



July 15, 2024

Mr. Geoffrey Spain
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Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319

Subject: **2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
IDNR #7-SDP-1-75P
AECOM #60699034**

Dear Geoffrey,

This letter summarizes the results of sampling for the Spring 2024 Semi-Annual Water Quality Monitoring event at the Black Hawk County Landfill (BHCL). The sampling event commenced on April 23, 2024, and was completed on May 23, 2024. AECOM received the last of the laboratory data on June 10, 2024; and statistical analyses were completed on July 13, 2024.

Most of the detection monitoring points defined in the current Hydrologic Monitoring System Plan (HMSP) were successfully sampled, except for groundwater underdrains, GUE-1, and GUW1-1. Underdrain GUE-1 is now routed to and combined with GUX-1. Underdrain GUW1-1 could not be sampled as there was no flow. All groundwater monitoring wells were sampled using bladder pumps, and water quality parameters (pH, specific conductance, temperature, and turbidity) measured using an Aqua TROLL 500 Multiparameter Sonde with flow-thru cell as part of low-flow sampling.

Sample turbidity measurements using field methods were recorded for all low-flow samples. All groundwater samples were analyzed for total suspended solids (TSS) by Eurofins TestAmerica lab. Field turbidity and TSS measurements were also recorded for the groundwater underdrain outlet samples. Of the 46 groundwater and underdrain samples taken during the spring event for which field turbidity was measured, 25 failed to meet the criterion of 5 NTU for field turbidity. In addition, 28 failed to meet lab TSS criteria. Of those 46 groundwater and underdrain samples, 20 met the criteria for both field turbidity (5 NTU) and lab total suspended solids (5 mg/L).

All historical and current Appendix I and Appendix II sample results for the shallow (water table), deep (bedrock) and assessment of corrective measures (ACM) monitoring wells are presented in attached PDF summary tables (C1 – Shallow, C2 – Deep and C3 – ACM). A summary of results with unverified statistically significant increases (SSIs) or above a groundwater protection standard (GPS) are presented in SAWQR Table 6. A summary of ongoing verified statistically significant increase above background (SSIs) are presented in Table 7. A summary of ongoing and newly identified statistically significant levels above groundwater protection standards (SSLs) are presented in Table 8. Verification of wells with initial SSIs or parameters greater than GPSs will be determined by resampling as part of pass 1-of-2 verification resampling as noted in the HMSP.

DETECTION MONITORING

Of all the monitoring points not in assessment monitoring, 6 monitoring points had unverified statistically significant prediction limit exceedances for interwell tests.

Area E

OW-212B

Area E downgradient monitoring well OW-212B groundwater results had an unverified exceedance for cobalt. This well will be resampled.

Cells W3/W4

Cells W3 downgradient monitoring well MW-712B unverified PL exceedance for cobalt . This well will be resampled.

Bedrock

Upgradient bedrock well P-604C had unverified exceedance above RL for acetone and benzene. This well will be resampled.

All other detection monitoring well groundwater results listed in Table 6 had no Appendix I parameters with SSIs or parameters above a GPS.

ASSESSMENT MONITORING

Sampling results for all monitoring wells in assessment monitoring are summarized in Tables 7 and 8.

Area A

Spring 2024 results for monitoring well OW-401B continues prediction limit exceedances for barium and benzene (Table 7). This well has ongoing SSLs for arsenic and beta-BHC (Table 8). The constituent beta-BHC was nondetect in Spring 2024. The constituent cobalt UCL was below the site GWPS for Spring 2024.

Area C

Spring 2024 results for monitoring well OW-220B show confirmed prediction limit exceedances for arsenic, barium, cobalt, nickel, and organic detections for acetone, 1,4-Dichlorobenzene, and benzene (Tables 7 and 8). This well was sampled for the full list of Appendix II parameters in September 2020 and October 2021. Initially, two Appendix II only parameters, 2,4-D and Silvex (2,4,5-TP), were detected. Five sampling events for these two parameters were completed in April 2022. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in Spring 2027.

Four new downgradient wells, OW-224B, OW-225B, OW-226B and OW-227B have been installed in 2022. Six sampling events have been completed.

Spring 2024 results for OW-224B show confirmed prediction limit exceedances for barium, cobalt, and nickel, and no organic detections. Barium and Cobalt is above site groundwater GWPS values (Table 8). There is insufficient sample data for estimating LCLs and UCLs. Two (2) more sampling events are required to achieve a minimum

sample size of $n = 8$ to estimate LCLs and UCLs. This well was sampled for Appendix II parameters in Fall 2023. There were no Appendix II only constituents detected. This well will be sampled for Appendix II again in Fall 2024.

Results for OW-225B show prediction limit confirmed exceedances for barium, cobalt, nickel, and organic detections for acetone and benzene (Table 7). Cobalt is above site groundwater GWPS values (Table 8). There is insufficient sample data for estimating LCLs and UCLs. Two (2) more sampling events are required to achieve a minimum sample size of $n = 8$ to estimate LCLs and UCLs. This well was sampled for Appendix II parameters in Fall 2023. There were no Appendix II only constituents detected. This well will be sampled for Appendix II again in Fall 2024.

Results for OW-226B show confirmed prediction limit exceedances for barium, cobalt, nickel, and organic detections for benzene. Cobalt is above site groundwater GWPS values (Table 8). There is insufficient sample data for estimating LCLs and UCLs. Two (2) more sampling events are required to achieve a minimum sample size of $n = 8$ to estimate LCLs and UCLs. This well was sampled for Appendix II parameters in Fall 2023. Only Sulfide was detected. This constituent has been added to semi-annual sampling. This well will be sampled for Appendix II again in Fall 2024.

Results for OW-227B show prediction limit confirmed exceedances for arsenic, barium, cobalt, nickel, and organic detections for benzene (Table 7). Cobalt is above site groundwater GWPS values (Table 8). There is insufficient sample data for estimating LCLs and UCLs. Two (2) more sampling events are required to achieve a minimum sample size of $n = 8$ to estimate LCLs and UCLs. This well was sampled for Appendix II parameters in Fall 2023. Only Sulfide was detected. This constituent has been added to semi-annual sampling. This well will be sampled for Appendix II again in Fall 2024.

Area E

For Spring 2024, downgradient well OW-113B had prediction limit exceedances for nickel. The cobalt result and LCLs are below the site GWPS of $9.83 \mu\text{g/L}$ and is noted as an ongoing SSL. No other inorganic Appendix I parameters were detected above a PL or a GPS. There have been no Appendix I organic parameter detections in 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023 or 2024. This well has been sampled for Appendix II in October 2020 and November 2021. Time series data for cobalt and nickel do not display significant trends over time. Given no increasing trends in cobalt and nickel, the groundwater concentrations of cobalt and nickel at this location are considered naturally occurring. This well will remain in assessment monitoring, with the next Appendix I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in 2027.

Shallow well MW-212B, located downgradient of Area E, was initially placed in assessment monitoring in 2020 due to detections of cobalt above the GWPS ($2.1 \mu\text{g/L}$) in 2020 (Tables 7 and 8). This well has been sampled for the full list of Appendix II constituents in 2020, 2021, and 2022. There have been no confirmed detections of Appendix II parameters, not in Appendix I, since 2022. There have been no confirmed detections of Appendix I organic parameters since 2020. This well will remain in assessment monitoring with the next Appendix I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in 2027.

Shallow well MW-409B, located downgradient of Area E, was initially placed in assessment monitoring in 2013 due to low level detections of benzene ($<5 \mu\text{g/L}$) in 2012. This well has been sampled for the full list of Appendix II constituents in 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021 and 2022. There have been no confirmed detections of Appendix II parameters, not in Appendix I, since 2013. There have been no confirmed detections of Appendix I organic parameters since 2013. A verified prediction limit exceedance occurred for cobalt. The result and LCL are below the site cobalt GPS of $9.83 \mu\text{g/L}$ and UCL has been below the site cobalt GWPS for 2 years (Tables 7 and 8). The elevated cobalt level at this location is considered naturally occurring and, given no Appendix I or Appendix II organic detections, this well will remain in assessment monitoring with the next Appendix

I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in 2027.

Bedrock well P-213C, which is side gradient of Area E, was placed in assessment monitoring in May 2022 due to cobalt results at or near the GWPS in March 2021. The Spring 2024 result is above the site bedrock cobalt GWPS of 2.5 µg/L. The elevated cobalt level at this location is considered naturally occurring and, given no other Appendix I or Appendix II organic detections, this well will remain in assessment monitoring with the next Appendix I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in Fall 2029.

Cell X

Spring 2024 results for monitoring well OW-221B show confirmed prediction limit exceedances for arsenic and barium, and organic detection for acetone. Cobalt is above the site groundwater GWPS and LCL and is noted as an ongoing SSL. An unverified detection of acetone is noted. This well will be resampled in Summer 2024 as part of pass 1-of-2 verification resampling. This well was sampled for the full list of Appendix II parameters in September 2020, October 2021, and October 2022. There were no detected Appendix II parameters not in Appendix I. This well will remain in assessment monitoring, with the next Appendix I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in 2027.

Results for monitoring well OW-222B show confirmed prediction limit exceedances for cobalt. Cobalt was detected above the groundwater GPS and LCL and is noted as an ongoing SSL. The well had one unverified Appendix I organic detection for acetone. This well was sampled for the full list of Appendix II parameters in September 2020, October 2021, and October 2022. There were no detected Appendix II parameters, not in Appendix I. This well will remain in assessment monitoring, with the next Appendix I sampling in Fall 2024. An alternate schedule for repeated sampling and analysis for the full list of Appendix II constituents is requested. BHCL proposes that the next full list of Appendix II constituents be collected again in 2027.

ASSESSMENT OF CORRECTIVE MEASURES (ACM)

An assessment of corrective measures was implemented because of detected Appendix I organic parameter concentrations in wells OW-401B and OW-402B located adjacent to Areas A and C and Cell W-1/W2.

Seven monitoring wells, five shallow (water table), one intermediate (inter-till) and one deep (bedrock) well, were installed in November 2016 as part of the ACM for the area. The wells, along with selected existing wells, have been sampled 15 times: December 2016, April 2017, June 2017, September 2017, November 2017, March 2018, September 2018, April 2019, October 2019, April 2020, October 2020, March 2021, May 2022, April 2023, and April 2024.

Groundwater levels are collected for ACM wells on a semi-annual basis. Analysis of groundwater levels from December 2016, April 2017, October 2018, October 2019, October 2020, April 2021, October 2021, March 2022, May 2023 and March 2024 indicate that the direction of shallow groundwater movement is from Areas A and C toward Cell W-1. Cell W-1 has a groundwater drainage layer which has created an inward groundwater gradient toward the cell.

Shallow (water table) wells OW-205B, OW-401B, OW-402B, OW-410B, OW-411B, OW-412B, OW-413B and OW-414B, intermediate well P-402A and bedrock well P-402C were sampled for Appendix I during the Spring 2024 sampling event. Wells OW-401B, and OW-402B were sampled for the full list of Appendix II constituents in May 2024. Results are summarized in Tables 7 and 8.

As described above, additional ACM monitoring wells, OW-220B, OW-224B, OW-225B, OW-226B and OW-227B have been installed on the north side of Area C for shallow groundwater levels and sampling groundwater quality. These wells were sampled for Appendix I during the Spring 2024 sampling event. Results are summarized in Tables 7 and 8.

GROUNDWATER UNDERDRAIN SAMPLING

Four of five groundwater underdrain detection monitoring points in the current Hydrologic Monitoring System Plan (HMSP) were successfully sampled in Spring 2024. The underdrain sampling points include GUE-2 (Area E), GUX-1 (Cell X and GUE-1), GUW1-1 (Cell W-1), GUW2-1 (Cell W-2) and GUW3-1 (Cell W-3). As noted above, groundwater underdrains GUW1-1 could not be sampled.

Monitoring point GUE-2 had detections of arsenic, barium, cobalt, and nickel. Appendix I organic detections included benzene and cis-1,2-Dichloroethylene. The GUE-2 effluent will continue to be diverted to the BHCL leachate gravity sewer through 2024, according to the approved GUE-2 ACM.

Monitoring point GUX-1 had detections of barium which were below corresponding GPS. There were no Appendix I organic detections for Spring 2024.

Monitoring point GUW2-1 had detections of arsenic, barium, and cobalt. There were no Appendix I organic detections. The GUW2-1 effluent will continue to be diverted to the western drainage ditch.

Monitoring point GUW3-1 had detections of barium, cobalt, copper, nickel and thallium. There were no Appendix I organic detections. The GUW3-1 effluent is diverted to the eastern drainage ditch.

GROUNDWATER ELEVATIONS

Site-wide groundwater levels have also been collected. Groundwater levels and depth to bottom measurements were collected prior to the Spring 2024 IDNR and EPA groundwater sampling events. Field photographs and well condition notes were collected. Groundwater contour maps for shallow (water table) and deep (bedrock) will be provided in 2024 AWQR. Groundwater flow and gradient calculations will also be provided in 2024 AWQR.

MONITORING WELL INSPECTIONS

As part of the Spring 2024 IDNR and EPA sampling events, wells were inspected for required maintenance and repairs. Maintenance generally includes cutting back grass, brush, or saplings by wells, removing sediment from wells with concrete pads, repairing and re-painting protective casings, and labeling. Based on Spring 2024 inspection, most of the monitoring wells are in good working condition. The monitoring well inspection and maintenance completed in Spring 2024 will be provided as part of the 2024 AWQR.

HYDROLOGIC MONITORING SYSTEM PLAN (HMSP) REVISION

The HMSP was updated in February 2023. The HMSP was revised to account for replacement bedrock monitoring wells P-214CR, P-215CR, and P-216CR and new Area C downgradient monitoring wells OW-224B, OW-225B, OW-226B and OW-227B.

ALTERNATE COBALT AND NICKEL GWPS

Site-specific groundwater protection standards have been developed for cobalt and nickel using USEPA guidance (EPA 2009). Background data for cobalt and nickel is based on upgradient shallow groundwater monitoring wells located outside the limits of waste. Monitoring wells included are: OW-101B, OW-114B, OW-213BR, OW-216B(R), OW-217B, OW-218B, OW-219B, MW-304B, MW-308B, MW-319B, OW-403B, OW-405B,

MW-701B, MW-702B, MW-703B, MW-704B, MW-705B, MW-706B, MW-707B, MW-708B, MW-709B, MW-710B, MW-711B and MW-712B. Sample dates span from August 2014, when low-flow sampling began, through May 2024.

Sampling from these non-impacted monitoring points has indicated the measured background concentrations of cobalt and nickel are above the IDNR GWPS in wells screened in the shallow (water table) monitoring zone. This zone consists of loess and glacial tills. As a result, development of a site-specific background GWPS for cobalt and nickel is suitable. The paragraphs below provide a detailed discussion and justification for a background GWPS for cobalt and nickel for shallow (water table) wells at the Black Hawk County Landfill (BHCL). Documentation will be provided in the 2024 AWQR and a revised HMSP.

