

January 31, 2025

Ms. Lori Babcock
Michigan Department of Environment, Great Lakes, and Energy
Materials Management Division
Bay City District Office
401 Ketchum St, Suite B
Bay City, Michigan 48708

SUBJECT: 2024 Annual Groundwater Monitoring and Corrective Action Report §257.90(e)

inclusive of the Semiannual Progress Report §257.97(a)

DE Karn Bottom Ash Pond Coal Combustion Residuals (CCR) Unit

Dear Ms. Babcock:

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended). Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90 – 257.98), apply to the Consumers Energy Company (Consumers Energy) Bottom Ash Pond CCR Unit at the DE Karn Power Plant Site. Pursuant to the CCR Rule, no later than January 31, 2018, and annually thereafter, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). This 2024 Annual Groundwater Monitoring and Corrective Action report documents activities from January 2024 through December 2024.

This letter along with the May 2024 and October 2024 semiannual groundwater sampling reports for the Karn Bottom Ash Pond (Enclosures 2 and 3) and a technical memorandum discussing the nature and extent of contamination characterization (Enclosure 4) collectively comprise the 2024 Annual Groundwater Monitoring and Corrective Action Report and meet the requirements of §257.90(e) as documented in the enclosed checklist (Enclosure 1).

The Karn Bottom Ash Pond was in assessment monitoring at the beginning and at the end of the period covered by this report. Consumers Energy is continuing to evaluate corrective measures per §257.96 and §257.97 and is continuing semiannual assessment monitoring in accordance with §257.95.

This groundwater monitoring and corrective action report includes a Semiannual Progress Report, prepared as a requirement of §257.97(a) of the Federal Coal Combustion Residual (CCR) Rule and describes progress towards selecting and implementing the final remedy for the Karn Bottom Ash Pond after the completion of the Assessment of Corrective Measures, DE Karn Bottom Ash Pond Coal Combustion Residual Unit, dated September 11, 2019 (Karn Bottom Ash Pond ACM)



(TRC, 2019). Groundwater management alternatives considered to be technically feasible following source removal activities that could potentially address the residual arsenic under <u>known</u> groundwater conditions were identified in the Karn Bottom Ash Pond ACM as: 1) Source removal with post-remedy monitoring, 2) Source removal with groundwater capture/control, 3) Source removal with impermeable barrier, 4) Source removal with active geochemical sequestration, and 5) Source removal with passive geochemical sequestration.

Karn Bottom Ash Pond Closure Activities

Consumers Energy prepared and submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) a closure work plan for the Karn Bottom Ash Pond (Karn Bottom Ash Pond Work Plan) and a Response Action Plan developed in accordance with Part 115 dated April 9, 2018 and March 15, 2019, respectively. These plans were developed in anticipation of supporting the Assessment of Corrective Measures that would be necessary for evaluating and selecting a final remedy for the Karn Bottom Ash Pond after Consumers Energy provided notification of exceeding Groundwater Protection Standard (GWPS) per §257.95(g) that arsenic was present at statistically significant levels above the federal GWPS in five of six downgradient wells at the Karn Bottom Ash Pond.

EGLE approved the Karn Bottom Ash Pond Work Plan on December 20, 2018 based on expectation that a report documenting the removal activities and certifying solid waste had been removed in accordance with the work plan would be submitted at the completion of activities. Subsequently, EGLE approved the Response Action Plan on May 14, 2019 based on the anticipated submittal of the Assessment of Corrective Measures. Consumers Energy submitted for review and approval, D.E. Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report (Karn Bottom Ash Pond Closure Report) on October 30, 2019 to satisfy requirements for completing the removal of solid waste so that obtaining a solid waste operating license was unnecessary. The certification of solid waste removal was approved by EGLE on December 1, 2020.

Closure by removal has been achieved pursuant to 324.11519b(9)(b) by documenting the removal of sources of contamination under the response action plan. However, concentrations of arsenic in groundwater exceeding the GWPS pursuant to 40 CFR 257.95(h) have persisted within the compliance monitoring well network after the source removal activities were completed. EGLE has approved a remedy consistent with R 299.4444 and R 299.4445 of the Part 115 rules through the approval of the DE Karn Hydrogeological Monitoring Plan, Rev. 03 that includes the determination of Groundwater Not in an Aquifer and groundwater mixing zone authorization. Additional steps needed to address residual groundwater contamination are discussed in the observations and results sections below.

Karn Bottom Ash Pond Assessment Activities for this Period

Consumers Energy instrumented the six new monitoring wells constructed within the former Karn Bottom Ash Pond area during the first week of March 2022 and the existing, certified Groundwater Monitoring System with mini-TrollTM pressure transducers that started collecting high-resolution groundwater elevation data starting on April 7, 2023. These data are continuing to be



evaluated. Based on the evaluation of data from the May and October 2024 sampling events, the following general observations were noted:

- Groundwater flow and direction was found to confirm the lack of radial flow within the former bottom ash pond area and helped to refine the extent of the new potentiometric high that has shifted to the east;
- ➤ The Karn 1&2 Electrical Generating Units that contributed process water discharges to the unlined ditch located immediately northeast of the former bottom ash pond ceased operation on May 30, 2023, resulting in the lowering of water levels near the ditch; and
- The distribution of arsenic was confirmed to be below the site-specific chronic concentration of 100 ug/L at all six well locations located within the former Karn Bottom Ash Pond footprint; however, several monitoring wells had arsenic observed at concentrations above the site-specific GWPS of 21 ug/L.

Results of May and October 2024 Sampling Event

Statistical analysis from the May and October 2024 semiannual groundwater monitoring events verified that the only constituent of concern that is present at statistically significant levels above the established GWPS is arsenic. Results are presented in May 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit (Enclosure 2) and the October 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit (Enclosure 3). Additionally, monitoring performed under the Karn Groundwater Surface-Water Interface (GSI) Compliance Plan demonstrates protection of human health and the environment with criteria determined to be protective at the point of exposure. These results are presented in the 2024 Annual Nature and Extent Data Summary, DE Karn Bottom Ash Pond, Consumers Energy (N&E Summary) (Enclosure 4).

Significant observations from the event summaries are as follows:

- > The groundwater potentiometric surface within the area of the former bottom ash pond area exhibits flow primarily moving west towards the intake channel rather than radially from within the former pond area;
- Regionally, radial flow is observed with a new "high" point shifted to the east of the former Karn Bottom Ash Pond geographically centered between monitoring wells DEK-MW-15003 and DEK-MW-18001;
- ➤ In late 2023, the Karn Generating Facility stopped operating and consequently stopped routine discharge to the discharge ditch north of the Karn Lined



Impoundment¹. This operational change triggered a decrease in groundwater elevation at DEK-MW-15003 and an overall flattening of the mounded groundwater;

- No additional Appendix IV constituents have been observed at statistically significant levels above GWPS for the Karn Bottom Ash Pond groundwater monitoring system;
- In addition to the groundwater flow direction changes mentioned above, redox conditions which also affect contaminant transport, are still stabilizing in the Bottom Ash Pond Area following removal activities and will continue to be evaluated further; and
- ➤ The mean arsenic concentration at DEK-MW-15002 is significantly lower than concentrations observed while the pond was in operation (prior to June 2018), indicating that the discontinuation of hydraulic loading to the Karn Bottom Ash Pond and the completed source removal of CCR was successful in removing a source of arsenic.
- Although arsenic is present in site wells at concentrations above the GWPS, the drinking water pathway is not complete. Monitoring performed under the Michigan-approved GSI Compliance Monitoring Program demonstrates protection of human health and the environment with criteria determined to be protective at the potential point of exposure (Enclosure 4: Figures 1 & 2).
 - Groundwater monitoring locations along the DE Karn Intake Channel and boundary between the coal ash management areas and the power plant complex (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006) document contaminant concentrations of arsenic are less than the authorized mixing zone-based chronic concentration of 100 ug/L.
 - Total chronic loading (i.e., mass flux), calculated from concentrations observed in transect groundwater samples collected from push-point samplers advanced at locations T1-3GSI through T6-3GSI, remains below the chronic mixing zone GSI criterion, indicating current conditions are protective of the GSI pathway.

Conclusions

Source removal activities for the Karn Bottom Ash Pond have been completed and documented in the Karn Bottom Ash Pond Closure Report submitted to EGLE on October 30, 2019. Improvements in groundwater quality have been observed in the groundwater monitoring system, but observations of ongoing changes in groundwater potentiometric surface that may influence groundwater flow characteristics and/or alter groundwater redox conditions at monitoring locations that could influence constituent concentrations, still require further evaluation before a final remedy can be selected. To aid in the further evaluation, Consumers

¹ Discharge to this ditch was completed under authorization of the National Pollutant Discharge Elimination System (NPDES) permit.



Energy installed six additional monitoring wells within the former Karn Bottom Ash Pond area that were integrated into the 2022 sampling schedule. Additionally, these groundwater monitoring wells have been instrumented with mini-TrollsTM that measure the groundwater elevation to a calibrated datum on frequent basis to better understand the relationships between groundwater elevation and potential flux. Subsequent sampling events at the additional monitoring wells will inform the on-going improvements and retention of monitoring-only, passive, or active remedial options following the source removal. As conditions continue to be evaluated post-source removal, the drinking water and GSI pathway are protected by quarterly monitoring performed under the Michigan-approved hydrogeological monitoring plan that includes a GSI Compliance Monitoring Program.

The final remedy for the Karn Bottom Ash Pond will be formally selected per §257.97 and Michigan Solid Waste requirements once the selected option is reviewed and commented on by EGLE and a public meeting is conducted at least 30-days prior to the final selection as required under §257.96(e).

The next semiannual progress report will be submitted in six months by July 30, 2025. Please feel free to contact me with any questions or clarifications.

Sincerely,

Sr. Principal Environmental Engineer

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Ms. Darby Litz, TRC

Ms. Kristin Lowery, TRC

Mr. Andrew Whaley, TRC



Enclosures:

- 1) CCR Annual Groundwater Report Requirements: § 257.90(e). Checklist for the Karn Bottom Ash Pond CCR Unit
- 2) May 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit. (TRC, July 30, 2024)
- 3) October 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit. (TRC, January 30, 2025)
- 4) 2024 Annual Nature and Extent Data Summary, DE Karn, Consumers Energy, Essexville, Michigan. (TRC, January 30, 2025)
- 5) May 2024 and October 2024 Field Notes



Enclosure 1

CCR Annual Groundwater Report Requirements: § 257.90(e).
Checklist for the Karn Bottom Ash Pond CCR Unit

CCR Annual Groundwater Report Requirements: § 257.90(e) Checklist for the Karn Bottom Ash Pond CCR Unit 2024 Annual Report

Requirement	Reference
At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:	
(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;	Figure 2 ^{(2),(3)}
(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;	Not Applicable - no installation or decommissioning
(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;	Section 2.2 Assessment Monitoring (2),(3)
(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and	Annual Report Cover Letter ⁽¹⁾ ; Section 1.1 Program Summary ^{(2),(3)}
(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.	Nature and Extent Data Summary (4)
(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program	
in § 257.94 or the assessment monitoring program in § 257.95;	Annual Report Cover Letter ⁽¹⁾ ; Section 1.1 Program Summary ^{(2),(3)}
(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;	Annual Report Cover Letter ⁽¹⁾ ; Section 1.1 Program Summary ^{(2),(3)}
(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):	
(A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and	Section 1.1 Program Summary (2),(3)
(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Section 1.1 Program Summary (2),(3)
(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:	
(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;	Section 1.1 Program Summary (2),(3)
(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	Section 1.1 Program Summary (2),(3)
(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	Not Applicable - final remedy still under evaluation
(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	Annual Report Cover Letter (1); Section 1.1 Program Summary (2),(3)
(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Annual Report Cover Letter ⁽¹⁾ ; final remedy still under evaluation
(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	Annual Report Cover Letter ⁽¹⁾ ; final remedy still under evaluation

Notes:

- (1) 2024 Annual Groundwater Monitoring and Corrective Action Report DE Karn Bottom Ash Pond Coal Combustion Residuals CCR Units. Consumers Energy. January 30, 2025. Including: First Semiannual 2024 Nature and Extent Data Summary, DE Karn, Consumers Energy, Essexville, Michigan. TRC. January 30, 2025.
- (2) 2024 Annual Groundwater Monitoring and Corrective Action Report DE Karn Bottom Ash Pond Coal Combustion Residuals CCR Units. Consumers Energy. January 30, 2025.
- (2) May 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit. TRC. July 2024.
- (3) October 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit TRC. January 2025.
- (4) 2024 Annual Nature and Extent Data Summary, DE Karn, Consumers Energy, Essexville, Michigan. TRC. January 30, 2025.



Enclosure 2

May 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit. (TRC, July 30, 2024)



May 2024 Assessment Monitoring Data Summary and Statistical Evaluation

DE Karn, Bottom Ash Pond CCR Unit

Essexville, Michigan

July 2024

Darby Litz

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Prepared For:

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1.0 Introduction

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended. Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90 – 257.98) apply to the DE Karn Bottom Ash Pond CCR Unit (Karn Bottom Ash Pond).

Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule for the Karn Bottom Ash Pond located in Essexville, Michigan. This report has been prepared to provide the summary of the May 2024 assessment groundwater monitoring results, data quality review, and statistical data evaluation for the Karn Bottom Ash Pond groundwater monitoring system.

1.1 Program Summary

Groundwater monitoring for the Karn Bottom Ash Pond commenced after the installation of the monitoring well network in December 2015 to establish background conditions. Detection monitoring was initiated on October 17, 2017 in conformance with the self-implementing schedule in the CCR Rule.

Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report DE Karn Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming statistically significant increases (SSIs) over background were as follows:

- Boron at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15004, DEK-MW-15005, DEK-MW-15006;
- Fluoride at DEK-MW-15001;
- Field pH at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15005, DEK-MW-15006; and
- Sulfate at DEK-MW-15006.

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notification that arsenic was present at statistically significant levels above the Ground Water Protection Standards (GWPS) established at 21 ug/L (Consumers Energy, January 2019) in five of the six downgradient monitoring wells at the Karn Bottom Ash Pond as follows:

Arsenic at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15004, and DEK-MW-15005.

The notification of the GWPS exceedance on January 14, 2019 was followed up with a Response Action Plan submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on March 15, 2019 laying out the preliminary understanding of water quality and



actions that were underway to mitigate or eliminate unacceptable risk associated with the identified release from the CCR unit. The *Assessment of Corrective Measures* (ACM) (TRC, September 2019) was initiated on April 14, 2019 and submitted on September 11, 2019 in accordance with the schedule in §257.96 and the requirements of the Response Action Plan.

The ACM documents that the groundwater nature and extent has been defined, as required in §257.95(g)(1). Although arsenic concentrations exceed the GWPS in on-site groundwater monitoring locations, arsenic is delineated within the limits of the property owned by Consumers Energy and there are **currently no adverse effects on human health or the environment** from either surface water or groundwater due to CCR management at the Karn Bottom Ash Pond. Per §257.96(b), Consumers Energy is continuing to monitor groundwater in accordance with the assessment monitoring program as specified in §257.95.

Evaluation of groundwater under the CCR Rule focused on the following constituents that were collected *unfiltered* in the field:

CCR Rule Monitoring Constituents

Appendix III	Apper	ndix IV					
Boron	Antimony	Mercury					
Calcium	Arsenic	Molybdenum					
Chloride	Barium	Radium 226/228					
Fluoride	Beryllium	Selenium					
рН	Cadmium	Thallium					
Sulfate	Chromium						
Total Dissolved Solids (TDS)	Cobalt						
	Fluoride						
	Lead						
	Lithium						

Prior to remedy selection, Consumers Energy will also collect a sufficient number of samples to evaluate Michigan state-specific constituents as follows:



Additional Monitoring Constituents (Michigan Part 115/PA 640)

Detection Monitoring	Assessment Monitoring
Iron	Copper
	Nickel
	Silver
	Vanadium
	Zinc

Consumers Energy will continue to evaluate corrective measures for the Karn Bottom Ash Pond per §257.96 and §257.97 and is continuing semiannual assessment monitoring in accordance with §257.95.

1.2 Site Overview

The Karn Bottom Ash Pond is located within the DE Karn Power Plant site, which is located north of the JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Karn site are the Karn Landfill and the Karn Lined Impoundment. The Karn Landfill has been certified closed and is now in post-closure care and is being monitored in accordance with the EGLE-approved *Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area* (December 19, 2017). The Karn Lined Impoundment has been licensed to operate by the EGLE under Part 115 (License Number 9629) and is being monitored in accordance with the EGLE-approved *Karn Lined Impoundment Hydrogeological Monitoring Plan* (November 13, 2020). The locations of the Karn Landfill, the Karn Lined Impoundment, and the Karn Bottom Ash Pond are shown on Figure 2.

Previously, the Karn Bottom Ash Pond was used for wet ash dewatering and was the primary settling/detention structure for the National Pollutant Discharge Elimination System (NPDES) treatment system prior to discharge. Consumers Energy provided notification of initiation of closure on October 12, 2018 to implement the certified closure plan by removal of CCR under the self-implementing requirements and schedule of the CCR Rule. In preparation for removal of the Karn Bottom Ash Pond, a new lined impoundment (Karn Lined Impoundment) was constructed meeting the requirements of the CCR Rule and the operational needs at the Karn Power Plant. The Karn Lined Impoundment began receipt of CCR and non-CCR on June 7, 2018 when it replaced the Karn Bottom Ash Pond operations.

¹ On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The December 2018 amendments to Part 115 were developed to provide the State of Michigan oversight of CCR impoundments and landfills and to better align existing state solid waste management rules and statutes with the CCR Rule.



Consumers Energy has completed the removal of CCR consistent with the timeline for closure of the Karn Bottom Ash Pond under the DE Karn Bottom Ash Pond Closure Plan (Golder, January 2018; Revised April 2018) and the CCR Rule's closure by removal provisions in §257.102(c). Consumers Energy ceased hydraulic loading to the Karn Bottom Ash Pond in June 2018 and allowed the area to dewater by gravity. Consumers Energy then operated a construction dewatering system to allow for excavation of the vertical and lateral extent of CCR that commenced on March 20, 2019 and has operated through the construction and restoration period. The excavation extended to six inches below known CCR elevations established from previous investigations. Excavated CCR has been placed in the neighboring Weadock Landfill that is constructed with of a fully encapsulation soil-bentonite slurry wall keyed into a competently confining clay unit. The Karn Bottom Ash Pond has been restored by backfilling and grading the surface with clean fill in accordance with the plan to promote stormwater drainage, minimize ponding of surface water, and to reduce the potential of infiltration and migration of residual arsenic and any future constituents of concern (COCs). With the CCR removal complete, Consumers Energy submitted the DE Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report (Golder, October 2019) on October 30, 2019. EGLE approved the documentation removal report on December 1, 2020. Groundwater conditions post-CCR removal continue to be monitored.

1.3 Geology/Hydrogeology

The majority of the Karn Bottom Ash Pond area is comprised of surficial CCR and sand fill. USGS topographic maps and aerial photographs dating back to 1938, in addition to field descriptions of subsurface soil at the site, indicate that the site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, is generally encountered at 80 to 90 ft bgs.

The DE Karn Power Plant site is bounded by several surface water features (Figure 1): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay. In the vicinity of the Karn Bottom Ash Pond, the shallow groundwater flow is generally to the west, toward the intake channel.



2.0 Groundwater Monitoring

2.1 Monitoring Well Network

In accordance with 40 CFR 257.91, Consumers Energy established a groundwater monitoring system for the Karn Bottom Ash Pond, which consists of 10 monitoring wells (four background monitoring wells and six downgradient monitoring wells) that are screened in the uppermost aquifer. The monitoring well locations are shown on Figure 2.

Groundwater around the Karn Bottom Ash Pond was initially characterized as radial based on the eight initial background sampling events prior to commencing detection monitoring; therefore, the six downgradient wells (DEK-MW-15001 through DEK-MW-15006) that were installed and spaced along the circumference of the Karn Bottom Ash Pond continued to accurately represent the quality of groundwater passing the waste boundary that ensures detection of groundwater contamination such that all potential contaminant pathways are monitored. Monitoring well DEK-MW-15001 was decommissioned on April 18, 2018 due to the installation of the new Karn Lined Impoundment, which is a new double composite lined CCR unit constructed as a replacement to the Karn Bottom Ash Pond. Monitoring well DEK-MW-18001 was installed on May 21, 2018 approximately 80 feet southeast of DEK-MW-15001 to maintain the perimeter downgradient monitoring well network.

Groundwater flow direction near the former pond has changed as a result of the pond decommissioning and monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit (Figure 3). These two wells were removed from the certified downgradient monitoring well network. The recertification was included in Appendix D of the October 2021 Assessment Monitoring Data Summary and Statistical Evaluation (TRC, January 2022).

Four monitoring wells located south of the Karn Bottom Ash Pond on the JC Weadock Power Plant site provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019). Analysis for the establishment of these wells as background is detailed in the *Groundwater Statistical Evaluation Plan* for the Karn Bottom Ash Pond, dated October 17, 2017.

2.2 May 2024 Assessment Monitoring

Per §257.95, all wells in the CCR unit groundwater monitoring program must be sampled semiannually. TRC conducted the first semiannual assessment monitoring event of 2024 for Appendix III and IV constituents at the Karn Bottom Ash Pond CCR Unit in accordance with the DE Karn Monitoring Program Sample Analysis Plan (ARCADIS, May 2016) (SAP). The semiannual assessment monitoring event was performed on May 6 through 9, 2024.

The May 2024 sampling event included collection of static water level measurements from the Karn Bottom Ash Pond groundwater monitoring system and other site wells to support preparation of a groundwater contour map. Static water elevation data are summarized in Table 1 and groundwater elevation data are shown on Figure 3. The Karn Bottom Ash Pond monitoring wells (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006 and DEK-MW-18001) and



background monitoring wells (MW-15002, MW-15008, MW-15016, and MW-15019) were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2.

The groundwater samples were analyzed by the Consumers Energy Trail Street Laboratory for Appendix III and IV constituents in accordance with the SAP. Radium analyses were completed by Eurofins Environment Testing. The analytical results for the background wells are summarized in Table 3, and the analytical results for the downgradient monitoring wells are summarized in Table 4. Analytical results from the May 2024 monitoring event are included in the attached laboratory reports (Appendix C).

2.2.1 Groundwater Flow Rate and Direction

Groundwater elevation data collected during the May 2024 assessment monitoring event are provided in Table 1. These data were used to construct the groundwater contour map (Figure 3). Groundwater elevations measured at the site in May 2024 are generally within the range of 579 to 585 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at equal elevation relative to the surrounding surface water features measured by the NOAA gauging station or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although historically the point source discharge of sluiced bottom ash into the Karn Bottom Ash Pond created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected from the groundwater monitoring system of the former Karn Bottom Ash Pond in May 2024demonstrate a reduction in groundwater elevation measurements by several feet when compared to groundwater elevations measured prior to June 2018. Due to the operational changes of the bottom ash pond and the completion of the landfill capping activities, the gradient between the bottom ash pond area and the surrounding surface water bodies is flattening out as compared to previous quarters as the groundwater elevations are reaching a new equilibrium, as expected. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the Karn Lined Impoundment. Monitoring Wells OW-11, OW-12, and DEK-MW-15003 delineate the newly established groundwater elevation high point with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3. As such, the groundwater flow across the footprint of the former bottom ash pond is generally to the west.



The average hydraulic gradient observed on May 6, 2024 in the Karn Bottom Ash Pond area during these events is estimated at 0.0036 ft/ft. The gradient was calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005 and DEK-MW-15003/DEK-MW-15006. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was 0.18 ft/day or 66 ft/year.

2.2.2 Data Quality

Analytical data were found to be usable for assessment monitoring and were generally consistent with previous sampling events. The Data Quality Reviews are included as Appendix A.



3.0 Assessment Monitoring Statistical Evaluation

Assessment monitoring is continuing at the Karn Bottom Ash Pond while Consumers Energy further evaluates corrective measures in accordance with §257.96 and §257.97 as outlined in the ACM. The following section summarizes the statistical approach applied to assess the May 2024 groundwater data in accordance with the assessment monitoring program.

3.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess whether Appendix IV constituent concentrations are present in groundwater at unacceptable levels as a result of CCR Unit operations by statistically comparing concentrations in the downgradient wells to the GWPSs for each Appendix IV constituent. In accordance with §257.95(h) and the Stats Plan, GWPSs were established for the Appendix IV constituents following the preliminary assessment monitoring event as documented in the Groundwater Protection Standards technical memorandum (Appendix C of the 2018 Annual Groundwater Monitoring Report, TRC, January 2019). The GWPS is established as the higher of the EPA Maximum Contaminant Level (MCL) or statistically derived background level for constituents with MCLs and the higher of the EPA Regional Screening Levels (RSLs) or background level for constituents without an established MCL.

3.2 Data Comparison to Groundwater Protection Standards

The compliance well groundwater concentrations for Appendix IV constituents were compared to the GWPSs to determine if a statistically significant exceedance had occurred in accordance with §257.95. Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009), the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient monitoring well data exceeds the GWPS of any Appendix IV constituent. As documented in the January 14, 2019 *Notification of Appendix IV Constituent Exceeding Groundwater Protection Standard per §257.95(g)*, arsenic was present at statistically significant levels above the federal GWPS in five of the six downgradient wells at the Karn Bottom Ash Pond.

Confidence intervals were established per the statistical methods detailed in the *Statistical Evaluation of May 2024 Assessment Monitoring Sampling Event* technical memorandum provided in Appendix B. For each Appendix IV constituent, the concentrations were first compared directly to their respective GWPS. Constituent-well combinations that included a direct exceedance of the GWPSs were retained for further statistical analysis using confidence limits.

Due to changes in groundwater flow direction on site, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit and were determined to be no longer indicative of groundwater conditions influenced by the Karn Bottom Ash Pond. Therefore, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer included for assessment monitoring statistical analysis. The monitoring well network for statistical evaluation consists of the four monitoring wells located downgradient of the bottom ash pond (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001). Overall, the assessment



monitoring statistical evaluations have confirmed that arsenic is the only Appendix IV constituent present at statistically significant levels above the GWPS. The statistical evaluation of the May 2024 semiannual assessment monitoring event data indicate that arsenic is present at statistically significant levels exceeding the GWPS in downgradient monitoring wells at the Karn Bottom Ash Pond:

Constituent	GWPS	#Downgradient Wells Observed
Arsenic	21 ug/L	2 of 4

Previously, arsenic was present in downgradient well DEK-MW-15002 and DEK-MW-15006 at a statistically significant level; however, arsenic concentrations have declined since sluicing to the Karn Bottom Ash Pond ceased in June 2018 and the bottom ash and transport water was diverted to the Karn Lined Impoundment (Appendix B: Attachment 1). The statistical evaluation of the October 2020 through May 2024 data show that the lower confidence limit for arsenic is below the GWPS at DEK-MW-15002 and DEK MW-15006.

Arsenic concentrations at DEK-MW-15005 and DEK-MW-18001 remain above the GWPS at a statistically significant level (i.e., lower confidence limit is above the GWPS) and arsenic concentrations at DEK-MW-18001 have recently been increasing. A summary of the confidence intervals for May 2024 is provided in Table 5. Although arsenic is present above the GWPS, the drinking water pathway is not complete as there are no drinking water wells on-site. Redox conditions, which affect contaminant transport, are still stabilizing in the Bottom Ash Pond Area following removal activities and will continue to be evaluated further.



4.0 Conclusions and Recommendations

Corrective action has been triggered and assessment monitoring is ongoing at the Karn Bottom Ash Pond CCR unit. A summary of the May 2024 assessment monitoring event is presented in this report.

Overall, the statistical assessments have confirmed that arsenic is the only Appendix IV constituent present at statistically significant levels above the GWPS. Consumers Energy has completed the removal of CCR consistent with the timeline for closure of the Karn Bottom Ash Pond under the *DE Karn Bottom Ash Pond Closure Plan* (Golder, January 2018; Revised April 2018) and the CCR Rule's closure by removal provisions in §257.102(c).

The ACM Report provided a high-level assessment of groundwater remediation technologies that could potentially address site-specific COCs (i.e., arsenic) under known groundwater conditions. Groundwater chemistry appears to be improving in some areas as a result of discontinuing the hydraulic loading to the Karn Bottom Ash Pond and the completed source removal of CCR, as shown by the decrease in concentration of arsenic at DEK-MW-15002; however, attainment of the GWPS at all of the Bottom Ash Pond compliance wells may not be feasible due to influences other than the former pond, such as the presence and former operation of the nearby Karn Landfill. Redox conditions, which affect contaminant transport, are still stabilizing following pond removal and will continue to be evaluated further.

Consumers Energy will continue assessment monitoring and evaluate corrective measures in accordance with §257.96 and §257.97 as outlined in the Karn Bottom Ash Pond ACM. The groundwater management remedy for the Karn Bottom Ash Pond will be selected as soon as feasible to meet the federal standards of §257.96(b) of the CCR Rule. Consumers Energy will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98. The next semiannual monitoring event is tentatively scheduled for the fourth calendar guarter of 2024.



