

May 31, 2024

Mr. Mick Leat, Environmental Specialist
Land Quality Bureau
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034



**RE: 2024 Semi-Annual Water Quality Notification Letter
Marshall County Sanitary Landfill 64-SDP-02-75P**

Dear Mr. Leat:

Water Quality Evaluation Approach

MW-93 is the leachate lagoon monitoring point placed in a unique location and hydrogeologic setting. MW-96R is a point of compliance well impacted by an alternate source. The alternate source demonstration (ASD) at MW-96R was completed January 17, 2024 (Doc #108834) and was accepted by IDNR on May 28, 2024 (Doc #110151).

Compounds at MW-93 and MW-96R are evaluated by intrawell statistical methods and by interwell statistical methods. A Statistically Significant Increase (SSI) and/or Statistically Significant Level (SSL) is demonstrated only if both intrawell and interwell statistics identify the SSI/SSL. At the same time, any VOC detection at MW-93 and MW-96R above the Method Reporting Limit (MRL) is determined to be an SSI.

All remaining monitoring wells at the site are evaluated by interwell statistical methods to determine whether a statistically significant increase (SSI) is documented in the vicinity of the landfill.

At the Marshall County Sanitary Landfill, the following monitoring wells are the background wells (interwell methods) for the facility: MW-66, MW-85, MW-98, and MW-99.

The following downgradient wells remain in the detection monitoring system (interwell methods): MW-87, MW-89, MW-95, and MW-97.

The following downgradient wells are in the assessment monitoring system (interwell methods): MW-91, MW-93, and MW-96R.

The following downgradient wells are corrective action (CA) monitoring wells maintained as Supplemental Monitoring Points to monitor water quality within the delineated plume: MW-49, MW-54, MW-81, and MW-94. The following downgradient wells exist at step-out locations at the relocated Point of Compliance to monitor the water quality (Attenuation Zone Point of Compliance Wells - AZPOC): MW-87, MW-89, MW-91, and MW-97.

SRAMP-B is a Site Remedial Action Mitigation Plan (SRAMP) tile line discharge point for a groundwater collection tile adjacent to the west of Area B1. This collection line is situated west of MW-81 and east of MW-87. The discharge water is sampled on the downgradient side of the Passive Engineered Conveyance Structure (PECS) at sampling point PECS-B in order to confirm compliance of the PECS.

Notification of Results of the Spring Sampling, Analysis, and Statistical Evaluation

Intrawell Statistical Evaluations

Verified *inorganic compound* detections that exceed the Control Limits:

MW-93 – None.

MW-96R – None.

Verified *VOC* detections that exceed the Control Limits:

MW-93 – None.

MW-96R – None.

At MW-93 and MW-96R there were no VOC detections, no intrawell control limit exceedances, and no increasing trends in the background in April, 2024. The interpretation is made that there are no documented Statistically Significant Increases (SSI) in the site groundwater at MW-93 or MW-96R, despite the interwell statistical method results discussed below.

Interwell Statistical Evaluations

Wells in the Detection Monitoring System (MW-87, MW-89, MW-95, and MW-97)

Verified *inorganic compound* detections that exceed the Prediction Limits:

MW-97 – Copper*

Verified *VOC* detections that exceed the Prediction Limits:

None.

* *MW-97 requires a verification sample for copper, prior to July 16, 2024*

Wells in the Assessment Monitoring System (MW-91, MW-93 and MW-96R)

Verified *inorganic compound* detections that exceed the Prediction Limits:

MW-93** – arsenic, cobalt, nickel

MW-96R** – Selenium

Verified *VOC* detections that exceed the Prediction Limits:

None.

** *MW-93 and MW-96R are also evaluated by Intrawell statistics and do not indicate exceedances of the Intrawell control limits nor are there increasing trends in background concentrations at MW-93 or MW-96R. MW-93 and MW-96R are conservatively assigned to the Assessment Monitoring System for additional evaluation on a five (5) year frequency.*

Historic Appendix II Compound Detections (Green Highlights = Full Appendix II)

bis (2-ethylhexyl)phthalate (ug/L)