For BHCL IDNR permit, monitoring wells are sampled for Appendix I which includes total metals (Antimony (Sb), Arsenic (As), Barium (Ba), Beryllium (Be), Cadmium (Cd), Chromium (Cr), Cobalt (Co), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Selenium (Se), Silver (Ag), Thallium (Tl), Vanadium (V), and Zinc (Zn)), low-flow field sampling parameters field pH, specific conductance, turbidity, and Total Suspended Solids (TSS). In addition, monitoring wells are sampled for Appendix I organic parameters. Alternate GWPS statistics were estimated for cobalt and nickel.

The process for estimating GWPS for annual sample results comparisons included analysis for trends, outliers, goodness-of-fit (GOF), and tolerance limits (TL). Currently, background for the facility includes data from Fall 2014 through Spring 2024. Each step in the process is described below.

First, detection monitoring data for each monitoring well used in site-specific GWPS are tallied for sample size (n), count of nondetects and calculated percentage of nondetects per well and parameter. For wells with small sample size ($n \leq 5$) and high percentage of nondetects (90 - 100% nondetect per parameter), no outliers, trends, or goodness of fit can be estimated.

Next, detection monitoring data for each monitoring well used in site-specific GWPS were analyzed for outliers using Rosner's or Dixon's methods depending on sample size. For the parameters, both raw (untransformed) and lognormal transformed data were tested for outliers. If there were significant outliers in the detection monitoring data which may be attributed to errors in field sampling, lab methods, changes in lab detection limits, or lab data recording, identified errors, which can be resolved, the data set is corrected, and outliers removed. If not, the outlier, would remain in the data set.

Next, the monitoring wells detection monitoring chemistry data were analyzed for trends using the Helsel (2012) NADA Akritas-Theil-Sen slope and Kendall's tau methods. If there are no significant trends within the past 10 years of detection monitoring data, the background data set was pooled to estimate the site-specific GWPS for each parameter.

Last, the pooled monitoring wells detection monitoring chemistry data were analyzed for statistical distribution using goodness-of-fit tests (GOF). Data will be tested for normal, lognormal and gamma distributions. Based on goodness-of-fit (distribution) tests, either parametric (normal) or nonparametric tolerance limits were estimated.

The analyses showed that the pooled data have few outliers. The GOF tests show the data are not normally distributed. Pooled data was natural log transformed and checked for outliers. Based on natural log transformed data, the pooled data show no outliers.

Goodness-of-fit (GOF) tests show the data is not normal, lognormal or gamma in statistical distribution. Given the GOF results, nonparametric tolerance limits were estimated for cobalt and nickel.

The nonparametric tolerance limit for cobalt is estimated to be 9.83 µg/L. While the nonparametric tolerance limit for nickel is estimated to be 722 µg/L. These tolerance limits replace the Iowa GWPS values of 2.1 µg/L for cobalt and 100 µg/L for nickel.

If you have questions or need further information, please contact me at (319) 232-6531.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'C. Oelkers', with a stylized flourish at the end.

Christopher G. Oelkers, PE

Enclosures: As Noted

REFERENCES:

EPA 530-R-09-007. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, 884 p.

TABLES

Table 6
Summary of Well/Detected Constituent Pairs with No Immediately Previous SSIs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Constituent	Units	GPS	Spring Event	Background Standard
Area A					
OW-401B	Arsenic	µg/L	10	5.67*	4.18 NPL
	Cobalt	µg/L	9.83	2.5	5.454 LnPL
	Nickel	µg/L	722	47	51.4 LnPL
OW-410B	ACM Well; refer to 2024 AWQR Appendix B: ACM Data Table				
OW-411B	Cobalt	µg/L	9.83	1.41	5.454 LnPL
	Nickel	µg/L	722	47	51.4 LnPL
OW-414B	ACM Well; refer to 2024 AWQR Appendix B: ACM Data Table				
MW-501B	Barium	µg/L	2000	116	484 NPL
	Chromium	µg/L	100	7.57	27 NPL
	Nickel	µg/L	722	5.2	51.4 LnPL
Area C					
OW-105B	Barium	µg/L	2000	79.9	484 NPL
OW-205B	Barium	µg/L	2000	171	484 NPL
	Cobalt	µg/L	9.83	3.69	5.454 LnPL
	Nickel	µg/L	100	12.6	51.4 LnPL
OW-220B	Chromium	µg/L	100	7	27 NPL
OW-224B	Cadmium	µg/L	5	0.59	12.2 NPL
	Chromium	µg/L	100	7.68	27 NPL
	Copper	µg/L	1300	7.43	11.5 NPL
	Lead	µg/L	15	1.44	1.48 NPL
OW-225B	Arsenic	µg/L	10	5.86*	4.18 NPL
	Cadmium	µg/L	5	0.398	12.2 NPL
	Lead	µg/L	15	0.957	1.48 NPL
OW-226B	Arsenic	µg/L	10	8.05*	4.18 NPL
	Chromium	µg/L	100	9.35	27 NPL
	Lead	µg/L	15	0.978	1.48 NPL
OW-227B	Cadmium	µg/L	5	0.216	12.2 NPL
	Chromium	µg/L	100	6.53	27 NPL
	Lead	µg/L	15	0.659	1.48 NPL
OW-402B	Cobalt	µg/L	9.83	2.02	5.454 LnPL
	Nickel	µg/L	722	30.4	51.4 LnPL
OW-412B	Arsenic	µg/L	10	4.18	4.18 NPL
	Cobalt	µg/L	9.83	1.03	5.454 LnPL
	Nickel	µg/L	722	20.5	51.4 LnPL
OW-413B	Chromium	µg/L	100	6.15	27 NPL
	Cobalt	µg/L	9.83	5.23	5.454 LnPL
	Lead	µg/L	15	1.06	1.48 NPL
	Nickel	µg/L	722	7.58	51.4 LnPL

Table 6
Summary of Well/Detected Constituent Pairs with No Immediately Previous SSIs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Constituent	Units	GPS	Spring Event	Background Standard
Area E/Cell X					
OW-113B	Arsenic	µg/L	10	2.19	4.18 NPL
	Barium	µg/L	2000	14.1	484 NPL
	Nickel	µg/L	100	20.9	51.4 LnPL
OW-209B	Barium	µg/L	2000	55.3	484 NPL
	Nickel	µg/L	100	6.86	51.4 LnPL
OW-212B	Barium	µg/L	2000	27.5	484 NPL
	Cadmium	µg/L	5	0.59	12.2 NPL
	Cobalt	µg/L	9.83	11.9*	5.454 LnPL
	Copper	µg/L	1300	7.25	11.5 NPL
	Nickel	µg/L	722	44.9	51.4 LnPL
OW-221B	Cobalt	µg/L	9.83	3.07	5.454 LnPL
OW-222B	Barium	µg/L	2000	116	484 NPL
	Copper	µg/L	1300	5.85	11.5 NPL
	Nickel	µg/L	722	15.9	51.4 NPL
OW-223B	Barium	µg/L	2000	64.3	484 NPL
	Copper	µg/L	1300	5.94	11.5 NPL
	Nickel	µg/L	722	6.21	51.4 NPL
MW-409B	Arsenic	µg/L	10	3.83	4.18 NPL
	Barium	µg/L	2000	35.8	484 NPL
	Copper	µg/L	1300	5	11.5 NPL
	Nickel	µg/L	722	9.19	51.4 LnPL
Cells W1/W2					
MW-602B	Barium	µg/L	2000	104	484 NPL
	Cobalt	µg/L	2.1	2.85	5.454 LnPL
	Nickel	µg/L	722	9.51	51.4 LnPL
MW-603B	Barium	µg/L	2000	38.6	484 NPL
MW-604B	Barium	µg/L	2000	72.2	484 NPL
	Chromium	µg/L	100	8.25	27 NPL
Cell W3					
OW-101B	Barium	µg/L	2000	179	484 NPL
MW-711B	Barium	µg/L	2000	43.5	484 NPL
	Cobalt	µg/L	9.83	4.43	5.454 LnPL
	Nickel	µg/L	722	19.5	51.4 LnPL
MW-712B	Barium	µg/L	2000	63	484 NPL
	Cobalt	µg/L	9.83	6.02*	5.454 LnPL
	Nickel	µg/L	722	7.24	51.4 LnPL

Table 6
Summary of Well/Detected Constituent Pairs with No Immediately Previous SSIs
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Well	Constituent	Units	GPS	Spring Event	Background Standard
Uppermost Aquifer					
Upgradient Bedrock Wells					
P-604C	Acetone	µg/L	6300	716*	10 RL
	Benzene	µg/L	5	1.4*	0.5 RL
Downgradient Bedrock Wells					
P-213C	Barium	µg/L	2000	8.72	722 NPL
	Nickel	µg/L	100	9.6	13.9151 PL
P-214CR	Barium	µg/L	2000	130	722 NPL
P-215CR	Barium	µg/L	2000	72.3	722 NPL
P-216CR	Barium	µg/L	2000	26.8	722 NPL

Notes:

* Current result is above background, if confirmed by next sample an SSI will be identified

** Confirmed SSI

N = Assumed to be naturally occurring

NPL = Nonparametric prediction limit

NS = No standard; insufficient background data to estimate PL/NPL

PL = Parametric prediction limit

RL = Reporting limit

-- = not sampled

Gray Shading = groundwater concentration > GPS

Table 7
Summary Table of Ongoing and Newly Identified SSIs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
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Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	LCL	IDNR Statewide Standard	Exceeds Standard?	Upgradient Background Prediction Limit	Sample Dates		
										Initial Exceedance	2nd, 3rd, and 4th assessment samples	5th background sample
Area A - ACM												
OW-401B	Barium	µg/l	1710	21	0.0	1246	2000	No	484 NPL	8/26/2015	10/3/2016; 9/29/2017; 9/20/2018	10/3/2019
	Benzene	µg/l	3.79	21	4.8	3.79	5	No	0.5 RL	8/26/2015	10/3/2016; 9/29/2017; 9/20/2018	10/3/2019
Area C												
OW-205B	Arsenic	µg/l	9.06	21	4.8	9.08	10	No	4.18 NPL	3/29/2016	12/7/2016; 3/21/2017; 6/15/2017	9/7/2017
	Cobalt	µg/l	3.69	21	4.8	3.82	9.83	No	5.454 LnPL	3/29/2016	12/7/2016; 3/21/2017; 6/15/2017	9/7/2017
OW-220B	Arsenic	µg/l	14.4	11	9.1	9.60	10	No	4.18 NPL	3/31/2020	8/6/2020; 9/16/2020; 12/9/2020	3/22/2021
	Barium	µg/l	904	11	0.0	729.16	2000	No	484 NPL	3/31/2020	8/6/2020; 9/16/2020; 12/9/2020	3/22/2021
	Benzene	µg/l	2.29	11	0.0	1.91	5	No	0.5 RL	3/31/2020	8/6/2020; 9/16/2020; 12/9/2020	3/22/2021
	Nickel	µg/l	135	11	0.0	109.14	722	No	51.392 LnPL	3/31/2020	8/6/2020; 9/16/2020; 12/9/2020	3/22/2021
OW-224B	Nickel	µg/l	172	6	0.0	Insufficient sample size to calculate LCL and UCL	722	NA	51.392 LnPL	1/11/2023	3/20/23; 8/1/2023; 9/7/2023	12/5/2023
OW-225B	Barium	µg/l	1710	6	0.0	Insufficient sample size to calculate LCL and UCL	2000	NA	484 NPL	1/11/2023	3/20/23; 8/1/2023; 9/7/2023	12/5/2023
	Nickel	µg/l	144	6	0.0		722	NA	51.392 LnPL	1/11/2023	3/20/23; 8/1/2023; 9/7/2023	12/5/2023
OW-226B	Barium	µg/l	1450	6	0.0	Insufficient sample size to calculate LCL and UCL	2000	NA	484 NPL	1/24/2023	3/21/2023; 8/3/2023; 9/18/2023	12/5/2023
	Nickel	µg/l	70.5	6	0.0		100	NA	51.392 LnPL	1/24/2023	3/21/2023; 8/3/2023; 9/18/2023	12/5/2023

Table 7
Summary Table of Ongoing and Newly Identified SSIs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	LCL	IDNR Statewide Standard	Exceeds Standard?	Upgradient Background Prediction Limit	Sample Dates		
										Initial Exceedance	2nd, 3rd, and 4th assessment samples	5th background sample
OW-227B	Barium	µg/l	1920	6	0.0	Insufficient sample size to calculate LCL and UCL	2000	NA	484 NPL	1/24/2023	3/21/2023; 8/3/2023; 9/18/2023	12/5/2023
OW-402B	Barium	µg/l	581	21	0.0	430	2000	No	484 NPL	8/26/2015	9/30/2016; 9/17/2017; 9/14/2018	10/7/2019
Area E												
OW-113B	Cobalt	µg/l	14.4	23	0.0	2.89	9.83	No	5.454 LnPL	9/4/2014	3/18/2015; 8/26/2015; 3/22/2016	9/14/2016
	Nickel	µg/l	20.9	21	9.5	12.00	722	No	51.392 LnPL	9/4/2014	3/18/2015; 8/26/2015; 3/22/2016	9/14/2016
OW-212B	Arsenic	µg/l	7.28	10	60.0	0.00	10	No	4.18 NPL	9/17/2020	3/29/2021; 6/21/2021; 11/9/2021	4/12/2022
	Cobalt	µg/l	11.9	10	0.0	2.58	9.83	No	9.83 NPL	3/25/2020	9/17/2020; 3/29/2021; 6/21/2021	11/9/2021
MW-409B	Cobalt	µg/l	11.1	21	0.0	8.45	9.83	YES	5.454 LnPL	8/20/2015	9/27/2016; 9/11/2017; 9/11/2018	9/23/2019
Cell X												
OW-221B	Arsenic	µg/l	10.6	12	41.7	3.16	10	No	4.18 NPL	3/24/2020	8/6/2020; 9/24/2020; 12/10/2020	3/17/2021
	Barium	µg/l	566	12	8.3	343	2000	No	484 NPL	3/24/2020	8/6/2020; 9/24/2020; 12/10/2020	3/17/2021
OW-222B	Cobalt	µg/l	8.11	11	0.0	8.2	9.83	No	5.454 LnPL	3/24/2020	8/12/2020; 9/23/2020; 12/10/2020	3/17/2021

Table 7
Summary Table of Ongoing and Newly Identified SSIs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	LCL	IDNR Statewide Standard	Exceeds Standard?	Upgradient Background Prediction Limit	Sample Dates		
										Initial Exceedance	2nd, 3rd, and 4th assessment samples	5th background sample
Bedrock												
P-213C	Cobalt	µg/l	3.25	23	4.3	1.36	2.1	No	2.5 NPL	9/2/2014	3/12/2015; 9/2/2015; 3/21/2016	10/3/2016
All analytical results given in µg/L. LnPL = lognormal prediction limit NS = No statewide standard exists. NT = No statistical test necessary. NPL = Nonparametric prediction limit PL = Parametric prediction limit RL = Reporting limit NA = Not applicable or not established. GPS exceedances are in red font Prediction limit exceedances shown on gray background. Detections are in bold font Estimated values are designated with a J False positive rate for all comparisons to statewide standards is 1.0%. Only 2024 data is presented here; refer to AWQR appendices for complete historical data used in the statistical tests.												
60722882/400/435/01-IDNR/2024 AWQR/03-SAWQR Tables/IDNR Table 7.xlsx												