5.0 References

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Tables

Table 1

Summary of Groundwater Elevation Data DE Karn – RCRA CCR Monitoring Program Essexville, Michigan

	тос		Screen Interval	May 6, 2023			
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water	Groundwater Elevation		
				(ft BTOC)	(ft)		
DEK Bottom Ash Pon	d						
DEK-MW-15002	590.87	Sand	578.3 to 575.3	7.00	583.87		
DEK-MW-15005	589.72	Sand	572.3 to 567.3	9.88	579.84		
DEK-MW-15006	589.24	Sand	573.0 to 568.0	9.30	579.94		
DEK Bottom Ash Pon	d & Karn Lined Im	poundment					
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.48	583.99		
Karn Lined Impoundr							
DEK-MW-15003	602.74	Sand	578.8 to 574.8	18.95	583.79		
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	7.8	583.78		
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	24.30	583.60		
OW-12	603.10	Silty Sand	584.2 to 579.2	18.25	584.85		
DEK Nature and Exte							
DEK-MW-15004	611.04	Sand	576.6 to 571.6	29.04	582.00		
MW-01	597.02	Sand	573.0 to 570.0	17.25	579.77		
MW-03	597.30	Sand	569.8 to 566.8	17.55	579.75		
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.54	579.90		
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	17.92	580.86		
MW-10	596.97	Sand	582.5 to 572.5	17.00	579.97		
MW-12	598.60	Sand	583.9 to 573.9	18.61	579.99		
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.40	579.97		
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.05	579.75		
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.35	581.64		
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.78	580.79		
DEK Static Water Lev	el						
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.59	579.75		
MW-04	598.01	NR	569.5 to 564.5	18.28	579.73		
MW-17	597.91	Sand	577.0 to 574.0	14.22	583.69		
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.84	582.38		
MW-19	597.28	NR	572.1 to 567.1	17.18	580.10		
MW-20	632.75	Sand	582.3 to 579.3	53.00	579.75		
MW-21	632.91	Sand	587.1 to 584.1	51.90	581.01		
OW-01	631.33	NR	572.5 to 567.5	51.58	579.75		
OW-02	598.01	Fly Ash	579.4 to 576.4	16.29	581.72		
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.48	580.46		
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.30	579.91		
OW-05	593.53	Sand	576.9 to 571.9	13.50	580.03		
OW-06	603.95	NR	580.9 to 575.9	22.85	581.10		
OW-07	596.41	Ash	583.3 to 580.3	15.60	580.81		
OW-08	593.93	NR	581.0 to 576.0	11.10	582.83		
OW-09	593.45	NR	585.5 to 580.5	10.45	583.00		
OW-13	588.52	NR	579.5 to 574.5	3.91	584.61		
OW-15	587.75	NR	572.8 to 567.8	3.85	583.90		

Notes:
Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G (Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2

Summary of Field Parameters DE Karn Bottom Ash Pond – RCRA CCR Monitoring Program

Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction Potential	рН	Specific Conductivity	Temperature	Turbidity
		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(NTU)
Background							
MW-15002	5/8/2024	1.25	-111.5	7.7	495	12.7	8.5
MW-15008	5/8/2024	0.70	-125.5	7.0	1,760	11.5	10.0
MW-15016	5/8/2024	0.69	-117.5	7.1	1,762	12.5	9.9
MW-15019	5/8/2024	0.77	-104.5	7.0	2,044	10.0	5.8
Karn Bottom Ash P	ond		•		•		
DEK-MW-15002	5/9/2024	0.18	-193.3	7.4	780	11.1	5.4
DEK-MW-15005	5/9/2024	0.58	-87.4	7.4	1,166	10.7	4.8
DEK-MW-15006	5/9/2024	0.13	-107.0	7.7	1,095	11.8	3.2
DEK-MW-18001	5/8/2024	0.12	-94.1	7.4	747	12.3	3.0

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius

NTU - Nephelometric Turbidity Unit.

Table 3

Summary of Groundwater Sampling Results (Analytical) DE Karn JC Weadock Background - RCRA CCR Monitoring Program Essexville, Michigan

					Sample Location:	MW-15002	MW-15008	MW-15016	MW-15019
					Sample Date:	5/8/2024	5/8/2024	5/8/2024	5/8/2024
				MI Non-			Daalu		
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^	Background			
Appendix III ⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	21	142	398	241
Calcium	mg/L	NC	NC	NC	500EE	55.9	121	243	173
Chloride	mg/L	250**	250 ^E	250 ^E	50	28.3	395	175	374
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	7.53	2.57	194	93.8
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	358	1,280	1,190	1,340
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.7	7.0	7.1	7.0
Appendix IV ⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	3	17	2
Barium	ug/L	2,000	2,000	2,000	1,200	43	93	157	364
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	1	1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	< 10	22	68	14
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC	< 0.0742	0.589	< 0.149	0.332
Radium-228	pCi/L	NC	NC	NC	NC	< 0.512	< 0.847	< 0.715	< 0.638
Radium-226/228	pCi/L	5	NC	NC	NC	< 0.512	1.03	< 0.715	0.822
Selenium	ug/L	50	50	50	5.0	< 1	< 1	1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 11	5 ⁽²⁾								
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	526	16,900	21,900	23,100
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	1	2	< 1
Nickel	ug/L	NC	100	100	120	2	4	10	5
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	9	2	3
Zinc	ug/L	5,000**	2,400	5,000€	260	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

- * Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.
- ** Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.
- ^- Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.
- ^E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendment Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4

Summary of Groundwater Sampling Results (Analytical) DE Karn Bottom Ash Pond - RCRA CCR Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15002	DEK-MW-15005	DEK-MW-15006	DEK-MW-18001
					•	5/9/2024	5/9/2024	5/9/2024	5/8/2024
	1		1	MI Non-	Sample Date:	5/9/2024	5/9/2024	5/9/2024	5/6/2024
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^				
Appendix III ⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	1,310	1,030	1,110	917
Calcium	mg/L	NC	NC NC	NC NC	500EE	94.3	158	196	52.5
Chloride	mg/L	250**	250 ^E	250 ^E	50	76.3	147	49.5	66.1
Fluoride	ug/L	4,000	NC NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	60.3	358	545	226
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	694	1,400	1,220	670
pH, Field	SÚ	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.4	7.4	7.7	7.4
Appendix IV ⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	3	32	19	484
Barium	ug/L	2,000	2,000	2,000	1,200	129	341	159	147
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	31	32	21	19
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	6	8	17
Radium-226	pCi/L	NC	NC	NC	NC	0.292	0.653	0.497	0.238
Radium-228	pCi/L	NC	NC	NC	NC	< 0.511	0.898	0.593	< 0.623
Radium-226/228	pCi/L	5	NC	NC	NC	0.541	1.55	1.09	< 0.623
Selenium	ug/L	50	50	50	5.0	< 1	< 1	< 1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 11	15 ⁽²⁾								
Iron	ug/L	300**	300E	300 ^E	500,000EE	33	836	1,770	458
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	2	1	< 1
Nickel	ug/L	NC	100	100	120	4	3	4	2
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	3	3	< 2	< 2
Zinc	ug/L	5,000**	2,400	5,000E	260	< 10	< 10	< 10	19

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

 $MCL-Maximum\ Contaminant\ Level,\ EPA\ Drinking\ Water\ Standards\ and\ Health\ Advisories,\ April,\ 2012.$

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- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendment Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 5

Summary of Assessment Monitoring Statistical Evaluation – May 2024 DE Karn Bottom Ash Pond – RCRA CCR Monitoring Program Essexville, Michigan

Constituent	Units	GWPS	DEK-MW-15005		DEK-MW-15005 DEK-MW-15006		DEK-MW-18001		
			LCL	UCL	LCL	UCL	LCL	UCL	
Arsenic	ug/L	21	34	60	19	27	110	690	

Notes:

Only compliance well/constituent pairs with one or more concentrations exceeding the GWPS within

the 8 most recent semiannual sampling events are included on this table.

ug/L - micrograms per Liter.

GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated October 15, 2018.

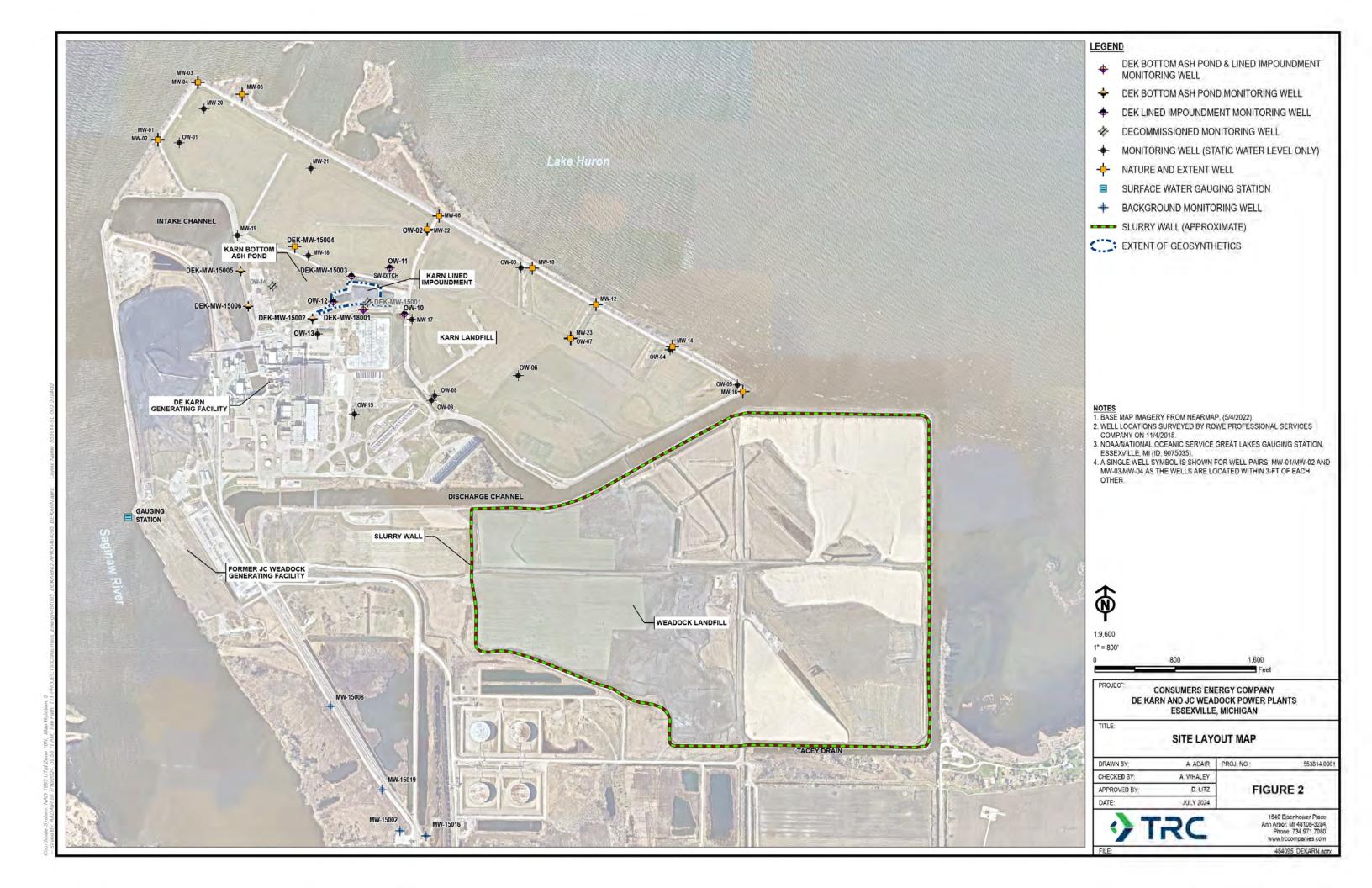
UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

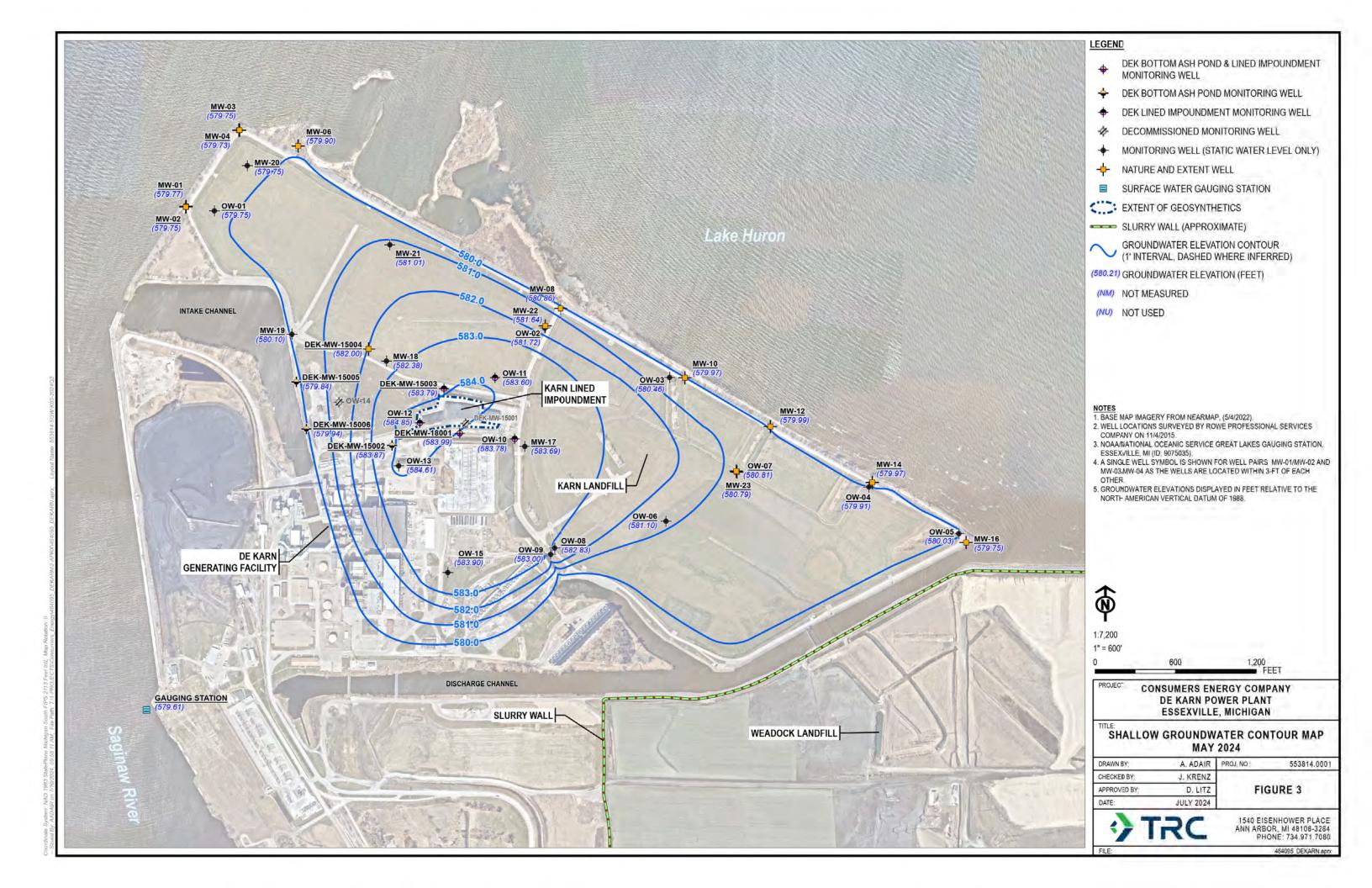
LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

Indicates a statistically significant exceedance of the GWPS. An exceedance occurs when the LCL is greater than the GWPS.



Figures







Appendix A Data Quality Reviews

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 DE Karn Bottom Ash Pond

Groundwater samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0339R and S61970.01(01).

During the May 2024 sampling event, a groundwater sample was collected from each of the following wells:

DEK-MW-15002

DEK-MW-15005

■ DEK-MW-15006

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;

- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services and Merit. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the total metals, anions, alkalinity, TDS, ammonia, and sulfide analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper diagram analyses, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-DEK-BAP) and one equipment blank (EB-DEK-BAP) were collected with this data set. Target analytes were not detected above the RL in these blank samples with the following exception.
 - Nickel was detected in FB-DEK-BAP at a concentration of 2 µg/L. The positive results for nickel in all groundwater samples in this data set are likely false positives due to detection less than 10x the field blank, as summarized in attachment A.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.
- Samples DUP-DEK-BAP-01 and DEK-MW-15002 were submitted as the field duplicate pair with this data set; all criteria were met.

Attachment A

Summary of Data Non-Conformances for Groundwater Analytical Data DE Karn Bottom Ash Pond – CCR Monitoring Program Erie, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-15002	5/9/2024		
DEK-MW-15005	5/9/2024	Nickel	Field blank contamination; potential false positive.
DEK-MW-15006	5/9/2024	INICKEI	Fleid blank Contamination, potential raise positive.
DUP-DEK-BAP-01	5/9/2024		

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the May 2024 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0340R and S61913.01(01).

During the May 2024 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;

- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates, when collected. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services and Merit. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the total metals, anions, ammonia, TDS, alkalinity, and sulfide analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of a detection or assessment monitoring program.
- Data are usable for the purposes of the detection or assessment monitoring program.
- When the data are evaluated through a detection or assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- A field blank was not collected with this data set.
- An equipment blank was not collected with this data set.
- MS and MSD analyses were performed on sample DEK-MW-18001 for total metals, anions, ammonia, total alkalinity, and sulfide. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters therefore were not evaluated; further, with the exception of sulfide, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event April 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the April 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0343.

During the April 2024 sampling event, a groundwater sample was collected from each of the following wells:

■ MW-15002

■ MW-15008

MW-15016

■ MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses:
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents, as well as magnesium, potassium, and sodium, will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Target analytes were not detected above the RL in this blank sample.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 DE Karn Bottom Ash Pond

Groundwater samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-204357-1.

During the May 2024 sampling event, a groundwater sample was collected from each of the following wells:

DEK-MW-15002

DEK-MW-15005

DEK-MW-15006

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;

- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data:
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Target analytes were not detected in the method blanks.
- One equipment blank (EB-DEK-BAP) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD duplicate analyses were not performed on a sample from this data set.
- Laboratory duplicate analyses were performed on sample EB-DEK-BAP for radium-226 and radium-228; all criteria were met.
- Samples DEK-MW-15002/DUP-DEK-BAP-01 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the May 2024 sampling event. The sample was analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-204354-1.

During the May 2024 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;

- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data:
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Target analytes were not detected in the method blanks.
- No equipment or field blanks were collected.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on the sample from this data set.
- A field duplicate pair was not collected.
- Carrier recoveries were within 40-110%.

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 JC Weadock/Karn DEK Background

Groundwater samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-204358-1.

During the May 2024 sampling event, a groundwater sample was collected from each of the following wells:

■ MW-15002

■ MW-15008

■ MW-15016

■ MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Target analytes were not detected in the method blanks.
- One equipment blank (EQ-BACKGROUND) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on a sample from this data set.
- Samples DUP-BACKGROUND/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.



Appendix B Statistical Evaluation of May 2024 Assessment Monitoring Sampling Event



Date: July 30, 2024

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC

Rebecca Paalanen, TRC

Project No.: 553814.0001.0000 Phase 002, Task 002

Subject: Statistical Evaluation of May 2024 Assessment Monitoring Sampling Event

DE Karn Bottom Ash Pond, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018), arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standard (GWPS). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019. Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule ¹ at the DE Karn Power Plant Bottom Ash Pond (Karn Bottom Ash Pond).

An assessment monitoring event was conducted on May 8 through 9,2024. In accordance with §257.95, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix IV constituents are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h), as detailed in the October 15, 2018 Groundwater Protection Standards technical memorandum, which was also included in the 2018 Annual Groundwater Monitoring Report (TRC, January 2019).

The statistical evaluation of the assessment monitoring event data indicates the following constituent is present at statistically significant levels exceeding the GWPS in downgradient monitoring wells at the Karn Bottom Ash Pond:

Constituent	GWPS	#Downgradient Wells Observed
Arsenic	21 ug/L	2 of 4

The results of the assessment monitoring statistical evaluation for the downgradient wells are consistent with the results of the previous assessment monitoring data statistical evaluations, indicating that arsenic is the only constituent present at concentrations above the GWPS. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97. Consumers Energy will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 -

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

§257.98.

Assessment Monitoring Statistical Evaluation

When the initial assessment monitoring event was completed in May 2018, the compliance well network at the Karn Bottom Ash Pond included six wells encircling the unit (DEK-MW-15002 through DEK-MW-15006 and DEK-MW-18001). Due to changes in groundwater flow direction on site, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit and were determined to be no longer indicative of groundwater conditions influenced by the Karn Bottom Ash Pond. Therefore, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer included for statistical analysis. Starting with the May 2021 statistical evaluation, the compliance well network includes DEK-MW-15002, DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001.

Following the assessment monitoring sampling event, compliance well data for the Karn Bottom Ash Pond were evaluated in accordance with the Groundwater Statistical Evaluation Plan (Stats Plan) (TRC, October 2017). An assessment monitoring program was developed to evaluate concentrations of CCR constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs). To evaluate whether or not a GWPS exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given assessment monitoring event compared to the GWPS must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance ², the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true mean concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the GWPS. If the confidence interval straddles the GWPS (i.e., the lower confidence level is below the GWPS, but the upper confidence level is above), the statistical test result indicates that there is insufficient confidence that the measured concentrations are different from the GWPS and thus no compelling evidence that the measured concentration is a result of a release from the CCR unit versus the inherent variability of the sample data. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule, and numerous other federal rules, are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected Appendix IV constituent, the concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Parameter-well combinations that included a direct exceedance of the GWPS within the past eight sampling events (October 2020 through May 2024) were retained for further analysis. Arsenic in DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001

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² USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.

at the Karn Bottom Ash Pond had individual results exceeding the GWPS.

Groundwater data were then evaluated utilizing Sanitas™ statistical software. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas™ statistical program, confidence limits were selected to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each of the CCR Appendix IV constituents using a using a per test³ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas™ output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers:
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well/constituent pair:
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the CCR assessment monitoring program. Initially, the assessment monitoring results were visually assessed for potential outliers or trends. No outliers were identified. Arsenic concentrations at DEK-MW-18001 appear to exhibit an upward trend on the time-series chart over the eight most recent sampling events (Attachment 1). This data set was tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend test showed that arsenic concentration at DEK-MW-18001 is generally increasing with time. as evidenced by the positive Sen's Slope. Additionally, the increase in concentration at DEK-MW-18001 was shown to be statistically significant (Attachment 1). Confidence bands are identified by the UG as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval. At least 8 to 10 measurements should be available when computing a confidence band around a linear regression.

The Sanitas™ software was used to test compliance at the downgradient monitoring wells using the confidence interval method for the most recent 8 sampling events. Eight independent sampling events provide the appropriate density of data as recommended per the UG yet are collected recently enough

³ Confidence level is assessed for each individual comparison (i.e. per well and per constituent).

to provide an indication of current condition. The tests were run with a per-test significance of α = 0.01. The software outputs are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations for well/constituent pairs with a direct GWPS exceedance are also included in Attachment 1. Non-detect data was handled in accordance with the Stats Plan for the purposes of calculating the confidence intervals.

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well, along with notes on data transformations, as appropriate. Due to the increasing trend, a confidence band was calculated for the arsenic data set at DEK-MW-18001. The arsenic data set at DEK-MW-15006 and DEK-15005 was found to be normally distributed. The confidence bands and interval tests compare the lower confidence limit to the GWPS. The statistical evaluation of the Appendix IV parameters shows exceedances for arsenic at two of the four monitoring locations (DEK-MW-15005 and DEK-MW-18001). The results of the assessment monitoring statistical evaluation for the other downgradient wells are consistent with the results of the previous assessment monitoring data statistical evaluations, indicating that arsenic is the only constituent present at concentrations above the GWPS. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97. Consumers Energy will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

Attachments

Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards

Attachment 1 Sanitas™ Output Files

Table

				Sa	ample Location:						DEK-M\	N-15002					
					Sample Date:	10/6/2020	10/6/2020	5/3/2021	10/4/2021	5/3/2022	10/4/2022	10/4/2022	5/2/2023	10/4/2023	10/4/2023	5/9/2024	5/9/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS						downg	radient					
Appendix III							Field Dup					Field Dup		Field Dup		Field Dup	
Boron	ug/L	NC	NA	619	NA	1,580	1,600	1,420	1,530	1,100	1,340	1,370	1,270	1,330	1,280	1,240	1,310
Calcium	mg/L	NC	NA	302	NA	126	122	148	73.1	105	70.2	68	122	69.4	71.7	94.4	94.3
Chloride	mg/L	250*	NA	2,440	NA	106	102	148	102	99.3	105	103	81.7	88	86.3	75.1	76.3
Fluoride	ug/L	4,000	NA	1,000	NA	1,300	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	142	139	216	58.3	172	33.7	33.2	225	50.2	50.2	60.6	60.3
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	791	776	926	599	779	584	631	899	576	596	746	694
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.1		7.4	7.1	7.0	7.4		7.2		7.3		7.4
Appendix IV																	
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	8	8	2	2	2	3	4	< 1	1	1	3	3
Barium	ug/L	2,000	NA	1,300	2,000	133	131	211	102	134	92	95	176	111	110	126	129
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	1	1	< 1	1	1	1	1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	1,300	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	35	36	36	29	28	25	27	29	25	25	31	31
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NA	NA	NA	< 0.430	< 0.577	0.582	1.47	< 0.423	0.219	0.287	0.431	0.342	0.272	0.299	0.292
Radium-228	pCi/L	NC	NA	NA	NA	1.06	< 0.577	0.811	2.29	< 0.530	1.81	2.70	< 1.5	< 0.878	1.13	< 0.538	< 0.511
Radium-226/228	pCi/L	5	NA	3.32	5	0.642	< 0.460	< 0.537	0.827	0.636	2.03	2.99	< 1.5	< 0.878	1.41	< 0.538	0.541
Selenium	ug/L	50	NA	2	50	< 1	1	< 1	3	1	< 1	1	< 1	< 1	< 1	< 1	< 1
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

RSL - Regional Screening Level from 83 FR 36435.

UTL - Upper Tolerance Limit (95%) of the background data set.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL and UTL as established in

TRC's Technical Memorandum dated October 15, 2018.

* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the

GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

All metals were analyzed as total unless otherwise specified.

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				Sa	ample Location:					DEK-M	N-15005				
					Sample Date:	10/7/2020	5/3/2021	5/3/2021	10/4/2021	5/3/2022	10/4/2022	5/2/2023	5/2/2023	10/5/2023	5/9/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS					downg	radient				
Appendix III								Field Dup					Field Dup		
Boron	ug/L	NC	NA	619	NA	847	926	948	991	787	911	856	864	957	1,030
Calcium	mg/L	NC	NA	302	NA	155	95.6	97.6	102	127	130	106	107	125	158
Chloride	mg/L	250*	NA	2,440	NA	52.7	65.2	65.1	82.3	141	138	86.7	87.4	89.2	147
Fluoride	ug/L	4,000	NA	1,000	NA	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	102	50.8	50.2	57.2	151	130	189	189	290	358
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	687	534	561	546	909	894	767	764	892	1,400
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.7	7.6		7.1	7.1	7.5	7.4		7.7	7.4
Appendix IV															
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	42	45	44	68	54	54	32	32	48	32
Barium	ug/L	2,000	NA	1,300	2,000	248	173	170	192	305	312	228	224	267	341
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	< 1	< 1	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	45	38	39	41	36	36	27	28	27	32
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	< 5	8	8	7	12	8	8	8	7	6
Radium-226	pCi/L	NC	NA	NA	NA	0.621	0.291	< 0.187	1.12	0.620	0.544	0.355	0.417	0.512	0.653
Radium-228	pCi/L	NC	NA	NA	NA	0.875	0.722	0.650	2.06	1.08	3.11	< 0.755	< 0.785	1.11	0.898
Radium-226/228	pCi/L	5	NA	3.32	5	< 0.502	< 0.459	0.479	0.940	1.70	3.66	< 0.755	< 0.785	1.63	1.55
Selenium	ug/L	50	NA	2	50	< 1	1	1	2	1	1	1	< 1	< 1	< 1
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.
-- - not analyzed.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

RSL - Regional Screening Level from 83 FR 36435.

UTL - Upper Tolerance Limit (95%) of the background data set.

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GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

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				S	ample Location:					DEK-M	W-15006				
					Sample Date:	10/7/2020	5/3/2021	10/4/2021	10/4/2021	5/3/2022	5/3/2022	10/4/2022	5/2/2023	10/5/2023	5/9/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS					down	gradient				
Appendix III									Field Dup		Field Dup				
Boron	ug/L	NC	NA	619	NA	1,220	938	1,050	1,080	893	888	871	944	1,050	1,110
Calcium	mg/L	NC	NA	302	NA	106	115	117	117	65.0	65.5	83.8	127	143	196
Chloride	mg/L	250*	NA	2,440	NA	102	63.5	78.9	74.7	68.6	67.9	70.6	61.2	62.6	49.5
Fluoride	ug/L	4,000	NA	1,000	NA	1,060	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	296	324	209	196	173	168	254	385	446	545
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	1,010	790	712	708	597	609	720	847	926	1,220
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.7	7.5	7.3		7.4		7.8	7.5	7.7	7.7
Appendix IV															
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	27	24	23	24	25	24	26	16	22	19
Barium	ug/L	2,000	NA	1,300	2,000	141	139	125	126	68	67	94	137	150	159
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	6	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	1,060	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	22	21	19	19	16	15	18	19	18	21
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	11	9	7	7	6	6	7	7	7	8
Radium-226	pCi/L	NC	NA	NA	NA	0.629	0.353	0.797	0.832	< 0.449	0.395	0.242	0.324	0.452	0.497
Radium-228	pCi/L	NC	NA	NA	NA	1.12	1.16	1.50	1.35	0.870	< 0.502	1.43	< 0.894	< 0.666	0.593
Radium-226/228	pCi/L	5	NA	3.32	5	0.492	0.804	0.704	0.518	1.29	0.742	1.67	< 0.894	1.04	1.09
Selenium	ug/L	50	NA	2	50	< 1	< 1	2	2	< 1	1	1	1	< 1	< 1
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.
-- - not analyzed.

