

West Des Moines, IA

PROJECT: Fort Madison, CY23-24 On-Call Support, IA 27223533.00 DATE: 12/5/2024

SUBJECT: City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C - 2024 Sampling and Reporting Suspension Request TRANSMITTAL ID: 00003

PURPOSE: For your approval VIA: Info Exchange

FROM

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TO

NAME	COMPANY	EMAIL	PHONE
Brad Davidson		brad.davison@dnr.iowa.gov	

REMARKS: Brad -

Please find for your download the City of Fort Madison Landfill & Rodeo Park Dump 2024 Sampling and Reporting Suspension Request. Let us know if you have any questions or comments.

Thanks,

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QTY	DATED	TITLE	NOTES
1	12/5/2024	City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C - 2024 Sampling and Reporting Suspension Request 12.5.2024.pdf	

COPIES:

Becky Jolly

Transmittal

DATE: 12/5/2024
TRANSMITTAL ID: 00003

Mark Boussetot
Tim Buelow
Sean Marczewski

(City of Fort Madison, Iowa)
(SCS Engineers)
(SCS Engineers)

December 5, 2024
File No. 27223533.00

Mr. Brad Davison
Iowa Department of Natural Resources
Land Quality Bureau
6200 Park Avenue,
Des Moines, Iowa 50321

Subject: 2024 Sampling and Reporting Suspension Request
City of Ft. Madison Landfill & Rodeo Park Dump
Permit No. 56-SDP-05-88C

Dear Brad:

The City of Fort Madison Landfill and Rodeo Park Dump municipal solid waste landfill (MSWLF) units, owned by the City of Fort Madison (City), are in the process of navigating the path toward ending post-closure care regulated by the Iowa Department of Natural Resources (DNR) and rescission of the above-referenced permit, with perpetual care requirements associated with the MSWLF units to be specified in an environmental covenant. The current area of focus is the disposition of leachate collection activities (i.e., whether or not leachate collection can be terminated prior to permit rescission or must continue as a component of perpetual care) as a requirement within an environmental covenant. The evaluation process and requirements for terminating leachate collection, even on a temporary trial basis, have not yet been determined and are an on-going discussion topic between the DNR and a subset of the affected sanitary disposal project (SDP) permit holders.

The groundwater monitoring plan presented in the *2023 Annual Water Quality Report* dated November 14, 2023 (Doc #101842) was placed on hold (Doc #108521) pending the evaluation of either extending the closure permit expiration date or rescinding the closure permit (Doc #107964).

A recent conversation between the DNR and SCS Engineers further discussed evaluation requirements for ceasing leachate collection activities and the merit of collecting additional groundwater and leachate analytical data in 2024. This correspondence is the follow-up to that conversation and provides recommendations regarding groundwater and leachate sampling in 2024 and the schedule for completion of the evaluation of leachate collection from the MSWLF units.

Background and Discussion

For the closed City of Fort Madison Landfill/Rodeo Park Dump, multiple permit amendments modified the frequency of sampling and analyzed parameters at the facility. Permit Amendments No. 12, issued April 13, 2017 (Doc #89098), No. 14, issued March 14, 2018 (Doc #91720), No. 16, issued February 14, 2019 (Doc #94385), and No. 17, issued April 1, 2022 (Doc #102700) modified the groundwater monitoring program that was in effect through 2016.

In correspondence dated December 29, 2022 (Doc #105406), the DNR issued Permit Amendment No. 18, which approved a reduction in sampling parameters. Site monitoring wells are sampled for

arsenic, cobalt, lead, and total suspended solids (TSS) with the exception of monitoring well WT-113B, which is sampled for Appendix I metals and TSS.

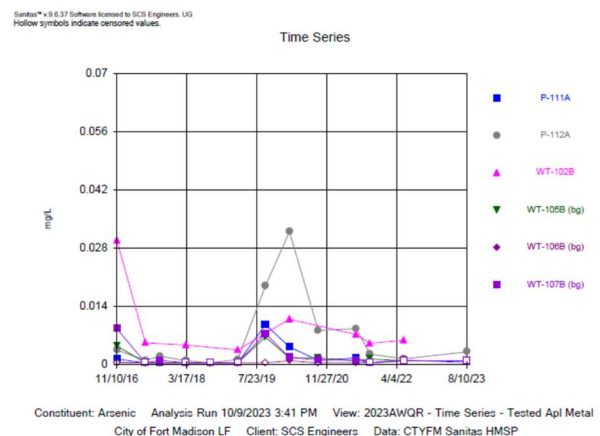
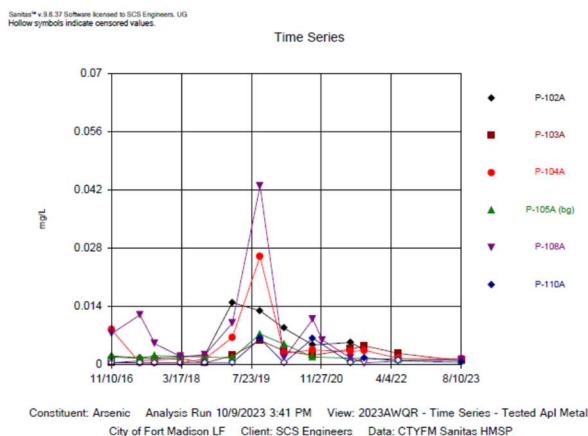
For data collected from 2016 through 2023:

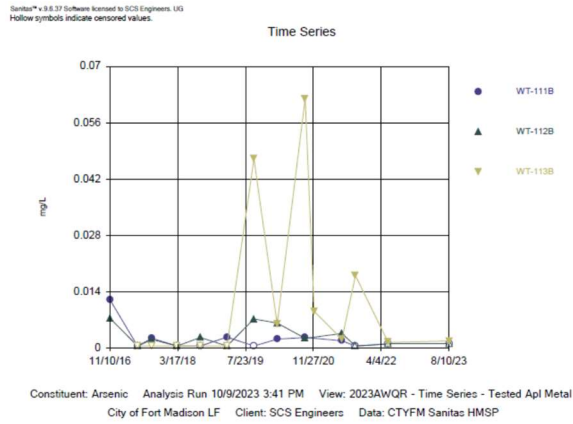
- Arsenic had one to four groundwater protection standard (GWPS) exceedances in each of seven monitoring wells.
- Lead had one to six GWPS exceedances in eleven monitoring wells.
- Cobalt had multiple GWPS exceedances in each monitoring except background monitoring well WT-106B, which had no cobalt detections.

It should be noted that the frequency of detections and measured concentrations decreased for arsenic, cobalt, and lead beginning in 2022, likely due to a change in the sampling methodology. Sampling in 2020-2021 was primarily performed with disposable bailers except for three wells sampled with a non-dedicated bladder pump during the June 2021 sampling event. Beginning in 2022, sampling was primarily performed using a peristaltic pump with dedicated in-situ tubing, with two wells being sampled with a non-dedicated submersible pump. For the 2022-2023 sampling events, only three wells had quantified concentrations of arsenic, all below the GWPS. Seven monitoring wells had quantified concentrations of cobalt, with only two GWPS exceedances. Lead had no quantified detections in the 2022-2023 sampling events. Based on this comparison, it appears that TSS likely had a significant influence on total metals concentrations in the samples. The 2022-2023 samples would be considered more representative of groundwater quality at the site. There were minimal GWPS exceedances in this data set.

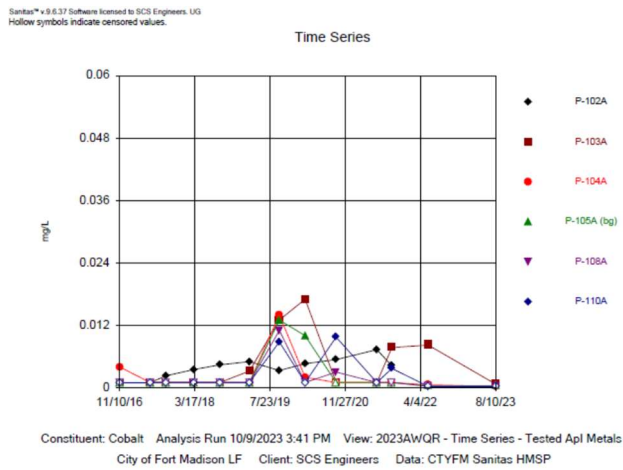
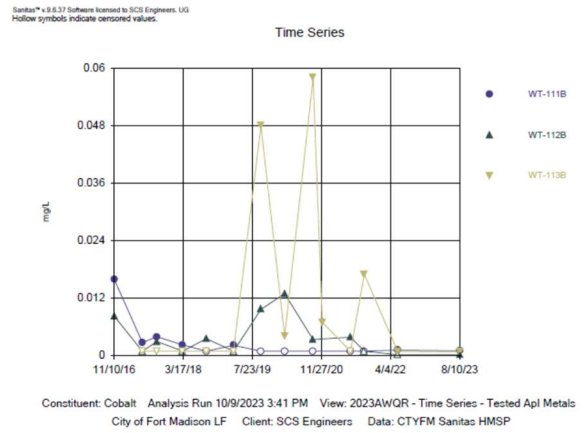
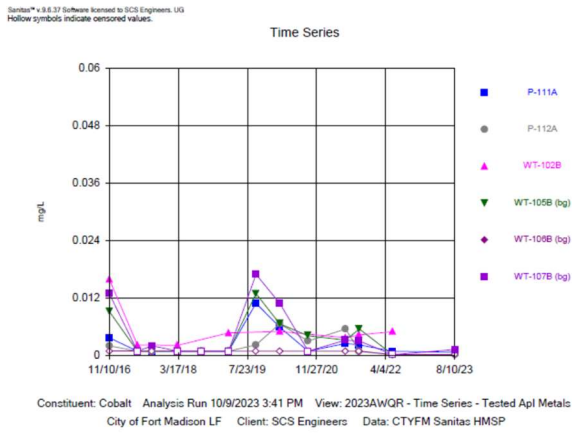
The time series plots below show the arsenic, cobalt, and lead concentrations measured since 2016. It should be noted that high metal concentrations correlated with high TSS concentrations were not removed from the plots. The reduction in measured concentrations after the sampling change beginning with the 2022 sampling event is apparent in the graphs, most notably with total lead.