Table 8
Summary Table of Ongoing and Newly Identified SSLs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	UCL	IDNR GWPS	Initial Exceedance	Consecutive Compliance Dates UCL < GWPS		
									1st Occurance	Most Recent	Duration
Area A - ACM											
OW-401B	Arsenic	µg/l	5.67	21	4.8	11.53	10	8/26/2015	--	--	--
	Cobalt	µg/l	2.5	21	0.0	8.26	9.83	8/26/2015	2024	--	1 year
	beta-BHC	µg/l	<0.0402	19	57.9	0.074	0.0420	8/26/2015	--	--	--
OW-410B	Barium	µg/l	2750	15	0.0	2720.540	2000.0000	4/8/2020	--	--	--
	Cobalt	µg/l	13.8	15	0.0	13.146	9.8300	3/30/2021	--	--	--
Area C - ACM											
OW-205B	Arsenic	µg/l	9.06	21	4.8	14.56	10	3/29/2016	--	--	--
OW-220B	Arsenic	µg/l	14.4	11	9.1	15.85	10	3/31/2020	--	--	--
	Barium	µg/l	904	11	0.0	922.84	722	3/31/2020	--	--	--
	Cobalt	µg/l	21.7	11	0.0	25.36	9.83	3/31/2020	--	--	--
OW-224B	Barium	µg/l	2580	6	0.0	Insufficient sample size to calculate UCL	2000	1/11/2023	--	--	--
	Cobalt	µg/l	32.5	6	0.0		2.1	1/11/2023	--	--	--
OW-225B	Cobalt	µg/l	33.3	6	0.0	Insufficient sample size to calculate UCL	9.83	9/18/2023	--	--	--
OW-226B	Cobalt	µg/l	18.8	6	0.0	Insufficient sample size to calculate UCL	9.83	9/18/2023	--	--	--
OW-227B	Arsenic	µg/l	16.9	6	0.0	Insufficient sample size to calculate UCL	10	9/20/2023	--	--	--
	Cobalt	µg/l	23.5	6	0.0		9.83	9/20/2023	--	--	--
OW-402B	Cobalt	µg/l	2.02	20	0.0	14.39	9.83	8/26/2015	--	--	--
	Nickel	µg/l	30.4	20	0.0	822.87	722	8/26/2015	--	--	--
OW-414B	Cobalt	µg/l	19.1	15	0.0	23.13	9.83	12/7/2016	--	--	--

Table 8
Summary Table of Ongoing and Newly Identified SSLs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	UCL	IDNR GWPS	Initial Exceedance	Consecutive Compliance Dates UCL < GWPS		
									1st Occurance	Most Recent	Duration
Area E											
OW-113B	Cobalt	µg/l	14.4	23	0.0	16.14	9.83	9/4/2014	--	--	--
OW-212B	Cobalt	µg/l	27.1	11	0.0	23.97	9.83	3/25/2020	--	--	--
	Copper	µg/l	6.07	10	60.0	9.11	1300	9/17/2020	2022	2023	3 years*
	Lead	µg/l	0.763	10	90.0	0.34	15	9/17/2020	2022	2023	3 years*
	Nickel	µg/l	34.1	10	10.0	28.83	722	3/25/2020	2022	2023	3 years*
MW-409B	Cobalt	µg/l	11.1	21	0.0	8.80	9.83	8/20/2015	2023	2024	2 years
Cell X											
OW-221B	Arsenic	µg/l	10.6	12	41.7	8.73	10	3/24/2020	2022	2023	3 years*
	Barium	µg/l	566	12	8.3	722	2000	3/24/2020	2022	2023	3 years*
	Cobalt	µg/l	3.07	12	8.3	6.92	9.83	3/24/2020	2024	--	1 year
OW-222B	Cobalt	µg/l	8.11	11	0.0	8.8	9.83	3/24/2020	2024	--	1 year
OW-223B	Copper	µg/l	5.94	12	41.7	5.43	1300	3/24/2020	2022	2023	3 years*
Bedrock											
P-213C	Cobalt	µg/l	3.25	23	4.3	2.95	2.5	9/2/2014	--	--	--

Table 8
Summary Table of Ongoing and Newly Identified SSLs
2024 Semi-Annual Water Quality Report
Black Hawk County Landfill
Permit No. 7-SDP-1-75P

Well	Parameter	Units	Spring 2024	Total Number Sample Events (n)	Percent Nondetects	UCL	IDNR GWPS	Initial Exceedance	Consecutive Compliance Dates UCL < GWPS		
									1st Occurance	Most Recent	Duration

All analytical results given in µg/L.
 NS = No statewide standard exists.
 NT = No statistical test necessary.
 NPL = Nonparametric prediction limit
 PL = Parametric prediction limit
 RL = Reporting limit
 NA = Not applicable or not established.
 GPS exceedances are in red font
 Prediction limit exceedances shown on gray background.
 Detections are in bold font
 Estimated values are designated with a J
 False positive rate for all comparisons to statewide standards is 1.0%.
 Only 2024 data is presented here; refer to AWQR appendices for complete historical data used in the statistical tests.
 * This well/contaminant pair has been compliant for 3 years and no longer has an SSL
 60722882/400/435/01-IDNR/2024 AWQR/03-AWQR Tables/IDNR Table 8.xlsx

HISTORICAL SHALLOW MONITORING WELL DATA

**Black Hawk County Landfill
Appendix I Results
Monitoring Well OW-216B/OW-216BR**

		OW-216BRR																						
Parameter Name	Units	GPS	Mar-14	Sep-14	Mar-15	Sep-15	Mar-16	Sep-16	Mar-17	Sep-17	Mar-18	Sep-18	Apr-19	Sep-19	Mar-20	Sep-20	Mar-21	Nov-21	May-22	Oct-22	Apr-23	Sep-23	May-24	
Appendix I Inorganics																								
Total Suspended Solids																								
Turbidity, Field	NTU	NS	--	3	7.63	7.62	6.25	7.75	22.6	21.6	21.8	2.5	3.13	4.5	3.75	4.62	9.87	42.5	3	1.75 J	8.87	<1.7	<1.7	2.88
Turbidity, Lab	NTU	NS	--	0.491J	19.69	5.373	27.63	7.411	98.73	14.24	21.14	7.607	29.51	9.26	21.69	35.88	2.7	4.06	5.54	2.26	0.95	3.05	3.71	
Antimony, Lab	µg/L	NS	6	-0.4	-0.161	-0.161	-0.161	-0.237	0.242 J	-0.185	-0.185	-0.42	-0.42	-0.53	-0.53	-0.58	-0.51	<1.1	<1.1	-0.69	-0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	NS	-0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Arsenic	µg/L	10	0.601 J	0.949 J	1.41 J	1.47 J	1.19 J	-0.672	4.18	2.8	--	-0.57	0.834 J	1.27 J	0.923 J	-0.88	1.57 J	0.873 J	0.755 J	-0.75	-0.75	0.654 J	0.615 J	-0.53
Arsenic, Dissolved	µg/L	NS	-0.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Barium	µg/L	2000	56.7	66.4	61.5	91.7	81	89.2	130	154	84.8	101	91.2	113	91.8	119	98.7	123	57.4	86.1	262	225	222	
Barium, Dissolved	µg/L	NS	44.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Beryllium	µg/L	4	<0.08	<0.039	<0.039	0.045 J	-0.221	-0.221	-0.125	-0.125	-0.19	-0.19	-0.27	-0.27	-0.27	-0.27	-0.27	-0.27	-0.27	-0.27	-0.33	-0.33	-0.3	
Beryllium, Dissolved	µg/L	NS	-0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cadmium	µg/L	5	<0.1	<0.112	<0.112	<0.112	-0.0351	0.064 J	-0.0441	-0.0441	-0.06	-0.06	-0.077	-0.039	-0.039	-0.049	-0.051	-0.051	-0.055	-0.055	-0.1	-0.1	-0.1	
Cadmium, Dissolved	µg/L	NS	-0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chromium	100	2.07	<1.24	1.83 J	<1.24	-0.355	-0.355	-0.729	3.79	3.79	3.79	0.76	-0.98	-0.98	-1.1	<1.1	<1.1	1.65 J	<1.1	<1.1	<1.1	<1.1	<1.2	
Chromium, Dissolved	µg/L	NS	0.694 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cobalt	µg/L	2.1	1.59	6.75	4.04	4.27	4.3	0.184 J	2	0.806	0.324 J	2.17	3.24	1.68	2.81	1.01	1.8	0.509	-0.19	-0.19	-0.17	-0.17	-0.17	
Cobalt, Dissolved	µg/L	NS	0.149 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Copper	µg/L	1300	2.52	0.68 J	-0.485	-0.485	<1.22	<1.22	<2.19	<2.19	<1.6	<1.6	<2	<2	<3.2	<1.5	<1.4	<1.4	2.5 J	2.84 J	<1.8	<1.8	<1.8	
Copper, Dissolved	µg/L	NS	1.64 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Lead	µg/L	15	0.371 J	-0.0967	-0.0967	-0.0967	-0.211	-0.211	-0.324	-0.324	-0.25	-0.25	-0.27	-0.27	-0.27	-0.11	-0.21	-0.21	-0.24	-0.24	-0.24	-0.24	-0.26	
Lead, Dissolved	µg/L	NS	-0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Nickel	100	5.59	12.4	7.87	8.66	6.71	2.62 J	3.81 J	3.6 J	5														

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL but less than the RL are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill

**Appendix 1 Results
Monitoring Well OW-101B**

Parameter Name	Units	GPS	Nov-22	Jan-23	Apr-23	Sep-23	Dec-23	May-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	1.25 J	0.75 J	<0.638	4.13	1.75 J	2.25
Turbidity, Field	NTU	NS	0	0	0.73	4.47	0.78	3.5
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<0.69	<0.69	<1	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	<0.75	<0.75	<0.53	<0.53	<0.53	<0.53
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	188	162	164	181	179	179
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	<0.055	<0.055	<0.1	<0.1	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	1.9 J	6.94	2.6 J	1.75 J	4.73 J	1.43 J
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	<0.19	<0.19	<0.17	0.275 J	0.311 J	<0.17
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	<0.24	<0.24	<0.24	0.469 J	<0.24	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	<1.9	<1.9	<1.9	4.14 J	4.15 J	<2.1
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	<0.96	<0.96	1.74 J	1.51 J	<1.4	1.52 J
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	0.382 J	2.98	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<6.4	<6.4	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill
Appendix II Results
Monitoring Well OW-220B

Component	Part	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31	W32	W33	W34	W35	W36	W37	W38	W39	W40	W41	W42	W43	W44	W45	W46	W47	W48	W49	W50	W51	W52	W53	W54	W55	W56	W57	W58	W59	W60	W61	W62	W63	W64	W65	W66	W67	W68	W69	W70	W71	W72	W73	W74	W75	W76	W77	W78	W79	W80	W81	W82	W83	W84	W85	W86	W87	W88	W89	W90	W91	W92	W93	W94	W95	W96	W97	W98	W99	W100	W101	W102	W103	W104	W105	W106	W107	W108	W109	W110	W111	W112	W113	W114	W115	W116	W117	W118	W119	W120	W121	W122	W123	W124	W125	W126	W127	W128	W129	W130	W131	W132	W133	W134	W135	W136	W137	W138	W139	W140	W141	W142	W143	W144	W145	W146	W147	W148	W149	W150	W151	W152	W153	W154	W155	W156	W157	W158	W159	W160	W161	W162	W163	W164	W165	W166	W167	W168	W169	W170	W171	W172	W173	W174	W175	W176	W177	W178	W179	W180	W181	W182	W183	W184	W185	W186	W187	W188	W189	W190	W191	W192	W193	W194	W195	W196	W197	W198	W199	W200	W201	W202	W203	W204	W205	W206	W207	W208	W209	W210	W211	W212	W213	W214	W215	W216	W217	W218	W219	W220	W221	W222	W223	W224	W225	W226	W227	W228	W229	W230	W231	W232	W233	W234	W235	W236	W237	W238	W239	W240	W241	W242	W243	W244	W245	W246	W247	W248	W249	W250	W251	W252	W253	W254	W255	W256	W257	W258	W259	W260	W261	W262	W263	W264	W265	W266	W267	W268	W269	W270	W271	W272	W273	W274	W275	W276	W277	W278	W279	W280	W281	W282	W283	W284	W285	W286	W287	W288	W289	W290	W291	W292	W293	W294	W295	W296	W297	W298	W299	W300	W301	W302	W303	W304	W305	W306	W307	W308	W309	W310	W311	W312	W313	W314	W315	W316	W317	W318	W319	W320	W321	W322	W323	W324	W325	W326	W327	W328	W329	W330	W331	W332	W333	W334	W335	W336	W337	W338	W339	W340	W341	W342	W343	W344	W345	W346	W347	W348	W349	W350	W351	W352	W353	W354	W355	W356	W357	W358	W359	W360	W361	W362	W363	W364	W365	W366	W367	W368	W369	W370	W371	W372	W373	W374	W375	W376	W377	W378	W379	W380	W381	W382	W383	W384	W385	W386	W387	W388	W389	W390	W391	W392	W393	W394	W395	W396	W397	W398	W399	W400	W401	W402	W403	W404	W405	W406	W407	W408	W409	W410	W411	W412	W413	W414	W415	W416	W417	W418	W419	W420	W421	W422	W423	W424	W425	W426	W427	W428	W429	W430	W431	W432	W433	W434	W435	W436	W437	W438	W439	W440	W441	W442	W443	W444	W445	W446	W447	W448	W449	W450	W451	W452	W453	W454	W455	W456	W457	W458	W459	W460	W461	W462	W463	W464	W465	W
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Deviations at or above the RL are shown in bold italics on gray background.

Deviations greater than the MDL, but less than the RL, are shown in bold italics on white background with a 1.