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UTL - Upper Tolerance Limit (95%) of the background data set.

 ${\sf GWPS-Groundwater\ Protection\ Standard.\ \ GWPS\ is\ the\ higher\ of\ the\ MCL/RSL\ and\ UTL\ as\ established\ in\ MCL/RSL\ and\ utlabel{MCL}$

TRC's Technical Memorandum dated October 15, 2018.

* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

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				Sa	ample Location:				DEK-M\	W-18001			
	_				Sample Date:	10/6/2020	5/3/2021	10/7/2021	5/3/2022	10/4/2022	5/3/2023	10/4/2023	5/8/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS				downg	radient			
Appendix III													
Boron	ug/L	NC	NA	619	NA	1,740	1,180	1,370	869	1,060	931	987	917
Calcium	mg/L	NC	NA	302	NA	71.7	65.2	71.0	63.7	58.3	54.6	52.5	52.5
Chloride	mg/L	250*	NA	2,440	NA	60.7	51.6	55.2	65.9	62.5	62.2	69.4	66.1
Fluoride	ug/L	4,000	NA	1,000	NA	1,240	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	91.9	121	118	187	140	148	158	226
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	476	486	494	555	551	575	551	670
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.6	7.3	7.4	7.6	7.6	7.6	7.4	7.4
Appendix IV													
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	85	92	85	113	109	304	398	484
Barium	ug/L	2,000	NA	1,300	2,000	136	135	135	164	135	152	155	147
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	1,240	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	26	25	24	22	23	20	19	19
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	< 5	< 5	< 5	< 5	< 5	11	9	17
Radium-226	pCi/L	NC	NA	NA	NA	< 0.473	0.189	0.873	0.294	0.264	0.268	0.148	0.238
Radium-228	pCi/L	NC	NA	NA	NA	0.591	0.828	1.85	0.592	1.67	0.599	< 0.581	< 0.623
Radium-226/228	pCi/L	5	NA	3.32	5	0.463	0.639	0.979	0.885	1.93	0.868	< 0.581	< 0.623
Selenium	ug/L	50	NA	2	50	1	< 1	2	2	< 1	1	< 1	< 1
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.

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UTL - Upper Tolerance Limit (95%) of the background data set.

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* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the

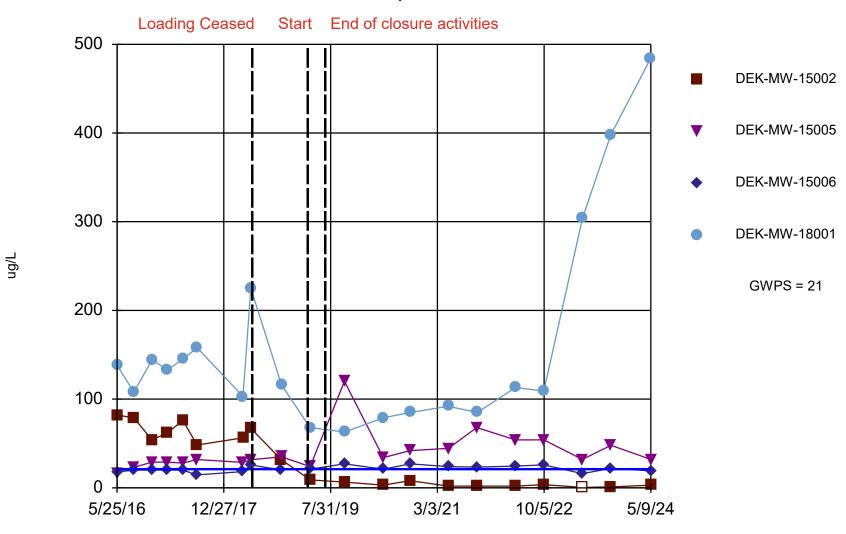
GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

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Attachment 1 Sanitas™ Output Files

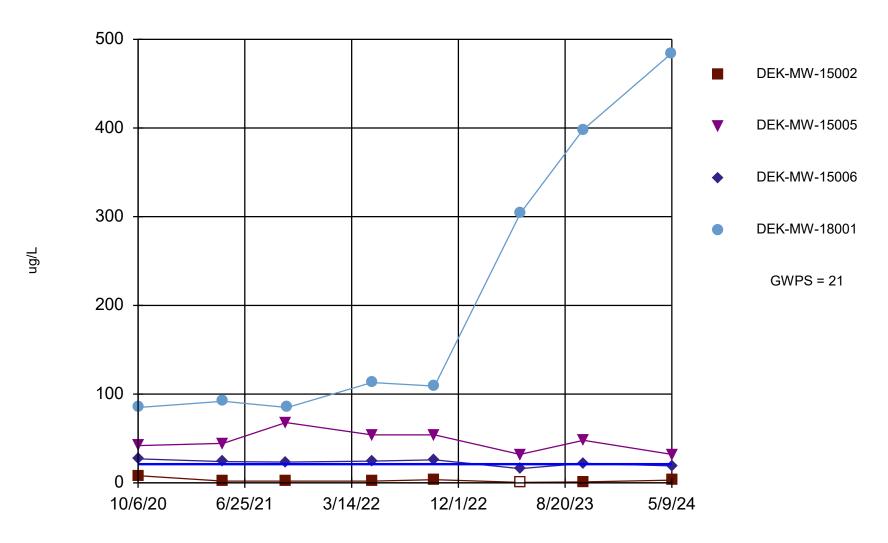
Arsenic Comparison to GWPS



Time Series Analysis Run 6/20/2024 10:06 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

Arsenic, Total



Time Series Analysis Run 6/20/2024 10:16 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

Sanitas™ v.10.0.16 Sanitas software licensed to Consumers Energy. U

Summary Report

Constituent: Arsenic, Total Analysis Run 6/20/2024 10:17 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

For observations made between 10/6/2020 and 5/9/2024, a summary of the selected data set:

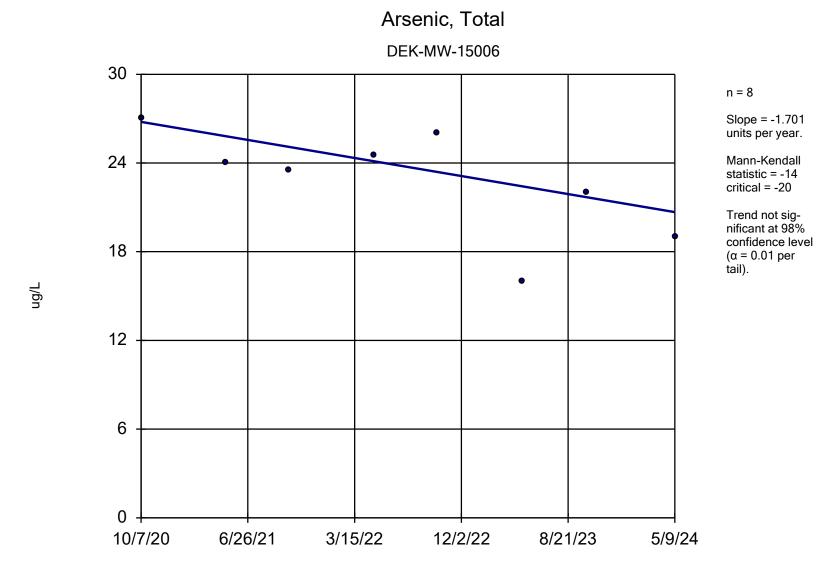
Observations = 32 NDs = 3% Wells = 4 Minimum Value = 1 Maximum Value = 484 Mean Value = 70.28 Median Value = 29.5 Standard Deviation = 113.2 Coefficient of Variation = 1.611 Skewness = 2.606

<u>Well</u>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<u>Skewness</u>
DEK-MW-15002	8	12%	1	8	2.813	2	2.267	0.806	1.657
DEK-MW-15005	8	0%	32	68	46.81	46.25	12.08	0.258	0.3149
DEK-MW-15006	8	0%	16	27	22.75	23.75	3.665	0.1611	-0.7507
DEK-MW-18001	8	0%	85	484	208.8	111	162.1	0.7767	0.7611

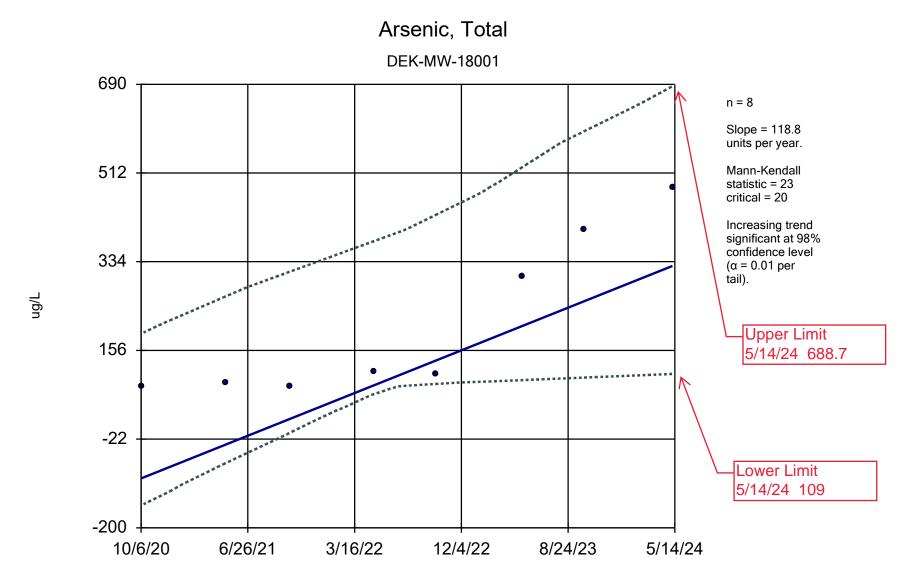
DEK-MW-15005 70 n = 8 Slope = -4.018units per year. 56 Mann-Kendall statistic = -6 critical = -20 Trend not significant at 98% confidence level 42 $(\alpha = 0.01 \text{ per})$ tail). ng/L 28 14 0 10/7/20 6/26/21 3/15/22 12/2/22 8/21/23 5/9/24

Arsenic, Total

Sen's Slope and 98% Confidence Band Analysis Run 6/20/2024 10:54 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2



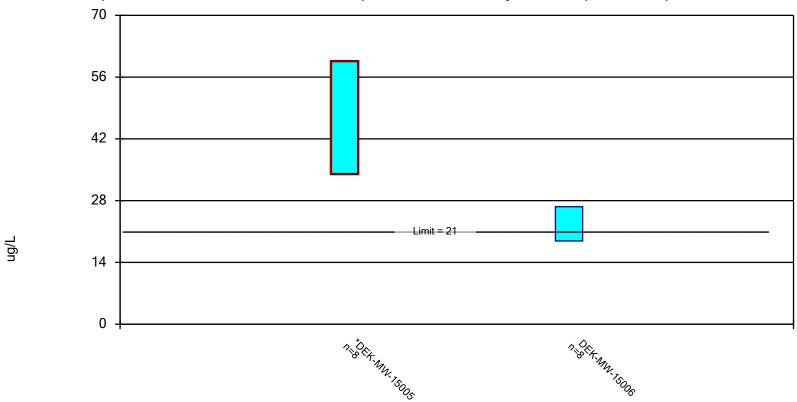
Sen's Slope and 98% Confidence Band Analysis Run 6/20/2024 10:54 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2



Sen's Slope and 98% Confidence Band Analysis Run 6/20/2024 10:55 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 6/20/2024 10:22 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 6/20/2024 10:22 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q2

	DEK-MW-15005	DEK-MW-15006
10/7/2020	42	27
5/3/2021	44.5 (D)	24
10/4/2021	68	23.5 (D)
5/3/2022	54	24.5 (D)
10/4/2022	54	26
5/2/2023	32 (D)	16
10/5/2023	48	22
5/9/2024	32	19
Mean	46.81	22.75
Std. Dev.	12.08	3.665
Upper Lim.	59.61	26.63
Lower Lim.	34.01	18.87



Appendix C Laboratory Analytical Reports



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK BOTTOM ASH POND WELLS – 2024 Q2

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0339

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond Wells area during the week of 05/06/2024 for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/10/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, the report that follows presents the results of the requested analytical testing; the results apply only to the samples, as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate.

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CASE NARRATIVE

I. <u>Sample Receipt</u>

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q2-2024 DEK Bottom Ash Pond Wells

Date Received: 5/10/2024 **Chemistry Project:** 24-0339

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0339-01	DEK-MW-15002	Groundwater	05/09/2024 10:31	DEK Bottom Ash Pond
24-0339-02	DEK-MW-15005	Groundwater	05/09/2024 08:37	DEK Bottom Ash Pond
24-0339-03	DEK-MW-15006	Groundwater	05/09/2024 11:38	DEK Bottom Ash Pond
24-0339-04	DUP-DEK-BAP-01	Groundwater	05/09/2024 00:00	DEK Bottom Ash Pond
24-0339-05	FB-DEK-BAP	Water	05/09/2024 11:38	DEK Bottom Ash Pond
24-0339-06	EB-DEK-BAP	Water	05/09/2024 12:00	DEK Bottom Ash Pond



Report Date:

05/23/24



A CENTURY OF EXCELLENCE

Sample Site:DEK Bottom Ash PondLaboratory Project:24-0339Field Sample ID:DEK-MW-15002Collect Date:05/09/2024Lab Sample ID:24-0339-01Collect Time:10:31 AM

Matrix: Groundwater

Metals by EPA 6020B: CCR	K Kule Appenaix III-IV 10	tai Metal	s Exp	Aliquot #: 24-0	339-01-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Arsenic	3		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	129		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	1310		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	94300		ug/L	1000.0	05/13/2024	AB24-0513-12
Chromium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Cobalt	ND		ug/L	6.0	05/13/2024	AB24-0513-12
Copper	2		ug/L	1.0	05/13/2024	AB24-0513-12
Iron	33		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	31		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	25100		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	268		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	4		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	8630		ug/L	100.0	05/13/2024	AB24-0513-12
Selenium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Silver	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Sodium	90000		ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium	3		ug/L	2.0	05/13/2024	AB24-0513-12
Zinc	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 24-0	339-01-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueous, NO2, NO3		Aliquot #: 24-0339-01-C02-A01		Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrite	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 24-0	339-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	76300		ug/L	1000.0	05/14/2024	AB24-0513-11



05/23/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

 Field Sample ID:
 DEK-MW-15002
 Collect Date:
 05/09/2024

 Lab Sample ID:
 24-0339-01
 Collect Time:
 10:31 AM

Anions by EPA 300.0 CCR Rule Ana	llyte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	339-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/10/2024	AB24-0513-11
Sulfate	60300		ug/L	1000.0	05/14/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	r HL		Aliquot #: 24-0	339-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	8390		ug/L	25.0	05/14/2024	AB24-0514-02
Total Dissolved Solids by SM 25400	;			Aliquot #: 24-0	339-01-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	694		mg/L	10.0	05/10/2024	AB24-0510-10
Alkalinity by SM 2320B				Aliquot #: 24-0	339-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	426000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Bicarbonate	426000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	339-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	1760	D	ug/L	100.0	05/13/2024	AB24-0513-15



05/23/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

 Field Sample ID:
 DEK-MW-15005
 Collect Date:
 05/09/2024

 Lab Sample ID:
 24-0339-02
 Collect Time:
 08:37 AM

Metals by EPA 6020B: CCR Rule Appe			•	Aliquot #: 24-0	339-02-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Arsenic	32		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	341		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	1030		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	158000		ug/L	1000.0	05/13/2024	AB24-0513-12
Chromium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Cobalt	ND		ug/L	6.0	05/13/2024	AB24-0513-12
Copper	2		ug/L	1.0	05/13/2024	AB24-0513-12
Iron	836		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	32		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	32100		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	459		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	6		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	3		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	9610		ug/L	100.0	05/13/2024	AB24-0513-12
Selenium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Silver	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Sodium	130000		ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium	3		ug/L	2.0	05/13/2024	AB24-0513-12
Zinc	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Total, Aqueo	us			Aliquot #: 24-0	339-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 24-0	339-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrite	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Anions by EPA 300.0 CCR Rule Analy	rte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	339-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
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05/23/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

 Field Sample ID:
 DEK-MW-15005
 Collect Date:
 05/09/2024

 Lab Sample ID:
 24-0339-02
 Collect Time:
 08:37 AM

Anions by EPA 300.0 CCR Rule Analy	rte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	339-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/10/2024	AB24-0513-11
Sulfate	358000		ug/L	1000.0	05/14/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3(h)	, Groundwate	r HL		Aliquot #: 24-0	339-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	4380		ug/L	25.0	05/14/2024	AB24-0514-02
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	339-02-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	05/10/2024	AB24-0510-10
Alkalinity by SM 2320B				Aliquot #: 24-0	339-02-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	337000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Bicarbonate	337000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	339-02-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	30		ug/L	20.0	05/13/2024	AB24-0513-15



05/23/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

 Field Sample ID:
 DEK-MW-15006
 Collect Date:
 05/09/2024

 Lab Sample ID:
 24-0339-03
 Collect Time:
 11:38 AM

Metals by EPA 6020B: CCR Rule Ap	ppenaix III-IV TO	lai Wietais	- Exp	Aliquot #: 24-0	339-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Arsenic	19		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	159		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	1110		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	196000		ug/L	1000.0	05/13/2024	AB24-0513-12
Chromium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Cobalt	ND		ug/L	6.0	05/13/2024	AB24-0513-12
Copper	1		ug/L	1.0	05/13/2024	AB24-0513-12
Iron	1770		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	21		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	30800		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	764		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	8		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	4		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	8300		ug/L	100.0	05/13/2024	AB24-0513-12
Selenium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Silver	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Sodium	80000		ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Zinc	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Total, Aque	eous			Aliquot #: 24-0	339-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueous, NO	2, NO3			Aliquot #: 24-0	339-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrite	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Anions by EPA 300.0 CCR Rule Ana	alyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	339-03-C02-A02	Analyst: KDR
D	Result	Flag	Units	RL	Analysis Date	Tracking
Parameter(s)	Nosun	ı iag	Oilits		Analysis Bate	Hacking





Report Date: 05/23/24

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

 Field Sample ID:
 DEK-MW-15006
 Collect Date:
 05/09/2024

 Lab Sample ID:
 24-0339-03
 Collect Time:
 11:38 AM

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, SC)4, Aqι	ieous	Aliquot #: 24-0	339-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/10/2024	AB24-0513-11
Sulfate	545000		ug/L	1000.0	05/16/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater H	IL		Aliquot #: 24-0	339-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	5830		ug/L	25.0	05/14/2024	AB24-0514-02
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	339-03-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1220		mg/L	10.0	05/10/2024	AB24-0510-10
Alkalinity by SM 2320B				Aliquot #: 24-0	339-03-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	266000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Bicarbonate	266000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	339-03-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	30		ug/L	20.0	05/13/2024	AB24-0513-15



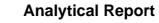


Report Date: 05/23/24

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

Field Sample ID: DUP-DEK-BAP-01 Collect Date: 05/09/2024
Lab Sample ID: 24-0339-04 Collect Time: 12:00 AM

Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	24-0339-04-C01-A01	Analyst: EB
Arsenic 3 ug/L 1.0 Barium 126 ug/L 5.0 Beryllium ND ug/L 1.0 Boron 1240 ug/L 20.0 Cadmium ND ug/L 0.2 Calcium 94400 ug/L 1000 Chromium ND ug/L 1.00 Cobalt ND ug/L 6.0 Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 1.0 Lithium 31 ug/L 1.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Selenium ND ug/L 1.0 Silver ND ug/L 2.0 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Vanadium 2 ug/L 2.0 Vanadium 2 ug/L 2.0 Vanadium 2 ug/L 2.0 Vanadium 5 Parameter(s) Result Flag Units RL Mercury by EPA 7470A, Total, Aqueous Flag Units RL Nitrate ND ug/L 100.0 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100.0	Analysis Date	Tracking
Barium	05/13/2024	AB24-0513-12
Beryllium	05/13/2024	AB24-0513-12
Boron	05/13/2024	AB24-0513-12
Cadmium ND ug/L 0.2 Calcium 94400 ug/L 1000 Chromium ND ug/L 1.0 Cobalt ND ug/L 6.0 Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100 Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 100 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 <td>05/13/2024</td> <td>AB24-0513-12</td>	05/13/2024	AB24-0513-12
Calcium 94400 ug/L 1000 Chromium ND ug/L 1.0 Cobalt ND ug/L 6.0 Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100 Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0	05/13/2024	AB24-0513-12
Chromium ND ug/L 1.0 Cobalt ND ug/L 6.0 Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100 Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2	05/13/2024	AB24-0513-12
Cobalt ND ug/L 6.0 Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100 Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L	.0 05/13/2024	AB24-0513-12
Copper 2 ug/L 1.0 Iron 34 ug/L 20.0 Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 1.0 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Nb ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliqu	05/13/2024	AB24-0513-12
Iron	05/13/2024	AB24-0513-12
Lead ND ug/L 1.0 Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.6 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate	05/13/2024	AB24-0513-12
Lithium 31 ug/L 10.0 Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100.0 Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100.0 Nitrate ND ug/L 100.0 ND ug/L 100.0	05/13/2024	AB24-0513-12
Magnesium 25100 ug/L 1000 Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. ND ug/L 100.	05/13/2024	AB24-0513-12
Manganese 268 ug/L 5.0 Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Molybdenum ND ug/L 5.0 Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrate ND ug/L 100.	.0 05/13/2024	AB24-0513-12
Nickel 4 ug/L 2.0 Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Potassium 8760 ug/L 100. Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Selenium ND ug/L 1.0 Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100.0 Nitrite ND ug/L 100.0	05/13/2024	AB24-0513-12
Silver ND ug/L 0.2 Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	0 05/13/2024	AB24-0513-12
Sodium 87900 ug/L 1000 Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Thallium ND ug/L 2.0 Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Vanadium 2 ug/L 2.0 Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100.0 Nitrite ND ug/L 100.0	.0 05/13/2024	AB24-0513-12
Zinc ND ug/L 10.0 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100.0 Nitrite ND ug/L 100.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Total, Aqueous Aliquot #: 2 Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Parameter(s) Result Flag Units RL Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	05/13/2024	AB24-0513-12
Mercury ND ug/L 0.2 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	24-0339-04-C01-A02	Analyst: CLE
Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 2 Parameter(s) Result Flag Units RL Nitrate ND ug/L 100. Nitrite ND ug/L 100.	Analysis Date	Tracking
Parameter(s)ResultFlagUnitsRLNitrateNDug/L100.NitriteNDug/L100.	05/20/2024	AB24-0515-03
Nitrate ND ug/L 100. Nitrite ND ug/L 100.	24-0339-04-C02-A01	Analyst: KDR
Nitrite ND ug/L 100.	Analysis Date	Tracking
	0 05/10/2024	AB24-0510-06
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 2	0 05/10/2024	AB24-0510-06
	24-0339-04-C02-A02	Analyst: KDR
Parameter(s) Result Flag Units RL	Analysis Date	Tracking
Chloride 75100 ug/L 1000	.0 05/14/2024	AB24-0513-11



05/23/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

Field Sample ID: DUP-DEK-BAP-01 Collect Date: 05/09/2024
Lab Sample ID: 24-0339-04 Collect Time: 12:00 AM

Anions by EPA 300.0 CCR Rule Ana	llyte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	339-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/10/2024	AB24-0513-11
Sulfate	60600		ug/L	1000.0	05/14/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	r HL		Aliquot #: 24-0	339-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	8620		ug/L	25.0	05/14/2024	AB24-0514-02
Total Dissolved Solids by SM 25400	;			Aliquot #: 24-0	339-04-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	746		mg/L	10.0	05/10/2024	AB24-0510-10
Alkalinity by SM 2320B				Aliquot #: 24-0	339-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	429000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Bicarbonate	429000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	339-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	1670	D	ug/L	100.0	05/13/2024	AB24-0513-15



05/23/24



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Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

Field Sample ID: FB-DEK-BAP Collect Date: 05/09/2024
Lab Sample ID: 24-0339-05 Collect Time: 11:38 AM

Metals by EPA 6020B: CCR Rule App	oendix III-IV To	tal Metals	в Ехр	Aliquot #: 24-0	339-05-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Arsenic	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	ND		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Chromium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Cobalt	ND		ug/L	6.0	05/13/2024	AB24-0513-12
Copper	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Iron	ND		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	2		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	ND		ug/L	100.0	05/13/2024	AB24-0513-12
Selenium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Silver	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Sodium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Zinc	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Total, Aqueo	ous			Aliquot #: 24-0	339-05-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueous, NO2	, NO3			Aliquot #: 24-0	339-05-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrite	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	er HL		Aliquot #: 24-0	339-05-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



Analytical Report

Report Date: 05/23/24

Laboratory Services

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Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

Field Sample ID: FB-DEK-BAP Collect Date: 05/09/2024
Lab Sample ID: 24-0339-05 Collect Time: 11:38 AM

Sulfide, Total by SM 4500 S2D			1	Aliquot #: 24-0	339-05-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/13/2024	AB24-0513-15



05/23/24



A CENTURY OF EXCELLENCE

Sample Site:DEK Bottom Ash PondLaboratory Project:24-0339Field Sample ID:EB-DEK-BAPCollect Date:05/09/2024Lab Sample ID:24-0339-06Collect Time:12:00 PM

Metals by EPA 6020B: CCR	Kule Appendix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	339-06-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Arsenic	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	ND		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Chromium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Cobalt	ND		ug/L	6.0	05/13/2024	AB24-0513-12
Copper	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Iron	ND		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	ND		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	ND		ug/L	100.0	05/13/2024	AB24-0513-12
Selenium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Silver	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Sodium	ND		ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium	ND		ug/L	2.0	05/13/2024	AB24-0513-12
Zinc	ND		ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Tota	al, Aqueous			Aliquot #: 24-0	339-06-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueo	us, NO2, NO3			Aliquot #: 24-0	339-06-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrite	ND		ug/L	100.0	05/10/2024	AB24-0510-06
Nitrogen-Ammonia by SM45	00NH3(h), Groundwate	er HL		Aliquot #: 24-0	339-06-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	05/14/2024	AB24-0514-02



Analytical Report

Report Date: 05/23/24

Laboratory Services

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Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0339**

Field Sample ID: EB-DEK-BAP Collect Date: 05/09/2024
Lab Sample ID: 24-0339-06 Collect Time: 12:00 PM

Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	339-06-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/13/2024	AB24-0513-15



Analytical Report

Report Date: 05/23/24

Data Qualifiers	Exception Summary
D = RL increased due to dilution.	No other exceptions occurred.