Date							
	Detection	Detection	Assessment	Assessment	Detection	Detection	Detection
	AZPOC	AZPOC	AZPOC	POC	POC	POC	AZPOC
	MW87	MW89	MW91	MW93	MW95	MW96R	MW97
3/28/08	<8	<8	<8	NT	NT	DNE	NT
6/25/08	<8	<8	<8	NT	NT	DNE	NT
8/25/08	<8	<8	<8	NT	NT	DNE	NT
10/3/08	<8	<8	<8	NT	NT	DNE	NT
12/8/08	28.0	60.0	9.0	NT	NT	DNE	NT
4/1/09	<10	<10	<10	NT	NT	DNE	NT
10/21/09	<10	<10	<10	NT	NT	DNE	NT
4/20/10	<10	<10	<10	NT	NT	DNE	NT
10/8/10	<10	<10	15.0	NT	NT	DNE	NT
4/4/11	<10	<14	<10	NT	NT	DNE	NT
10/6/11	<10	<10	<10	NT	NT	DNE	NT
4/10/12	<10	<10	<10	NT	NT	DNE	NT
10/8/12	<10	<10	<10	<12	NT	DNE	NT
4/4/13	<10	<10	<10	<8	NT	DNE	NT
10/16/13	<8	9.0	142.0	NT	NT	DNE	NT
4/9/14	13.0	18.0	<10	NT	NT	DNE	NT
10/16/14	<10	<10	<10	NT	NT	DNE	NT
4/3/2015	<10	NT	<10	NT	NT	DNE	NT
10/1/2015	<10	<10	<10	NT	NT	DNE	NT
4/14/2016	<10	19.0	<10	NT	NT	DNE	NT
10/13/2016	<10	<10	<10	NT	NT	DNE	NT
4/10/2017	<10	<10	<10	NT	NT	DNE	NT
10/9/2017	NT	NT	NT	NT	NT	DNE	NT
4/17/2018	NT	NT	NT	NT	NT	DNE	NT
10/22/2018	NT	NT	<6	<6	NT	DNE	NT
4/22/2019	NT	NT	NT	NT	NT	DNE	NT
10/23/2019	NT	NT	NT	NT	NT	DNE	NT
4/10/2020	NT	NT	NT	NT	NT	DNE	NT
10/19/2020	NT	NT	NT	NT	NT	DNE	NT
4/5/2021	NT	NT	NT	NT	NT	NT	NT
10/8/2021	NT	NT	NT	NT	NT	NT	NT
4/6/2022	NT	NT	NT	NT	NT	6.0	NT
10/25/2022	NT	NT	NT	NT	NT	NT	NT
4/10/2023	NT	NT	NT	NT	NT	<6	NT
10/13/2023	NT	NT	<6	<6	NT	NT	NT
4/17/2024	NT	NT	NT	NT	NT	NT	NT

bis (2-ethylhexyl)phthalate (ug/L)

Date	Supplemental Monitoring Wells			
	MW49	MW54	MW81	MW94
3/28/08	<8	<8	<8	NT
6/25/08	<8	<8	<8	NT
8/25/08	<8	<8	<8	NT
10/3/08	<8	<8	<11	NT
12/8/08	13.0	16.0	<8	NT
4/1/09	<10	<10	<10	NT
10/21/09	NT	NT	NT	NT
4/20/10	NT	NT	<10	NT
10/8/10	NT	NT	NT	NT
4/4/11	NT	NT	NT	<8
10/6/11	NT	NT	NT	<8
4/10/12	NT	NT	NT	NT
10/8/12	<10	<10	<10	8.0
4/4/13	<10	<10	<10	<10
10/16/13	<8	<11	<8	<10
4/9/14	<10	<10	<10	<10
10/16/14	<10	<17	<10	<10
4/3/2015	65.0	<10	36.0	<10
10/1/2015	<10	<10	<10	<10
4/14/2016	<10	<10	<10	<10
10/13/2016	<10	<10	<10	<10
4/10/2017	<10	<10	<10	<10
10/9/2017	NT	NT	NT	<6
4/17/2018	NT	NT	NT	NT
10/22/2018	<6	<6	<6	NT
4/22/2019	NT	NT	NT	NT
10/23/2019	NT	NT	NT	NT
4/10/2020	NT	NT	NT	NT
10/19/2020	NT	NT	NT	NT
4/5/2021	NT	NT	NT	NT
7/2/2021	NT	NT	NT	NT
10/8/2021	NT	NT	NT	NT
4/6/2022	NT	NT	NT	NT
10/25/2022	NT	NT	NT	NT
4/10/2023	NT	NT	NT	NT
10/13/2023	NT	NT	NT	NT
4/17/2024	NT	NT	NT	NT

DNE = Did Not Exist

Current Appendix II Compound Detections

None.

Evaluation of SRAMP-B and PECS-B

Verified *inorganic compound* detections that exceed the Prediction Limits:

SRAMP-B - None.

PECS-B - Dry

Verified *VOC* detections that exceed the Prediction Limits:

SRAMP-B - None.