NS = Not standard

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well OW-224B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	Apr-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	15.5	9	16.5	16.5	20.5	33
Turbidity, Field	NTU	NS	24.84	8.9	28.62	104.1	4.69	67.89
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<2.76	1.65 J	1.23 J	<4	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	2.98	3.51	4.99	6.57	6.26	5.7
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1700	1860	2120	1770	2370	2580
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<1.08	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	1.53	1.33	0.387	0.454	0.234	0.349
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	8.34	9.01	9.25	9.24	12.6	7.68
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	55.4	62	29.9	24.8	21.7	32.5
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	17.2	11.6 J	3.5 J	2.5 J	1.94 J	7.43
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	0.801	1.27	0.926	1.61	1.37	1.44
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	280	272	143	125	105	172
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.96 J	1.97 J	2.64 J	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<2
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	1.42	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	2.45 J	3.37 J	5.35 J	3.6 J	3.21 J	<4.4
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	10.2 J	<10	<6.4	<25.6	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<3.8	<0.38	<0.38	<3.8
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<1.9	<0.19	<0.19	<1.9
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<4.7	<0.47	<0.47	<4.7
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<4.5	<0.45	<0.45	<4.5
1,1-Dichloroethane	µg/L	140	0.242 J	0.383 J	<2.2	<0.22	<0.22	<2.2
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<5.6	<0.56	<0.56	<5.6
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<5.9	<0.59	<0.59	<5.9
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<12	<1.2	<1.2	<12
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<3.4	<0.34	<0.34	<3.4
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<3.7	<0.37	<0.37	<3.7
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<3.9	<0.39	<0.39	<3.9
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<2.7	<0.27	<0.27	<2.7
1,4-Dichlorobenzene	µg/L	75	1.97	3.18	2.81 J	3.29	2.95	<2.3
2-Butanone	µg/L	4000	<2.1	7.65 J	<21	<2.1	4.77 J	<21
2-Hexanone	µg/L	NS	<2	<2	<20	<2	<2	<20
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<21	<2.1	<2.1	<21
Acetone	µg/L	6300	<3.1	<3.1	<31	6.7 J	5.43 J	<31
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<22	<2.2	<2.2	<22
Benzene	µg/L	5	2.05	3.24	4.34 J	4.36	4.2	3.02 J
Bromochloromethane	µg/L	90	<0.54	<0.54	<5.4	<0.54	<0.54	<5.4
Bromodichloromethane	µg/L	80	<0.39	<0.39	<3.9	<0.39	<0.39	<3.9
Bromomethane	µg/L	10	<1.1	<1.1	<11	<1.1	<1.1	<11
Carbon disulfide	µg/L	700	<0.45	<0.45	<4.5	<0.45	<0.45	<4.5
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<6.5	<0.65	<0.65	<6.5
Chlorobenzene	µg/L	100	<0.4	<0.4	<4	<0.4	0.429 J	<4
Chloroethane	µg/L	2800	<0.79	<0.79	<7.9	<0.79	<0.79	<7.9
Chloromethane	µg/L	NS	<0.61	<0.61	<6.1	<0.61	<0.61	<6.1
cis-1,2-Dichloroethylene	µg/L	70	1.85	1.22	<2.1	<0.21	<0.21	<2.1
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<2.5	<0.25	<0.25	<2.5
Dibromochloromethane	µg/L	80	<0.75	<0.75	<7.5	<0.75	<0.75	<7.5
Dibromomethane	µg/L	70	<0.33	<0.33	<3.3	<0.33	<0.33	<3.3
Dichloromethane	µg/L	5	<1.7	<1.7	<17	<1.7	<1.7	<17
Ethylbenzene	µg/L	700	0.458 J	0.472 J	<3.1	<0.31	<0.31	<3.1
Iodomethane	µg/L	NS	<7	<7	<70	<7	<7	<70
Styrene	µg/L	100	<0.37	<0.37	<3.7	<0.37	<0.37	<3.7
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<4.8	<0.48	<0.48	<4.8
Toluene	µg/L	1000	<0.43	<0.43	<4.3	0.539 J	<0.43	<4.3
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<2.7	<0.27	<0.27	<2.7
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<5.6	<0.56	<0.56	<5.6
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<11	<1.1	<1.1	<11
Tribromomethane	µg/L	80	<0.78	<0.78	<7.8	<0.78	<0.78	<7.8
Trichloroethylene	µg/L	5	<0.43	<0.43	<4.3	<0.43	<0.43	<4.3
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<3.8	<0.38	<0.38	<3.8
Trichloromethane	µg/L	80	<1.3	<1.3	<13	<1.3	<1.3	<13
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<25	<2.5	<2.5	<25
Vinyl Chloride	µg/L	2	<0.18	<0.18	<1.8	<0.18	<0.18	<1.8
Xylenes	µg/L	10000	<0.4	<0.4	<4	<0.4	<0.4	<4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well OW-225B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	Apr-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	9	16.7	10.4	17.5	15.5	42.5
Turbidity, Field	NTU	NS	6.26	35.7	7.74	5.71	17.09	48.28
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<0.69	<0.69	<1	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	1.45 J	1.68 J	2.42	2.16	2.74	5.86
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1510	1360	1680	1070	1420	1710
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	0.895	0.646	0.999	0.484	0.522	0.398
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	3.92 J	4.47 J	4.25 J	3.15 J	4.4 J	4.47 J
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	26.9	30.9	34.9	21	30.6	33.3
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	7.26	5.56	5.84	3.45 J	5.8	3.23 J
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	0.416 J	0.333 J	0.886	0.561	0.673	0.957
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	102	120	126	85	126	144
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.41 J	1.35 J	1.44 J	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	1.15 J	1.23 J	2.37 J	<1.1	1.59 J	1.81 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<6.4	<6.4	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	0.317 J	0.443 J	<0.22	0.287 J	0.331 J	0.274 J
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	1.25	0.498 J	1.07	0.875 J	0.791 J
2-Butanone	µg/L	4000	<2.1	6.58 J	<2.1	5.86 J	5.43 J	6.31 J
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	5.85 J	6.68 J	<3.1	40.9
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	0.777	0.972 J	1	1.28	1.2	1.18
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	0.531 J	0.865 J	0.542 J	0.988 J	0.728 J	0.772 J
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	0.844 J	0.749 J	<0.21	1.16	1.17	0.778 J
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	0.626 J	<0.31	0.504 J	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well OW-226B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	May-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	112	74	62	57	10	48
Turbidity, Field	NTU	NS	138.17	40.59	22.77	82.31	41.44	24.86
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<0.69	<2.76	<1	<5	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	5.53	5.08	7.88	8.57 J	8.09	8.05
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1400	1790	1720	1500	1660	1450
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<1.08	<0.33	<1.65	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	0.19	0.188	0.508	<0.5	0.26	0.148 J
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	9.42	8.87	9.03	10.4 J	9.11	9.35
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	34.5	28.7	26	19.7	24.6	18.8
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	3.99 J	<7.2	2.51 J	<9	3.09 J	3.06 J
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	2.61	1.27	1.28	1.81 J	2.02	0.978
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	84.3	81.2	78.9	66.6	85.1	70.5
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.46 J	1.6 J	<1.4	<7	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<2.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<1.04	<1.3	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	4.35 J	4.24 J	8.12 J	<5.5	2.88 J	2.74 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<40	<6.4	<32	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	0.917 J	1.15	<0.22	0.752 J	0.913 J	0.755 J
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	4.34 J	<2.1	5.17 J	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	5.81 J	12.3	4.46 J	5.36 J
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	2.41	2.51	2.44	2.16	2.77	2.02
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	0.588 J	<0.4	<0.4
Chloroethane	µg/L	2800	1.52 J	0.811 J	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	18	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well OW-227B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	May-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	30	10.3	16	30	27	68
Turbidity, Field	NTU	NS	32.27	21.58	1.32	7.88	1.03	9.52
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<0.69	<0.69	<1	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	6.91	2.67	4.14	7.85	5.32	16.9
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1330	1690	1740	1460	1560	1920
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	0.387	0.54	0.771	0.71	0.398	0.216
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	6.13	5.3	6.68	5.8	6.04	6.53
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	17.2	25.6	33	34.1	26.4	23.5
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	11.6	6.2	3.81 J	2.65 J	1.82 J	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	<0.24	<0.24	0.464 J	0.388 J	0.465 J	0.659
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	73.5	90.1	98.9	76	83.6	78.4
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.79 J	1.48 J	<1.4	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<1.04	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	1.78 J	1.82 J	6.34 J	1.51 J	1.67 J	2.48 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<6.4	<6.4	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	0.425 J	0.543 J	<0.22	<0.22	0.555 J	0.647 J
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	0.45 J	<0.23	<0.23	<0.23	0.244 J	0.371 J
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	5.57 J	8.32 J	6.19 J	8.33 J
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	1.31	1.95	2.69	2.77	2.78	2.99
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	2.03 J	1.22 J	<0.79	<0.79	1.11 J	0.804 J
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	0.285 J	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	0.347 J	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well MW-320B

Parameter Name	Units	GPS	May-24
Appendix 1 Inorganics			
Total Suspended Solids	mg/L	NS	5.13
Turbidity, Field	NTU	NS	19.41
Turbidity, Lab	NTU	NS	—
Antimony	µg/L	6	<1
Antimony, Dissolved	µg/L	NS	—
Arsenic	µg/L	10	<0.53
Arsenic, Dissolved	µg/L	NS	—
Barium	µg/L	2000	235
Barium, Dissolved	µg/L	NS	—
Beryllium	µg/L	4	<0.33
Beryllium, Dissolved	µg/L	NS	—
Cadmium	µg/L	5	<0.1
Cadmium, Dissolved	µg/L	NS	—
Chromium	µg/L	100	83.3
Chromium, Dissolved	µg/L	NS	—
Cobalt	µg/L	2.1	0.635
Cobalt, Dissolved	µg/L	NS	—
Copper	µg/L	1300	2.38 J
Copper, Dissolved	µg/L	NS	—
Lead	µg/L	15	<0.26
Lead, Dissolved	µg/L	NS	—
Nickel	µg/L	100	31.6
Nickel, Dissolved	µg/L	NS	—
Selenium	µg/L	50	<1.4
Selenium, Dissolved	µg/L	NS	—
Silver	µg/L	100	<0.5
Silver, Dissolved	µg/L	NS	—
Thallium	µg/L	2	<0.57
Thallium, Dissolved	µg/L	NS	—
Vanadium	µg/L	35	1.1 J
Vanadium, Dissolved	µg/L	NS	—
Zinc	µg/L	2000	<9.7
Zinc, Dissolved	µg/L	NS	—
Appendix 1 Organics			
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45
1,1-Dichloroethane	µg/L	140	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37
1,2-Dichloroethane	µg/L	5	<0.39
1,2-Dichloropropane	µg/L	5	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23
2-Butanone	µg/L	4000	<2.1
2-Hexanone	µg/L	NS	<2
4-Methyl-2-pentanone	µg/L	560	<2.1
Acetone	µg/L	6300	<3.1
Acrylonitrile	µg/L	0.32	<2.2
Benzene	µg/L	5	<0.22
Bromochloromethane	µg/L	90	<0.54
Bromodichloromethane	µg/L	80	<0.39
Bromomethane	µg/L	10	<1.1
Carbon disulfide	µg/L	700	<0.45
Carbon Tetrachloride	µg/L	5	<0.65
Chlorobenzene	µg/L	100	<0.4
Chloroethane	µg/L	2800	<0.79
Chloromethane	µg/L	NS	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25
Dibromochloromethane	µg/L	80	<0.75
Dibromomethane	µg/L	70	<0.33
Dichloromethane	µg/L	5	<1.7
Ethylbenzene	µg/L	700	<0.31
Iodomethane	µg/L	NS	<7
Styrene	µg/L	100	<0.37
Tetrachloroethylene	µg/L	5	<0.48
Toluene	µg/L	1000	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1
Tribromomethane	µg/L	80	<0.78
Trichloroethylene	µg/L	5	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38
Trichloromethane	µg/L	80	<1.3
Vinyl Acetate	µg/L	NS	<2.5
Vinyl Chloride	µg/L	2	<0.18
Xylenes	µg/L	10000	0.404 J

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well MW-709B

Parameter Name	Units	GPS	Nov-21	May-22	Jul-22	Oct-22	Feb-23	Apr-23	Sep-23	Apr-24
Appendix 1 Inorganics										
Total Suspended Solids	mg/L	NS	13	2.25	23.4	15.1	9.12	2.13	21.8	2.75
Turbidity, Field	NTU	NS	0	0	9.13	10.49	11.11	3.53	37.24	7.09
Turbidity, Lab	NTU	NS	—	—	—	—	—	—	—	—
Antimony	µg/L	6	<1.1	<0.69	<0.69	<0.69	<0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Arsenic	µg/L	10	1.58 J	<0.75	<0.75	<0.75	<0.75	1.15 J	<0.53	<0.53
Arsenic, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Barium	µg/L	2000	339	150	114	112	136	87.8	105	87.8
Barium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Beryllium	µg/L	4	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Cadmium	µg/L	5	<0.051	<0.055	<0.055	<0.055	<0.055	0.28	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Chromium	µg/L	100	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Cobalt	µg/L	2.1	0.577 J	<0.19	0.21 J	0.267 J	0.352 J	0.38 J	0.426 J	<0.17
Cobalt, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Copper	µg/L	1300	<1.4	<1.8	<1.8	<1.8	<1.8	<1.8	1.86 J	<1.8
Copper, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Lead	µg/L	15	1.31	<0.24	<0.24	<0.24	<0.24	0.596	0.28 J	<0.26
Lead, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Nickel	µg/L	100	5.21	<1.9	<1.9	2.13 J	<1.9	<1.9	<1.9	2.42 J
Nickel, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Selenium	µg/L	50	1.35 J	1.11 J	<0.96	<0.96	<0.96	3.56 J	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Silver	µg/L	100	<0.42	<0.49	<0.49	<0.49	<0.49	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	3.83	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Vanadium	µg/L	35	<1.1	1.15 J	1.32 J	<1.1	<1.1	<1.1	1.95 J	<1.1
Vanadium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Zinc	µg/L	2000	<10	<10	<10	<10	<10	<6.4	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Appendix 1 Organics										
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	0.46 J	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.462 J	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well MW-710B

Parameter Name	Units	GPS	Nov-21	May-22	Jul-22	Oct-22	Feb-23	Apr-23	Sep-23	May-24
Appendix 1 Inorganics										
Total Suspended Solids	mg/L	NS	15.6	9.13	1 J	3.38	3.87	1.38 J	2.75	<1.39
Turbidity, Field	NTU	NS	19.14	13.82	0	1.17	6.04	0.93	1.76	4.49
Turbidity, Lab	NTU	NS	—	—	—	—	—	—	—	—
Antimony	µg/L	6	<1.1	<0.69	<0.69	<0.69	<0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Arsenic	µg/L	10	<0.75	<0.75	<0.75	<0.75	<0.75	<0.53	<0.53	<0.53
Arsenic, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Barium	µg/L	2000	233	87.9	88.1	95.8	83.2	75.7	80.5	64.4
Barium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Beryllium	µg/L	4	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Cadmium	µg/L	5	<0.051	<0.055	<0.055	<0.055	<0.055	<0.1	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Chromium	µg/L	100	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Cobalt	µg/L	2.1	<0.19	<0.19	<0.19	<0.19	<0.19	<0.17	<0.17	<0.17
Cobalt, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Copper	µg/L	1300	<1.4	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Copper, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Lead	µg/L	15	<0.21	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.26
Lead, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Nickel	µg/L	100	<1.9	<1.9	2.25 J	<1.9	<1.9	<1.9	<1.9	<2.1
Nickel, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Selenium	µg/L	50	<0.96	<0.96	<0.96	<0.96	<0.96	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Silver	µg/L	100	<0.42	<0.49	<0.49	<0.49	<0.49	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Vanadium	µg/L	35	1.4 J	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Zinc	µg/L	2000	<10	<10	<10	<10	<10	<6.4	8.34 J	<9.7
Zinc, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—
Appendix 1 Organics										
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	8 J	4.02 J	<3.1	<3.1	<3.1	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill

Appendix I Results

Monitoring Well MW-711B

Parameter Name	Units	GPS	Nov-21	May-22	Aug-22	Oct-22	Feb-23	Apr-23	Aug-23	Sep-23	Apr-24
Appendix I Inorganics											
Total Suspended Solids	mg/L	NS	10.4	2.5	1.5 J	13.6	2	1.88	2.33 J	2	7.88
Turbidity, Field	NTU	NS	28.68	1.48	3.9	23.73	2.41	3.76	9.31	2.38	26.14
Turbidity, Lab	NTU	NS	—	—	—	—	—	—	—	—	—
Antimony	µg/L	6	<1.1	<0.69	<0.69	<0.69	<0.69	<1	—	<1	<1
Antimony, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Arsenic	µg/L	10	<0.75	<0.75	<0.75	<0.75	<0.75	0.68 J	—	0.724 J	0.878 J
Arsenic, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Barium	µg/L	2000	136	79.5	61.4	57.1	57.7	54.8	—	49.9	43.5
Barium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Beryllium	µg/L	4	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	—	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Cadmium	µg/L	5	0.126	0.061 J	<0.055	<0.055	0.06 J	0.173 J	—	<0.1	0.116 J
Cadmium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Chromium	µg/L	100	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Cobalt	µg/L	2.1	2.09	4.92	4.89	3.42	2.81	3.51	—	4.91	4.43
Cobalt, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Copper	µg/L	1300	<1.4	<1.8	<1.8	<1.8	<1.8	<1.8	—	<1.8	<1.8
Copper, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Lead	µg/L	15	<0.21	<0.24	<0.24	<0.24	<0.24	<0.24	—	0.265 J	<0.26
Lead, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Nickel	µg/L	100	7.55	12.3	10.6	9.02	11.8	15	16.3	14	19.5
Nickel, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Selenium	µg/L	50	<0.96	<0.96	<0.96	<0.96	<0.96	<1.4	—	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Silver	µg/L	100	<0.42	<0.49	<0.49	<0.49	<0.49	<0.5	—	<0.5	<0.5
Silver, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	0.477 J	—	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Vanadium	µg/L	35	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Zinc	µg/L	2000	<10	<10	<10	<10	<10	<6.4	—	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Appendix I Organics											
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	—	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	—	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	—	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	—	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	—	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	—	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	—	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	—	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	—	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	—	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	—	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	—	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	—	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	—	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	—	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	—	<2.1	<2.1
Acetone	µg/L	6300	<3.1	11.5	<3.1	<3.1	<3.1	<3.1	—	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	—	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	—	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	—	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	—	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	—	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	—	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	—	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	—	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	—	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	—	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	—	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	—	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	—	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	—	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	—	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	—	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	—	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	—	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	—	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	—	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	—	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	—	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	—	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	—	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	—	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	—	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	—	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	—	<0.4	<0.4

Detections at or above the RL are shown in bold
 italics on gray background.