CONSUMERS ENERGY

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 REVISION 4 ATTACHMENT A

TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Projec	t Log-In Number:	24-033	9			
Inspec	tion Date: osl	10/24		Inspection By: _ CLE		
Sampl	e Origin/Project Name	DEK	BAP			
Shipm	ent Delivered By: Ente	er the type of shi	pment carrie	r.		
				USPS_		orne
	Tracking Number:			Shipping Form Atta	nched: Yes	No
Shipp	ing Containers: Enter t	he type and nun	nber of shipp	ing containers received.		
				Custom Case		
Condi	tion of Shipment: Ente	r the as-receive	d condition of	f the shipment container.		
	Damaged Shipment O			Dented	Leak	ing
Shipn	ent Security: Enter if a	my of the shipp	ing container	s were opened before rec	eipt.	
	Shipping Containers I	Received: Open	ed	Sealed	_	
Enclo	sed Documents: Enter t			AT A STATE OF THE		
	CoC Wo	ork Request		Air Data Sheet	Other	
Temp	erature of Containers:	Measure the ter	nperature of	several sample containers		
	As-Received Tempera	ature Range 0	9-3.2%	Samples Received on	Ice: Yes $\stackrel{\smile}{\smile}$ N	0
Artis	M&TE # and Expirate	5-23	24			
Numb				of sample containers rec		
	Container Type	Water 8	Soil	Other	Broken	Leaking
	VOA (40mL or 60mL)		_			
	Quart/Liter (g/p) 9-oz (amber glass jar)		_			
FSP orlypt	2-oz (amber glass)	_	_		_	
# 13.640-508	125 mL (plastic)	24				
16+:205522	24 mL yial (glass)					
exp: 2.15.25	500 mL (plastic)	4				
	Other		_			

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page ____ of ____

SAM	IPLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or WO#:		ANALYSIS REQUESTED							QA REQUIREMENT:							
Q2-	2024 DEK Botto	m Ash Pond We	ells		24-0339	24-0339 REQUESTER: Harold Register			1	(Atta	ch Lis	st if N	lore 5	Space	is Needed)		QA REQUIREMENT:					
SAM	IPLING TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER												□ NPDES ⊠ TNI					
SEN	ND REPORT TO:	Joseph Firlit			email: phone:												☐ ISO 17025					
	COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other	CONTAINERS											□ 10 CFR 50 APP. B					
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		PRESERVATIVE		IVE	Metals				>			2	☐ INTERNAL INFO				
	LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gener	ral Waste	Vaste TION # TIVE		0 % 7 H		7 H H L		I Me	suc	Amonia		Alkalinity	ide			□ OTHER	
S	SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	TELD SAMPLE ID / LOCATION		ATION 5	TOI	None	None HNO ₃ H ₂ SO ₄		NaOH HCI MeOH Other	Total	Anions	Am	TDS	Alk	Sulfide			REMARKS
	24-0339-01	5-9-24	1031	GW	DEK-MW-15002		7	4	1 1	1			x	x	x	x	x	x				
1,	-02	5-9-24	0837	GW	DEK-MW-15005		7	4	1 1	1		Ħ	x	x	x	x	x	x				
	-03	5-9-24	1138	GW	DEK-MW-15006		7	4	1 1	1			x	x	x	x	x	x				
Н	-04	5-9-24	-	GW	DUP-DEK-BAP-01		7	4	1 1	1			x	x	x	x	x	x				
	-05	5-9-24	1138	W	FB-DEK-BAP		4	1	1 1	1	П		x	x	x			x		H		
	-06	5-9-24	1200	w	EB-DEK-BAP		4	1	1 1	1	П	T	x	x	x		П	x				
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RELI	QUISHED BY:		[DATE/		CEIVED BY:	19											□ N •°C		100	015402 ate: 5-23-24	



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2024 Q2

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0340

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 05/06/2024, for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/09/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, the report that follows presents the results of the requested analytical testing; the results apply only to the samples, as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate.

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CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q2-2024 DEK Bottom Ash Pond & Lined Impoundment

Date Received: 5/9/2024 **Chemistry Project:** 24-0340

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0340-01	DEK-MW-18001	Groundwater	05/08/2024 13:03	DEK Bottom Ash Pond & Lined Impoundment
24-0340-02	DEK-MW-18001 MS	Groundwater	05/08/2024 13:03	DEK Bottom Ash Pond & Lined Impoundment
24-0340-03	DEK-MW-18001 MSD	Groundwater	05/08/2024 13:03	DEK Bottom Ash Pond & Lined Impoundment



05/23/24



A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 24-0340

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0340-01
 Collect Time:
 01:03 PM

Parameter(s) Result Flag Units Antimony ND ug/L Arsenic 484 ug/L Barium 147 ug/L Beryllium ND ug/L Boron 917 ug/L Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L Silver ND ug/L	1.0 1.0 5.0	Analysis Date 05/13/2024 05/13/2024	Tracking
Arsenic 484 ug/L Barium 147 ug/L Beryllium ND ug/L Boron 917 ug/L Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1.0 5.0		A D 24 A E 4 2 4 2
Barium 147 ug/L Beryllium ND ug/L Boron 917 ug/L Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium ND ug/L Boron 917 ug/L Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L		03/13/2024	AB24-0513-12
Boron 917 ug/L Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	4.0	05/13/2024	AB24-0513-12
Cadmium ND ug/L Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1.0	05/13/2024	AB24-0513-12
Calcium 52500 ug/L Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	20.0	05/13/2024	AB24-0513-12
Chromium ND ug/L Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	0.2	05/13/2024	AB24-0513-12
Cobalt ND ug/L Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1000.0	05/13/2024	AB24-0513-12
Copper ND ug/L Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1.0	05/13/2024	AB24-0513-12
Iron 458 ug/L Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	6.0	05/13/2024	AB24-0513-12
Lead ND ug/L Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1.0	05/13/2024	AB24-0513-12
Lithium 19 ug/L Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	20.0	05/13/2024	AB24-0513-12
Magnesium 11200 ug/L Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1.0	05/13/2024	AB24-0513-12
Manganese 133 ug/L Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	10.0	05/13/2024	AB24-0513-12
Molybdenum 17 ug/L Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	1000.0	05/13/2024	AB24-0513-12
Nickel 2 ug/L Potassium 5460 ug/L Selenium ND ug/L	5.0	05/13/2024	AB24-0513-12
Potassium 5460 ug/L Selenium ND ug/L	5.0	05/13/2024	AB24-0513-12
Selenium ND ug/L	2.0	05/13/2024	AB24-0513-12
<u> </u>	100.0	05/13/2024	AB24-0513-12
Silver ND ug/l	1.0	05/13/2024	AB24-0513-12
Silver ND ug/L	0.2	05/13/2024	AB24-0513-12
Sodium 134000 ug/L	1000.0	05/13/2024	AB24-0513-12
Thallium ND ug/L	2.0	05/13/2024	AB24-0513-12
Vanadium ND ug/L	2.0	05/13/2024	AB24-0513-12
Zinc 19 ug/L	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, Total, Aqueous	Aliquot #: 24-0	340-01-C01-A02	Analyst: CLE
Parameter(s) Result Flag Units	RL	Analysis Date	Tracking
Mercury ND ug/L	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aqueous, NO2, NO3	Aliquot #: 24-0	340-01-C02-A01	Analyst: KDR
Parameter(s) Result Flag Units	RL	Analysis Date	Tracking
Nitrate ND ug/L	100.0	05/09/2024	AB24-0509-16
Nitrite ND ug/L	100.0	05/09/2024	AB24-0509-16
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous	Aliquot #: 24-0	340-01-C02-A02	Analyst: KDR
Parameter(s) Result Flag Units	RL	Analysis Date	Tracking
Chloride 66100 ug/L	1000.0	05/14/2024	AB24-0513-11



ytical Report

Report Date:

05/10/2024

20.0

AB24-0510-05

05/23/24

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Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 24-0340

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0340-01
 Collect Time:
 01:03 PM

Matrix: Groundwater

Sulfide

Anions by EPA 300.0 CCR Rule An	alyte List, Cl, F,	SO4, Aqւ	ieous	Aliquot #: 24-0	340-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/09/2024	AB24-0513-11
Sulfate	226000		ug/L	1000.0	05/14/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	r HL		Aliquot #: 24-0	340-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1810		ug/L	25.0	05/14/2024	AB24-0514-02
Total Dissolved Solids by SM 2540	С			Aliquot #: 24-0	340-01-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	670		mg/L	10.0	05/09/2024	AB24-0509-17
Alkalinity by SM 2320B				Aliquot #: 24-0	340-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	154000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Bicarbonate	154000		ug/L	10000.0	05/15/2024	AB24-0515-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	340-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking

ug/L

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05/23/24



Laboratory Services
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Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 24-0340

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0340-02
 Collect Time:
 01:03 PM

Metals by EPA 6020B: CCR	Rule Appendix III-IV 10	nai Wetal		Aliquot #: 24-0	340-02-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	106		%	1.0	05/13/2024	AB24-0513-12
Arsenic	104		%	1.0	05/13/2024	AB24-0513-12
Barium	103		%	5.0	05/13/2024	AB24-0513-12
Beryllium	98		%	1.0	05/13/2024	AB24-0513-12
Boron	110		%	20.0	05/13/2024	AB24-0513-12
Cadmium	105		%	0.2	05/13/2024	AB24-0513-12
Calcium	99.8		%	1000.0	05/13/2024	AB24-0513-12
Chromium	93		%	1.0	05/13/2024	AB24-0513-12
Cobalt	93		%	6.0	05/13/2024	AB24-0513-12
Copper	89		%	1.0	05/13/2024	AB24-0513-12
Iron	106		%	20.0	05/13/2024	AB24-0513-12
Lead	100		%	1.0	05/13/2024	AB24-0513-12
Lithium	99		%	10.0	05/13/2024	AB24-0513-12
Magnesium	106		%	1000.0	05/13/2024	AB24-0513-12
Manganese	103		%	5.0	05/13/2024	AB24-0513-12
Molybdenum	110		%	5.0	05/13/2024	AB24-0513-12
Nickel	91		%	2.0	05/13/2024	AB24-0513-12
Potassium	105		%	100.0	05/13/2024	AB24-0513-12
Selenium	106		%	1.0	05/13/2024	AB24-0513-12
Silver	97.5		%	0.2	05/13/2024	AB24-0513-12
Sodium	110		%	1000.0	05/13/2024	AB24-0513-12
Thallium	99		%	2.0	05/13/2024	AB24-0513-12
Vanadium	97		%	2.0	05/13/2024	AB24-0513-12
Zinc	88		%	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 24-0	340-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 24-0	340-02-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	96		%	100.0	05/09/2024	AB24-0509-16
Nitrite	105		%	100.0	05/09/2024	AB24-0509-16
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 24-0	340-02-C02-A02	Analyst: KDI
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	105		%	1000.0	05/14/2024	AB24-0513-11



Analytical Report

Report Date: 05/23/24

Laboratory Services

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DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: Sample Site: 24-0340

Field Sample ID: DEK-MW-18001 MS

Collect Date: 05/08/2024 Lab Sample ID: 24-0340-02 Collect Time: 01:03 PM

Anions by EPA 300.0 CCR Rule Anal	yte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	340-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	96		%	1000.0	05/09/2024	AB24-0513-11
Sulfate	102		%	1000.0	05/14/2024	AB24-0513-11
Nitrogen-Ammonia by SM4500NH3(h), Groundwat	er HL		Aliquot #: 24-0	340-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	97		%	25.0	05/14/2024	AB24-0514-02
Alkalinity by SM 2320B				Aliquot #: 24-0	340-02-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	97.8		%	10000.0	05/15/2024	AB24-0515-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	340-02-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	05/10/2024	AB24-0510-05



Laboratory Project:

Collect Date:

Collect Time:

05/23/24

24-0340

05/08/2024

01:03 PM



Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Field Sample ID: DEK-MW-18001 MSD

Lab Sample ID: 24-0340-03

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	340-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	107		%	1.0	05/13/2024	AB24-0513-12
Arsenic	106		%	1.0	05/13/2024	AB24-0513-12
Barium	106		%	5.0	05/13/2024	AB24-0513-12
Beryllium	99		%	1.0	05/13/2024	AB24-0513-12
Boron	105		%	20.0	05/13/2024	AB24-0513-12
Cadmium	105		%	0.2	05/13/2024	AB24-0513-12
Calcium	95.8		%	1000.0	05/13/2024	AB24-0513-12
Chromium	96		%	1.0	05/13/2024	AB24-0513-12
Cobalt	96		%	6.0	05/13/2024	AB24-0513-12
Copper	91		%	1.0	05/13/2024	AB24-0513-12
Iron	103		%	20.0	05/13/2024	AB24-0513-12
Lead	100		%	1.0	05/13/2024	AB24-0513-12
Lithium	101		%	10.0	05/13/2024	AB24-0513-12
Magnesium	104		%	1000.0	05/13/2024	AB24-0513-12
Manganese	101		%	5.0	05/13/2024	AB24-0513-12
Molybdenum	110		%	5.0	05/13/2024	AB24-0513-12
Nickel	94		%	2.0	05/13/2024	AB24-0513-12
Potassium	102		%	100.0	05/13/2024	AB24-0513-12
Selenium	108		%	1.0	05/13/2024	AB24-0513-12
Silver	98.0		%	0.2	05/13/2024	AB24-0513-12
Sodium	105		%	1000.0	05/13/2024	AB24-0513-12
Thallium	98		%	2.0	05/13/2024	AB24-0513-12
Vanadium	99		%	2.0	05/13/2024	AB24-0513-12
Zinc	91		%	10.0	05/13/2024	AB24-0513-12
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 24-0	340-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	101		%	0.2	05/20/2024	AB24-0515-03
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 24-0	340-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	94		%	100.0	05/09/2024	AB24-0509-16
Nitrite	105		%	100.0	05/09/2024	AB24-0509-16
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	340-03-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	103		%	1000.0	05/14/2024	AB24-0513-11
	24	0340 Page 9	0 of 13			



Analytical Report

Report Date: 05/23/24

24-0340

Laboratory Services A CENTURY OF EXCELLENCE

DEK Bottom Ash Pond & Lined Impoundment Sample Site:

Laboratory Project: Field Sample ID: DEK-MW-18001 MSD

Collect Date: 05/08/2024 Lab Sample ID: 24-0340-03 Collect Time: 01:03 PM

Anions by EPA 300.0 CCR Rule Ar	nalyte List, Cl, F,	SO4, Aqւ	ieous	Aliquot #: 24-0	340-03-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	95		%	1000.0	05/09/2024	AB24-0513-11	
Sulfate	100		%	1000.0	05/14/2024	AB24-0513-11	
Nitrogen-Ammonia by SM4500NH3	B(h), Groundwate	r HL		Aliquot #: 24-0	340-03-C03-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	100		%	25.0	05/14/2024	AB24-0514-02	
Alkalinity by SM 2320B				Aliquot #: 24-0	340-03-C04-A01	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	98.3		%	10000.0	05/15/2024	AB24-0515-02	
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	340-03-C06-A01	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	92		%	20.0	05/10/2024	AB24-0510-05	



Report Date: 05/23/24

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Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS ENERGY

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 REVISION 4 ATTACHMENT A

TITLE: SAMPLE LOG-IN – SHIPMENT IN	SPECTION FORM
------------------------------------	---------------

Project Log-In Number:			M. Committee of the com	6	
Sample Origin/Project Name:					
Shipment Delivered By: Enter					
Other/Hand Carry (who	om)		USPS		
Tracking Number: 27	4431774	1855	Shipping Form A	ttached: Yes	_ No
Shipping Containers: Enter th	ne type and r	number of ship	ping containers received		
Cooler_(i)	Cardboard B	ox	Custom Case	Envelope	Mailer
Loose/Unpackaged Co			Other		
Condition of Shipment: Enter	the as-recei	ived condition	of the shipment contained	r.	
Damaged Shipment Ol Other			Dented	Leak	cing
Shipment Security: Enter if an	ny of the shi	pping containe	ers were opened before re	eceipt.	
Shipping Containers R	eceived: O	pened	Sealed		
Enclosed Documents: Enter the					
			Air Data Sheet	Other	
Temperature of Containers: N	Measure the	temperature o	several sample containe	ers.	
As-Received Temperar	ture Range	1.2-2.0°C	Samples Received	on Ice: Yes N	lo
M&TE # and Expiration					
Number and Type of Contain		る・24 the total numb	er of sample containers re	eceived.	
Container Type VOA (40mL or 6(mL))	Water 6	Soil	Other	Broken	Leaking
Quart/Liter (g/p)					
9-oz (amber glass jar)					
2-oz (amber glass)					
125 mL (plastic)	12	_			
24 mL vial (glass)					-
	1				
250 500 mL (plastic)		-			-

FSP 0-14 # 13-640-508 Lot: 265522 exp: 2-15-25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

Page l of

Count on Us 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAIVIFL	ING SITE / CU	ISTOMER:			PROJECT NUMBER:	SAP CC or Wo	O#:							A	NAI	YSI	SRI	OUI	ESTE	ED	O / DEGUIDATE CENTER
Q2-202	4 DEK Botto	m Ash Pond & I	Lined Impo	ound.	24-0340	REQUESTER	: Haro	old I	Regi	ster				(Atta	ch Li	st if N	More:	Space	is Ne	eeded)	QA REQUIREMENT:
SAMPL	ING TEAM:	· Krenz			TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ ST	TANDARD ⊠ OTI	HER_														☐ NPDES ☑ TNI
SEND	REPORT TO:	Joseph Firlit			email:	phone:															□ ISO 17025
CC	OPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other			CC	ONT	AIN	ERS	5									☐ 10 CFR 50 APP, B
-		TRC			WW = Wastewater SL = Slud W = Water / Aqueous Liquid A = Air			F	RES	ER'	VAT	IVE	tals								☐ INTERNAL INFO
	LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid WP = Wip	neral Waste	TOTAL#			7 -		=	Il Metals	suc	Ammonia		Alkalinity	de			□ OTHER
SAM	MPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TOT	None	HNO	NaO.	HCI	MeOl	Total	Anions	Amn	TDS	Alka	Sulfide			REMARKS
24	-0340-01	5-8-24	1303	GW	DEK-MW-18001		7	4	1	1 1			x	x	x	x	x	x			
	-02			GW	DEK-MW-18001 MS		6	3	1	1 1			x	x	x		x	x			
	-03	J	1	GW	DEK-MW-18001 MSD		6	3	1	ı I			x	x	x		x	x			
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DEL BIO	HEIVEA DV.			ATE/I	TAIT.	POPULED DV) ma						
111	UISHEO BY:	lust		181		Fed - EX							CO	MME	N15:						
RELINQ	UISHED BY:	X	D.	ATE/T	IME: R	Fed - EX ECCEIVED BY:	(a è è											_°C			#: 015402 e Date: 5-23-24



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q2

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0343

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 05/06/2024 for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/10/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PΙ	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q2-2024 DEK-JCW Background Wells

Date Received: 5/10/2024 **Chemistry Project:** 24-0343

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0343-01	MW-15002	Groundwater	05/08/2024 14:51	DEK JCW Background
24-0343-02	MW-15008	Groundwater	05/08/2024 13:15	DEK JCW Background
24-0343-03	MW-15016	Groundwater	05/08/2024 14:47	DEK JCW Background
24-0343-04	MW-15019	Groundwater	05/08/2024 14:13	DEK JCW Background
24-0343-05	DUP-Background	Groundwater	05/08/2024 00:00	DEK JCW Background
24-0343-06	FB- Background	Water	05/08/2024 16:05	DEK JCW Background



05/23/24



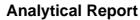
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Sample Site: **DEK JCW Background** Laboratory Project: **24-0343**

 Field Sample ID:
 MW-15002
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-01
 Collect Time:
 02:51 PM

Antimony Antimony Antimony Antimony Antimony Antimony Antimony Arsenic ND ug/L 1.0 05/14/2024 AB24-0515-0' AB24-0515-0' Barium A3 ug/L 5.0 05/14/2024 AB24-0515-0' Beryllium ND ug/L 1.0 05/14/2024 AB24-0515-0' Beryllium ND ug/L 20.0 05/14/2024 AB24-0515-0' Cadmium ND ug/L 1000.0 05/14/2024 AB24-0515-0' Calcium 55900 ug/L 1000.0 05/14/2024 AB24-0515-0' Chromium ND ug/L 1.0 05/14/2024 AB24-0515-0' Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-0' Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-0' Copper 2 ug/L 1.0 05/14/2024 AB24-0515-0' Lead ND ug/L 1.0 05/14/2024 AB24-0515-0' Magnesium ND ug/L 1.0 05/14/2024 AB24-0515-0' Molybdenum ND ug/L 1.0 05/14/2024 AB24-0515-0' Molybdenum ND ug/L 1.0 05/14/2024 AB24-0515-0' Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-0' Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-0' Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-0' No No ND ug/L 1.0 05/14/2024 AB24-0515-0' No No ND ug/L 1.0 05/14/2024 AB24-0515-0' No No ND ug/L 1.0 05/14/2024 AB24-0515-0' No No No Ug/L 1.0 05/14/2024 AB24-0515-0' No No Ug/L 1.0 05/14/2024 AB24-0515-0' AB24-0515-0' No No Ug/L 1.0 05/14/2024 AB24-0515-0' No No No Ug/L 1.0 05/14/2024 AB24-0515-0' AB24-0515-0' No No Ug/L 1.0 05/14/2024 AB24-0515-0' A	Metals by EPA 6020B: CCR Rul	le Appendix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	343-01-C01-A01	Analyst: EB
Arsenic ND ug/L 1.0 05/14/2024 AB24-0515-0' Barlum 43 ug/L 5.0 05/14/2024 AB24-0515-0' Beryllium ND ug/L 1.0 05/14/2024 AB24-0515-0' Boron 21 ug/L 20.0 05/14/2024 AB24-0515-0' Cadmium ND ug/L 0.2 05/14/2024 AB24-0515-0' Cadmium ND ug/L 1000.0 05/14/2024 AB24-0515-0' Calcium 55900 ug/L 1000.0 05/14/2024 AB24-0515-0' Chromium ND ug/L 1.0 05/14/2024 AB24-0515-0' Chromium ND ug/L 1.0 05/14/2024 AB24-0515-0' Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-0' Copper 2 ug/L 1.0 05/14/2024 AB24-0515-0' Iron 526 ug/L 20.0 05/14/2024 AB24-0515-0' Lead ND ug/L 1.0 05/14/2024 AB24-0515-0' Lead ND ug/L 1.0 05/14/2024 AB24-0515-0' Magnesium ND ug/L 1.0 05/14/2024 AB24-0515-0' Magnesium 6360 ug/L 100.0 05/14/2024 AB24-0515-0' Molybdenum ND ug/L 10.0 05/14/2024 AB24-0515-0' Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-0' Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-0' Selenium ND ug/L 1.0 05/14/2024 AB24-0515-0' Selenium ND ug/L 1.0 05/14/2024 AB24-0515-0' Silver ND ug/L 1.0 05/14/2024 AB24-0515-0' Silver ND ug/L 1.0 05/14/2024 AB24-0515-0' Sodium 51500 ug/L 100.0 05/14/2024 AB24-0515-0' Sodium 51500 ug/L 1.0 05/14/2024 AB24-0515-0' Aliquot #: 24-0343-01-C02-A01 AR1945: CLI Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0343-01-C02-A01 AR1945: CLI Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0515-0' Aliquot #: 24-0343-01-C03-A01 Analysi: CLI Parameter(s) Result Flag Units RL Analysis Date Tracking	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Barium 43 ug/L 5.0 05/14/2024 AB24-0515-00 Beryllium ND ug/L 1.0 05/14/2024 AB24-0515-00 Boron 21 ug/L 20.0 05/14/2024 AB24-0515-00 Cadmium ND ug/L 1.00 0.5/14/2024 AB24-0515-00 Calcium 55900 ug/L 1.00 05/14/2024 AB24-0515-00 Chromium ND ug/L 1.0 05/14/2024 AB24-0515-00 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-00 Copper 2 ug/L 1.0 05/14/2024 AB24-0515-00 Iron 526 ug/L 1.0 05/14/2024 AB24-0515-00 Lead ND ug/L 1.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 1.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 1.0 05/14/2024 AB24-0515-00 Nickel 2	Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Beryllium ND ug/L 1.0 05/14/2024 AB24-0515-01 Boron 21 ug/L 20.0 05/14/2024 AB24-0515-01 Cadmium ND ug/L 0.2 05/14/2024 AB24-0515-01 Calcium 55900 ug/L 1.0 05/14/2024 AB24-0515-01 Chomium ND ug/L 1.0 05/14/2024 AB24-0515-01 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-01 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-01 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-01 Iron 526 ug/L 2.0 05/14/2024 AB24-0515-01 Lead ND ug/L 1.0 05/14/2024 AB24-0515-01 Magnesium 6360 ug/L 1.0 05/14/2024 AB24-0515-01 Majoresium ND ug/L 2.0 05/14/2024 AB24-0515-01 Nickel 2	Arsenic	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron 21 ug/L 20.0 05/14/2024 AB24-0515-01 Cadmium ND ug/L 0.2 05/14/2024 AB24-0515-01 Calcium 55900 ug/L 1000.0 05/14/2024 AB24-0515-01 Chromium ND ug/L 1.0 05/14/2024 AB24-0515-01 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-01 Copper 2 ug/L 1.0 05/14/2024 AB24-0515-01 Iron 526 ug/L 2.0 05/14/2024 AB24-0515-01 Lead ND ug/L 1.0 05/14/2024 AB24-0515-01 Lithium ND ug/L 1.0 05/14/2024 AB24-0515-01 Magnesium 6360 ug/L 1.0 05/14/2024 AB24-0515-01 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-01 Mickel 2 ug/L 1.0 05/14/2024 AB24-0515-01 Nickel 2	Barium	43		ug/L	5.0	05/14/2024	AB24-0515-01
Cadmium ND ug/L 0.2 05/14/2024 AB24-0515-01 Calcium 55900 ug/L 1000.0 05/14/2024 AB24-0515-01 Chromium ND ug/L 1.0 05/14/2024 AB24-0515-01 Cobalt ND ug/L 1.0 05/14/2024 AB24-0515-01 Copper 2 ug/L 1.0 05/14/2024 AB24-0515-01 Iron 526 ug/L 1.0 05/14/2024 AB24-0515-01 Lead ND ug/L 10.0 05/14/2024 AB24-0515-01 Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-01 Molybdenum ND ug/L 1000.0 05/14/2024 AB24-0515-01 Molybdenum ND ug/L 2.0 05/14/2024 AB24-0515-01 Molybdenum ND ug/L 2.0 05/14/2024 AB24-0515-01 Molybdenum ND ug/L 1.0 05/14/2024 AB24-0515-01 Selenium	Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Calcium 55900 ug/L 1000.0 05/14/2024 AB24-0515-0¹ Chromium ND ug/L 1.0 05/14/2024 AB24-0515-0¹ Cobalt ND ug/L 6.0 05/14/2024 AB24-0515-0¹ Copper 2 ug/L 1.0 05/14/2024 AB24-0515-0¹ Iron 526 ug/L 20.0 05/14/2024 AB24-0515-0¹ Lead ND ug/L 1.0 05/14/2024 AB24-0515-0¹ Magnesium 6360 ug/L 100.0 05/14/2024 AB24-0515-0¹ Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-0¹ Mickel 2 ug/L 2.0 05/14/2024 AB24-0515-0¹ Nickel 2 ug/L 10.0 05/14/2024 AB24-0515-0¹ Selenium ND ug/L 10.0 05/14/2024 AB24-0515-0¹ Sodium 51500 ug/L 10.0 05/14/2024 AB24-0515-0¹ Vanadium ND <td>Boron</td> <td>21</td> <td></td> <td>ug/L</td> <td>20.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Boron	21		ug/L	20.0	05/14/2024	AB24-0515-01
Chromium ND ug/L 1.0 05/14/2024 AB24-0515-00 Cobalt ND ug/L 6.0 05/14/2024 AB24-0515-00 Copper 2 ug/L 1.0 05/14/2024 AB24-0515-00 Iron 526 ug/L 20.0 05/14/2024 AB24-0515-00 Lead ND ug/L 1.0 05/14/2024 AB24-0515-00 Lithium ND ug/L 10.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-00 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 100.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 1.0 05/14/2024 AB24-0515-00 Sodium 51500	Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Cobalt ND ug/L 6.0 05/14/2024 AB24-0515-07 Copper 2 ug/L 1.0 05/14/2024 AB24-0515-07 Iron 526 ug/L 20.0 05/14/2024 AB24-0515-07 Lead ND ug/L 1.0 05/14/2024 AB24-0515-07 Lithium ND ug/L 10.0 05/14/2024 AB24-0515-07 Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-07 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-07 Nickel 2 ug/L 100.0 05/14/2024 AB24-0515-07 Nickel 2 ug/L 100.0 05/14/2024 AB24-0515-07 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-07 Silver ND ug/L 1.0 05/14/2024 AB24-0515-07 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-07 Thallium ND	Calcium	55900		ug/L	1000.0	05/14/2024	AB24-0515-01
Copper 2 ug/L 1.0 05/14/2024 AB24-0515-00 Iron 526 ug/L 20.0 05/14/2024 AB24-0515-00 Lead ND ug/L 1.0 05/14/2024 AB24-0515-00 Lithium ND ug/L 10.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 100.0 05/14/2024 AB24-0515-00 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 100.0 05/14/2024 AB24-0515-00 Potassium 243 ug/L 10.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 0.2 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND	Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Lead ND ug/L 1.0 05/14/2024 AB24-0515-00 Lithium ND ug/L 10.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-00 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 20.0 05/14/2024 AB24-0515-00 Potassium 243 ug/L 100.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Sodium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis Date Tracking	Copper	2		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium ND ug/L 10.0 05/14/2024 AB24-0515-00 Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-00 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 100.0 05/14/2024 AB24-0515-00 Potassium 243 ug/L 100.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Zinc ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis Date Tracking	Iron	526		ug/L	20.0	05/14/2024	AB24-0515-01
Magnesium 6360 ug/L 1000.0 05/14/2024 AB24-0515-00 Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-00 Potassium 243 ug/L 100.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury ND ug/L 0.2 05/20/2024 AB24-0515-00	Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515-00 Nickel 2 ug/L 2.0 05/14/2024 AB24-0515-00 Potassium 243 ug/L 100.0 05/14/2024 AB24-0515-00 Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-00 Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 </td <td>Lithium</td> <td>ND</td> <td></td> <td>ug/L</td> <td>10.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Lithium	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Nickel 2	Magnesium	6360		ug/L	1000.0	05/14/2024	AB24-0515-01
Potassium	Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Selenium ND ug/L 1.0 05/14/2024 AB24-0515-00 Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-00 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analysis KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-00 AB24-0514-00 Sulfate 7530	Nickel	2		ug/L	2.0	05/14/2024	AB24-0515-01
Silver ND ug/L 0.2 05/14/2024 AB24-0515-00 Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-00 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-00 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-00 Zinc ND ug/L 10.0 05/14/2024 AB24-0515-00 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-00 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analysis KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-06 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-06 Sulfate 7530 ug/L 1000.0 05/15	Potassium	243		ug/L	100.0	05/14/2024	AB24-0515-01
Sodium 51500 ug/L 1000.0 05/14/2024 AB24-0515-07 Thallium ND ug/L 2.0 05/14/2024 AB24-0515-07 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-07 Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-07 Zinc ND ug/L 10.0 05/14/2024 AB24-0515-07 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0343-01-C01-A02 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-05 Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking Tracking	Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Thallium ND ug/L 2.0 05/14/2024 AB24-0515-01 AB24-051	Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Vanadium ND ug/L 2.0 05/14/2024 AB24-0515-07 Zinc ND ug/L 10.0 05/14/2024 AB24-0515-07 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0343-01-C01-A02 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-05 Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analysis CLE Parameter(s) Result Flag Units RL Analysis Date Trac	Sodium	51500		ug/L	1000.0	05/14/2024	AB24-0515-01
Zinc ND ug/L 10.0 05/14/2024 AB24-0515-07 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0343-01-C01-A02 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-05 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analysis Date Tracking Parameter(s) Result Flag Units RL Analysis Date Tracking	Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0343-01-C01-A02 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-08 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Vanadium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Parameter(s) Result Flag Units RL Analysis Date Tracking Mercury ND ug/L 0.2 05/20/2024 AB24-0515-05 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury ND ug/L 0.2 05/20/2024 AB24-0515-05 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Parameter(s) Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Mercury by EPA 7470A, Total,	Aqueous			Aliquot #: 24-0	343-01-C01-A02	Analyst: CLE
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0343-01-C02-A01 Analyst: KDF Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Chloride 28300 ug/L 1000.0 05/15/2024 AB24-0514-08 Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Anions by EPA 300.0 CCR Rule	Analyte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-01-C02-A01	Analyst: KDR
Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride ND ug/L 1000.0 05/15/2024 AB24-0514-08 Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Chloride	28300		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate 7530 ug/L 1000.0 05/15/2024 AB24-0514-08 Total Dissolved Solids by SM 2540C Aliquot #: 24-0343-01-C03-A01 Analyst: CLE Parameter(s) Result Flag Units RL Analysis Date Tracking	Fluoride	ND		-	1000.0	05/15/2024	AB24-0514-08
Parameter(s) Result Flag Units RL Analysis Date Tracking	Sulfate	7530		-		05/15/2024	AB24-0514-08
•	Total Dissolved Solids by SM 2	540C			Aliquot #: 24-0	343-01-C03-A01	Analyst: CLE
Total Dissolved Solids 358 mg/L 10.0 05/10/2024 AB24-0510-10	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
	Total Dissolved Solids	358		mg/L	10.0	05/10/2024	AB24-0510-10