Arsenic

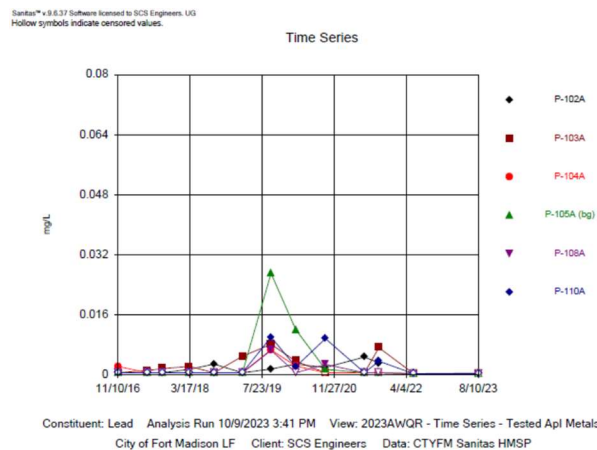
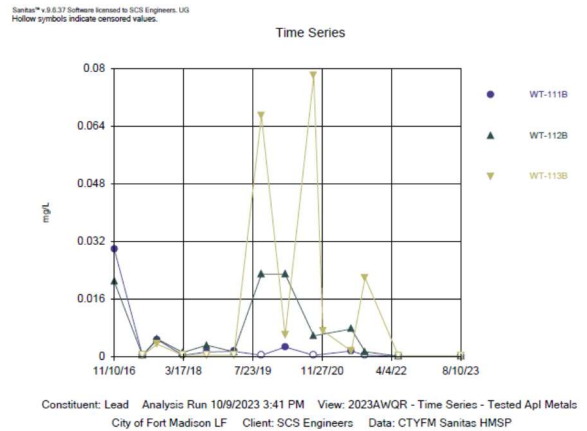
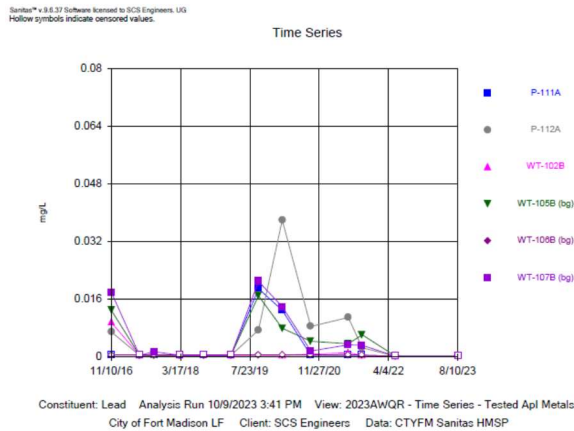




Cobalt



Lead



The limited GWPS exceedances, especially since the change in sampling method in 2022, indicates that groundwater conditions at the site are generally stable. Continued sampling and evaluation would unlikely result in a change in statistical conclusions.

Leachate samples from the leachate manholes have been collected and evaluated annually for numerous years. To evaluate trending, Mann-Kendall analysis at 80% confidence ($\alpha=0.2$) was performed for the leachate data collected from 2017 through 2023. This is the lowest statistically significant trend threshold available in the Sanitas statistical program, and therefore is more likely to identify data sets as having statistically significant trends. A summary table of the Mann-Kendall results is included in Attachment A. The Rodeo Park Dump and City Landfill MSWLF unit trend results are discussed individually below.