Detections greater than the MDL, but less than
 the RL are shown in bold italics on white
 background with a J.

NS = No standard

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well MW-712B

Parameter Name	Units	GPS	Nov-21	May-22	Aug-22	Oct-22	Feb-23	Apr-23	Aug-23	Sep-23	Apr-24
Appendix 1 Inorganics											
Total Suspended Solids	mg/L	NS	2.63	2.38	146	17.6	7.38	5.88	4.25	1.88	<1.39
Turbidity, Field	NTU	NS	0.41	0	127.68	10.02	5.34	3.1	10.09	2.1	2.63
Turbidity, Lab	NTU	NS	—	—	—	—	—	—	—	—	—
Antimony	µg/L	6	<1.1	<0.69	<2.76	<0.69	<0.69	<1	—	<1	<1
Antimony, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Arsenic	µg/L	10	<0.75	<0.75	4.42	<0.75	1.1 J	1.35 J	—	0.654 J	0.537 J
Arsenic, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Barium	µg/L	2000	130	92.9	113	18.3	84.9	63.8	—	67.8	63
Barium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Beryllium	µg/L	4	<0.27	<0.27	<1.08	<0.27	<0.27	<0.33	—	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Cadmium	µg/L	5	0.212	0.264	0.228	<0.055	0.08 J	0.355	0.496	0.237	0.131 J
Cadmium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Chromium	µg/L	100	<1.1	<1.1	<1.1	1.16 J	<1.1	<1.1	—	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Cobalt	µg/L	2.1	2.77	2.79	9.82	<0.19	8.6	8.15	9.29	7.3	6.02
Cobalt, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Copper	µg/L	1300	1.41 J	1.87 J	14.8	<1.8	<1.8	<1.8	—	<1.8	<1.8
Copper, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Lead	µg/L	15	<0.21	<0.24	1.71	<0.24	0.304 J	0.555	—	<0.24	<0.26
Lead, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Nickel	µg/L	100	9.58	8.33	11.5	<1.9	11.3	11.5	—	8.46	7.24
Nickel, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Selenium	µg/L	50	<0.96	<0.96	1.3 J	135	<0.96	2.54 J	—	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Silver	µg/L	100	<0.42	<0.49	<0.49	<0.49	<0.49	<0.5	—	<0.5	<0.5
Silver, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	2.79	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Vanadium	µg/L	35	1.25 J	<1.1	1.76 J	<1.1	<1.1	<1.1	—	1.64 J	<1.1
Vanadium, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Zinc	µg/L	2000	<10	<10	<10	<10	<10	<6.4	—	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	—	—	—	—	—	—	—	—	—
Appendix 1 Organics											
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	—	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	—	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	—	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	—	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	—	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	—	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	—	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	—	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	—	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	—	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	—	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	—	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	—	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	—	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	—	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	—	<2.1	<2.1
Acetone	µg/L	6300	<3.1	4.44 J	4.85 J	4.35 J	<3.1	<3.1	—	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	—	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	—	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	—	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	—	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	—	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	—	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	—	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	—	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	—	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	—	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	—	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	—	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	—	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	—	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	—	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	—	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	—	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	—	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	0.846 J	<0.43	<0.43	—	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	—	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	—	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	—	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	—	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	—	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	—	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	—	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	—	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	—	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	—	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill
Appendix I Results
Cell W2 Underdrain GUW3-1

Parameter Name	Units	GPS	May-22	Aug-22	Nov-22	Jan-23	Mar-23	Sep-23	May-24
Appendix I Inorganics									
Total Suspended Solids	mg/L	NS	16.3	11	40.5	17	7	37	18.7
Turbidity, Field	NTU	NS	14.32	8.73	19.31	3.72	16.42	20.11	9.27
Turbidity, Lab	NTU	NS	—	—	—	—	—	—	—
Antimony	µg/L	6	1.34 J	<0.69	<0.69	<0.69	<0.69	1.1 J	<1
Antimony, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Arsenic	µg/L	10	1.29 J	1.69 J	1.96 J	<0.75	<0.75	2.98	1.84 J
Arsenic, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Barium	µg/L	2000	34.9	38.2	32.3	26.7	33.4	30	27.4
Barium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Beryllium	µg/L	4	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Cadmium	µg/L	5	<0.055	<0.055	<0.055	<0.055	<0.055	0.284	<0.1
Cadmium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Chromium	µg/L	100	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Cobalt	µg/L	2.1	5.34	4.21	2.52	2	2.24	2.77	2.21
Cobalt, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Copper	µg/L	1300	<1.8	8.37	10.7	5.84	7.22	40.3	5.55
Copper, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Lead	µg/L	15	<0.24	0.767	0.923	0.241 J	<0.24	1.78	0.486 J
Lead, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Nickel	µg/L	100	15.8	16.2	10.4	8.53	7.46	10.4	6.61
Nickel, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Selenium	µg/L	50	<0.96	<0.96	<0.96	<0.96	<0.96	2.43 J	<1.4
Selenium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Silver	µg/L	100	<0.49	<0.49	<0.49	<0.49	<0.49	0.997 J	<0.5
Silver, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	9.99	1.15
Thallium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Vanadium	µg/L	35	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Zinc	µg/L	2000	29.9	14.5 J	19.5 J	52.8	13.3 J	35.4	11 J
Zinc, Dissolved	µg/L	NS	—	—	—	—	—	—	—
Appendix I Organics									
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	2.13 J	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	9.86 J	<3.1	68.6	28.2	3.89 J	14.7	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	0.401 J	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

HISTORICAL BEDROCK MONITORING WELL DATA

Black Hawk County Landfill
Appendix II Results
Monitoring Well P-213C[illegible]

Directions: at or above the RL are shown in bold italics on gray background.

Directions: greater than the MLE, but less than the RL, are shown in bold italics on white background with a 2.

100 = No standard

Black Hawk County Landfill
Appendix I Results
Monitoring Well P-703C

Parameter Name	Units	GPS	Nov-21	May-22	Aug-22	Oct-22	Apr-23	Oct-23	May-24
Appendix I Inorganics									
Total Suspended Solids	mg/L	NS	5.5	1.25 J	<1.7	<0.638	<1.7	<1.7	2
Turbidity, Field	NTU	NS	1.68	0	0.54	4.34	0.39	1.57	1.24
Turbidity, Lab	NTU	NS	--	--	--	--	--	--	--
Antimony	µg/L	6	<1.1	<0.69	<3.45	<0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Arsenic	µg/L	10	1.54 J	1.2 J	6.04 J	0.976 J	1.17 J	1.03 J	1.24 J
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Barium	µg/L	2000	211	165	722	124	127	111	84.8
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<1.35	<0.27	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Cadmium	µg/L	5	<0.051	<0.055	<0.275	<0.055	<0.1	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Chromium	µg/L	100	<1.1	<1.1	<5.5	<1.1	<1.1	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	0.536	0.385 J	2.5	0.417 J	0.455 J	0.648	0.531
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Copper	µg/L	1300	<1.4	<1.8	<9	<1.8	<1.8	<1.8	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Lead	µg/L	15	<0.21	<0.24	<1.2	<0.24	<0.24	<0.24	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Nickel	µg/L	100	<1.9	<1.9	<9.5	<1.9	<1.9	<1.9	<2.1
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Selenium	µg/L	50	<0.96	<0.96	<4.8	<0.96	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Silver	µg/L	100	<0.42	<0.49	4.07 J	<0.49	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<1.3	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Vanadium	µg/L	35	<1.1	<1.1	<5.5	<1.1	<1.1	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<50	<10	<6.4	6.66 J	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--	--
Appendix I Organics									
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.006	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	3.5	<3.1	<3.1	<3.1	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	3.53	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL but less than
the RL are shown in bold italics on white
background with a J.

NS = No standard

HISTORICAL ACM DATA

**Black Hawk County Landfill
Appendix I Results
Monitoring Well OW-114B**

Appendix I Inorganics		Units	GPS	Mar-14	Aug-14	Mar-15	Aug-15	Mar-16	Oct-16	Dec-16	Apr-17	Sep-17	Mar-18	Sep-18	Mar-19	Sep-19	Mar-20	Oct-20	Mar-21	Nov-21	May-22	Nov-22	Apr-23	Oct-23	May-24
Total Suspended Solids	mg/L	NS	--	<-3.77	--	2.35	0.82	0.563	0.683	0.581	1.3	2.25	2.5	1.9	0.875 J	1.25 J	1.75 J	0.638	0.638	1 J	0.875 J	0.75 J	1.7	<-1.7	1.88
Turbidity, Field	NTU	NS	--	--	--	10.35	1.83	0.966	0.863	0.0031	18.64	3.37	2.01	8.165	1.861	0.43	1.36	0.69	0.43	0.09	1 J	0.15 J	0	2.76	20.11
Turbidity, Lab	NTU	NS	--	--	--	0.6	4.9	<-0.4	13.4	0.9	4.9	<-0.4	0.69 J	3.97	--	--	--	--	--	--	--	--	--	--	--
Antimony	µg/L	6	0.501 J	<-0.161	<-0.161	<-0.161	<-0.237	<-0.237	<-0.237	<-0.185	<-0.185	0.272 J	<-0.42	<-0.53	<-0.53	<-0.58	<-0.51	<-1.1	<-1.1	<-0.69	<-0.69	<-1	<-1	<-1	<-1
Antimony, Dissolved	µg/L	NS	<-0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	2.55 J	<-0.945	1.3 J	<-0.945	0.823 J	1.84 J	<-0.672	1.58 J	2.26	2.14	<-0.57	<-0.75	0.924 J	<-0.88	<-0.88	<-0.88	<-0.75	<-0.75	<-0.75	<-0.75	0.681 J	0.929 J	<-0.53
Arsenic, Dissolved	µg/L	NS	2.15 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	66.7	62	63.6	71.3	51.7	18.6	51.3	45.3	45.2	49.6	41.2	36.7	51.7	48.5	47.2	42.7	46.4	55.9	54.8	62.7	62.1	55.8	
Barium, Dissolved	µg/L	NS	66.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<-0.08	<-0.039	0.041 J	<-0.039	<-0.221	<-0.221	<-0.221	<-0.125	<-0.125	<-0.125	<-0.19	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27	<-0.27
Beryllium, Dissolved	µg/L	NS	<-0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	<-0.1	0.213J	<-0.112	0.142 J	0.142 J	<-0.0351	0.065 J	<-0.0441	<-0.0441	0.174 J	0.086 J	0.087 J	0.061 J	0.066 J	0.051 J	--	<-0.051	<-0.051	<-0.055	<-0.055	0.107 J	0.109 J	<-0.1
Cadmium, Dissolved	µg/L	NS	<-0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	1.88 J	<-1.24	<-1.24	<-1.24	<-0.355	2.02 J	<-0.355	<-0.729	<-0.729	<-0.729	<-0.76	<-0.98	<-0.98	<-1.1	<-1.1	<-1.1	1.81 J	<-1.1	1.51 J	<-1.1	<-1.1	1.93 J	<-0.1
Chromium, Dissolved	µg/L	NS	<-0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	6.15	1.24	4.5	2.65	2.82	1.21	2.9	2.86	3.38	3.53	0.447 J	1.45	1.87	1.94	1.43	0.842	2.85	1.34	1.95	0.753	2.92	0.83	

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL but less than the RL are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill