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Count on Us® All allytical Report Report Date: 05/23/24

Sample Site: **DEK JCW Background** Laboratory Project: **24-0343**

 Field Sample ID:
 MW-15008
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-02
 Collect Time:
 01:15 PM

Metals by EPA 6020B: CCR Rule Appe				Aliquot #: 24-0	343-02-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	3		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	93		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	142		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	121000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	1		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	16900		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	22		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	19300		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	4		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	3180		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	221000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	9		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueou	S			Aliquot #: 24-0	343-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Analyt	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-02-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	395000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	2570		ug/L	1000.0	05/15/2024	AB24-0514-08
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	343-02-C03-A01	Analyst: CLE
	Result	Floor	Heita	RL	Analysia Data	Trackina
Parameter(s)	Result	Flag	Units	KL	Analysis Date	Tracking



05/23/24



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Sample Site: **DEK JCW Background** Laboratory Project: **24-0343**

 Field Sample ID:
 MW-15016
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-03
 Collect Time:
 02:47 PM

Metals by EPA 6020B: CCR Rule Appe	ndix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	343-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	17		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	157		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	398		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	243000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	2		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	21900		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	68		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	39200		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	10		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	9050		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	96000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	2		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueou	s			Aliquot #: 24-0	343-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-03-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	175000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	194000		ug/L	1000.0	05/15/2024	AB24-0514-08
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	343-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1190	J	mg/L	10.0	05/10/2024	AB24-0510-10
		.0343 Page	-		· · · · · · · · · · · · · · · · · ·	



05/23/24



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Sample Site: **DEK JCW Background** Laboratory Project: **24-0343**

 Field Sample ID:
 MW-15019
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-04
 Collect Time:
 02:13 PM

	endix III-IV To			Aliquot #: 24-0	343-04-CUT-AUT	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	2		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	364		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	241		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	173000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	23100		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	14		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	40900		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	5		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	815		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	221000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	3		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueo	ous			Aliquot #: 24-0	343-04-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-04-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	374000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	93800		ug/L	1000.0	05/15/2024	AB24-0514-08
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	343-04-C03-A01	Analyst: CLE
						
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



05/23/24



Count on Us®

Sample Site: **DEK JCW Background** Laboratory Project: **24-0343**

Field Sample ID: DUP-Background Collect Date: 05/08/2024
Lab Sample ID: 24-0343-05 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appe	TIGIX III IV 10	- Inotal	AP	Aliquot #: 24-0	343-05-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	3		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	92		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	140		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	124000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	17300		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	22		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	19400		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	4		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	3970		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	223000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	8		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 24-0	343-05-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-05-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	395000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	2520		ug/L	1000.0	05/15/2024	AB24-0514-08
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	343-05-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
i didiliotor(o)		•			•	_



Report Date:

05/23/24



A CENTURY OF EXCELLENCE

Sample Site:DEK JCW BackgroundLaboratory Project:24-0343Field Sample ID:FB- BackgroundCollect Date:05/08/2024Lab Sample ID:24-0343-06Collect Time:04:05 PM

Matrix: Water

Metals by EPA 6020B: CCR I	Rule Appendix III-IV Tot	al Metals Exp	Aliquot #: 24-0	343-06-C01-A01	01 Analyst: EB			
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking			
Antimony	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Arsenic	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Barium	ND	ug/L	5.0	05/14/2024	AB24-0515-01			
Beryllium	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Boron	ND	ug/L	20.0	05/14/2024	AB24-0515-01			
Cadmium	ND	ug/L	0.2	05/14/2024	AB24-0515-01			
Calcium	ND	ug/L	1000.0	05/14/2024	AB24-0515-01			
Chromium	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Cobalt	ND	ug/L	6.0	05/14/2024	AB24-0515-01			
Copper	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Iron	ND	ug/L	20.0	05/14/2024	AB24-0515-01			
Lead	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Lithium	ND	ug/L	10.0	05/14/2024	AB24-0515-01			
Magnesium	ND	ug/L	1000.0	05/14/2024	AB24-0515-01			
Molybdenum	ND	ug/L	5.0	05/14/2024	AB24-0515-01			
Nickel	ND	ug/L	2.0	05/14/2024	AB24-0515-01			
Potassium	ND	ug/L	100.0	05/14/2024	AB24-0515-01			
Selenium	ND	ug/L	1.0	05/14/2024	AB24-0515-01			
Silver	ND	ug/L	0.2	05/14/2024	AB24-0515-01			
Sodium	ND	ug/L	1000.0	05/14/2024	AB24-0515-01			
Thallium	ND	ug/L	2.0	05/14/2024	AB24-0515-01			
Vanadium	ND	ug/L	2.0	05/14/2024	AB24-0515-01			
Zinc	ND	ug/L	10.0	05/14/2024	AB24-0515-01			
Mercury by EPA 7470A, Tota	ıl, Aqueous		Aliquot #: 24-0	343-06-C01-A02	Analyst: CLE			
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking			
Mercury	ND	ug/L	0.2	05/20/2024	AB24-0515-05			





Report Date: 05/23/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS ENERGY

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1,2.01 PAGE 1 OF 2 REVISION 4 ATTACHMENT A

TITLE: SAMPLE LOG-IN -	SHIPMENT	INSPECTION	FORM
------------------------	----------	------------	------

Pr	oject Log-In Number: _	24-03	3 4 3			
In	spection Date:	5110/24		Inspection By:	IE	
Sa	mple Origin/Project Nan	ne:	W-DEK &	sackground		
	ipment Delivered By: E			0		
				USPS_	Airb	orne
	Other/Hand Carry (whom)	LC			
	Tracking Number:_			Shipping Form At	tached: Yes	No
St	ipping Containers: Ente	r the type and	number of ship	oing containers received.		
	Cooler	Cardboard B	ox	Custom Case	Envelope	/Mailer
	Loose/Unpackaged		17.00	Other		
C	ondition of Shipment: Er	iter the as-rece	ived condition	of the shipment container	h:	
	Damaged Shipment			Dented		ing
				Defited	_	5
SI	nipment Security: Enter i			rs were opened before red Sealed		
r.						
E	nclosed Documents: Ente				4.4	
	CoC \	Vork Request_	-	Air Data Sheet	Other	
To	emperature of Container	s: Measure the	temperature of	several sample container	·s.	
	As-Received Temper	erature Range_	6.4-2.4°C	Samples Received o	n Ice: Yes \checkmark N	0
	M&TE # and Expir	ation 615	5402			
N	umber and Type of Cont	5.2 ainers: Enter	3.24 the total numbe	r of sample containers re	ceived.	
	Container Type	Water	Soil	Other	Broken	Leaking
	VOA (40mL or 60m)					
	Quart/Liter (g/p)	-	_		-	
	9-oz (amber glass ja	ar)	_		-	-
FSP pH 0-14	2-oz (amber glass)		_		-	-
# 13-640-508	125 mL (plastic)	11	_		_	
101: 205522	24 mL vial (glass)		_			
exp: 2-15-25	250560 mL (plastic)	5				
	Other				_	

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER;		PROJECT NUMBER:	SAP CC or W	SAP CC or WO#: ANALYSIS REQUESTED			0.1 200120000000000000000000000000000000														
Q2-	2024 JCW-DEK	Background W	ells		24-0343	REQUESTER	: Hard	old R	Regi	ster				(Atta	ch Li	t if N	fore S	Space is Needed) QA REQUIREME			QA REQUIREMENT:
SAMPLING TEAM:					TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ⋈ OTHER							□ NPDES ⊠ TNI									
SEN	ND REPORT TO:	Joseph Firlit			email:	phone:															□ ISO 17025
COPY TO: Harold Register TRC			MATRIX CODES: GW = Groundwater WW = Wastewater OX = Other SL = Sludge		CONTAINERS PRESERVATIVE					S								☐ 10 CFR 50 APP. B			
		7.1.	LECTION	XIX	W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = Gene		Waste # TOLAT	П					Total Metals	suc							☐ INTERNAL INFO ☐ OTHER
S	AMPLE ID	DATE	DATE TIME S S SOIT / General Solid WP = W O = Oil WT = O		FIELD SAMPLE ID / LOC	CATION	TOT	None	HNO	H ₂ SO ₄	HCI	MeOl	Tota	Anions	TDS						REMARKS
	24-0343-01	5/8/24	1451	GW	MW-15002		3	2	1				х	х	х						
	-02	3/8/24	1315	GW	MW-15008		3	2	1				х	х	x						
	-03	5/8/24	1497	GW	MW-15016		3	2	1				х	x	x						
	-04	5/8/24	1413	GW	MW-15019		3	2	1				x	x	x						
	-05	3/8/24	_	GW	DUP-Background		3	2	1				х	x	x						
	→ -06	5/8/24	1607	W	FB- Background		1						x								
(NQUISHED BY:	_ 5		A 4 DATE/I	074	CEIVED BY:							Rec	eived							015402
					24	-0343 Page 13 of	13						Ten	perat	ure:	.4-	2.4	.c	Cal.	Due I	Date: 5-23-24

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ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 6/14/2024 10:52:31 AM

JOB DESCRIPTION

Karn/Weadock CCR DEK Botton Ash Pond

JOB NUMBER

240-204357-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203



Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated 6/14/2024 10:52:31 AM

Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

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Definitions/Glossary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Job ID: 240-204357-1

Qualifiers

	_	_
ĸ	н	п
•	•	•

 Qualifier
 Qualifier Description

 U
 Result is less than the sample detection limit.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Example 2 Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Cleveland

Case Narrative

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR DEK Botton Ash Pond

Job ID: 240-204357-1 Eurofins Cleveland

Job Narrative 240-204357-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 5/11/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.9°C and 3.0°C.

Receipt Exceptions

The number of containers listed on the COC pages do not match what was received for the following: DEK-MW-15002 (240-204357-1), DEK-MW-15005 (240-204357-2) and DUP-DEK-BAP-01 (240-204357-4). There is sufficient volume for the requested analyses.

Gas Flow Proportional Counter

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cleveland

Job ID: 240-204357-1

Page 5 of 28 6/14/2024

Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-204357-1

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Sample Summary

Client: TRC Environmental Corporation.

240-204357-5

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

EB-DEK-BAP

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204357-1	DEK-MW-15002	Water	05/09/24 10:31	05/11/24 08:00
240-204357-2	DEK-MW-15005	Water	05/09/24 08:37	05/11/24 08:00
240-204357-3	DEK-MW-15006	Water	05/09/24 11:38	05/11/24 08:00
240-204357-4	DUP-DEK-BAP-01	Water	05/09/24 00:00	05/11/24 08:00

05/09/24 12:00

05/11/24 08:00

Water

Job ID: 240-204357-1

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: DEK-MW-15002

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-1 Date Collected: 05/09/24 10:31

Matrix: Water

Job ID: 240-204357-1

ı		
l	Method: EPA 903.0 - R	adium-226 (GFPC)

Metriod. Li A 303.0 -	Naululli-220	(0110)	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.292		0.0929	0.0965	1.00	0.0751	pCi/L	05/16/24 09:22	06/12/24 09:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.1		30 - 110					05/16/24 09:22	06/12/24 09:58	1

Method: EPA 904.0 -	Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.249	U	0.308	0.309	1.00	0.511	pCi/L	05/16/24 09:27	05/22/24 16:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.1		30 - 110					05/16/24 09:27	05/22/24 16:21	1
Y Carrier	80.7		30 - 110					05/16/24 09:27	05/22/24 16:21	1

Method: TAL-STL Ra226 Ra228 - Combined Radium-226 and Radium-228

INICI	ilou. IAL-OIL Ka	220_I\a220 •	Combined	Madium-220	and Nadiun	1-220					
				Count	Total						
				Uncert.	Uncert.						
Anal	yte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Com	bined Radium	0.541		0.322	0.324	5.00	0.511	pCi/L		06/13/24 11:50	1
226.	L 228										

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: DEK-MW-15005

Date Collected: 05/09/24 08:37 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-2

Matrix: Water

Job ID: 240-204357-1

Method: EPA 903.0	- Radium-226	(GFPC)								
		,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.653		0.131	0.144	1.00	0.0651	pCi/L	05/16/24 09:22	06/12/24 09:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.8		30 - 110					05/16/24 09:22	06/12/24 09:58	1
	37.0		00-110					00, 10,24 00.22	00, 12, 24 00.00	

Method: EPA 904.0) - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.898		0.377	0.386	1.00	0.480	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.8		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	80.7		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra	226_Ra228	- Combined	l Radium-226	and Radiun	n- 228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.55		0.399	0.412	5.00	0.480	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: DEK-MW-15006

Date Collected: 05/09/24 11:38 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-3

Matrix: Water

Job ID: 240-204357-1

Method: EPA 903.0	- Radium-226	(GFPC)								
		,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.497		0.121	0.129	1.00	0.0839	pCi/L	05/16/24 09:22	06/12/24 09:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110					05/16/24 09:22	06/12/24 09:58	1

Method: EPA 904.0) - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.593		0.328	0.333	1.00	0.455	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	85.2		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra	226_Ra228	- Combined	Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.09		0.350	0.357	5.00	0.455	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: DUP-DEK-BAP-01

Date Collected: 05/09/24 00:00

Lab Sample ID: 240-204357-4

Matrix: Water

Job ID: 240-204357-1

Date Received: 05/11/24 08:00

Method: EPA 903.0	- Radium-226	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.299		0.0990	0.103	1.00	0.0913	pCi/L	05/16/24 09:22	06/12/24 09:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		30 - 110					05/16/24 09:22	06/12/24 09:58	1

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.132	U	0.307	0.307	1.00	0.538	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.3		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	86.7		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra2	26_Ra228	- Combined	l Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.431	U	0.323	0.324	5.00	0.538	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: EB-DEK-BAP

Date Collected: 05/09/24 12:00 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-5

Matrix: Water

Job ID: 240-204357-1

Method: EPA 903.0	- Radium-226	(GFPC)								
		,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0341	U	0.0545	0.0546	1.00	0.0948	pCi/L	05/16/24 09:22	06/12/24 09:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		30 - 110					05/16/24 09:22	06/12/24 09:59	1
_										

Method: EPA 904.	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.141	U	0.307	0.307	1.00	0.537	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	85.6		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra2	26_Ra228	- Combined	Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.175	U	0.312	0.312	5.00	0.537	pCi/L	_	06/13/24 11:50	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(30-110)	
240-204357-1	DEK-MW-15002	89.1	
240-204357-2	DEK-MW-15005	91.8	
240-204357-3	DEK-MW-15006	88.6	
240-204357-4	DUP-DEK-BAP-01	88.3	
240-204357-5	EB-DEK-BAP	84.6	
240-204357-5 DU	EB-DEK-BAP	82.6	
LCS 160-662015/2-A	Lab Control Sample	89.6	
MB 160-662015/1-A	Method Blank	94.3	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Prep Type: Total/NA **Matrix: Water**

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-204357-1	DEK-MW-15002	89.1	80.7	
240-204357-2	DEK-MW-15005	91.8	80.7	
240-204357-3	DEK-MW-15006	88.6	85.2	
240-204357-4	DUP-DEK-BAP-01	88.3	86.7	
240-204357-5	EB-DEK-BAP	84.6	85.6	
240-204357-5 DU	EB-DEK-BAP	82.6	76.6	
LCS 160-662016/2-A	Lab Control Sample	89.6	81.5	
MB 160-662016/1-A	Method Blank	94.3	81.9	

Tracer/Carrier Legend

Ba = Ba Carrier Y = Y Carrier

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Job ID: 240-204357-1

Prep Type: Total/NA

Prep Batch: 662015

Prep Batch: 662015

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-662015/1-A Client Sample ID: Method Blank

Matrix: Water

Prep Type: Total/NA **Prep Batch: 662015** Analysis Batch: 665824 Count Total

MB MB Uncert. Uncert. Analyte Result Qualifier (2σ+/-) (2σ+/-) RL MDC Unit Prepared Analyzed Dil Fac 0.0761 pCi/L Radium-226 0.03763 U 0.0464 0.0466 1.00 05/16/24 09:22 06/12/24 09:56

MВ

Carrier Qualifier Limits Prepared Dil Fac %Yield Analyzed Ba Carrier 94.3 30 - 110 05/16/24 09:22 06/12/24 09:56

Lab Sample ID: LCS 160-662015/2-A Client Sample ID: Lab Control Sample

Matrix: Water

Analysis Batch: 665824

Total LCS LCS %Rec Spike Uncert. Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 11.3 1.00 100 75 - 125 11 29 1.15 0.0974 pCi/L

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 89.6 30 - 110

Lab Sample ID: 240-204357-5 DU Client Sample ID: EB-DEK-BAP Prep Type: Total/NA

Matrix: Water

Analysis Batch: 665824

Total Sample Sample DU DU Uncert. RER Result Qual Result Qual RL MDC Unit RER

Analyte $(2\sigma + / -)$ Limit 0.0341 U Radium-226 0.03874 U 0.0493 1.00 0.0811 pCi/L 0.04

DU DU Carrier %Yield Qualifier Limits Ba Carrier 82.6 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662016/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 662959 Prep Batch: 662016 Count Total

	МВ	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.02553	U	0.303	0.303	1.00	0.568	pCi/L	05/16/24 09:27	05/22/24 16:21	1

	МВ	МВ				
Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.3		30 - 110	05/16/24 09:27	05/22/24 16:21	1
Y Carrier	81.9		30 - 110	05/16/24 09:27	05/22/24 16:21	1

6/14/2024

QC Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Job ID: 240-204357-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-662016/2-A

Matrix: Water

Analysis Batch: 662959

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 662016

Total LCS LCS %Rec Spike Uncert. Analyte Added Result Qual (2σ+/-) RL MDC Unit %Rec Limits Radium-228 8.92 10.45 1.39 1.00 0.473 pCi/L 117 75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 89.6 30 - 110 Y Carrier 81.5 30 - 110

Lab Sample ID: 240-204357-5 DU Client Sample ID: EB-DEK-BAP

Matrix: Water

Analysis Batch: 662959

Prep Type: Total/NA

Prep Batch: 662016

Total Sample Sample DU DU Uncert. RER RL Analyte Result Qual Result Qual MDC Unit RER Limit $(2\sigma + / -)$ Radium-228 0.141 U -0.03889 U 0.313 1.00 0.603 pCi/L 0.29

DU DU

Carrier	%Yield	Qualifier	Limits
Ba Carrier	82.6		30 - 110
Y Carrier	76.6		30 - 110

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QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Job ID: 240-204357-1

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Prep Batch: 662015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204357-1	DEK-MW-15002	Total/NA	Water	PrecSep STD	
240-204357-2	DEK-MW-15005	Total/NA	Water	PrecSep STD	
240-204357-3	DEK-MW-15006	Total/NA	Water	PrecSep STD	
240-204357-4	DUP-DEK-BAP-01	Total/NA	Water	PrecSep STD	
240-204357-5	EB-DEK-BAP	Total/NA	Water	PrecSep STD	
MB 160-662015/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-662015/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-204357-5 DU	EB-DEK-BAP	Total/NA	Water	PrecSep STD	

Prep Batch: 662016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204357-1	DEK-MW-15002	Total/NA	Water	PrecSep_0	
240-204357-2	DEK-MW-15005	Total/NA	Water	PrecSep_0	
240-204357-3	DEK-MW-15006	Total/NA	Water	PrecSep_0	
240-204357-4	DUP-DEK-BAP-01	Total/NA	Water	PrecSep_0	
240-204357-5	EB-DEK-BAP	Total/NA	Water	PrecSep_0	
MB 160-662016/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-662016/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-204357-5 DU	EB-DEK-BAP	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: DEK-MW-15002

Date Collected: 05/09/24 10:31 Date Received: 05/11/24 08:00 Lab Sample ID: 240-204357-1

Matrix: Water

Job ID: 240-204357-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:58
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:21
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: DEK-MW-15005

Date Collected: 05/09/24 08:37 Date Received: 05/11/24 08:00 Lab Sample ID: 240-204357-2

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:58
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: DEK-MW-15006

Date Collected: 05/09/24 11:38

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-3

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:58
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: DUP-DEK-BAP-01

Date Collected: 05/09/24 00:00

Date Received: 05/11/24 08:00

Lab Sample ID: 240-	204357-4
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Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:58
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Client Sample ID: EB-DEK-BAP

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204357-5 Date Collected: 05/09/24 12:00

Matrix: Water

Job ID: 240-204357-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:59
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Botton Ash Pond

Job ID: 240-204357-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Ilinois	NELAP	200023	11-30-24
owa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
_ouisiana	NELAP	04080	06-30-22 *
_ouisiana (All)	NELAP	04080	06-30-24
_ouisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-24
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	10-31-24

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 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

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180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record

MICHIGAN 190

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Environment Testing

Client Information	Sampler:				ib PM: rooks,	Kris	М					١	Carrier	rackin	ig 140(:	»).			COC No: 240-120142-29	052.1	
Client Contact: Jacob Krenz	Phone:				Mail: ris.Bro	oks@	not e	aurofin	ocue c	·om		s	state of	Origin					Page: Page 1 of 1		
Company:			PWSID:	IX.	115.010	OKSE	<i>y</i> et.e	Saroin											Job #:	-	
TRC Environmental Corporation.					\perp					Anal	ysis	Requ	este	ed_							
Address: 1540 Eisenhower Place	Due Date Request	ed:						- 1											Preservation Co D - HNO3	des:	
City:	TAT Requested (d	ays):				100															
Ann Arbor State, Zip:																					
MI, 48108-7080	Compliance Project	ct: A Yes	Δ No		-10	77													l .		
Phone:	PO #:										1 1										
734-971-7080(Tel) 734-971-9022(Fax) Email:	TBD WO#:				- ĝ	M				1	11										
JKrenz@trccompanies.com	553814.0001				s or	S S											1	SJ			
Project Name: Karn/Weadock CCR DEK Bottom Ash Pond	Project #: 24024154				رچ	SOF	ပ္စ	List						ŀ			1	containers			
Site:	SSOW#:				౼림	څ	5	rget										cont	Other:		
					Sar	MSD	a228	E E										rof			
			Sample Type	Matrix (w-water,		Perform MS/MSD (Yes or No)	903.0, Ra226Ra228_GFPC	904.0 - Standard Target Lis										Number			
		Sample	(C=comp,	3=solid, O=waste/ol		orfor	30,1	-0.4										Total			
Sample Identification	Sample Date	Time	G=grab) a				\rightarrow				+			-	_			É	Special !	nstructions/l	Note:
DEI/ NAM 45000	- 1 2 d						\neg	D	+	+-	+-				-			I			
DEK-MW-15002	5-9-24	1031	G	Water	N	N	X	٨		_	\perp		\perp			_	_	2			
DEK-MW-15005	5-9-24	0837	6	Water	N	N	X	X										2			
DEK-MW-15006	5-9-24	1138		Water	Ŋ	N	X	X										2			
DUP-DEK-BAP-01	5-9-24	10-	G	Water	Ŋ	N	X	x										2			
EB-DEK-BAP	5-9-24	1200	6	Water	N	N	х	χ							Ī			2			
				Water	П		┪						T								
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			<u> </u>		\dashv		1	40-20	14357	Cha	in of C	Custo	 dv	II IIIII II			_				
					\dashv	٣,				0110		1 200					_				
Possible Hazard Identification			LL.			Sam	ple	Dispo	sal (A fee		be as	sesse	ed if s	amp	les ai	re re	taine	ed longer than	1 month)	
Non-Hazard Flammable Skin Irritant	Poison B Unkn	own 🗆 I	Radiological				$\dot{\beth}_{R\epsilon}$	eturn T	To Clie	ent	<u>ר</u>	Dis	sposa	l By L	ab .				ive For	Months	
Deliverable Requested: I, II, III, IV, Other (specify)		+									Require										
Empty Kit Relinquished by:		Date:			Tin	ne:							М	ethod c	of Ship	ment:					
Relinquished by	Date/Time: 5-10-2	1/1		ompany		F	Recei	ved by:	0						Dat	e/Time	i		10 1 010	Company	-1
Relinquished by:	Date/Time:	4/10	10	TR	رت	4	2000	ved by:	KC	l	9		>					102	10:10		FTH
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Ver: 06/08/2024

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Eurofins — Cleveland Sample Receipt Form/Narrative ယန္လ Ņ FedEx. 1st Grd Exp Cooler Received on Barberton Facility Receipt After-hours Drop-off Date/Time
Furofins Cooler # &C Foam F Were the custody papers relinquished & signed in the appropriate place? Did custody papers accompany the sample(s)? Shippers' packing slip attached to the cooler(s)? Cooler temperature upon receipt TR GIIN # $\frac{18}{6}$ (CF Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity IR GUN# Packing material used -Were tamper/custody seals intact and uncompromised? Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Were the seals on the outside of the cooler(s) signed & dated? COOLANT Vet Ice Bubble Wrap (CF 0, 0 Blue Ice °C) Observed Cooler Temp Foam Dry Ice Plastic Bag Water Nome None See Multiple Cooler Form Other °C Corrected Cooler Temp S. S. Z Z N Z Oil and Grease TOC Tests that are not Receiving checked for pH by `ದೆ

Time preserved Sample(s) 20 SAMPLE PRESERVATION Sample(s) Sample(s) Sample(s) 19 SAMPLE CONDITION 18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Preservative(s) added/Lot number(s) were received after the recommended holding time had expired. were received with bubble >6 mm in diameter (Notify PM) additional next page were received in a broken container were further preserved in the laboratory Samples processed Ġ

WI NC-099-041724 Cooler Receipt Form

VOA Sample Preservation

Date/Time VOAs Frozer

9 8 7 6

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Were VOAs on the COC?

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Were all preserved sample(s) at the correct pH upon receipt?

If yes, Questions 13 17 have been checked at the originating laboratory

Sufficient quantity received to perform indicated analyses? Were correct bottle(s) used for the test(s) indicated?

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pH Strip Lot# HC439975

Are these work share samples and all listed on the COC?

Could all bottle labels (ID/Date/Time) be reconciled with the COC?

For each sample, does the COC specify preservatives (YN), # of containers (YN), and sample type of grab/comp(YN)?

Z

Was/were the person(s) who collected the samples clearly identified on the COC?

Did all bottles arrive in good condition (Unbroken)?

16

Was a LL Hg or Me Hg trip blank present? Was a VOA trip blank present in the cooler(s)? Were air bubbles >6 mm in any VOA vials?

