GW-1123	MW248-GW-0423	
Sample Date:	11/29/2023	04/27/2023	10/05/2023	04/27/2023	10/05/2023	11/29/2023	04/27/2023	
Parameters	Units							
Appendix III								
Boron	mg/L	--	0.169	0.158	0.170	0.196	--	0.160
Calcium	mg/L	--	164	184	165	156	--	146
Chloride	mg/L	--	14.5	13.5	14.4	14.4	--	10.9
Fluoride	mg/L	--	<1.00	<1.00	<1.00	<1.00	--	<1.00
pH, lab	s.u.	7.0 J	7.1 J	7.8 J	7.1 J	7.9 J	7.1 J	7.2 J
Sulfate	mg/L	--	66.6 J-	62.7	98.8 J-	111	--	92.6 J-
Total dissolved solids (TDS)	mg/L	--	622	758	626	682	--	552

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-248	MW-248	MW-250	MW-250	MW-250	MW-250	MW-250	
Sample ID:	MW248-GW-1023	MW248-GW-1123	MW250-GW-0123	DP01-GW-0123	MW250-GW-0423	MW250-GW-0623	MW250-GW-1023	
Sample Date:	10/05/2023	11/29/2023	01/17/2023	01/17/2023 (Duplicate)	04/26/2023	06/27/2023	10/05/2023	
Parameters	Units							
Appendix III								
Boron	mg/L	0.160	--	--	--	0.234	--	0.215
Calcium	mg/L	121	--	199	185	241	--	211
Chloride	mg/L	11.7	--	--	--	7.86	8.26	9.32
Fluoride	mg/L	<1.00	--	--	--	<1.00	--	<1.00
pH, lab	s.u.	7.9 J	7.1 J	--	--	6.9 J	--	7.8 J
Sulfate	mg/L	64.9	--	177	179	306 J-	--	211
Total dissolved solids (TDS)	mg/L	518	--	818	846	1040	--	928

**2023 Groundwater Analytical Data
Walter Scott Jr. Energy Center
WSEC CCR Monofill - Council Bluffs, Iowa**

Sample Location:	MW-250	MW-34	MW-34	TW-1	TW-1	TW-2	TW-2	
Sample ID:	MW250-GW-1123	MW34-GW-0423	MW34-GW-1023	TW1-GW-0423	TW1-GW-1023	TW2-GW-0423	TW2-GW-1023	
Sample Date:	11/29/2023	04/24/2023	10/04/2023	04/25/2023	10/03/2023	04/24/2023	10/03/2023	
Parameters	Units							
Appendix III								
Boron	mg/L	--	0.113	0.101	0.175	0.328	0.430	0.443
Calcium	mg/L	--	95.7	91.6	239	182	125	144
Chloride	mg/L	--	<5.00	5.60	21.6	17.7	6.32	13.5
Fluoride	mg/L	--	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
pH, lab	s.u.	7.0 J	7.2 J	7.5 J	7.1 J	7.0 J	7.3 J	7.1 J
Sulfate	mg/L	--	12.0	24.7	325	188	7.15	<5.00
Total dissolved solids (TDS)	mg/L	--	460	446	1100	928	566	704

Attachment 3

**IDNR Template to AGWMCAR Cross
Reference Table**

IDNR Template to AGWMCAR Cross Reference Table

Walter Scott Jr. Energy Center - CCR Monofill
Permit No. 78-SDP-26-06P

Annual Water Quality Report Template for Non-Municipal Landfills	Annual Groundwater Monitoring and Corrective Action Report	Notes
Table 1 Monitoring Program Summary	Table 2.1 Groundwater Monitoring Well Network	Lists all wells in monitoring network.
	Table 2.6 Summary of Groundwater Monitoring Events	Lists total number of samples from monitoring programs since March 2016.
	Table 4.4 Intra-Well Comparisons of Monitoring Data vs. Baseline UPLs	Compares current reporting period's groundwater data to the prediction limit value (control limit).
	Section 1.1 Purpose of this Report	States the current monitoring program.
	Section 2.1 Groundwater Monitoring Network	Describes the aquifer characteristics.
	Section 6.3 Recommendations	Provides recommended changes, if any, to the monitoring network.
Table 2 Monitoring Program Implementation Schedule	Table 2.6 Summary of Groundwater Monitoring Events	Provides summary of all sampling events since March 2016.
Table 3 Monitoring Well Maintenance and Performance Reevaluation Schedule	Section 2.2 Monitoring Well Inspection	States the frequency of total depth measurements (annually).
Table 4 Monitoring Well Maintenance and Performance Summary	Table 2.2 Well Construction Details	Provides well coordinates and elevations for TOC, original total depth, ground surface, top of screen, and bottom of screen.
	Table 2.3 Monitoring Well Screen Occlusion Evaluation	Provides TOC elevation, original total depth below TOC, screen length, annual total depth measurements, and percent of screen occluded.
	Table 3.1 Groundwater Elevation Summary	Provides all groundwater elevation data, past elevations through elevations during the current reporting period.
Table 5 Background Summary	Table 4.3 Intra-Well Comparison Values	Summary of intra-well evaluation on all wells in monitoring network. Provides the prediction limit value (background level).
Table 6 Summary of Well/Detected Constituent Pairs With No Immediately Preceding Control Limit Exceedances	Table 4.4 Intra-Well Comparisons of Monitoring Data vs. Baseline UPLs	Compares current reporting period's groundwater data to the prediction limit value (control limit).
Table 7 Summary of Ongoing and Newly Identified Control Limit Exceedances	--	Table 7 is provided to IDNR.
Table 8 Analytical Data Summary	Table 4.1 Cumulative Groundwater Analytical Summary	Provides all groundwater analytical data at the CCR Monofill.
	Table 4.2 Groundwater Analytical Data	Provides all groundwater analytical data for the current reporting period at the CCR Monofill.
Table 9 Historic Control Limit & Action Level Exceedances	--	Table 9 is provided to IDNR.
Table 10 Groundwater Quality Assessment Plan Trend Analysis	Section 4 Groundwater Monitoring	Section 4 discusses trends in groundwater data, during baseline monitoring and current reporting period.
	Table 4.5 Trend Test Results	Provides identified constituent trends for all wells at the CCR monofill.
Table 11 Leachate Management Summary	Annual Leachate Report	The Annual Leachate Report documents the leachate management activities for the current reporting period. Provides analytical data, leachate head, and leachate volume measurements.
Table 12 Gas Monitoring Summary	NA	Not applicable since the CCR Monofill holds CCR and does not generate gas.