Appendix I Results

Monitoring Well OW-205B

Parameter Name	Units	GPS	Mar-16	Dec-16	Mar-17	Jun-17	Sep-17	Nov-17	Dec-17	Mar-18	Jul-18	Sep-18	Mar-19	Oct-19	Nov-19	Mar-20	Sep-20	Mar-21	Jun-21	Nov-21	Apr-22	Nov-22	Apr-23	Sep-23	Apr-24
Appendix I Inorganics																									
Total Suspended Solids	mg/L	NS	20.8	7	26.6	14	9	9.12	3.87	22.9	13.3	7.25	21.9	5.25	--	48	6	20.3	--	7 J	34	14	18.8	16.5	10
Turbidity, Field	NTU	NS	108	12.47	39.53	3.316	6.944	2.733	98.7	6.709	10.48	152.17	0.53	10.69	136.35	1.67	289.85	2.45	3.13	65.53	0	144.3	0.81	59.73	
Turbidity, Lab	NTU	NS	76.8	24.7	155	95	10.8	20.9	13.4	39.7	84.5	34.6	1.27	10.6	--	98.9	--	--	--	--	--	--	--	--	--
Antimony	µg/L	6	<0.237	<0.237	<0.185	<0.185	<0.185	0.956 J	<0.185	<0.185	<8.4	<0.42	<0.53	<0.53	--	<0.58	<0.51	<1.1	--	<1.1	<0.69	<0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	14.8	13.9	12.9	7.5	6.55	6.4	2.63	7.25	<11.4	5.31	11.9	18.8	--	13.4	6.85	17.5	--	12.4	10.2	11.1	18.3	9.14	9.06
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	112	177	186	115	108	106	107	125	189	190	151	350	--	307	250	376	--	307	237	240	273	177	171
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.221	<0.221	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<3.8	<0.19	<0.27	<0.27	--	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	0.042 J	<0.0351	<0.0441	<0.0441	<0.0441	0.052 J	<0.0441	<0.0441	<1.2	0.092 J	<0.077	<0.039	--	<0.039	0.152	<0.051	--	<0.051	<0.055	<0.055	<0.1	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	2.33 J	0.68 J	3.03 J	1.06 J	1.32 J	2.86 J	<0.729	0.94 J	<15.2	<0.76	2.73 J	<0.98	--	2.04 J	<1.1	1.81 J	--	<1.1	1.87 J	<1.1	1.87 J	<1.1	1.98 J
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	3.62	2.27	2.9	3.6	3.07	2.85	3.16	3.48	4.62 J	3.77	4.12	3	--	5.14	4.43	6.19	--	4.35	5.01	3.49	5.28	3.37	3.69
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	µg/L	1300	<1.22	<1.22	<2.19	<2.19	<2.19	<2.19	<2.19	<2.19	45.8 J	<1.6	<2	<2	--	<3.2	<1.5	<1.4	--	<1.4	<1.8	<1.8	<1.8	<1.8	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	µg/L	15	0.269 J	<0.211	<0.324	<0.324	<0.324	<0.324	<0.324	<0.324	<0.324	16.2	<0.25	<0.27	<0.27	--	<0.27	<0.11	<0.21	--	<0.21	<0.24	<0.24	<0.24	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	µg/L	100	7.66	5.57	7.27	8.67	6.65	6.69	8.12	7.62	<20	9.79 J	10.7	11.5	--	15.9	12.3	18.8	--	12.3	14.6	10.7	16.2	9.57	12.6
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	µg/L	50	<0.63	<0.63	<0.928	<0.928	<0.928	<0.928	<0.928	<0.928	<18	<0.9	<1	<1	--	<1	<1	<0.96	--	<0.96	<0.96	<0.96	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	µg/L	100	<0.153	<0.153	<0.14	<0.14	<0.14	0.171 J	<0.14	0.167 J	<6	<0.3	<0.37	<0.37	--	<0.37	<0.37	<0.42	--	<0.42	<0.49	<0.49	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/L	2	<0.0255	<0.0255	<0.0644	<0.0644	<0.0644	<0.0644	<0.0644	<0.0644	<3.4	<0.17	<0.27	<0.27	--	<0.26	<0.26	<0.26	--	<0.26	<0.26	<0.26	0.415 J	<0.57	
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	µg/L	35	<0.255	<0.255	<0.84	<0.84	<0.84	<0.84	<0.84	<0.84	<10.4	<0.52	<0.82	<0.82	--	<0.82	<0.85	<1.1	--	<1.1	<1.1	<1.1	<1.1	<1.1	
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	µg/L	2000	<5.21	<5.21	<11.5	<11.5	<11.5	<11.5	<11.5	<11.5	<200	<10	<10	<10	--	<10	<10	<10	--	<10	<10	<10	<6.4	<6.4	
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Appendix I Organics																									
1,1,1,2-Tetrachloroethane	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	--	<0.38	<0.38	<0.38	--	<0.38	<0.38	<0.38	--	<0.38	<0.38	<0.38	<0.38	<0.38	
1,1,1-Trichloroethane	µg/L	200	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	--	<0.19	<0.19	<0.19	--	<0.19	<0.19	<0.19	--	<0.19	<0.19	<0.19	<0.19	<0.19	
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.47	<0.47	<0.47	--	<0.47	<0.47	<0.47	--	<0.47	<0.47	<0.47	<0.47	<0.47	
1,1,2-Trichloroethane	µg/L	5	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	--	<0.45	<0.45	<0.45	--	<0.45	<0.45	<0.45	--	<0.45	<0.45	<0.45	<0.45	<0.45	
1,1-Dichloroethane	µg/L	140	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	--	<0.22	<0.22	<0.22	--	<0.22	<0.22	<0.22	--	<0.22	<0.22	<0.22	<0.22	<0.22	
1,1-Dichloroethylene	µg/L	7	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	<0.56	<0.56	<0.56	--	<0.56	<0.56	<0.56	--	<0.56	<0.56	<0.56	<0.56	<0.56	
1,2,3-Trichloropropane	µg/L	0.0058	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	--	<0.59	<0.59	<0.59	--	<0.59	<0.59	<0.59	--	<0.59	<0.59	<0.59	<0.59	<0.59	
1,2-Dibromo-3-chloropropane	µg/L	0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<1.2	<1.2	<1.2	--	<1.2	<1.2	<1.2	--	<1.2	<1.2	<1.2	<1.2	<1.2	
1,2-Dibromomethane	µg/L	0.05	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.34	<0.34	<0.34	--	<0.34	<0.34	<0.34	--	<0.34	<0.34	<0.34	<0.34	<0.34	
1,2-Dichlorobenzene	µg/L	600	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	<0.37	<0.37	<0.37	--	<0.37	<0.37	<0.37	--	<0.37	<0.37	<0.37	<0.37	<0.37	
1,2-Dichloroethane	µg/L	5	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	--	<0.39	<0.39	<0.39	--	<0.39	<0.39	<0.39	--	<0.39	<0.39	<0.39	<0.39	<0.39	
1,2-Dichloropropane	µg/L	5	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	--	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	
1,4-Dichlorobenzene	µg/L	75	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.23	<0.23	0.373 J	--	0.317 J	<0.23	<0.23	--	<0.23	<0.23	<0.23	<0.23	<0.23	
2-Butanone	µg/L	4000	<0.47	<1.04	18.2	1.36 J	<1.04	<1.04	<1.04	<1.04	--	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	<2.1	<2.1	
2-Hexanone	µg/L	NS	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<2	<2	<2	--	<2	<2	<2	--	<2	<2	<2	<2	<2	
4-Methyl-2-pentanone	µg/L	560	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	--	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	<2.1	<2.1	
Acetone	µg/L	6300	<1.79	<1.79	298	6.02 J	3.33 J	<1.79	<1.79	7.47 J	--	<3.1	3.9 J	<3.1	--	<3.1	<3.1	<3.1	--	<3.1	<3.1	<3.1	6.7 J	<	

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well OW-220B

Parameter Name	Units	GPS	Mar-20	Aug-20	Sep-20	Dec-20	Mar-21	Jun-21	Oct-21	Apr-22	Nov-22	Apr-23	Sep-23	May-24
Appendix 1 Inorganics														
Total Suspended Solids	mg/L	NS	104	83.5	66.4	39.9	67	--	70	56	95	70	58	115
Turbidity, Field	NTU	NS	8.25	19.97	7	3.24	3.75	14.44	--	7.52	10.31	7.69	9.51	4.72
Turbidity, Lab	NTU	NS	343	--	--	--	--	--	--	--	--	--	--	--
Antimony	µg/L	6	0.681 J	<0.51	<0.51	<0.51	<1.1	--	<4.4	<2.76	<0.69	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	13.3	9.74	13.4	12.8	13.2	--	14.5	4.87 J	14.5	16.4	14.5	14.4
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	706	867	732	853	722	--	792	847	706	1120	664	904
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<0.27	<0.27	<0.27	--	<1.08	<1.08	<0.27	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	0.461	0.087 J	0.143	0.094 J	<0.051	--	<0.051	<0.22	<0.055	<0.1	<0.1	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	6.06	7.31	5.42	5.31	5.66	--	5.37	5.81 J	5.56	6.52	6.44	7
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	32.5	30.9	25.4	26.3	27.4	--	21.4	25.4	18.9	24.9	17.3	21.7
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Copper	µg/L	1300	<3.2	5.29	<1.5	<1.5	2.22 J	--	<1.4	<7.2	<1.8	<1.8	2.09 J	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Lead	µg/L	15	0.39 J	0.477 J	0.252 J	0.226 J	0.369 J	--	<0.21	0.272 J	<0.24	0.274 J	0.401 J	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	µg/L	100	123	106	108	109	124	--	108	147	99.7	141	106	135
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	µg/L	50	1.83 J	<1	<1	<1	<0.96	--	<0.96	<3.84	<0.96	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Silver	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.42	--	<0.42	<1.96	<0.49	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	--	<0.26	<0.26	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	µg/L	35	<0.82	1.21 J	0.874 J	<0.85	1.18 J	--	1.26 J	<4.4	1.72 J	1.34 J	2.1 J	1.37 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<10	<10	<10	--	<10	<40	<10	<6.4	6.44 J	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--	--	--	--
Appendix 1 Organics														
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<3.8	<0.38	<0.38	<0.38	--	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<1.9	<0.19	<0.19	<0.19	--	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<4.7	<0.47	<0.47	<0.47	--	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<4.5	<0.45	<0.45	<0.45	--	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	1.02	10.7	0.873 J	0.868 J	0.898 J	--	0.791 J	1.04	0.689 J	0.975 J	<0.22	0.94 J
1,1-Dichloroethylene	µg/L	7	<0.56	<5.6	<0.56	<0.56	<0.56	--	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<5.9	<0.59	<0.59	<0.59	--	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<12	<1.2	<1.2	<1.2	--	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<3.4	<0.34	<0.34	<0.34	--	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<3.7	<0.37	<0.37	<0.37	--	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<3.9	<0.39	<0.39	<0.39	--	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<2.7	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	3.29	20.5	2.56	1.86	1.97	--	<0.23	1.81	1.54	2.14	<0.23	1.87
2-Butanone	µg/L	4000	<2.1	<21	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	<2.1	<2.1	5.29 J
2-Hexanone	µg/L	NS	<2	<20	<2	<2	<2	--	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<21	<2.1	<2.1	<2.1	--	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<31	12.1	<3.1	5.78 J	--	10	<3.1	12.8	4.69 J	12.7	10.8
Acrylonitrile	µg/L	0.32	<2.2	<22	<2.2	<2.2	<2.2	--	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	3.91	32.5	2.98	2.78	2.75	--	2.32	2.42	1.91	2.64	1.77	2.29
Bromochloromethane	µg/L	90	<0.54	<5.4	<0.54	<0.54	<0.54	--	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<3.9	<0.39	<0.39	<0.39	--	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<11	<1.1	<1.1	<1.1	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<4.5	<0.45	<0.45	<0.45	--	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<6.5	<0.65	<0.65	<0.65	--	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	0.758 J	5.13 J	<0.4	0.528 J	0.501 J	--	<0.4	0.418 J	0.414 J	0.435 J	<0.4	<0.4
Chloroethane	µg/L	2800	5.58	39.8 J	<7.9	3.11 J	<0.79	--	2.86 J	2.79 J	1.56 J	<0.79	<0.79	2.09 J
Chloromethane	µg/L	NS	<0.61	<6.1	<0.61	<0.61	<0.61	--	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	0.772 J	13.8	0.698 J	0.574 J	0.573 J	--	0.507 J	0.703 J	<0.21	0.345 J	<0.21	0.474 J
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<2.5	<0.25	<0.25	<0.25	--	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<7.5	<0.75	<0.75	<0.75	--	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<3.3	<0.33	<0.33	<0.33	--	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<17	<1.7	<1.7	<1.7	--	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	<3.1	<0.31	<0.31	<0.31	--	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<70	<7	<7	<7	--	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<3.7	<0.37	<0.37	<0.37	--	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<4.8	<0.48	<0.48	<0.48	--	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<4.3	<0.43	<0.43	<0.43	--	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<2.7	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<5.6	<0.56	<0.56	<0.56	--	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<11	<1.1	<1.1	<1.1	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<7.8	<0.78	<0.78	<0.78	--	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<4.3	<0.43	<0.43	<0.43	--	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<3.8	<0.38	<0.38	<0.38	--	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<13	<1.3	<1.3	<1.3	--	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<25	<2.5	<2.5	<2.5	--	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<1.8	<0.18	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<4	<0.4	<0.4	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill
Appendix H Results
Monitoring Well OW-2208[illegible]

Directions greater than the EL are shown in bold italic on grey background.

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well OW-224B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	Apr-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	15.5	9	16.5	16.5	20.5	33
Turbidity, Field	NTU	NS	24.84	8.9	28.62	104.1	4.69	67.89
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<2.76	1.65 J	1.23 J	<4	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	2.98	3.51	4.99	6.57	6.26	5.7
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1700	1860	2120	1770	2370	2580
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<1.08	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	1.53	1.33	0.387	0.454	0.234	0.349
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	8.34	9.01	9.25	9.24	12.6	7.68
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	55.4	62	29.9	24.8	21.7	32.5
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	17.2	11.6 J	3.5 J	2.5 J	1.94 J	7.43
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	0.801	1.27	0.926	1.61	1.37	1.44
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	280	272	143	125	105	172
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.96 J	1.97 J	2.64 J	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<2
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	1.42	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	2.45 J	3.37 J	5.35 J	3.6 J	3.21 J	<4.4
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	10.2 J	<10	<6.4	<25.6	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<3.8	<0.38	<0.38	<3.8
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<1.9	<0.19	<0.19	<1.9
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<4.7	<0.47	<0.47	<4.7
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<4.5	<0.45	<0.45	<4.5
1,1-Dichloroethane	µg/L	140	0.242 J	0.383 J	<2.2	<0.22	<0.22	<2.2
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<5.6	<0.56	<0.56	<5.6
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<5.9	<0.59	<0.59	<5.9
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<12	<1.2	<1.2	<12
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<3.4	<0.34	<0.34	<3.4
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<3.7	<0.37	<0.37	<3.7
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<3.9	<0.39	<0.39	<3.9
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<2.7	<0.27	<0.27	<2.7
1,4-Dichlorobenzene	µg/L	75	1.97	3.18	2.81 J	3.29	2.95	<2.3
2-Butanone	µg/L	4000	<2.1	7.65 J	<21	<2.1	4.77 J	<21
2-Hexanone	µg/L	NS	<2	<2	<20	<2	<2	<20
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<21	<2.1	<2.1	<21
Acetone	µg/L	6300	<3.1	<3.1	<31	6.7 J	5.43 J	<31
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<22	<2.2	<2.2	<22
Benzene	µg/L	5	2.05	3.24	4.34 J	4.36	4.2	3.02 J
Bromochloromethane	µg/L	90	<0.54	<0.54	<5.4	<0.54	<0.54	<5.4
Bromodichloromethane	µg/L	80	<0.39	<0.39	<3.9	<0.39	<0.39	<3.9
Bromomethane	µg/L	10	<1.1	<1.1	<11	<1.1	<1.1	<11
Carbon disulfide	µg/L	700	<0.45	<0.45	<4.5	<0.45	<0.45	<4.5
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<6.5	<0.65	<0.65	<6.5
Chlorobenzene	µg/L	100	<0.4	<0.4	<4	<0.4	0.429 J	<4
Chloroethane	µg/L	2800	<0.79	<0.79	<7.9	<0.79	<0.79	<7.9
Chloromethane	µg/L	NS	<0.61	<0.61	<6.1	<0.61	<0.61	<6.1
cis-1,2-Dichloroethylene	µg/L	70	1.85	1.22	<2.1	<0.21	<0.21	<2.1
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<2.5	<0.25	<0.25	<2.5
Dibromochloromethane	µg/L	80	<0.75	<0.75	<7.5	<0.75	<0.75	<7.5
Dibromomethane	µg/L	70	<0.33	<0.33	<3.3	<0.33	<0.33	<3.3
Dichloromethane	µg/L	5	<1.7	<1.7	<17	<1.7	<1.7	<17
Ethylbenzene	µg/L	700	0.458 J	0.472 J	<3.1	<0.31	<0.31	<3.1
Iodomethane	µg/L	NS	<7	<7	<70	<7	<7	<70
Styrene	µg/L	100	<0.37	<0.37	<3.7	<0.37	<0.37	<3.7
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<4.8	<0.48	<0.48	<4.8
Toluene	µg/L	1000	<0.43	<0.43	<4.3	0.539 J	<0.43	<4.3
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<2.7	<0.27	<0.27	<2.7
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<5.6	<0.56	<0.56	<5.6
trans-1,4-Dichloro-2-butene	µg/L	1.8	<1.1	<1.1	<11	<1.1	<1.1	<11
Tribromomethane	µg/L	80	<0.78	<0.78	<7.8	<0.78	<0.78	<7.8
Trichloroethylene	µg/L	5	<0.43	<0.43	<4.3	<0.43	<0.43	<4.3
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<3.8	<0.38	<0.38	<3.8
Trichloromethane	µg/L	80	<1.3	<1.3	<13	<1.3	<1.3	<13
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<25	<2.5	<2.5	<25
Vinyl Chloride	µg/L	2	<0.18	<0.18	<1.8	<0.18	<0.18	<1.8
Xylenes	µg/L	10000	<0.4	<0.4	<4	<0.4	<0.4	<4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Black Hawk County Landfill
Appendix 1 Results
Monitoring Well OW-225B