Trip Blank Lot #

3(3)3

(3)

Concerning

Contacted PM

Date

à

via Verbal Voice Mail Other

Login#
204357

		GUN GUN	Box Other Box Other	EC Client EC Client
		IR GUN #:		
		1R GUN #:		
,,,,,,,, .		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #:	tox Olher	EC Client
		IR GUN #;	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #;	Box Olher	EC Client
		IR GUN #:	Box Olher	EC Client
	-	IR GUN #:	Box Olher	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Ofher	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #:	Box Other	EC Client
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		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Olher	EC Client
		IR GUN #:	Box Ofher	EC Client
		IR GUN #:	Box Olher	EC Client
	30	IR GUN #: -/8-	Box Other	(Eg/ Client
	79	IR GUN #: -	Box Other	Client
ǰ dwaT	Temp °Ç	(Circle)	Circle)	Circle)

Login Container Summary Report

240-204357

Temperature readings			
Client Sample ID	Lab ID	Container Type	Container Preservation Preservation pH Temp Added Lot Number
DEK-MW-15002	240-204357-A-1	Plastic 1 liter - Nitric Acid	۵
DEK-MW-15002	240-204357-B-1	Plastic 1 liter - Nitric Acid	\$
DEK-MW-15005	240-204357-A-2	Plastic 1 liter - Nitric Acid	\$
DEK-MW-15005	240-204357 B-2	Plastic 1 liter - Nitric Acid	\$
DEK-MW-15006	240-204357-A-3	Plastic 1 liter - Nitric Acid	\$
DEK-MW 15006	240 204357-B-3	Plastic 1 liter - Nitric Acid	\$2
DUP-DEK-BAP-01	240-204357-A-4	Plastic 1 liter - Nitric Acid	\$
DUP-DEK-BAP-01	240-204357-B-4	Plastic 1 liter - Nitric Acid	<2
EB-DEK-BAP	240-204357-A-5	Plastic 1 liter - Nıtrıc Acıd	\$
EB-DEK-BAP	240-204357-B-5	Plastic 1 liter - Nitric Acid	<2

Page 23 of 28

Page 1 of 1

6/14/2024

Environment Testing 💸 eurofins

Chain of Custody Record

180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

Eurofins Cleveland

Client Information (Sub Contract Lab)				Brook	Brooks, Kris M	≥			Carrier	Carrier Tracking No(s):	COC No: 240-184583.1	1583.1	
Culent Contact: Shipping/Receiving	Phone:			E-Mail			,		State of Origin:	igin:	Page		
Company				NIS.	rooks	ger ei	Nris. Brooks@et.eurorinsus.com	IS.com	Michiga		Page 1 of	of 1	
TestAmerica Laboratories, Inc.					Accredit	tions K	ednired	Accreditations Required (See note):			Job #: 240_204357_4	1357_1	
Address: 13715 Rider Trail North, ,	Due Date Requested: 6/12/2024	:pe						Analysis Requested	duested		Preserv	Preservation Codes:	
Gity:	TAT Requested (days):	ays):					-	-	_				
State, Zip. MO. 63045	1				1000								
(IoT)39	#Od#:			T		tsi							
514-230-0300(16) 514-290-0/5/(Fax)					(0		Jei.						
Citali	# OM						128:				5		
Project Name. Karn/Weadock CCR DEK Botton Ash Pond	Project #: 24024154						p) nie				enenis		
Site:	#MOSS										of cont		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wewster, Sesolid, O-wasta/oil, BT-Tissue, A-Air)	Field Filtered S Perform MS/M:	S_deSoe19\0.609	904.0/PrecSep_0 Ra226Ra228_GF				o tedmuM listo		
	\bigvee	X	-	133								Special Illan de llons/Note:	ole:
DEK-MW-15002 (240-204357-1)	5/9/24	10:31 Fastern		Water		×	×				1 TVA prot	TVA protocol - Ra-226+228 action limit at	n limit at
DEK-MW-15005 (240-204357-2)	5/9/24	08.37 Eastern		Water		×	×				TVA proto	TVA protocol - Ra-226+228 action limit at	n limit at
						-					9.0 PCIA		
						+	+						
						+-	-						
						-							
						-							
						 							
						\vdash							
Note: Since laboratory accreditations are subject to change. Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/mair/x being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC aborators will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central.	int Testing North Centra tbove for analysis/tests/ entral, LLC attention im	il, LLC places t matrix being ar mediately. If al	he ownership o nalyzed, the sar I requested acc	f method, analyt nples must be sl reditations are c	s & accr nipped b urrent to	editation ack to tl date, re	complia te Eurofi turn the	nce upon our subcon ns Environment Testi signed Chain of Cust	tract faborato g North Cen	ies. This sample shi	pment is forwarde other instructions Eurofins Environn	d under chain-of-custody. Will be provided. Any char	If the ages to LLC.
Possible Hazard Identification					Sam	ple D	sposa	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	assessed	if samples are r	etained longe	r than 1 month)	
Unconfirmed					_	J Re t_{t}	Return To Client	Client	Disposal By Lab	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Archive For	Months	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Delivera	able Rank: 2			Spec	ial Ins	truction	Requirem	ints:				
inquished by:		Date:			Time:				Meth	Method of Shipment:			
Reinquished by: MALISSA LUAR	Date/Time:		0	Company	<u>"</u>	Received by	py.			Date/Time:		Company	
Relinquished by:	Date/Time:		O	Company	12	1	λo	1	1	Date/Time	/ 2000 P	Company Company	
Relinquished by:	Date/Time:		U	Company	-	Ceive	d by:		9	Date/Time:	4 /11/46/	Company	
Custody Seals Intact: Custody Seal No. A Yes A No						ooler T	amperati	Cooler Temperature(s) °C and Other Remarks	emarks				
							13	11 12	10	8	6 7	Ver: 06/08/202	2

eurofins | Environment Testing

Chain of Custody Record

180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

Eurofins Cleveland

ecord

KEECK

Client Information (Sub Contract Lab)				Brook	Brooks, Kris M	Σ						n.		0 (4	240-184582.1	
Client Contact:	Phone:			E-Mail			E-Mail:			Sta	State of Origin:	ے			Page:	
Company				Kris.t	srooks(get e	rotins	IS.COM		Ž	Michigan				Page 1 of 1	
TestAmerica Laboratories, Inc.					Accredite	RIOUS	Accreditations Required (See note)	see not	· ·					3 (Job #: 240-204357-1	
Address. 13715 Rider Trail North,	Due Date Requested: 6/12/2024	:pe						Ang	Analysis	Requested	sted				Preservation Codes	des:
City. Earth City	TAT Requested (days):	ays):					_		_			-				
State, Ztp. MO, 63045	Γ															
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #.				(15							200		
Email:	#OM						rget Lis							5		
Project Name: Karn/Weadock CCR DEK Botton Ash Pond	Project #: 24024154		9				ard 1a							sienis:		
Site.	SSOW#:														Other:	
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wasteroll, BT=Tissue, A=Ar)	Field Filtered M\2M mrone9	.ge25en9\0.£06	904.0/PrecSep_ 904.0/PrecSep_ 90_822&9628	-	-					nedmuN lsto	, in the second	Special Instructions Mate.
		X	Preservation Code:											X		V V
DEK-MW-15005 (240-204357-2)	5/9/24	08:37 Fastern		Water		×	×					L		-	TVA protocol - Ra	TVA protocol - Ra-226+228 action limit at
DEK-MW-15006 (240-204357-3)	5/9/24	11:38 Fastern		Water		×	×					-		- A	TVA protocol - Ra	TVA protocol - Ra-226+228 action limit at
DUP-DEK-BAP-01 (240-204357-4)	5/9/24	Eastern		Water	-	×	×					-) F 4	VA protocol - Ra	TVA protocol - Ra-226+228 action limit at
												_		63		
												-				
Note: Since laboratory accreditations are subject to change. Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central. LLC aboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central. LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central. LLC attention immediately.	ment Testing North Centr d above for analysis/tests Central, LLC attention in	al, LLC places i /matrix being a imediately. If a	the ownership on nalyzed, the sar	f method, analy nples must be s reditations are o	e & accr hipped b	editatio ack to date, r	n compli he Eurof eturn the	ance upo ins Envir signed (onment T	contract Is esting Nor	boratorie th Centra esting to	s. This s. I, LLC tab	ample sh soratory c	ipment is or other ins Eurofins	orwarded under ch tructions will be pro Environment Testir	ain-of-custody. If the ovided. Any changes to ng North Central, LLC.
Possible Hazard Identification					San	ple D	isposa	1 (A fe	e may	be asse	ssed if	sample	ss are !	etained	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month	month)
Unconfirmed					⊔ —	⊒ Ret	Return To Client	Client		∐ Disp	Disposal By Lab	rab.	Ц	Archive For	For	Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank:	able Rank: 2			Spe	cial In	structio	ns/QC	Special Instructions/QC Requirements	ments:						
linquished by:		Date:			Time:						Method	Method of Shipment	ent:			
Kelinquished by: IMALISSA LUAR	Date/Time:		0	Company		Received by	d by:	1	2			Date/Time	Time:			Company
Relinquished by:	Date/Time			Company		Redig	- -	12	7	120	10	Date	DateTime	4	200000	Company
Relinquished by:	Date/Time:			Company		Received by	d by:					Date/Time	Time:		2071	Company
Custody Seals Intact: Custody Seal No∴ △ Yes △ No						Cooler	emperat	ore(s) °C	and Othe	Cooler Temperature(s) °C and Other Remarks	16					
							13	12		10	40		8	7	5	Ver: 06/08/2021

eurofins Environment Testing

Chain of Custody Record

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

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Client Information (Sub Contract Lab)				Brool	Brooks, Kris M	Σ							240-184585.1	85.1	
Chent Contact: Shipping/Receiving	Phone:			E-Mail: Kris B	rooke	a ta	lirofine	E-Mail: Kris Brooks@et eurofinsus com	S	State of Origin:	Ë		Page:		
Company					Accredita	ations F	Sequired	Accreditations Required (See note):		5			Job #:		
TestAmerica Laboratories, Inc.													240-204357-1	57-1	
Address 13715 Rider Trail North,	Due Date Requested: 6/12/2024	sted:						Analy	Analysis Reguested	ested			Preservat	Preservation Codes:	
City. Earth City	TAT Requested (days):	days):			1981		\vdash				F				
State, Zip. MO, 63045	1														
Phone 314-298-8566(Tel) 314-298-8757(Fax)	# Od				(tsiJ :	15								
Email:	#OM					Target	get Li:						\$		
Project Name. Karn/Weadock CCR DEK Botton Ash Pond	Project #: 24024154					brabne	isT bis						enenisi		
Site:	#MOSS	:				ste OTa							ot conf		
Sample Identification - Client ID (Lab ID)	Sample Date	Sample	Sample Type (C=comp,	Matrix (wrwster, Sreolid, Orweste/olf,	S benetiiii bleii M/SM mnohe	03.0/PrecSep_	0_4e2>e19\0.b0 			_			o tedmul listo		
	\bigvee							100						Cial Instruction	HS/NOIE.
EB-DEK-BAP (240-204357-5)	5/9/24	12:00		Water		×	×						2 TVA protoc	TVA protocol - Ra-226+228 action limit at	action limit at
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Note: Since laborations are subject to change. Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC altertion immediately. If all requested accreditation are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.	nent Testing North Cen I above for analysis/tes Central, LLC attention i	tral, LLC places ts/matrix being a mmediately. If	the ownership of analyzed, the san all requested acci	f method, analy nples must be t reditations are	te & accr hipped b	reditation back to b date,	on comp the Eur	iance upon o fins Environn e signed Cha	ur subcontrac ient Testing h n of Custody	laboratorii orth Centra	ss. This sa al, LLC lab said comp	ample ship oratory or oliance to l	ment is forwarded other instructions w urofins Environme	under chain-of-cus rill be provided. Ar nt Testing North C	lody. If the y changes to entral, LLC.
Possible Hazard Identification					San	Jalat.	Sispos	al (A fee r	nay be ass	essed ii	sample	s are re	tained longer	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed						_ Rei	Return To Client	Client	Sig 	Disposal By Lab	Lab		Archive For	Months	sų,
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank:	rable Rank:	2		Spe	cial In	structi	ons/QC Re	Special Instructions/QC Requirements:						
Empty Kit Relinquished by:		Date			Time:					Method	Method of Shipment:	ent:			
Relinquished WALISSA LOAR	Date/Time:		<u>υ</u>	Company		Received by	ad by:	8			Date/Time	Time:		Company	
Relinquished by:	Date/Time:		0	Company				13	tor	10	Date/Time:	Time:	Pracoc A	Company	
Relinquished by:	Date/Time:		O	Company		Received by	d by:		3		Date/Time	Time:		Company	
Custody Seals Intact: Custody Seal No:						Cooler	Tempera	iture(s) °C an	Cooler Temperature(s) °C and Other Remarks	rks:	-				
						14	13	12	11	10	g	8	6	Ver: 06/08/202	2 3
							}								

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204357-1

List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/14/24 05:18 PM

Creator: Thornley, Richard W

Creator: Thornley, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
he cooler or samples do not appear to have been compromised or ampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
ooler Temperature is recorded.	True	
COC is present.	True	
OC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	N/A	
here are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
ample collection date/times are provided.	True	
ppropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is 6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204357-1

List Source: Eurofins St. Louis
List Number: 3
List Creation: 05/15/24 01:55 PM

Creator: Pinette, Meadow L

oreator. I mette, meadow E		
Question	Answer Comment	
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 6/13/2024 8:16:54 PM

JOB DESCRIPTION

Karn/Weadock CCR DEK Bottom Ash Pond

JOB NUMBER

240-204354-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203



Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated 6/13/2024 8:16:54 PM

Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790 -

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Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	9
QC Sample Results	10
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Chain of Custody	14
Racaint Chacklists	18

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Definitions/Glossary

Client: TRC Environmental Corporation. Job ID: 240-204354-1

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Qualifiers

Rad

Qualifier **Qualifier Description**

Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
--------------	---

¤ Listed under the "D" column to designate that the result is reported on a dry weight basis

Percent Recovery %R **CFL** Contains Free Liquid CFU Colony Forming Unit CNF Contains No Free Liquid

Duplicate Error Ratio (normalized absolute difference) **DER**

Dil Fac **Dilution Factor**

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit ML Minimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive QC **Quality Control**

Relative Error Ratio (Radiochemistry) **RER**

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC**

Page 4 of 18

6/13/2024

Case Narrative

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1 Eurofins Cleveland

Job Narrative 240-204354-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The sample was received on 5/11/2024 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.9°C and 3.0°C.

Gas Flow Proportional Counter

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Job ID: 240-204354-1

Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-204354-1

Sample Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received

 240-204354-1
 DEK-MW-18001
 Water
 05/08/24 13:03
 05/11/24 08:00

Job ID: 240-204354-1

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-18001

Date Collected: 05/08/24 13:03 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204354-1

Matrix: Water

Job ID: 240-204354-1

Method: EPA 903.	.0 - Radium	-226 (GFP	C)							
		·	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.238		0.0933	0.0958	1.00	0.0935	pCi/L	05/16/24 09:22	06/12/24 09:58	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		30 - 110					05/16/24 09:22	06/12/24 09:58	1

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.000	U	0.329	0.329	1.00	0.623	pCi/L	05/16/24 09:27	05/22/24 16:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	79.1		30 - 110					05/16/24 09:27	05/22/24 16:21	1
Y Carrier	75.5		30 - 110					05/16/24 09:27	05/22/24 16:21	1

Method: TAL-STL R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	m-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.238	U	0.342	0.343	5.00	0.623	pCi/L		06/13/24 11:27	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

_			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(30-110)	
240-204354-1	DEK-MW-18001	79.1	
LCS 160-662015/2-A	Lab Control Sample	89.6	
MB 160-662015/1-A	Method Blank	94.3	
Tracer/Carrier Legen	d		
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Y = Y Carrier

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Y	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-204354-1	DEK-MW-18001	79.1	75.5	
LCS 160-662016/2-A	Lab Control Sample	89.6	81.5	
MB 160-662016/1-A	Method Blank	94.3	81.9	
Tracer/Carrier Legen	d			
Ba = Ba Carrier				

Eurofins Cleveland

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2

Job ID: 240-204354-1

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14

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-662015/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 665824

Analysis Batch: 665824

Client Sample ID: Method Blank

Prep Type: Total/NA

Job ID: 240-204354-1

Prep Batch: 662015

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.03763 U 0.0464 0.0466 1.00 0.0761 pCi/L 05/16/24 09:22 06/12/24 09:56

Total

Count

MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 94.3 30 - 110 05/16/24 09:22 06/12/24 09:56

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 662015

Total LCS LCS %Rec **Spike** Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL %Rec Limits MDC Unit Radium-226 11.3 11.29 1.15 1.00 0.0974 pCi/L 100 75 - 125

LCS LCS Carrier %Yield Qualifier

Lab Sample ID: LCS 160-662015/2-A

Limits Ba Carrier 89.6 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662016/1-A

Matrix: Water

Analysis Batch: 662959

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 662016

Total Count MB MB Uncert. Uncert. Analyte Result Qualifier **MDC** Unit $(2\sigma + / -)$ $(2\sigma + / -)$ RL Prepared Analyzed Dil Fac Radium-228 -0.02553 Ū 0.303 0.303 1.00 0.568 pCi/L 05/16/24 09:27 05/22/24 16:21

Total

MB MB Carrier %Yield Qualifier Limits Ba Carrier 94.3 30 - 110 30 - 110 Y Carrier 81.9

05/16/24 09:27 05/22/24 16:21 05/16/24 09:27 05/22/24 16:21

Prepared

Lab Sample ID: LCS 160-662016/2-A

Matrix: Water

Analysis Batch: 662959

Client Sample ID: Lab Control Sample

Prep Batch: 662016

Analyzed

Spike LCS LCS Uncert. %Rec Analyte Added Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-228 1.39 1.00 0.473 pCi/L 75 - 125 8.92 10.45 117

LCS LCS Carrier %Yield Qualifier Limits 30 - 110 Ba Carrier 89.6 Y Carrier 81.5 30 - 110

Eurofins Cleveland

6/13/2024

Dil Fac

Prep Type: Total/NA

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

Rad

Prep Batch: 662015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204354-1	DEK-MW-18001	Total/NA	Water	PrecSep STD	
MB 160-662015/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-662015/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 662016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204354-1	DEK-MW-18001	Total/NA	Water	PrecSep_0	
MB 160-662016/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-662016/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: TRC Environmental Corporation.

Job ID: 240-204354-1

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-18001

Date Collected: 05/08/24 13:03 Matrix: Water

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 09:58
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:21
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Sample ID: 240-204354-1

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date				
Alaska (UST)	State	20-001	05-06-25				
ANAB	Dept. of Defense ELAP	L2305	04-06-25				
ANAB	Dept. of Energy	L2305.01	04-08-25				
ANAB	ISO/IEC 17025	L2305	04-06-25				
Arizona	State	AZ0813	12-08-24				
California	Los Angeles County Sanitation Districts	10259	06-30-22 *				
California	State	2886	06-30-24				
Connecticut	State	PH-0241	03-31-25				
Florida	NELAP	E87689	06-30-24				
HI - RadChem Recognition	State	n/a	06-30-24				
Illinois	NELAP	200023	11-30-24				
owa	State	373	12-01-24				
Kansas	NELAP	E-10236	10-31-24				
Kentucky (DW)	State	KY90125	12-31-24				
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24				
_ouisiana	NELAP	04080	06-30-22 *				
Louisiana (All)	NELAP	04080	06-30-24				
Louisiana (DW)	State	LA011	12-31-24				
Maryland	State	310	09-30-24				
Massachusetts	State	M-MO054	06-30-24				
MI - RadChem Recognition	State	9005	06-30-24				
Missouri	State	780	06-30-25				
Nevada	State	MO00054	07-31-24				
New Jersey	NELAP	MO002	06-30-24				
New Mexico	State	MO00054	06-30-24				
New York	NELAP	11616	03-31-25				
North Carolina (DW)	State	29700	07-31-24				
North Dakota	State	R-207	06-30-24				
Oklahoma	NELAP	9997	08-31-24				
Oregon	NELAP	4157	09-01-24				
Pennsylvania	NELAP	68-00540	02-28-25				
South Carolina	State	85002001	06-30-24				
Texas	NELAP	T104704193	07-31-24				
US Fish & Wildlife	US Federal Programs	058448	07-31-24				
USDA	US Federal Programs	P330-17-00028	05-18-26				
Utah	NELAP	MO00054	07-31-24				
Virginia	NELAP	10310	06-15-25				
Washington	State	C592	08-30-24				
West Virginia DEP	State	381	10-31-24				

Job ID: 240-204354-1

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Eurofins Cleveland

180 S. Van Buren Avenue Barberton, OH 44203 **Chain of Custody Record**

MICHIGAN 190

eurofins

Environment Testing

Phone: 330-497-9396 Fax: 330-497-0772																					
Client Information	Sampler:			Lat Br	b PM: rooks,	, Kris	М.					Carri	er Tracking	No(s):			C No: 0-120143-	-29053	3.1		
Client Information Client Contact: Jacob Krenz Company:	Phone:			E-N	Mail:			eurofi	insus.co	om_		State	of Origin:			Pag Pa	ge: ge 1 of 1				
TRC Environmental Corporation.			PWSID:			Analysis Red						eques	ted			Job	-				
Address: 1540 Eisenhower Place	Due Date Requeste	ed:						П								Pre	eservation HNO3	Codes	:		
City: Ann Arbor State, Zip:	TAT Requested (da	iys):													1						
State, Zip: MI, 48108-7080 Phone:	Compliance Projec	it: Δ Yes	Δ No			X															
Phone: 734-971-7080(Tel) 734-971-9022(Fax) Email:	PO#: TBD				<u></u>																
JKrenz@trccompanies.com	WO#: 553814.0001				s or N	No)										sign					
Project Name: Karn/Weadock CCR DEK Bottom Ash Pond & I Site:	Project #: 24024154				ole (Ye	10801	SFPC	et List							100	containers					
Site:	SSOW#:				Samp	ASD ()	8228 G	rd Targ							7	5 I	er:				
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=wster, S=solid, O=wsste/oll, BT=Tissue, A=A	eld Filte	Perform MS/MSD (Yes or No)	903.0, Ra226Ra228_GFPC	904.0 - Standard Target List							Total Mimbo	I otal Number	Specia	al I <u>nst</u>	ruct <u>ion</u>	s/Note	e:
		> <	Preserva	ation Code:		* 1	_	D										=	_	==	
DEK-MW-18001	5-8-24	1303	6	Water	N	N	X	×							3	7					
				Water			\dashv														
						\sqcup	\dashv	\sqcup	_												
					\bot	\sqcup	\dashv	\vdash	_							-					
					\bot	$\vdash \vdash$	\dashv	$\vdash \vdash$	+		\vdash	\perp		-							
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				_												IV	AIC	Th'	JA	N	
													-					4			
				240	0-204	1354	Cha	in of	Custo	dy		MACH.	+								
				_	П					1	1 1	1 1									
Possible Hazard Identification Non-Hazard Flammable Skin Irritant Pois	on B Unkno	own D	Radiological	1		Sam	iple l	Dispo eturn	osal (A To Clie	A fee i	may be	asses	sed if sa	amples	are retai	ined I	onger tha For	ın 1 m	onth) Month	s	
Deliverable Requested: I, II, III, IV, Other (specify)											equirem										
Empty Kit Relinquished by:		Date:	-		Tir	me:				_			Method of	Shipment	0						
Relinguished by	Date/Time:	24 /1.	010	Company	حر	R	Recelv	lved by:	nd	ple	H	5		Date/Tin	ne	5/1	الاهام	C	ompany		
Relinguished by:	Date/Time:	10:11	5	Company	A	R	Recei	JE S	\$51	C A	RIG	אחר		Date/Tin		_ 1	10:10	7 c	onpany	7-7	A .
Relinquished by:	Date/Time:			Company		R	Receiv	ived by:	:					Date/Tin	ne:			С	ompany		
Custody Seals Intact: Custody Seal No.:						С	Cooler	r Temp	perature((s) °C aı	nd Other I	Remarks	:								

20. SAMI DE I RESERVATION
20 SAMPLE PRESERVATION
Sample(s)were received with bubble >6 mm in diameter (Notify PM)
Sample(s)were received after the recommended holding time had expired
19 SAMPLE CONDITION
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Concerning
Contacted PM Date by via Verbal Voice Mail Other
Yes (No)
Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes
Were air bubbles >6 mm in any VOA vials?
13 Were all preserved sample(s) at the correct pH upon receipt? 14 Were VOAs on the COC? Ves (%)
If yes, Questions 13-17 have been checked at the originating laboratory
Are these work share samples and all listed on the COC?
10 Were correct bottle(s) used for the test(s) indicated?
For each sample, does the COC specify preservatives (YN), # of containers (YN), as
7 Did all bottles arrive in good condition (Unbroken)? 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? (es) No
learly identified on the COC? (Yes)
Were the custody papers accompany the sample(s)? Were the custody papers relinquished & signed in the appropriate place? TOC
-Were tamper/custody seals intact and uncompromised? -Were tamper/custody seals intact and uncompromised? -Were tamper/custody seals intact and uncompromised?
A SON NA
IR GUN # /8 (CF_O. O °C) Observed Cooler
upon receipt
rial used Bubble Wrap Foam Plastic Bag
ox Chent Cooler Box
FedEx. 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other Receipt After-hours Drop off Date Time Storage Location
rved on 5 11 24 Opened on 5-11-24
Then TCC Site Name Cooler unpacked by
Eurofins – Cleveland Sample Receipt Form/Narrative Login# 2575
And the second s

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Login#
204354

		R GUN #:	Box Other Box Other	EC Client EC Client EC Client
		R GUN #	Box Other	EC Client
		IR GUN #:	Box Other Box Other Box Other	EC Client EC Client
		IR GUN #:		
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ۯڹ	30'	IR GUN #: -/8-	Box Other	EQ Client
	7/9	IR GUN #:	Box Other	Client
ý, dwa <u>T</u>	Temp °Ç	(Circle)	cle)	A (Circle)

Login Container Summary Report

240-204354

Temperature readings		MATERIAL MAT	
			Container Preservation Preservation
Client Sample ID	<u>Lab ID</u>	Container Type	pH Temp Added Lot Numbe
DEK-MW-18001	240-204354-A-1	Plastic 1 liter - Nitric Acid	\$
DEK-MW 18001	240-204354-B-1	Plastic 1 liter - Nıtrıc Acıd	

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Page 1 of 1

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204354-1

Login Number: 204354
List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/14/24 05:18 PM

Creator: Thornley, Richard W

Creator. Morniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 6/14/2024 11:02:48 AM

JOB DESCRIPTION

Karn/Weadock CCR Background Well

JOB NUMBER

240-204358-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203



Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated 6/14/2024 11:02:48 AM

Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

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Definitions/Glossary

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Qualifiers

Rad

Qualifier Qualifier Description

U Result is less than the sample detection limit.

Glossary

Abbreviation These commonly used abbreviations may or may not be present in this report.

Listed under the "D" column to designate that the result is reported on a dry weight basis

%R Percent Recovery
CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Cleveland

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Case Narrative

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR Background Well

Job ID: 240-204358-1 Eurofins Cleveland

Job Narrative 240-204358-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 5/11/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.7°C, 3.4°C and 3.9°C.

Receipt Exceptions

The number of containers listed on the COC pages do not match what was received for the following: MW-15016 (240-204358-3) and EQ-BACKGROUND (240-204358-6). There is sufficient volume for the requested analyses.