Rodeo Park Dump

Statistically significant increasing trends for biochemical oxygen demand (BOD), lead, and nickel were identified for Manhole #3 at the Rodeo Park Dump. The maximum measured concentration of BOD in Manhole #3 was 16.1 mg/L; for context, BOD limits of 30 mg/L for the 30-day average and 45 mg/L for the 7-day average for wastewater treatment facility effluent are found at 40 Code of Federal Regulations (CFR) §133.102(a). Lead had two detections in seven samples; the highest concentration of the two detections, 0.00278 mg/L, was less than 20% of the GWPS and nearly four



times the concentration of the other detection (0.000727 mg/L), indicating the higher concentration may be not representative. The highest concentration of nickel, 0.0104 mg/L, was less than 11% of the GWPS. Statistically significant decreasing trends were identified for arsenic, copper, and lead in Manhole #4 and for nickel in Manhole #5, and since 2022, there have not been quantified detections of these metals in Manhole #4 and Manhole #5. Of the 40 constituent/monitoring point pairs analyzed, 7.5% had a statistically significant positive trend using the lowest trend threshold. There were no statistically significant positive trends at 99% confidence ($\alpha=0.01$). In the data collected in 2023, no VOCs were measured at quantified detections in Manholes #3, #4, and #5 and the only measured GWPS exceedances were for cobalt in Manholes #3 and #5.

City Landfill

Statistically significant increasing trends were identified for chloromethane and toluene in Manhole #1; the trends are primarily due to elevated reporting limits in the 2021 sampling event, as the constituents each have only one quantified detection. Statistically significant increasing trends were identified for chlorobenzene, chloroethane, and chloromethane at Manhole #2. Non-detect values with elevated reporting limits in 2021 likely contributed to the increasing trend identification. No statistically significant decreasing trends were identified. Of the 45 constituent/monitoring point pairs analyzed, 11.1% had a statistically significant positive trend. There were no statistically significant positive trends at 99% confidence ($\alpha=0.01$). In the data collected in 2023, measured GWPS exceedances were for cobalt in Manhole #1 and for arsenic, cobalt, and benzene in Manhole #2. Cobalt concentrations in Manhole #1 are generally the second-lowest at the site, with recent concentrations in Manhole #4 being mostly lower. The two benzene detections above the GWPS in Manhole #2, 6.1 $\mu\text{g/L}$ and 6.32 $\mu\text{g/L}$, are only about 1 $\mu\text{g/L}$ above the GWPS.

With regard to both the Rodeo Park Dump and the City Landfill, sufficient source concentration data is available to model the potential leachate migration. Appendix I trending is generally stable, with many of the statistically significant increasing trends being attributable to data anomalies rather than actual increasing concentrations. The few GWPS exceedances were only 0.0034 mg/L for arsenic, 0.00264 mg/L or less for cobalt, and 0.00132 mg/L for benzene above the associated GWPS. Note that this summary of GWPS exceedances excluded the LM-2 sample collected on September 29, 2021, which had a measured Total Suspended Solids (TSS) concentration of 14,200 mg/L, and, as a result was not considered representative. Additional leachate composition data is unlikely to provide data that would affect leachate management conclusions.

Recommendations

Based on the above discussion, the following are recommended:

1. Groundwater and leachate sampling and reporting be suspended for the 2024 calendar year while efforts to end post-closure care continue. Sufficient groundwater and leachate analytical data are available to continue this process as it is currently understood. Further clarification from the DNR regarding the evaluation requirements may necessitate additional data collection in 2025.
2. The requirement to evaluate whether the closure permit expiration date should be extended or rescinded, which is currently focused on determining whether on-going leachate collection at the site can be ceased, should be considered complete. The closure permit expiration date was extended by five years to May 26, 2029 (Doc #110072), thereby resolving the requirement. The City is very interested in determining the evaluation requirements necessary for closure permit rescission, including the disposition of leachate collection from

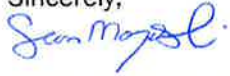


Brad Davison
December 5, 2024
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the MSWLF units, and will continue to pursue a comprehensive determination and completion of requirements in the absence of a deadline.

If you have any questions or comments regarding this request, please contact Nathan Ohrt at (319) 331-9613. Thank you.

Sincerely,



FOR: NATHAN OHRT

Nathan Ohrt
Senior Project Professional
SCS Engineers



Timothy C. Buelow, P.E.
Senior Project Advisor
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NPO/TCB

Copies: Mr. Mark Boussetot, City of Fort Madison