Parameter Name	Units	GPS	Jan-23	Mar-23	Aug-23	Sep-23	Dec-23	Apr-24
Appendix 1 Inorganics								
Total Suspended Solids	mg/L	NS	9	16.7	10.4	17.5	15.5	42.5
Turbidity, Field	NTU	NS	6.26	35.7	7.74	5.71	17.09	48.28
Turbidity, Lab	NTU	NS	--	--	--	--	--	--
Antimony	µg/L	6	<0.69	<0.69	<1	<1	<1	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--
Arsenic	µg/L	10	1.45 J	1.68 J	2.42	2.16	2.74	5.86
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--
Barium	µg/L	2000	1510	1360	1680	1070	1420	1710
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--
Beryllium	µg/L	4	<0.27	<0.27	<0.33	<0.33	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cadmium	µg/L	5	0.895	0.646	0.999	0.484	0.522	0.398
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--
Chromium	µg/L	100	3.92 J	4.47 J	4.25 J	3.15 J	4.4 J	4.47 J
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--
Cobalt	µg/L	2.1	26.9	30.9	34.9	21	30.6	33.3
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--
Copper	µg/L	1300	7.26	5.56	5.84	3.45 J	5.8	3.23 J
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--
Lead	µg/L	15	0.416 J	0.333 J	0.886	0.561	0.673	0.957
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--
Nickel	µg/L	100	102	120	126	85	126	144
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--
Selenium	µg/L	50	1.41 J	1.35 J	1.44 J	<1.4	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--
Silver	µg/L	100	<0.49	<0.49	<0.5	<0.5	<0.5	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--
Thallium	µg/L	2	<0.26	<0.26	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--
Vanadium	µg/L	35	1.15 J	1.23 J	2.37 J	<1.1	1.59 J	1.81 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--
Zinc	µg/L	2000	<10	<10	<6.4	<6.4	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--
Appendix 1 Organics								
1,1,1,2-Tetrachloroethane	µg/L	70	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	0.317 J	0.443 J	<0.22	0.287 J	0.331 J	0.274 J
1,1-Dichloroethylene	µg/L	7	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.23	1.25	0.498 J	1.07	0.875 J	0.791 J
2-Butanone	µg/L	4000	<2.1	6.58 J	<2.1	5.86 J	5.43 J	6.31 J
2-Hexanone	µg/L	NS	<2	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
Acetone	µg/L	6300	<3.1	<3.1	5.85 J	6.68 J	<3.1	40.9
Acrylonitrile	µg/L	0.32	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Benzene	µg/L	5	0.777	0.972 J	1	1.28	1.2	1.18
Bromochloromethane	µg/L	90	<0.54	<0.54	<0.54	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.65	<0.65	<0.65	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	0.531 J	0.865 J	0.542 J	0.988 J	0.728 J	0.772 J
Chloroethane	µg/L	2800	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	0.844 J	0.749 J	<0.21	1.16	1.17	0.778 J
cis-1,3-Dichloropropene	µg/L	NS	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.31	0.626 J	<0.31	0.504 J	<0.31	<0.31
Iodomethane	µg/L	NS	<7	<7	<7	<7	<7	<7
Styrene	µg/L	100	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Toluene	µg/L	1000	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	18	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Xylenes	µg/L	10000	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold
italics on gray background.

Detections greater than the MDL, but less than
the RL, are shown in bold italics on white
background with a J.

NS = No standard

Appendix I		Units	GPS	Apr-14	Aug-14	Mar-15	Aug-15	Mar-16	Oct-16	Dec-16	Apr-17	Sep-17	Apr-18	Sep-18	Apr-19	Oct-19	Apr-20	Oct-20	Apr-21	Nov-21	Apr-22	Nov-22	Mar-23	Sep-23	May-24	
Appendix I Inorganics																										
Total Suspended Solids	mg/L	NS	--	77	287	687	56.9	89.8	74	77.9	83.1	58.5	56.1	78.12	92.15	64.7	68	72	26	90	102	85	48	76	76	
Turbidity, Field	NTU	NS	--	2.665	2.087	4.091	6.84	1.788	22.6	1.462	3.131	1.581	1.561	7.112	8.160	0.85	5.09	2.58	2.94	0.6	0	8.59	2.09	3.37	3.37	
Turbidity, Lab	NTU	NS	--	165	253	600	211	397	113	289	164	177	710	313	191	175	--	--	--	--	--	--	--	--	--	
Antimony	µg/L	6	<0.4	<0.161	<0.161	<0.161	<0.237	<0.237	<0.237	<0.185	0.239 J	<0.42	<0.42	<0.53	<0.53	<0.58	<0.51	<1.1	<1.1	<0.69	<0.69	<2.76	<1	<1		
Antimony, Dissolved	µg/L	NS	<0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Arsenic	µg/L	10	6.42	8.94	9.13	10	8.98	13.1	12.7	11.5	12.6	11.6	10.5	12	11.7	12.8	14.3	13.7	10.6	10.4	7.2	5.96 J	4.75	5.67		
Arsenic, Dissolved	µg/L	NS	6.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Barium	µg/L	2000	235	312	280	307	317	442	441	427	775	575	591	870	1160	1650	1620	1800	1490	1300	1110	1230	1140	1710		
Barium, Dissolved	µg/L	NS	224	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Beryllium	µg/L	4	<0.08	<0.039	<0.039	<0.039	<0.039	<0.221	<0.221	<0.221	<0.125	<0.125	<0.19	<0.19	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<1.08	<0.33	<0.33		
Beryllium, Dissolved	µg/L	NS	0.008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cadmium	µg/L	5	<0.1	<0.112	<0.112	<0.112	<0.0351	<0.0351	<0.0351	<0.0441	<0.0441	<0.06	<0.06	<0.077	<0.039	<0.039	0.076 J	0.068 J	<0.051	<0.055	<0.055	<0.22	<0.1	<0.1		
Cadmium, Dissolved	µg/L	NS	<0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chromium	µg/L	100	2.24	1.89 J	1.32 J	1.3 J	1.64 J	1.1 J	1.68 J	1.85 J	1.63 J	1.32 J	1.33 J	2.9 J	2.41 J	2.9 J	2.6 J	2.4 J	1.93 J	1.73 J	1.79 J	<4.4	1.5 J	1.34 J		
Chromium, Dissolved	µg/L	NS	1.3 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Cobalt	µg/L	2.1	34.9	44.8	38.1	42.3	31.9	27.7	25.7	21	21.4	18.1	15.7	13.2	13.1	12.4	13.2	10	6.7	3.69	3.22	2.58	2.21	2.5		
Cobalt, Dissolved	µg/L	NS	35.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Copper	µg/L	1300	2.36	<0.485	<0.485	<0.485	1.39 J	<1.22	1.26 J	<2.19	<2.19	<1.6	<1.6	2.02 J	<2	<3.2	1.76 J	<1.4	<1.4	2.2 J	<1.8	<7.2	<1.8	<1.8		
Copper, Dissolved																										

Black Hawk County Landfill
Appendix II Results
Monitoring Well OW-401B[illegible]

Differences at or above the EL are shown in bold italics on grey background.

Differences greater than the MEI, but less than the EL, are shown in bold italics on white background with a 1.

Black Hawk County Landfill

Appendix I Results

Monitoring Well OW-402B

Parameter Name	Units	GPS	Mar-14	Aug-14	Feb-15	Aug-15	Mar-16	Sep-16	Dec-16	Apr-17	Sep-17	Mar-18	Sep-18	Apr-19	Oct-19	Mar-20	Oct-20	Apr-21	Jun-21	Nov-21	Apr-22	Nov-22	Mar-23	Sep-23	May-24
Appendix I Inorganics																									
Total Suspended Solids	mg/L	NS	--	<3.77	<3.2	<1.2	2.13	1.75 J	3.87	8.25	3.87	6.12	1.1	8.5	1.63 J	1.63 J	3.87	2.67 J	--	2.5	3.25	5	8.33	5.75	<1.39
Turbidity, Field	NTU	NS	--	0.8575	0	0.993	0.7932	0.2666	5.753	1.069	2.017	1.137	1.827	4.77	0.75	0	0.63	0	2.4	0.13	0	0	0.38	1.28	0.82
Turbidity, Lab	NTU	NS	--	<0.6	1.7	1.2	1.4	<0.4	2.1	15.7	3.1	19.6	0.9 J	7.3	1.92	2.34	--	--	--	--	--	--	--	--	--
Antimony	µg/L	6	<0.4	<0.161	<0.161	<0.161	<0.237	<0.237	<0.237	<0.185	<0.185	<0.42	<0.42	<0.53	<0.53	<0.58	<0.51	<1.1	--	<1.1	<0.69	<0.69	<0.69	<1	<1
Antimony, Dissolved	µg/L	NS	<0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	0.606 J	<0.945	<0.945	<0.945	<0.672	<0.672	<0.672	<0.505	0.708 J	0.694 J	0.615 J	<0.75	<0.75	<0.88	1.1	<0.75	--	0.845 J	0.847 J	0.782 J	0.826 J	0.962 J	<0.53
Arsenic, Dissolved	µg/L	NS	<0.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	357	284	365	294	378	283	381	358	469	609	489	444	691	573	892	866	--	1010	979	949	857	850	581
Barium, Dissolved	µg/L	NS	369	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.08	<0.039	<0.039	<0.039	<0.221	<0.221	<0.221	<0.125	<0.125	<0.19	<0.19	<0.27	<0.27	<0.27	<0.27	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33
Beryllium, Dissolved	µg/L	NS	<0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	1.16	0.735	1.29	0.685	0.41 J	0.644	0.765	0.582	0.873	1.23	0.95	0.873	1.09	0.462	1.29	1.12	--	0.951	0.745	0.697	0.529	0.569	<0.1
Cadmium, Dissolved	µg/L	NS	1.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	7.6	6.51	3.81 J	3.42 J	3.13 J	1.11 J	3.05 J	1.79 J	1.41 J	9.64	0.991 J	4.89 J	2.23 J	1.74 J	21.2	36	--	5.69	2.26 J	6.82	34.9	7.21	<1.2
Chromium, Dissolved	µg/L	NS	1.7 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	8.69	4.7	6.85	5.23	7.93	3.3	5.11	16.7	6.83	12.9	2.89	7.13	4.12	3.03	7.26	18.4	--	6.74	9.35	8.33	21.2	7.52	2.02
Cobalt, Dissolved	µg/L	NS	8.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	µg/L	1300	2.69	1.7 J	2.37	1.3 J	3.45 J	<1.22	2.3 J	5.38	<2.19	3.84 J	<1.6	2.1 J	<2	4.01 J	5.69	--	--	4.23 J	3.08 J	2.82 J	7.64	4.89 J	<1.8
Copper, Dissolved	µg/L	NS	2.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	µg/L	15	0.233 J	<0.0967	<0.0967	<0.0967	<0.211	<0.211	<0.211	<0.324	<0.324	<0.25	<0.25	<0.27	<0.27	<0.27	<0.11	<0.21	--	<0.21	<0.24	<0.24	<0.24	<0.24	<0.26
Lead, Dissolved	µg/L	NS	<0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	µg/L	100	205	105	200	143	441	55	171	722	258	836	97.3	328	144	73.1	396	988	--	322	602	460	1270	402	30.4
Nickel, Dissolved	µg/L	NS	195	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	µg/L	50	<0.7	<3.34	<3.34	<3.34	0.776 J	<0.63	<0.63	<0.928	<0.928	<0.9	<0.9	<1	<1	<1	<1	<0.96	--	<0.96	<0.96	<0.96	<0.96	<1.4	<1.4
Selenium, Dissolved	µg/L	NS	<0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	µg/L	100	0.0399 J	<0.042	0.055 J	<0.042	<0.153	<0.153	<0.153	<0.14	<0.14	<0.3	<0.3	<0.37	<0.37	<0.37	<0.37	<0.42	--	<0.42	<0.49	<0.49	<0.49	<0.5	<0.5
Silver, Dissolved	µg/L	NS	<0.033	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/L	2	0.0571 J	<0.0325	0.038 J	0.035 J	<0.0255	0.038 J	0.028 J	<0.0644	<0.0644	<0.17	<0.17	<0.27	<0.27	<0.26	<0.26	<0.26	--	<0.26	<0.26	<0.26	<0.26	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	<0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	µg/L	35	0.732 J	0.479	<0.449	<0.449	<0.255	0.309 J	<0.255	<0.84	<0.84	<0.52	<0.52	<0.82	<0.82	<0.82	<0.85	<1.1	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Vanadium, Dissolved	µg/L	NS	0.998 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	µg/L	2000	<2	<6.95	<6.95	<6.95	<5.21	<5.21	<5.21	<11.5	<11.5	<10	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	<10	<6.4	<9.7
Zinc, Dissolved	µg/L	NS	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Appendix I Organics																									
1,1,1,2-Tetrachloroethane	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	--	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	--	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	--	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	--	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.21	0.666 J	0.942 J	0.533 J	0.318 J	0.501 J	0.619 J	0.423 J	0.741 J	0.706 J	0.595 J	0.503 J	0.682 J	0.574 J	0.651 J	0.611 J	--	0.476 J	<0.22	0.654 J	0.581 J	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56	--	<0.56	<0.56	<0.56	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	--	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<0.12	<0.12	<0.12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	--	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
1,2-Dibromomethane	µg/L	0.05	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	--	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	--	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	--	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	0.908 J	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	0.92 J	0.431 J	0.352 J	0.615 J	0.368 J	0.58 J	0.341 J	--	0.497 J	0.41 J	0.404 J	0.374 J	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.237 J	0.366 J	<0.23	<0.23	0.331 J	<0.23	<0.23	--	0.508 J	0.497 J	0.421 J	0.544 J	<0.23	<0.23
2-Butanone	µg/L	4000	<0.47	<0.47	<0.47	<0.47	<0.47	<0.47	<1.04	<1.04	<1.04	<1.04	<2.1	<2.1	<2.1	<2.1	2.86 J	<2.1	--	<2.1	<2.1	<2.1	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<0.2	<0.2	<0.																				