Gas Flow Proportional Counter

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cleveland

Job ID: 240-204358-1

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Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep 0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Job ID: 240-204358-1

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Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204358-1	MW-15002	Water	05/08/24 14:51	05/11/24 08:00
240-204358-2	MW-15008	Water	05/08/24 13:15	05/11/24 08:00
240-204358-3	MW-15016	Water	05/08/24 14:57	05/11/24 08:00
240-204358-4	MW-15019	Water	05/08/24 14:13	05/11/24 08:00
240-204358-5	DUP-BACKGROUND	Water	05/08/24 00:00	05/11/24 08:00
240-204358-6	FO-BACKGROUND	Water	05/08/24 16:05	05/11/24 08:00

Job ID: 240-204358-1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15002

Date Collected: 05/08/24 14:51 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-1

Matrix: Water

Method: EPA 903.0	- Radium	-226 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0657	U	0.0534	0.0537	1.00	0.0742	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0468	U	0.277	0.277	1.00	0.512	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	82.2		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226_Ra228 -			bined Radi	um-226 an	d Radiur	n-228				
		Count Uncert		Count Total Uncert. Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.113	U	0.282	0.282	5.00	0.512	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15008

Date Collected: 05/08/24 13:15 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-2

Matrix: Water

Method: EPA 90	3.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.589		0.166	0.175	1.00	0.123	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		30 - 110					05/16/24 09:22	06/12/24 10:00	1

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.438	U	0.514	0.516	1.00	0.847	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	81.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	oncert. (2σ+/-)	Oncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.03		0.540	0.545	5.00	0.847	pCi/L	_ ··	06/13/24 11:50	1

6/14/2024

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15016

Lab Sample ID: 240-204358-3 Date Collected: 05/08/24 14:57 Date Received: 05/11/24 08:00

Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143	U	0.104	0.105	1.00	0.149	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 904.0 - Radium-228 (GFPC)

Wiethod: El A 304			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.229	U	0.413	0.414	1.00	0.715	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	81.5		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226 Ra228 - Combined Radium-226 and Radium-228

	_		Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.372	U	0.426	0.427	5.00	0.715	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15019

Lab Sample ID: 240-204358-4 Date Collected: 05/08/24 14:13

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.	0 - Radium	-226 (GFP	C)							
		·	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.332		0.116	0.120	1.00	0.0982	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.490	U	0.409	0.412	1.00	0.638	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	87.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL F	Ra226_Ra	228 - Com	bined Radi	ium-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.822		0.425	0.429	5.00	0.638	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-204358-5 Date Collected: 05/08/24 00:00 **Matrix: Water**

Date Received: 05/11/24 08:00

Method: EPA 90	3.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.443		0.146	0.151	1.00	0.151	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:22	06/12/24 10:06	1

Method: EPA 904	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.29		0.568	0.580	1.00	0.751	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	83.4		30 - 110					05/16/24 09:27	05/22/24 16:39	1

Method: TAL-STL F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.73		0.586	0.599	5.00	0.751	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: EQ-BACKGROUND

Date Collected: 05/08/24 16:05 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-6

Matrix: Water

Job ID: 240-204358-1

Method: EPA 903.0 - Radium-226 (GFPC)											
		·	Count Uncert.	Total Uncert.							
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac	
Radium-226	0.0109	U	0.0568	0.0568	1.00	0.111	pCi/L	05/16/24 09:22	06/12/24 10:06	1	
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac	
Ba Carrier	75.6		30 - 110					05/16/24 09:22	06/12/24 10:06	1	

	4.0 - Radium		~ ∫							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0753	U	0.394	0.394	1.00	0.712	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.6		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	83.0		30 - 110					05/16/24 09:27	05/22/24 16:39	1

Method: TAL-STL R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0862	U	0.398	0.398	5.00	0.712	pCi/L		06/13/24 11:50	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(30-110)	
240-204358-1	MW-15002	85.1	
240-204358-2	MW-15008	73.6	
240-204358-3	MW-15016	83.3	
240-204358-4	MW-15019	92.8	
240-204358-5	DUP-BACKGROUND	85.1	
240-204358-6	EQ-BACKGROUND	75.6	
LCS 160-662015/2-A	Lab Control Sample	89.6	
MB 160-662015/1-A	Method Blank	94.3	
Tracer/Carrier Legen	d		

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-204358-1	MW-15002	85.1	82.2	
240-204358-2	MW-15008	73.6	81.1	
240-204358-3	MW-15016	83.3	81.5	
240-204358-4	MW-15019	92.8	87.1	
240-204358-5	DUP-BACKGROUND	85.1	83.4	
240-204358-6	EQ-BACKGROUND	75.6	83.0	
LCS 160-662016/2-A	Lab Control Sample	89.6	81.5	
MB 160-662016/1-A	Method Blank	94.3	81.9	

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

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6/14/2024

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-662015/1-A

Count

Matrix: Water

Analysis Batch: 665824

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 662015

Job ID: 240-204358-1

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.03763 U 0.0464 0.0466 1.00 0.0761 pCi/L 05/16/24 09:22 06/12/24 09:56

Total

MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ba Carrier 94.3 30 - 110 05/16/24 09:22 06/12/24 09:56

Total

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 662015

Lab Sample ID: LCS 160-662015/2-A **Matrix: Water**

Analysis Batch: 665824

				. Otal					
	Spike	LCS	LCS	Uncert.				%Rec	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Un	t %Rec	Limits	
Radium-226	11.3	11.29		1.15	1.00	0.0974 pC	/L 100	75 - 125	

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 89.6 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662016/1-A

Matrix: Water

Analysis Batch: 662959

Client Sample ID: Method Blank Prep Type: Total/NA **Prep Batch: 662016**

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ **MDC** Unit Prepared RL Analyzed Dil Fac Radium-228 -0.02553 U 0.303 0.303 1.00 0.568 pCi/L 05/16/24 09:27 05/22/24 16:21

Total

MB MB

Carrier	%Yield Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.3	30 - 110	05/16/24 09:27	05/22/24 16:21	1
Y Carrier	81.9	30 - 110	05/16/24 09:27 0)5/22/24 16:21	1

Lab Sample ID: LCS 160-662016/2-A

Matrix: Water

Analysis Batch: 662959

Client Sample ID: Lab Control Sample

Prep Batch: 662016

Total LCS LCS **Spike** Uncert.

Count

Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-228 8.92 10.45 1.39 1.00 0.473 pCi/L 75 - 125 117

LCS LCS

Carrier	%Yield	Qualifier	Limits
Ba Carrier	89.6		30 - 110
Y Carrier	81.5		30 - 110

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Prep Type: Total/NA

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Rad

Prep Batch: 662015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204358-1	MW-15002	Total/NA	Water	PrecSep STD	
240-204358-2	MW-15008	Total/NA	Water	PrecSep STD	
240-204358-3	MW-15016	Total/NA	Water	PrecSep STD	
240-204358-4	MW-15019	Total/NA	Water	PrecSep STD	
240-204358-5	DUP-BACKGROUND	Total/NA	Water	PrecSep STD	
240-204358-6	EQ-BACKGROUND	Total/NA	Water	PrecSep STD	
MB 160-662015/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-662015/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 662016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204358-1	MW-15002	Total/NA	Water	PrecSep_0	
240-204358-2	MW-15008	Total/NA	Water	PrecSep_0	
240-204358-3	MW-15016	Total/NA	Water	PrecSep_0	
240-204358-4	MW-15019	Total/NA	Water	PrecSep_0	
240-204358-5	DUP-BACKGROUND	Total/NA	Water	PrecSep_0	
240-204358-6	EQ-BACKGROUND	Total/NA	Water	PrecSep_0	
MB 160-662016/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-662016/2-A	Lab Control Sample	Total/NA	Water	PrecSep 0	

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15002

Date Collected: 05/08/24 14:51 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-1

Lab Sample ID: 240-204358-3

Lab Sample ID: 240-204358-4

Matrix: Water

Matrix: Water

Matrix: Water

Matrix: Water

Job ID: 240-204358-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Lab Sample ID: 240-204358-2 Client Sample ID: MW-15008

Date Collected: 05/08/24 13:15

Date Received: 05/11/24 08:00

_	Batch	Batch	Dilution		Batch		Prepared		
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed	
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22	
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00	
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27	
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22	
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50	

Client Sample ID: MW-15016

Date Collected: 05/08/24 14:57

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: MW-15019

Date Collected: 05/08/24 14:13

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: DUP-BACKGROUND Lab Sample ID: 240-204358-5

Date Collected: 05/08/24 00:00 **Matrix: Water** Date Received: 05/11/24 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:39
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: EQ-BACKGROUND Lab Sample ID: 240-204358-6

Date Collected: 05/08/24 16:05 **Matrix: Water**

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:39
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-204358-1

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-24
lowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-24
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	10-31-24

Job ID: 240-204358-1

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Eurofins Cleveland

180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record

eurofins |

Phone: 330-497-9396 Fax: 330-497-0772										19	U			Environment	lesting
Client Information	Sampler:	- 1	ASSE	Lab F	PM: oks, Kri	c M				Carrier Tr	acking No(s):	COC No: 240-120140-33	2292.1	
Client Contact: Jacob Krenz	Phone:	904	3310		ail:					State of C	Origin:		Page:	,202.1	
Company:	1 / 2 7	(७५	PWSID:	Kris	.Brooks	@et.e	eurofinsu	is.com					Page 1 of 1		
TRC Environmental Corporation.			FWSID.					Ana	lysis Re	queste	i		Job #:		
Address: 1540 Eisenhower Place	Due Date Request	ed:											Preservation Co	des:	
City: Ann Arbor	TAT Requested (d	ays):			18										
State, Zip: MI, 48108-7080	Compliance Proje	rt: A Vas	A No.			Н									
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO #:					П						1			
Email:	TBD WO#:				ο _ν										
JKrenz@trccompanies.com Project Name:	Drain at the				NO (0)		_			1					
Karn/Weadock CCR Background Well	Project #: 24024154				e (Ye	ပ္ရ	1			1		[E			
Site:	SSOW#:				Sample (SD (Yes	28 GI	Targe		11				Other:		
			Sample	Matrix	MS/M	Ra226Ra2	Standard Target List					Total Number of			
		Sample		(W=water, S=solid,	Field Filt		•								
Sample Identification	Sample Date	Time	G=grab) вт-		Fig.	903.0,	904.0		1			Total	Special I	nstructions/Not	e:
		$>\!\!<$	Preservation	n Code:	XX	D	D	ı		= 1111	119			_	
MW-15002	5/8/24	1451	0	Water	Ma	14	t	240				3	r		
MW-15008	5/8/24	1315	6	Water	MV	1	+	240-204358					2		
MW-15016	5/8/24	1457	Co	Water	NV		+	358							
MW-15019	5/8/24	1413	6	Water	4.	N	+	Chair				8	-		
DUP-Background	4/8/24	_		Water	un	1	4	1 1			<u> </u>	=			
EQ-Backgroud	5/8/25	1405		Water	w	7	1		Cust				•		
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Possible Hazard Identification					Sar	nple D	Disposa	I (A fee	may be	assessed	if sample	es are retain	ned longer than	1 month)	
Non-Hazard Flammable Skin Irritant Pois	on B Unkno	own F	Radiological			Ret	turn To (Client		Disposal E	By Lab		hive For	Months	
Deliverable Requested: I, II, III, IV, Other (specify)					Spe	ecial In	struction	ns/QC R	Requireme	nts:					
Empty Kit Relinquished by:		Date:			Time:					Meth	od of Shipm	ent:			
Relinquished by	Date/Time:	- ()	8/1	apay p		Receive	ed by:	110	1 11	n	Date	7/10/20	u u	Company	+
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Relinquished by:	Date/Time:	4 0		npany		Receive		L MIL	11001			5/// /2 Time:	24 OSTL	Company	C
Custody Seals Intact: Custody Seal No.:						Cooler	Temperat	ure(s) °C a	and Other R	emarks:		n l sede			

VOA Sample Preservation Date/Time VOAs Frozen.
Sample(s)were further preserved in the laboratory Time preservedPreservative(s) added/Lot number(s)were further preserved in the laboratory
20 SAMPLE PRESERVATION
Sample(s)were received after the recommended holding time had expired. Sample(s)were received with bubble >6 mm in diameter (Notify PM)
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Concerning
Contacted PM Date by via Verbal Voice Mail Other
15 Were air bubbles >6 mm in any VOA vials? Larger than this Yes No (NA) 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No 17 Was a LL Hg or Me Hg trip blank present? Yes No
13 Were all preserved sample(s) at the correct pH upon receipt? Yes (No) Yes (No)
11. Sufficient quantity received to perform indicated analyses? 12. Are these work share samples and all listed on the COC? 15 ves. Ouestions 13-17 have been checked at the originating laboratory.
For each sample, does the COC specify preservatives (YN), # of containers (YN), and said Were correct bottle(s) used for the test(s) indicated?
Did all bottles arrive in good condition (Unbroken)? Could all bottle labels (ID/Date/Time) he reconciled with the COC? Could all bottle labels (ID/Date/Time) he reconciled with the COC?
npromisea? Yes No NA
-Were the seals on the outside of the cooler(s) signed & dated? Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity (Vee) No.
perature upon receipt See Multiple Cooler Form
Packing material used Bubble Wrap Foam Plastic Hag None Other COOLANT: Wester Blue Ice Dry Ice Water None
Drop-off Date/Time Storage Location
on OO 11 24 Opened on 05 11 24 Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Othe
Chent TQC Site Name Cooler unpacked by.
Eurofins - Cleveland Sample Receipt Form/Narrative - Login # : - *- Barberton Facility

WI NC-099-041724 Cooler Receipt Form

Wate		IR GUN #:		
	The state of the s	IR GUN #:	İ	
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Olher	EC Client
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		IR GUN #:	Box Other	EC Client
		IR GUN #:	Box Other	EC Client
		IR GUN #: 10	Box Other	EC Client
9.8	39	IR GUN #:/	Box Other	EC Client
7.5	3.4	IR GUN #* — / 8	Box Olher	Client
17	1,7	IR GUN #:	Box Olher	Client
Temp °C	Temp °C	(Circle)	cle) ·	Circle)

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

Login#

5/11/2024

Login Container Summary Report

240-204358

Temperature readings

Lab ID Container Type	<u>Container Preservation Preservation</u> <u>pH Temp Added Lot Number</u>
240-204358 A-1 Plastic I liter - Nitric Acid	52
240-204358-B-1 Plastic I liter - Nitric Acid	\$
240-204358-A-2 Plastic I liter - Nitric Acid	\$
240-204358-B-2 Plastic 1 liter - Nitric Acid	\$
240-204358 A-3 Plastic I liter - Nitric Acid	\$
240-204358-B-3 Plastic 1 liter - Nitric Acid	\$
240 204358-A-4 Plastic 1 liter - Nitric Acid	\$
240-204358-B-4 Plastic 1 liter - Nitric Acid	\$
240-204358-A-5 Plastic 1 liter - Nitric Acid	\$
240-204358-B-5 Plastic 1 liter - Nitric Acid	\$
240-204358-A-6 Plastic 1 liter - Nitric Acid	\$
240-204358-B-6 Plastic 1 liter - Nitric Acid	\$

Page 23 of 26

Page 1 of 1

6/14/2024

Ver: 06/08/202

13

Chain of Custody Record

Environment Testing

💸 eurofins

Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

Eurofins Cleveland 180 S. Van Buren Avenue

	Sampler			Lab PM:					Carrier Tracking No(s)	O No(s)	2	COCNO
Client Information (Sub Contract Lab)				Brooks, Kris M	Kris N	_					24	240-184582.1
Cirent Contact. Shipping/Receiving	Phone:			E-Mail Kris.Br	ooks@	et.eur	E-Mail: Kris. Brooks@et.eurofinsus.com		State of Origin: Michigan		Pa Pa	Page Page 1 of 1
Company TestAmerica Laboratories, Inc.				¥	creditatio	ons Rec	Accreditations Required (See note)	:(6			Jor 7	Job #:
Address: 13715 Rider Trail North,	Due Date Requested: 6/12/2024	;pa					¥	Analysis Requested	auested		Pr	Preservation Codes:
City: Earth City State, Zip:	TAT Requested (days)	ays):										
MIO, 63043 Phone: 314-298-8566(Tel) 314-298-8757(Fax)	#Od				3000							
	WO #:			OF NO	(0							
Project Name Karn/Weadock CCR Background Well	Project #: 24024154			26Y) 6	N 10 se						enenis	
Site:	**MOSS			Idmes	so (x		Dd:				_	Other:
Sample Identification - Client ID (Lab ID)	Sample Date	Sample	Sample M. Type (w C=comp, o-w G=grab) Strits	Matrix (weveter, Sasolid. Owesteroll, old old old old old old old old old old	M/SM mrohe9	2_qe2oe19\0.c09 	Ra226Ra228_GF				otal Number	Special Institute Mass.
	\bigvee	X			X						×	Special instructions/Note:
MW-15002 (240-204358-1)	5/8/24	14:51 Fastern	8	Water	Ê	×	×				2 5	TVA protocol - Ra-226+228 action limit at
MW-15008 (240-204358-2)	5/8/24	13:15 Fastern	S	Water	×	×	×	-			2 7 2	TVA protocol - Ra-226+228 action limit at
MW-15016 (240-204358-3)	5/8/24	14:57 Eastern	\$	Water	×	×	×				1	TVA protocol - Ra-226+228 action limit at
MW-15019 (240-204358-4)	5/8/24	14:13 Eastern	8	Water	×	×	×				2 750	TVA protocol - Ra-226+228 action limit at 5.0 nCi/l
DUP-BACKGROUND (240-204358-5)	5/8/24	Eastern	8	Water	×	×	×				2 TV	TVA protocol - Ra-226+228 action limit at 5.0 p.Ci/l
EQ-BACKGROUND (240-204358-6)	5/8/24	16:05 Eastern	8	Water	×	×	×				1 TV.	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratory or other instructions will be provided. Any changes to laboratory or other instructions will be provided. Any changes to accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.	int Testing North Centra Ibove for analysis/tests/ entral, LLC attention im	il, LLC places the matrix being an mediately. If all	ne ownership of met alyzed, the samples requested accredita	nod, analyte must be shij tions are cur	& accred ped bac rent to da	itation of k to the ate, retu	compliance upo Eurofins Envir um the signed (n our subcontronment Testin Chain of Custo	act laboratories. g North Central, I	This sample shi	ipment is for r other instru Eurofins Er	warded under chain-of-custody. If the uctions will be provided. Any changes to nvironment Testing North Central, LLC.
Possible Hazard Identification					Samp	le Dis	posal (A fe	e may be a	ssessed if s	amples are r	etained I	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed						Retur	Return To Client		Disposal By Lab	ap qu	Archive For	For Months
Deliverable Requested: 1, 11, 111, 1V, Other (specify)	Primary Deliverable	ible Rank: 2			Specia	I Inst	Special Instructions/QC Requirements:	Requiremer	ıts:			
Empty Kit Relinquished by:		Date:		Ë	Time:				Method of	Method of Shipment:		
Relinquished by MALISSA LOAR	Date/Time:		Company	λυ	- Re	Received by	.ic	,		Date/Time:		Company
Relinquished by:	Date/Time:		Company	, in	. g	Recover	1	2	7	DAMANY 1	4 20	2024 Company
Reinquished by:	Date/Time:		Company	γυ	Rec	Received by			9	Date/Time:		Company
Custody Seals Intact: Custody Seal No.: △ Yes △ No					Š	oler Ter	Cooler Temperature(s) °C and Other Remarks	and Other Re	marks:			

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358
List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/14/24 05:18 PM

Creator: Thornley, Richard W

Creator. Thorniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358 List Source: Eurofins St. Louis
List Number: 3 List Creation: 05/15/24 08:08 AM

Creator: Thornley, Richard W

Creator. Morniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

8













Enclosure 3

October 2024 Assessment Monitoring Data Summary and Statistical Evaluation Consumers Energy, DE Karn Site, Bottom Ash Pond CCR Unit. (TRC, January 30, 2025)



October 2024 Assessment Monitoring Data Summary and Statistical Evaluation

DE Karn Bottom Ash Pond CCR Unit

Essexville, Michigan

January 2025

DarbyLitz 🖊

Hydrogeologist/Project Manager

Prepared For:

Consumers Energy Company

Prepared By:

TRC

1540 Eisenhower Place Ann Arbor, Michigan 48108

Andrew Whaley Project Geologist



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Laboratory Analytical Reports

Appendix C



1.0 Introduction

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule), as amended. Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90 – 257.98) apply to the DE Karn Bottom Ash Pond CCR Unit (Karn Bottom Ash Pond).

Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule for the Karn Bottom Ash Pond located in Essexville, Michigan. This report has been prepared to provide the summary of the October 2024 assessment groundwater monitoring results, data quality review, and statistical data evaluation for the Karn Bottom Ash Pond groundwater monitoring system.

1.1 Program Summary

Groundwater monitoring for the Karn Bottom Ash Pond commenced after the installation of the monitoring well network in December 2015 to establish background conditions. Detection monitoring was initiated on October 17, 2017 in conformance with the self-implementing schedule in the CCR Rule.

Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report DE Karn Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming statistically significant increases (SSIs) over background were as follows:

- Boron at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15004, DEK-MW-15005, DEK-MW-15006;
- Fluoride at DEK-MW-15001;
- Field pH at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15005, DEK-MW-15006; and
- Sulfate at DEK-MW-15006.

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notification that arsenic was present at statistically significant levels above the Ground Water Protection Standards (GWPS) established at 21 ug/L (Consumers Energy, January 2019) in five of the six downgradient monitoring wells at the Karn Bottom Ash Pond as follows:

Arsenic at DEK-MW-15001, DEK-MW-15002, DEK-MW-15003, DEK-MW-15004, and DEK-MW-15005.

The notification of the GWPS exceedance on January 14, 2019 was followed up with a Response Action Plan submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on March 15, 2019 laying out the preliminary understanding of water quality and



actions that were underway to mitigate or eliminate unacceptable risk associated with the identified release from the CCR unit. The *Assessment of Corrective Measures* (ACM) (TRC, September 2019) was initiated on April 14, 2019 and submitted on September 11, 2019 in accordance with the schedule in §257.96 and the requirements of the Response Action Plan.

The ACM documents that the groundwater nature and extent has been defined, as required in §257.95(g)(1). Although arsenic concentrations exceed the GWPS in on-site groundwater monitoring locations, arsenic is delineated within the limits of the property owned by Consumers Energy and there are **currently no adverse effects on human health or the environment** from either surface water or groundwater due to CCR management at the Karn Bottom Ash Pond. Per §257.96(b), Consumers Energy is continuing to monitor groundwater in accordance with the assessment monitoring program as specified in §257.95.

Evaluation of groundwater under the CCR Rule focused on the following constituents that were collected *unfiltered* in the field:

CCR Rule Monitoring Constituents

	g concuration				
Appendix III	Apper	ndix IV			
Boron	Antimony	Mercury			
Calcium	Arsenic	Molybdenum			
Chloride	Barium	Radium 226/228			
Fluoride	Beryllium	Selenium			
рН	Cadmium	Thallium			
Sulfate	Chromium				
Total Dissolved Solids (TDS)	Cobalt				
	Fluoride				
	Lead				
	Lithium				

Prior to remedy selection, Consumers Energy will also collect a sufficient number of samples to evaluate Michigan state-specific constituents as follows:



Additional Monitoring Constituents (Michigan Part 115/PA 640)

Detection Monitoring	Assessment Monitoring
Iron	Copper
	Nickel
	Silver
	Vanadium
	Zinc

Consumers Energy will continue to evaluate corrective measures for the Karn Bottom Ash Pond per §257.96 and §257.97 and is continuing semiannual assessment monitoring in accordance with §257.95.

1.2 Site Overview

The Karn Bottom Ash Pond CCR unit is located within the DE Karn Power Plant site, which is located north of the JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Karn Units 3 & 4, co-located with the coalfired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Karn site are the Karn Landfill and the Karn Lined Impoundment. The Karn Landfill has been certified closed and is now in post-closure care and is being monitored in accordance with the EGLE-approved Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area (December 19, 2017). The Karn Lined Impoundment has been licensed to operate by the EGLE under Part 115 (License Number 9629). Closure of the Karn Lined Impoundment CCR unit per §257.102(c) was initiated in August 2024 and CCR removal activities were completed in September 2024. Groundwater monitoring is ongoing in accordance with the EGLE-approved Karn Lined Impoundment Hydrogeological Monitoring Plan (November 13, 2020) to support evaluation of post-excavation groundwater conditions. The locations of the Karn Landfill, the Karn Lined Impoundment, and the Karn Bottom Ash Pond are shown on Figure 2.

Previously, the Karn Bottom Ash Pond was used for wet ash dewatering and was the primary settling/detention structure for the National Pollutant Discharge Elimination System (NPDES) treatment system prior to discharge. Consumers Energy provided notification of initiation of closure on October 12, 2018 to implement the certified closure plan by removal of CCR under the self-implementing requirements and schedule of the CCR Rule. In preparation for removal of the Karn Bottom Ash Pond, a new lined impoundment (Karn Lined Impoundment) was constructed meeting the requirements of the CCR Rule and the operational needs at the Karn Power Plant. The Karn Lined Impoundment began receipt of CCR and non-CCR on June 7,

¹ On December 28, 2018, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The December 2018 amendments to Part 115 were developed to provide the State of Michigan oversight of CCR impoundments and landfills and to better align existing state solid waste management rules and statutes with the CCR Rule.



2018 when it replaced the Karn Bottom Ash Pond operations, and was in operation until closure was initiated in August 2024.

Closure by removal has been initiated at the Karn Bottom Ash Pond CCR Unit. Consumers Energy has completed the removal of CCR consistent with the timeline for closure of the Karn Bottom Ash Pond under the DE Karn Bottom Ash Pond Closure Plan (Golder, January 2018; Revised April 2018) and the CCR Rule's closure by removal provisions in §257.102(c). Consumers Energy ceased hydraulic loading to the Karn Bottom Ash Pond in June 2018 and allowed the area to dewater by gravity. Consumers Energy then operated a construction dewatering system to allow for excavation of the vertical and lateral extent of CCR that commenced on March 20, 2019 and has operated through the construction and restoration period. The excavation extended to six inches below known CCR elevations established from previous investigations. Excavated CCR has been placed in the neighboring Weadock Landfill that is constructed with of a fully encapsulation soil-bentonite slurry wall keyed into a competently confining clay unit. The Karn Bottom Ash Pond has been restored by backfilling and grading the surface with clean fill in accordance with the plan to promote stormwater drainage, minimize ponding of surface water, and to reduce the potential of infiltration and migration of residual arsenic and any future constituents of concern (COCs). With the CCR removal complete. Consumers Energy submitted the DE Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report (Golder, October 2019) on October 30, 2019. EGLE approved the documentation removal report on December 1, 2020. Groundwater conditions post-CCR removal continue to be monitored.

1.3 Geology/Hydrogeology

The majority of the Karn Bottom Ash Pond area is comprised of surficial CCR and sand fill. USGS topographic maps and aerial photographs dating back to 1938, in addition to field descriptions of subsurface soil at the site, indicate that the site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, is generally encountered at 80 to 90 ft bgs.

The DE Karn Power Plant site is bounded by several surface water features (Figure 1): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and



Saginaw Bay. In the vicinity of the Karn Bottom Ash Pond, the shallow groundwater flow is generally to the west, toward the intake channel.



2.0 Groundwater Monitoring

2.1 Monitoring Well Network

In accordance with 40 CFR 257.91, Consumers Energy established a groundwater monitoring system for the Karn Bottom Ash Pond, which consists of 10 monitoring wells (four background monitoring wells and six downgradient monitoring wells) that are screened in the uppermost aquifer. The monitoring well locations are shown on Figure 2.

Groundwater around the Karn Bottom Ash Pond was initially characterized as radial based on the eight initial background sampling events prior to commencing detection monitoring; therefore, the six downgradient wells (DEK-MW-15001 through DEK-MW-15006) that were installed and spaced along the circumference of the Karn Bottom Ash Pond continued to accurately represent the quality of groundwater passing the waste boundary that ensures detection of groundwater contamination such that all potential contaminant pathways are monitored. Monitoring well DEK-MW-15001 was decommissioned on April 18, 2018 due to the installation of the Karn Lined Impoundment, which was the double composite lined CCR unit constructed as a replacement to the Karn Bottom Ash Pond. Monitoring well DEK-MW-18001 was installed on May 21, 2018 approximately 80 feet southeast of DEK-MW-15001 to maintain the perimeter downgradient monitoring well network.

Groundwater flow direction near the former pond has changed as a result of the pond decommissioning and monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit (Figure 3). These two wells were removed from the certified downgradient monitoring well network. The recertification was included in Appendix D of the October 2021 Assessment Monitoring Data Summary and Statistical Evaluation (TRC, January 2022).

Four monitoring wells located south of the Karn Bottom Ash Pond on the JC Weadock Power Plant site provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019). Analysis for the establishment of these wells as background is detailed in the *Groundwater Statistical Evaluation Plan* for the Karn Bottom Ash Pond, dated October 17, 2017.

2.2 October 2024 Assessment Monitoring

Per §257.95, all wells in the CCR unit groundwater monitoring program must be sampled semiannually. TRC conducted the second semiannual assessment monitoring event of 2024 for Appendix III and IV constituents at the Karn Bottom Ash Pond CCR Unit in accordance with the DE Karn Monitoring Program Sample Analysis Plan (ARCADIS, May 2016) (SAP). The semiannual assessment monitoring event was performed on October 2 and 3, 2024.

The October 2024 sampling event included collection of static water level measurements from the Karn Bottom Ash Pond groundwater monitoring system and other site wells to support preparation of a groundwater contour map. Static water elevation data are summarized in Table 1 and groundwater elevation data are shown on Figure 3. The Karn Bottom Ash Pond monitoring wells (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006 and DEK-MW-18001) and



background monitoring wells (MW-15002, MW15008, MW15016, and MW-15019) were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2.

The groundwater samples were analyzed by the Consumers Energy Trail Street Laboratory for Appendix III and IV constituents in accordance with the SAP. Radium analyses were completed by Eurofins Environment Testing. The analytical results for the background wells are summarized in Table 3, and the analytical results for the downgradient monitoring wells are summarized in Table 4. Analytical results from the October 2024 monitoring event are included in the attached laboratory reports (Appendix C).

2.2.1 Groundwater Flow Rate and Direction

Groundwater elevation data collected during the October 2024 assessment monitoring event are provided in Table 1. These data were used to construct the groundwater contour map (Figure 3). Groundwater elevations measured at the site in October 2024 are generally within the range of 579 to 584 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at equal elevation relative to the surrounding surface water features measured by the NOAA gauging station or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although historically the point source discharge of sluiced bottom ash into the Karn Bottom Ash Pond created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected from the groundwater monitoring system of the former Karn Bottom Ash Pond in October 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to groundwater elevations measured prior to June 2018. Due to the operational changes of the bottom ash pond and the completion of the landfill capping activities, the gradient between the bottom ash pond area and the surrounding surface water bodies is flattening out as compared to previous quarters as the groundwater elevations are reaching a new equilibrium, as expected. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the former Karn Lined Impoundment.