PECS-B - Dry

Wells in the Corrective Action Monitoring System (MW-49, MW-54, MW-81, MW-94) – (Evaluation not required)

Verified *inorganic compounds* that exceed the Prediction Limits:

Supplemental Wells

MW-49 – arsenic, cadmium, copper, nickel

MW-54 - cobalt, nickel

MW-81 – barium, cobalt, nickel

MW-94 – arsenic, cobalt, nickel

Verified *VOC* that exceed the Prediction Limits:

Supplemental Wells

MW-49 - 1,1-dichloroethane, 1,4-dichlorobenzene, chloroethane, cis-1,2-dichloroethane,

MW-54 - 1,4-dichlorobenzene

MW-81 - 1,1-dichloroethane, 1,2-dichloroethane†, 1,2-dichloropropane†, 1,4-dichlorobenzene,
chlorobenzene, chloroethane, cis-1,2-dichloroethane†, trans-1,2-dichloroethane,
trichloroethene, and vinyl chloride†

MW-94 - 1,1-dichloroethane, 1,2-dichloropropane, benzene, chloroethane, cis-1,2-dichloroethene, and vinyl
chloride†

† Exceeds GWPS

Interwell GWPS

GWPS are equal to the Statewide Standards published in Iowa Administrative Code (IAC) 567, Chapter 137, except for cobalt where 6.0584 ug/L is utilized as the Site-Specific GWPS (equal to the interwell method Site Prediction Limit for cobalt).

Confidence Interval Assessment of wells with recorded Exceedances of the Prediction Limits

For compounds where historic or active Statistically Significant Increases (SSI) are recorded, a Confidence Interval (95% LCL & 95% UCL) evaluation should be performed.

A Confidence Interval evaluation is not applicable for metals, as no SSI were confirmed, except at Supplemental wells, which do not require evaluation.

A Confidence Interval evaluation is not applicable for VOC, as no VOC were detected, except at Supplemental wells, which do not require evaluation.

Progress towards Remedy Completion

Special Provision 4.i. of the Permit (Doc #108057) approved the Corrective Action (CA) Plan on May 20, 2020. According to IAC 113.10(9)"e", the remedy is considered complete when water quality in all point of compliance wells remain below the GWPS for three consecutive years.

AZPOC MW-87

No prediction limits are exceeded at MW-87 (no SSI).

The 95% LCL is below the GWPS for all compounds at MW-87 (no SSL).

The 95% UCL for all compounds of interest at MW-87 (cobalt, 1,2-dichloropropane, cis-1,2-dichloroethene, and vinyl chloride) are below the GWPS (CA is performing effectively (*4 consecutive years*)).

AZPOC MW-89

No prediction limits are exceeded at MW-89 (no SSI).

The 95% LCL is below the GWPS for all compounds at MW-89 (no SSL).

The 95% UCL for all compounds of interest (cobalt) at MW-89 are below the GWPS (CA is performing effectively (*4 consecutive years*)).

AZPOC MW-91

No prediction limits are exceeded at MW-91 (no SSI).

The prediction limits for 1,1-dichloroethane and selenium were historically exceeded at MW-91 (SSI), giving cause for MW-91 to be included in the assessment monitoring system at the site.

The 95% LCL is below the GWPS for all compounds at MW-91 (no SSL).

The 95% UCL for all compounds of interest (arsenic, cobalt and vinyl chloride) at MW-91 are below the GWPS (CA is performing effectively (*4 consecutive years*)).

AZPOC MW-97

No prediction limits are exceeded at MW-97 (no SSI). *A verification sample for copper is pending.*

The 95% LCL is below the GWPS for all compounds at MW-97 (no SSL).

The 95% UCL for all compounds of interest (cobalt, cis-1,2-dichloroethene, and vinyl chloride) are below the GWPS (CA is performing effectively (*4 consecutive years*)).

Wells returning to the detection monitoring system

None.

This notification is intended to satisfy requirements of Iowa Administrative Code (IAC) 567-113.10(5)"c"(1); 113.10(6)"d"(1); and 113.10(6)"g".

The water quality results for the Spring of 2024 will be fully evaluated in the Annual Water Quality Report in accordance with the unnumbered permit amendments dated May 22, 2013, July 10, 2014, and IAC 567-113.10(10).

Please feel free to contact our office at (515) 733-4144 with any questions you may have.

Sincerely,
HLW Engineering Group



Todd Whipple, CPG
Project Manager

cc: *Don Ballalatak, Manager*

GROUND WATER STATISTICS

FOR THE

MARSHALL COUNTY SANITARY LANDFILL

First Semi-Annual Monitoring Event in 2024

Prepared for:
Marshall County Sanitary Landfill
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