Black Hawk County Landfill

Appendix 1 Results

Monitoring Well P-402A

Parameter Name	Units	GPS	Dec-16	Apr-17	Sep-17	Apr-18	Sep-18	Apr-19	Jun-19	Oct-19	May-24
Appendix 1 Inorganics											
Total Suspended Solids	mg/L	NS	3.75	3.63	1.63 J	<0.638	0.875 J	1 J	--	0.875 J	2.63
Turbidity, Field	NTU	NS	5.355	0.9243	10.09	0.4912	2.933	0.27	45.75	1.08	1.02
Turbidity, Lab	NTU	NS	3.8	1.4	<0.4	0.7 J	<0.4	1.3	--	2.07	--
Antimony	µg/L	6	<0.237	<0.185	<0.185	<0.42	<0.42	6.82	1.86	5.91	2.51
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	<0.672	0.52 J	0.655 J	<0.57	<0.57	<0.75	--	<0.75	<0.53
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	100	97	116	116	94.5	83.7	--	108	4.08
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.221	<0.125	<0.125	<0.19	<0.19	<0.27	--	<0.27	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	<0.0351	<0.0441	<0.0441	<0.06	<0.06	<0.077	--	<0.039	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	0.719 J	<0.729	1.54 J	1.96 J	7.68	19	--	8.2	4.42 J
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	0.801	0.566	0.099 J	0.156 J	<0.061	<0.091	--	0.186 J	0.172 J
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Copper	µg/L	1300	<1.22	6.48	2.56 J	2.43 J	1.77 J	<2	--	<2	<1.8
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Lead	µg/L	15	<0.211	<0.324	<0.324	<0.25	<0.25	<0.27	--	<0.27	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Nickel	µg/L	100	6.55	8.25	2.8 J	5.26	<3	2.3 J	--	5.96	7.73
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Selenium	µg/L	50	<0.63	<0.928	<0.928	<0.9	<0.9	<1	--	<1	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Silver	µg/L	100	<0.153	<0.14	<0.14	<0.3	<0.3	<0.37	--	<0.37	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Thallium	µg/L	2	<0.0255	<0.0644	<0.0644	<0.17	<0.17	<0.27	--	<0.27	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Vanadium	µg/L	35	0.905 J	<0.84	<0.84	0.865 J	0.851 J	0.92 J	--	<0.82	1.36 J
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Zinc	µg/L	2000	<5.21	<11.5	<11.5	<10	<10	<10	--	<10	27.6
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Appendix 1 Organics											
1,1,1,2-Tetrachloroethane	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.38	<0.38	--	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.12	<0.12	<0.12	<0.12	<0.19	<0.19	--	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.1	<0.1	<0.1	<0.1	<0.47	<0.47	--	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.12	<0.12	<0.12	<0.12	<0.45	<0.45	--	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.21	<0.21	<0.21	<0.21	<0.22	<0.22	--	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.15	<0.15	<0.15	<0.15	<0.56	<0.56	--	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.19	<0.19	<0.19	<0.19	<0.59	<0.59	--	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<0.5	<0.5	<0.5	<0.5	<1.2	<1.2	--	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.13	<0.13	<0.13	<0.34	<0.34	<0.34	--	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.14	<0.14	<0.14	<0.14	<0.37	<0.37	--	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.18	<0.18	<0.18	<0.18	<0.39	<0.39	--	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.87	<0.87	<0.87	<0.87	<0.27	<0.27	--	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.2	<0.2	<0.2	<0.2	<0.23	<0.23	--	<0.23	<0.23
2-Butanone	µg/L	4000	<1.04	<1.04	<1.04	<1.04	<2.1	<2.1	--	<2.1	<2.1
2-Hexanone	µg/L	NS	<0.2	<0.2	<0.2	<0.2	<2	<2	--	<2	<2
4-Methyl-2-pentanone	µg/L	560	<0.22	<0.22	<0.22	<0.22	<2.1	<2.1	--	<2.1	<2.1
Acetone	µg/L	6300	3.05 J	2.54 J	3.79 J	3.55 J	<3.1	<3.1	--	3.84 J	<3.1
Acrylonitrile	µg/L	0.32	<0.53	<0.53	<0.53	<2.2	<2.2	<2.2	--	<2.2	<2.2
Benzene	µg/L	5	0.167 J	<0.11	<0.11	0.377 J	<0.22	<0.22	--	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.12	<0.12	<0.12	<0.12	<0.54	<0.54	--	<0.54	<0.54
Bromodichloromethane	µg/L	80	<0.12	<0.12	<0.12	<0.12	<0.39	<0.39	--	<0.39	<0.39
Bromomethane	µg/L	10	<0.22	<0.22	<0.22	<0.22	<1.1	<1.1	--	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.15	<0.15	<0.15	<0.15	<0.45	<0.45	--	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.24	<0.24	<0.24	<0.24	<0.65	<0.65	--	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.19	<0.19	<0.19	<0.19	<0.4	<0.4	--	<0.4	<0.4
Chloroethane	µg/L	2800	<0.15	<0.15	<0.15	<0.15	<0.79	<0.79	--	<0.79	<0.79
Chloromethane	µg/L	NS	<0.31	<0.31	<0.31	<0.31	<0.61	<0.61	--	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.13	<0.13	<0.13	<0.13	<0.21	<0.21	--	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.15	<0.15	<0.15	<0.15	<0.25	<0.25	--	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.2	<0.2	<0.2	<0.2	<0.75	<0.75	--	<0.75	<0.75
Dibromomethane	µg/L	70	<0.18	<0.18	<0.18	<0.18	<0.33	<0.33	--	<0.33	<0.33
Dichloromethane	µg/L	5	0.321 J	0.579 J	<0.17	<0.17	<1.7	<1.7	--	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.21	<0.21	<0.21	<0.21	<0.31	<0.31	--	<0.31	<0.31
Iodomethane	µg/L	NS	<0.8	<0.8	<0.8	<0.8	<7	<7	--	<7	<7
Styrene	µg/L	100	<0.1	<0.1	<0.1	<0.1	<0.37	<0.37	--	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.18	<0.18	<0.18	<0.18	<0.48	<0.48	--	<0.48	<0.48
Toluene	µg/L	1000	<0.15	<0.15	<0.15	0.906 J	<0.43	<0.43	--	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.21	<0.21	<0.21	<0.21	<0.27	<0.27	--	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.22	<0.22	<0.22	<0.56	<0.56	<0.56	--	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<0.13	<0.13	<0.13	<0.13	<1.1	<1.1	--	<1.1	<1.1
Tribromomethane	µg/L	80	<0.14	<0.14	<0.14	<0.14	<0.78	<0.78	--	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.19	<0.19	<0.19	<0.19	<0.43	<0.43	--	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.17	<0.17	<0.17	<0.17	<0.38	<0.38	--	<0.38	<0.38
Trichloromethane	µg/L	80	<0.28	<0.28	<0.28	<0.28	<1.3	<1.3	--	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<0.74	<0.74	<0.74	<0.74	<2.5	<2.5	--	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.1	<0.1	<0.1	<0.1	<0.6	<0.6	--	<0.6	<0.6
Xylenes	µg/L	10000	<0.13	<0.13	<0.13	0.203 J	<0.4	<0.4	--	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

Black Hawk County Landfill

Appendix I Results

Monitoring Well P-402C

Parameter Name	Units	GPS	Dec-16	Mar-17	Jun-17	Sep-17	Nov-17	Apr-18	Apr-19	Apr-20	May-24
Appendix I Inorganics											
Total Suspended Solids	mg/L	NS	3.38	2.88	2.67 J	2.25	1.5 J	1.63 J	2.1 J	<1.7	<1.39
Turbidity, Field	NTU	NS	7.732	0.8558	1.618	8.29	1.009	0.9118	22.17	0	0.7
Turbidity, Lab	NTU	NS	1.3	<0.4	1.3	<0.4	2.7	<0.4	1.5	0.84 J	<1
Antimony	µg/L	6	0.442 J	0.2 J	0.39 J	<0.185	<0.185	<0.42	0.93 J	<0.58	<1
Antimony, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Arsenic	µg/L	10	<0.672	0.53 J	<0.505	<0.505	<0.505	<0.57	<0.75	<0.88	<0.53
Arsenic, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Barium	µg/L	2000	71.7	90.6	81.8	87.6	84.3	78.4	74.8	83.1	70.3
Barium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Beryllium	µg/L	4	<0.221	<0.125	<0.125	<0.125	<0.125	<0.19	<0.27	<0.27	<0.33
Beryllium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Cadmium	µg/L	5	<0.0351	<0.0441	<0.0441	<0.0441	<0.0441	<0.06	<0.077	<0.039	<0.1
Cadmium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Chromium	µg/L	100	<0.355	1.82 J	<0.729	<0.729	<0.729	<0.76	<0.98	<1.1	<1.2
Chromium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Cobalt	µg/L	2.1	0.805	1.18	0.559	0.382 J	0.296 J	0.285 J	0.356 J	0.252 J	0.38 J
Cobalt, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Copper	µg/L	1300	2.21 J	2.83 J	5.28	6.44	3.88 J	5.12	4.53 J	4.68 J	2.33 J
Copper, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Lead	µg/L	15	<0.211	<0.324	<0.324	<0.324	<0.324	<0.25	<0.27	<0.27	<0.26
Lead, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Nickel	µg/L	100	16.4	37.9	16.1	5.77	5.05	3.54 J	3.44 J	2.19 J	2.31 J
Nickel, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Selenium	µg/L	50	0.696 J	<0.928	<0.928	<0.928	<0.928	<0.9	<1	<1	<1.4
Selenium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Silver	µg/L	100	<0.153	<0.14	<0.14	0.171 J	<0.14	<0.3	<0.37	<0.37	<0.5
Silver, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Thallium	µg/L	2	<0.0255	<0.0644	<0.0644	<0.0644	<0.0644	<0.17	<0.27	<0.26	<0.57
Thallium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Vanadium	µg/L	35	0.813 J	<0.84	3.08 J	1.41 J	<0.84	2.24 J	<0.82	0.858 J	<1.1
Vanadium, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Zinc	µg/L	2000	<5.21	40.3	<11.5	<11.5	<11.5	<10	<10	<10	<9.7
Zinc, Dissolved	µg/L	NS	--	--	--	--	--	--	--	--	--
Appendix I Organics											
1,1,1,2-Tetrachloroethane	µg/L	70	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.38	<0.38	<0.38
1,1,1-Trichloroethane	µg/L	200	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	µg/L	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.47	<0.47	<0.47
1,1,2-Trichloroethane	µg/L	5	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.45	<0.45	<0.45
1,1-Dichloroethane	µg/L	140	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.22	<0.22	<0.22
1,1-Dichloroethylene	µg/L	7	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.56	<0.56	<0.56
1,2,3-Trichloropropane	µg/L	0.0058	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.59	<0.59	<0.59
1,2-Dibromo-3-chloropropane	µg/L	0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.2	<1.2	<1.2
1,2-Dibromomethane	µg/L	0.05	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.34	<0.34	<0.34
1,2-Dichlorobenzene	µg/L	600	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.37	<0.37	<0.37
1,2-Dichloroethane	µg/L	5	<0.18	<0.18	0.181 J	<0.18	<0.18	<0.18	<0.39	<0.39	<0.39
1,2-Dichloropropane	µg/L	5	<0.87	<0.87	<0.87	<0.87	<0.87	<0.87	<0.27	<0.27	<0.27
1,4-Dichlorobenzene	µg/L	75	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.23	<0.23	<0.23
2-Butanone	µg/L	4000	<1.04	<1.04	<1.04	<1.04	<1.04	<1.04	<2.1	<2.1	<2.1
2-Hexanone	µg/L	NS	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<2	<2
4-Methyl-2-pentanone	µg/L	560	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<2.1	<2.1	<2.1
Acetone	µg/L	6300	3.17 J	3.11 J	3.74 J	4.76 J	4.67 J	3.43 J	<3.1	<3.1	<3.1
Acrylonitrile	µg/L	0.32	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	<2.2	<2.2	<2.2
Benzene	µg/L	5	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.22	<0.22	<0.22
Bromochloromethane	µg/L	90	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.54	<0.54	<0.54
Bromodichloromethane	µg/L	80	0.795 J	0.179 J	<0.12	<0.12	<0.12	<0.12	<0.39	<0.39	<0.39
Bromomethane	µg/L	10	<0.22	<0.22	1 J	<0.22	<0.22	<0.22	<1.1	<1.1	<1.1
Carbon disulfide	µg/L	700	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.45	<0.45	<0.45
Carbon Tetrachloride	µg/L	5	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.65	<0.65	<0.65
Chlorobenzene	µg/L	100	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.4	<0.4	<0.4
Chloroethane	µg/L	2800	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.79	<0.79	<0.79
Chloromethane	µg/L	NS	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.61	<0.61	<0.61
cis-1,2-Dichloroethylene	µg/L	70	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.21	<0.21	<0.21
cis-1,3-Dichloropropene	µg/L	NS	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.25	<0.25	<0.25
Dibromochloromethane	µg/L	80	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.75	<0.75	<0.75
Dibromomethane	µg/L	70	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.33	<0.33	<0.33
Dichloromethane	µg/L	5	0.391 J	0.635 J	<0.17	<0.17	0.17 J	<0.17	<1.7	<1.7	<1.7
Ethylbenzene	µg/L	700	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.31	<0.31	<0.31
Iodomethane	µg/L	NS	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<7	<7	<7
Styrene	µg/L	100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.37	<0.37	<0.37
Tetrachloroethylene	µg/L	5	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.48	<0.48	<0.48
Toluene	µg/L	1000	0.177 J	<0.15	0.334 J	<0.15	<0.15	0.194 J	<0.43	<0.43	<0.43
Trans-1,2-dichloroethylene	µg/L	100	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.27	<0.27	<0.27
trans-1,3-Dichloropropene	µg/L	NS	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.56	<0.56	<0.56
trans-1,4-Dichloro-2-butene	µg/L	1.8	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<1.1	<1.1	<1.1
Tribromomethane	µg/L	80	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.78	<0.78	<0.78
Trichloroethylene	µg/L	5	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	<0.43	<0.43	<0.43
Trichlorofluoromethane	µg/L	2000	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.38	<0.38	<0.38
Trichloromethane	µg/L	80	1.48	1.37	0.376 J	<0.28	<0.28	<0.28	<1.3	<1.3	<1.3
Vinyl Acetate	µg/L	NS	<0.74	<0.74	<0.74	<0.74	<0.74	<0.74	<2.5	<2.5	<2.5
Vinyl Chloride	µg/L	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.18	<0.18
Xylenes	µg/L	10000	<0.13	<0.13	0.162 J	<0.13	<0.13	0.14 J	<0.4	<0.4	<0.4

Detections at or above the RL are shown in bold italics on gray background.

Detections greater than the MDL, but less than the RL, are shown in bold italics on white background with a J.

NS = No standard