Monitoring well DEK-MW-15003 had been at or near the local high point of mounded groundwater at the Karn site following the discontinuing of loading to the Karn Bottom Ash Pond. However, in late 2023, the Karn Generating Facility stopped operating and consequently stopped routine discharge to the discharge ditch north of the Karn Lined Impoundment. The conveyance ditch was observed to be dry in October 2024 as wastewater is not being generated due to the cessation of operations of Karn Units 1 & 2. This operational change



triggered a decrease in groundwater elevation at DEK-MW-15003 and OW-11 and additional flattening of the mounded groundwater.

The groundwater elevation high point has shifted to the south, towards DEK-MW-18001 with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3. As such, the groundwater flow across the footprint of the former bottom ash pond is generally to the west.

The average hydraulic gradient observed on September 30, 2024 in the Karn Bottom Ash Pond area during these events is estimated at 0.0031 ft/ft. The gradient was calculated using the monitoring pairs DEK-MW-15004/DEK-MW-15005 as well as the water elevation difference and distance between DEK-MW-15003 and the Intake Channel. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was 0.15 ft/day or 56 ft/year.

2.2.2 Data Quality

Analytical data were found to be usable for assessment monitoring and were generally consistent with previous sampling events. The Data Quality Reviews are included as Appendix A.



3.0 Assessment Monitoring Statistical Evaluation

Assessment monitoring is continuing at the Karn Bottom Ash Pond while Consumers Energy further evaluates corrective measures in accordance with §257.96 and §257.97 as outlined in the ACM. The following section summarizes the statistical approach applied to assess the October4 2024 groundwater data in accordance with the assessment monitoring program.

3.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess whether Appendix IV constituent concentrations are present in groundwater at unacceptable levels as a result of CCR Unit operations by statistically comparing concentrations in the downgradient wells to the GWPSs for each Appendix IV constituent. In accordance with §257.95(h) and the Stats Plan, GWPSs were established for the Appendix IV constituents following the preliminary assessment monitoring event as documented in the Groundwater Protection Standards technical memorandum (Appendix C of the 2018 Annual Groundwater Monitoring Report, TRC, January 2019). The GWPS is established as the higher of the EPA Maximum Contaminant Level (MCL) or statistically derived background level for constituents with MCLs and the higher of the EPA Regional Screening Levels (RSLs) or background level for constituents without an established MCL.

3.2 Data Comparison to Groundwater Protection Standards

The compliance well groundwater concentrations for Appendix IV constituents were compared to the GWPSs to determine if a statistically significant exceedance had occurred in accordance with §257.95. Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009), the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient monitoring well data exceeds the GWPS of any Appendix IV constituent. As documented in the January 14, 2019 *Notification of Appendix IV Constituent Exceeding Groundwater Protection Standard per §257.95(g)*, arsenic was present at statistically significant levels above the federal GWPS in five of the six downgradient wells at the Karn Bottom Ash Pond.

Confidence intervals were established per the statistical methods detailed in the *Statistical Evaluation of October 2024 Assessment Monitoring Sampling Event* technical memorandum provided in Appendix B. For each Appendix IV constituent, the concentrations were first compared directly to their respective GWPS. Constituent-well combinations that included a direct exceedance of the GWPSs were retained for further statistical analysis using confidence limits.

Due to changes in groundwater flow direction on site, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit and were determined to be no longer indicative of groundwater conditions influenced by the Karn Bottom Ash Pond. Therefore, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer included for assessment monitoring statistical analysis. The monitoring well network for statistical evaluation consists of the four monitoring wells located downgradient of the bottom ash pond (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001). Overall, the assessment



monitoring statistical evaluations have confirmed that arsenic is the only Appendix IV constituent present at statistically significant levels above the GWPS. The statistical evaluation of the October 2024 semiannual assessment monitoring event data indicate that arsenic is present at statistically significant levels exceeding the GWPS in downgradient monitoring wells at the Karn Bottom Ash Pond:

Constituent	GWPS	#Downgradient Wells Observed
Arsenic	21 ug/L	2 of 4

Previously, arsenic was present in downgradient well DEK-MW-15002 and DEK-MW-15006 at a statistically significant level; however, arsenic concentrations have declined since sluicing to the Karn Bottom Ash Pond ceased in June 2018 and the bottom ash and transport water was diverted to the Karn Lined Impoundment (Appendix B: Attachment 1). The statistical evaluation of the May 2021 through October 2024 data show that the lower confidence limit for arsenic is below the GWPS at DEK-MW-15002 and DEK MW-15006.

Arsenic concentrations at DEK-MW-15005 and DEK-MW-18001 remain above the GWPS at a statistically significant level (i.e., lower confidence limit is above the GWPS) and arsenic concentrations at DEK-MW-18001 have recently been increasing. A summary of the confidence intervals for October 2024 is provided in Table 5. Although arsenic is present above the GWPS, the drinking water pathway is not complete as there are no drinking water wells on-site. Redox conditions, which affect contaminant transport, are still stabilizing in the Bottom Ash Pond Area following removal activities and will continue to be evaluated further.



4.0 Conclusions and Recommendations

Corrective action has been triggered and assessment monitoring is ongoing at the Karn Bottom Ash Pond CCR unit. A summary of the October 2024 assessment monitoring event is presented in this report.

Overall, the statistical assessments have confirmed that arsenic is the only Appendix IV constituent present at statistically significant levels above the GWPS. Consumers Energy has completed the removal of CCR consistent with the timeline for closure of the Karn Bottom Ash Pond under the *DE Karn Bottom Ash Pond Closure Plan* (Golder, January 2018; Revised April 2018) and the CCR Rule's closure by removal provisions in §257.102(c).

The ACM Report provided a high-level assessment of groundwater remediation technologies that could potentially address site-specific COCs (i.e., arsenic) under known groundwater conditions. Groundwater chemistry appears to be improving in some areas as a result of discontinuing the hydraulic loading to the Karn Bottom Ash Pond and the completed source removal of CCR, as shown by the decrease in concentration of arsenic at DEK-MW-15002; however, attainment of the GWPS at all of the Bottom Ash Pond compliance wells may not be feasible due to influences other than the former pond, such as the presence and former operation of the nearby Karn Landfill. Redox conditions, which affect contaminant transport, are still stabilizing following pond removal and will continue to be evaluated further.

Consumers Energy will continue assessment monitoring and evaluate corrective measures in accordance with §257.96 and §257.97 as outlined in the Karn Bottom Ash Pond ACM. The groundwater management remedy for the Karn Bottom Ash Pond will be selected as soon as feasible to meet the federal standards of §257.96(b) of the CCR Rule. Consumers Energy will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98. The next semiannual monitoring event is tentatively scheduled for the second calendar quarter of 2025.



5.0 References

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- TRC. 2022. October 2021 Assessment Monitoring Data Summary and Statistical Evaluation DE Karn Power Plant, Bottom Ash Pond CCR Unit. Prepared for Consumers Energy Company. January.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.



Table 1

Summary of Groundwater Elevation Data DE Karn – RCRA CCR Monitoring Program Essexville, Michigan

	TOC Geologic Unit of		Screen Interval	Septemb	per 30, 2024
Well Location	Elevation (ft)	Screen Interval	Elevation (ft)	Depth to Water	Groundwater Elevation
				(ft BTOC)	(ft)
DEK Bottom Ash Pon	d		<u>'</u>		
DEK-MW-15002	590.87	Sand	578.3 to 575.3	8.38	582.49
DEK-MW-15005	589.72	Sand	572.3 to 567.3	10.00	579.72
DEK-MW-15006	589.24	Sand	573.0 to 568.0	N	IM ⁽¹⁾
DEK Bottom Ash Pon	d & Karn Lined Im	poundment			
DEK-MW-18001	593.47	Sand	579.2 to 574.2	10.18	583.29
Karn Lined Impoundn	nent				
DEK-MW-15003	602.74	Sand	578.8 to 574.8	19.84	582.90
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	8.60	582.98
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	25.00	582.90
OW-12	603.10	Silty Sand	584.2 to 579.2	N	IM ⁽²⁾
DEK Nature and Exter					-
DEK-MW-15004	611.04	Sand	576.6 to 571.6	29.48	581.56
MW-01	597.02	Sand	573.0 to 570.0	17.34	579.68
MW-03	597.30	Sand	569.8 to 566.8	17.67	579.63
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.89	579.55
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	18.62	580.16
MW-10	596.97	Sand	582.5 to 572.5	16.90	580.07
MW-12	598.60	Sand	583.9 to 573.9	18.71	579.89
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.50	579.87
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.08	579.72
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.90	581.09
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.80	580.77
DEK Static Water Lev		<u></u>			
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.64	579.70
MW-04	598.01	NR	569.5 to 564.5	18.38	579.63
MW-17	597.91	Sand	577.0 to 574.0	14.80	583.11
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	27.45	581.77
MW-19	597.28	NR	572.1 to 567.1	17.49	579.79
MW-20	632.75	Sand	582.3 to 579.3	53.00	579.75
MW-21	632.91	Sand	587.1 to 584.1	52.10	580.81
OW-01	631.33	NR	572.5 to 567.5	51.95	579.38
OW-02	598.01	Fly Ash	579.4 to 576.4	16.80	581.21
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.60	580.34
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.30	579.91
OW-05	593.53	Sand	576.9 to 571.9	13.45	580.08
OW-06	603.95	NR	580.9 to 575.9	22.75	581.20
OW-07	596.41	Ash	583.3 to 580.3	15.65	580.76
OW-08	593.93	NR	581.0 to 576.0	11.43	582.50
OW-09	593.45	NR	585.5 to 580.5	10.73	582.72
OW-13	588.52	NR	579.5 to 574.5		IM ⁽¹⁾
OW-15	587.75	NR	572.8 to 567.8	5.33	582.42

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G (Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing. NM: Not Measured; NR: Not Recorded

(2) OW-12 was decommissioned as part of the Karn Lined Impoundment closure activities in September 2024.

⁽¹⁾ Monitoring well was inaccessible due to site activities.

Summary of Field Parameters DE Karn Bottom Ash Pond - RCRA CCR Monitoring Program Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature	Turbidity (NTU)
DE Karn & JC Weadoc	k Background	(IIIg/L)	(IIIV)	(30)	(ummos/cm)	(0)	(1110)
MW-15002	10/3/2024	0.91	-148	6.9	8,940	13.9	3.3
MW-15008	10/2/2024	0.98	-190	7.3	1.845	15.9	4.0
MW-15016	10/3/2024	0.89	-150	6.9	1,940	17.3	3.0
MW-15019	10/2/2024	1.17	-168	7.1	2,087	15.0	4.2
DE Karn Bottom Ash F	Pond						
DEK-MW-15002	10/3/2024	0.99	-135.1	7.4	822	15.7	6.6
DEK-MW-15005	10/3/2024	0.95	-113.9	7.6	1,361	14.7	0.5
DEK-MW-15006	10/3/2024	0.92	-132.9	7.6	1,366	14.9	1.4
DEK-MW-18001	10/3/2024	1.00	-228	8.1	941	13.7	4.3

Notes: mg/L -Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius.

NTU - Nephelometric Turbidity Unit

Summary of Groundwater Sampling Results (Analytical) DE Karn JC Weadock Background - RCRA CCR Monitoring Program Essexville, Michigan

					Sample Location:	MW-15002	MW-15008	MW-15016	MW-15019
					Sample Date:	10/3/2024	10/2/2024	10/3/2024	10/2/2024
				MI Non-					
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^				
Appendix III ⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	223	129	610	276
Calcium	mg/L	NC	NC	NC	500EE	269	94.2	260	184
Chloride	mg/L	250**	250 ^E	250 ^E	50	3,020	423	214	365
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	35.4	2.38	129	121
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	5,620	1,030	1,300	1,260
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	6.9	7.3	6.9	7.1
Appendix IV ⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	< 1	23	< 1
Barium	ug/L	2,000	2,000	2,000	1,200	885	71	219	337
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	24	15	34	13
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC	1.13	0.439	0.280	0.614
Radium-228	pCi/L	NC	NC	NC	NC	1.80	< 0.821	< 0.753	< 0.771
Radium-226/228	pCi/L	5	NC	NC	NC	2.93	0.978	< 0.753	1.24
Selenium	ug/L	50	50	50	5.0	< 1	< 1	< 1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 11	5 ⁽²⁾								
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	28,900	12,800	20,500	19,000
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	3	10	2	3
Nickel	ug/L	NC	100	100	120	6	2	8	4
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	18	11	3	3
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

- * Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.
- ** Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.
- ^- Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.
- ^E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendment Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Summary of Groundwater Sampling Results (Analytical) DE Karn Bottom Ash Pond - RCRA CCR Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15002	DEK-MW-15005	DEK-MW-15006	DEK-MW-18001
					Sample Date:	10/3/2024	10/3/2024	10/3/2024	10/3/2024
				MI Non-					
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^	Downgradient			
Appendix III ⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	1,450	1,030	1,040	953
Calcium	mg/L	NC	NC	NC	500EE	95.4	188	273	58.5
Chloride	mg/L	250**	250 ^E	250 ^E	50	84.5	150	53.2	78.1
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	52.5	484	744	207
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	656	1,240	1,500	624
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.4	7.6	7.6	8.1
Appendix IV ⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	2	44	20	495
Barium	ug/L	2,000	2,000	2,000	1,200	129	381	212	148
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	32	31	21	18
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	7	6	10
Radium-226	pCi/L	NC	NC	NC	NC	0.23	0.647	0.524	0.353
Radium-228	pCi/L	NC	NC	NC	NC	< 0.6	< 0.764	1.28	0.774
Radium-226/228	pCi/L	5	NC	NC	NC	0.681	1.12	1.8	1.13
Selenium	ug/L	50	50	50	5.0	1	2	2	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 115 ⁽²⁾									
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	105	1,740	3,330	763
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	< 1	2	1	< 1
Nickel	ug/L	NC	100	100	120	3	7	10	< 2
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	3	< 2	2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

- * Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.
- ** Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.
- ^- Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendment Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Summary of Assessment Monitoring Statistical Evaluation – October 2024 DE Karn Bottom Ash Pond – RCRA CCR Monitoring Program Essexville, Michigan

Constituent	Units	GWPS	DEK-MW-15005		DEK-MW-15006		DEK-MW-18001	
			LCL	UCL	LCL	UCL	LCL	UCL
Arsenic	ug/L	21	34	10	18	25	130	720

Notes:

Only compliance well/constituent pairs with one or more concentrations exceeding the GWPS within

the 8 most recent semiannual sampling events are included on this table.

ug/L - micrograms per Liter.

GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated October 15, 2018.

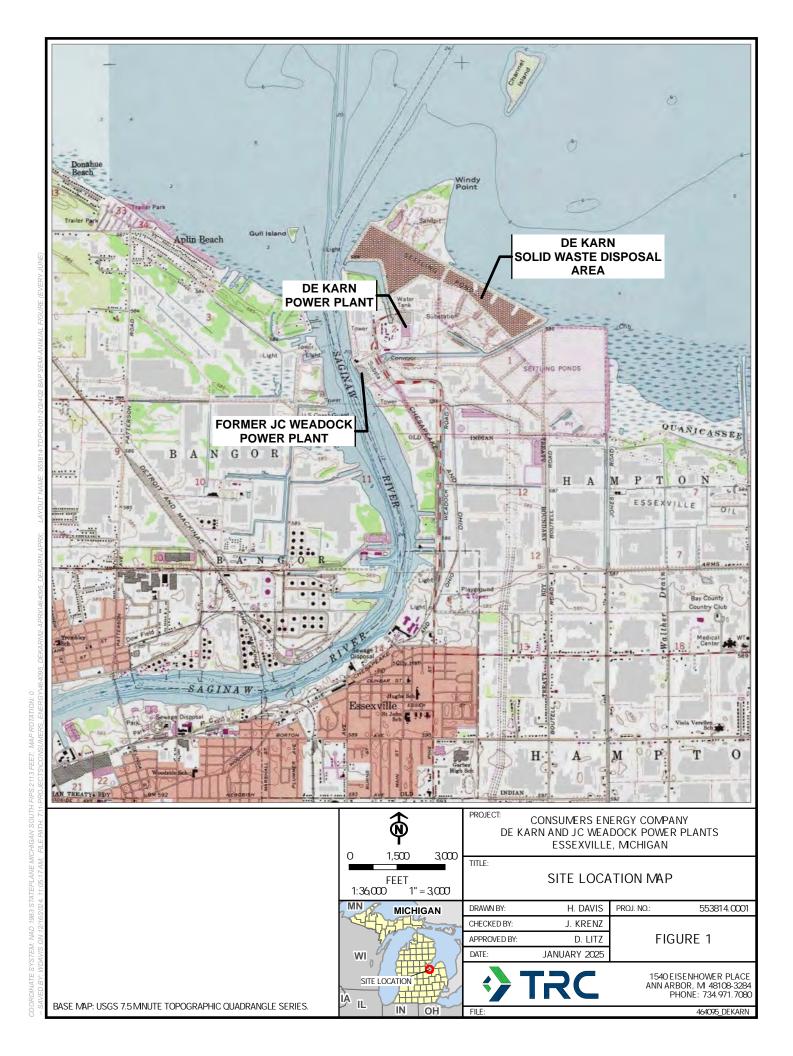
UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

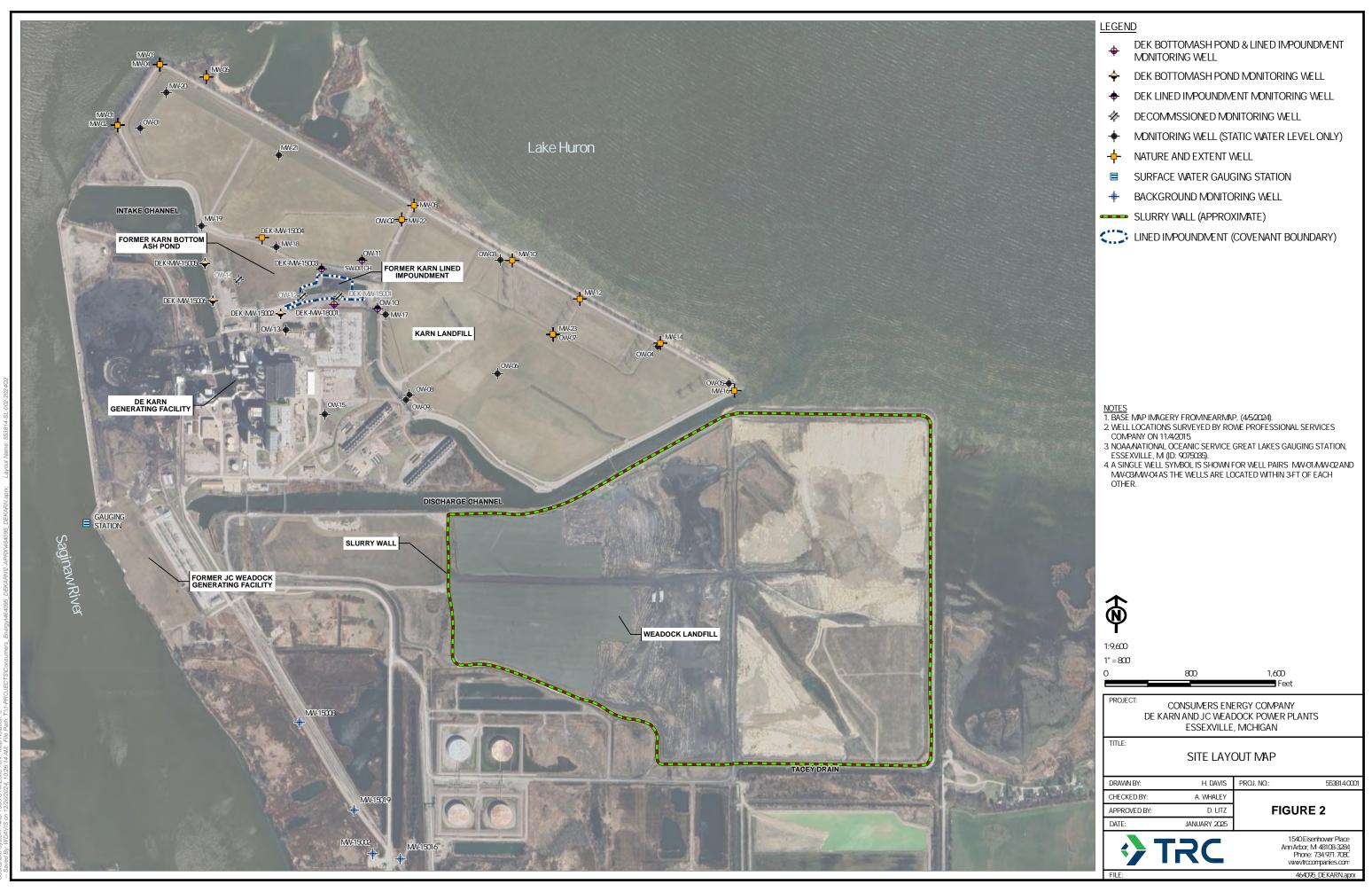
LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

Indicates a statistically significant exceedance of the GWPS. An exceedance occurs when the LCL is greater than the GWPS.

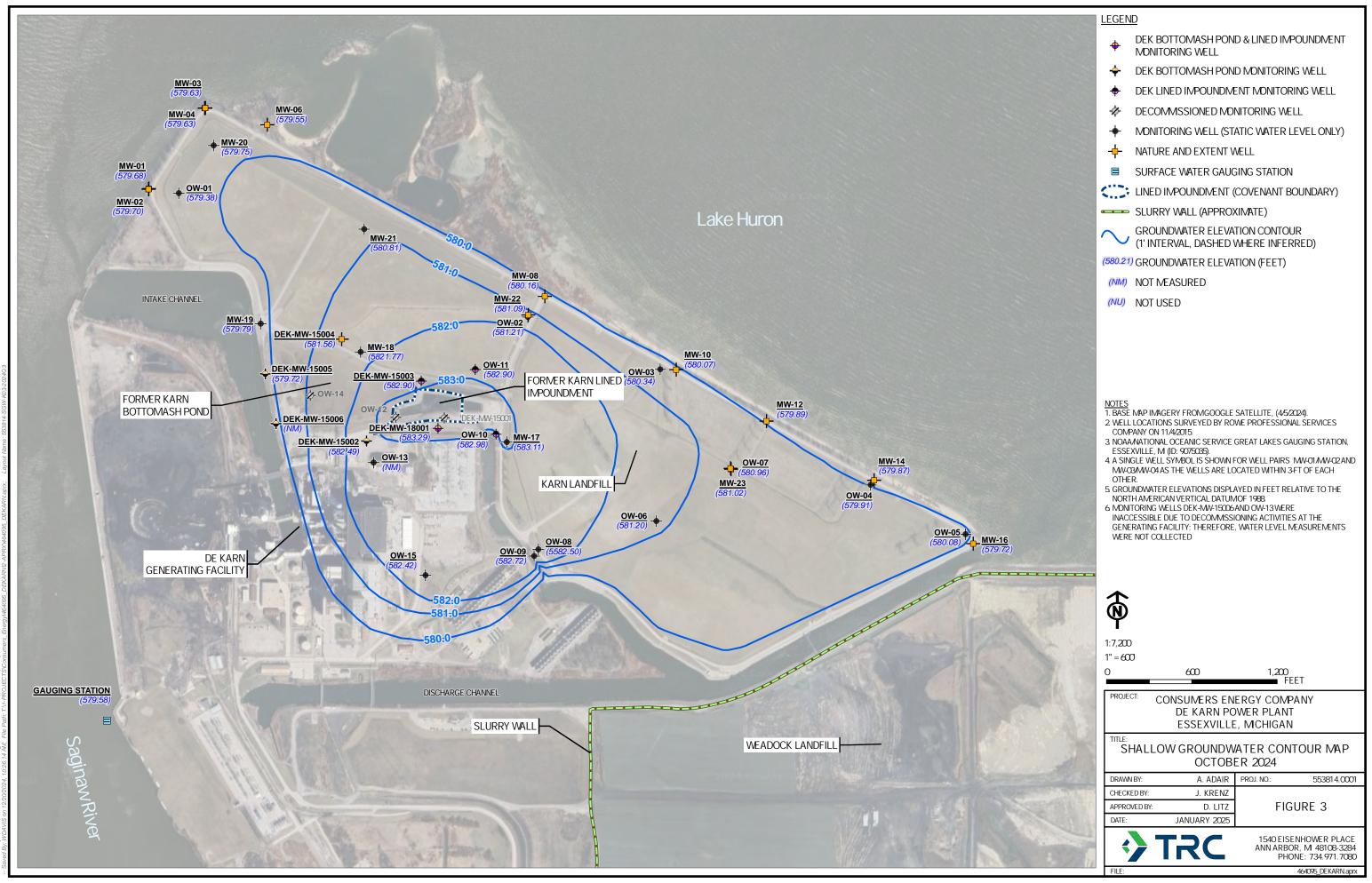


Figures





Coordinate Statem: NAD 1089 LITM Zone 10NI: Ma



stem: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl: Map Rotation: 0



Appendix A Data Quality Reviews

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 DE Karn Bottom Ash Pond

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0801 and S67050.01(01).

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

DEK-MW-15002

DEK-MW-15005

DEK-MW-15006

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;

- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services and Merit. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the total metals, anions, alkalinity, TDS, ammonia, and sulfide analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper diagram analyses, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-DEK-BAP) and one equipment blank (EB-DEK-BAP) were collected with this data set. Target analytes were not detected above the RL in these blank samples.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.
- Samples DUP-DEK-BAP-01 and DEK-MW-15005 were submitted as the field duplicate pair with this data set; all criteria were met.

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the October 2024 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0802 and S67051.01(01).

During the October 2024 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;

- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates, when collected. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services and Merit. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the total metals, anions, ammonia, TDS, alkalinity, and sulfide analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of a detection or assessment monitoring program.
- Data are usable for the purposes of the detection or assessment monitoring program.
- When the data are evaluated through a detection or assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- A field blank was not collected with this data set.
- An equipment blank was not collected with this data set.
- MS and MSD analyses were performed on sample DEK-MW-18001 for total metals, anions, ammonia, total alkalinity, and sulfide. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters therefore were not evaluated; further, with the exception of sulfide, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 DE Karn Bottom Ash Pond

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for radium by Eurofins - St. Louis, in Earth City, Missouri. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 240-212372-1 and 240-212644-1.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

- DEK-MW-15002
- DEK-MW-15005
- DEK-MW-15006

DEK-MW-18001

Each sample was analyzed for the following constituents:

Analyte Group	Method		
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0		

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- All samples in this data set were reported without a 21-day waiting for radium-226 period to ensure that short-lived alpha-emitting radium isotopes (e.g. Ra-224) decayed out. The positive radium-226 results reflect the total alpha radium such that the radium-226 (where detected) and associated combined radium results should be considered potentially biased high, as summarized in the attached table. It should be noted that these results were below the MCL for combined Radium 226/228 (5.0 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- One equipment blank (EB-DEK-BAP) was collected. Target analytes were not detected in the equipment blank sample.
- LCS/LCSD percent recoveries (%Rs) and relative percent differences for all target analytes were within laboratory control limits with the following exception.
 - The %R for radium-228 (127%) was above the acceptance limits (75-125%) in the LCS associated with sample DEK-MW-15005. There is no impact on the data usability since radium-228 was nondetect in the associated sample.
- MS/MSD analyses were not performed on a sample from this data set.
- Laboratory duplicate analyses were performed on sample DEK-MW-15005 for radium-226 and radium-228; all criteria were met.

- Samples DEK-MW-15002/DUP-DEK-BAP-01 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A

Summary of Data Non-Conformances for Groundwater Analytical Data DE Karn Bottom Ash Pond Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-18001 DEK-MW-15002 DEK-MW-15005 DEK-MW-15006 DUP-DEK-BAP-01	10/3/2024	Radium-226, Combined Radium	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The results are well below the applicable screening criteria and are therefore deemed usable as reported.

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0805.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

■ MW-15002

■ MW-15008

MW-15016

■ MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses:
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Target analytes were not detected above the RL in this blank sample.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met with the following exception.
 - Copper was detected in one of the two samples at a concentration <5x the RL and the absolute difference was greater than the RL. Therefore, the positive results for copper should be considered potentially uncertain (i.e., estimated) in all groundwater samples in this data set, as summarized in the attached table, Attachment A.</p>

Attachment A

Summary of Data Non-Conformances for Groundwater Analytical Data JCW/DEK Karn Background Wells Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
MW-15002	10/3/2024		
MW-15008	10/2/2024		
MW-15016	10/3/2024	Copper	Field duplicate variability (one result <5x the reporting limit and absolute difference above criteria); potential uncertainty exists for the listed results.
MW-15019	10/2/2024		
DUP-Background	10/2/2024		

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock/Karn DEK Background

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for radium by Eurofins - St. Louis, in Earth City, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-212370-1.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

■ MW-15002

■ MW-15008

■ MW-15016

■ MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Samples MW-15008, MW-15016, MW-15019, DUP-BACKGROUND, and EQ-BACKGROUND were reported without a 21-day waiting period for raduim-226 to ensure that short-lived alpha-emitting radium isotopes (e.g. Ra-224) decayed out. The positive radium-226 reflects the total alpha radium such that the radium-226 (where detected) and associated combined radium results should be considered potentially biased high in these samples, as summarized in the attached table. It should be noted that these results were below the MCL for combined Radium 226/228 (5.0 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- One equipment blank (EQ-BACKGROUND) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on a sample from this data set.
- Samples DUP-BACKGROUND/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A

Summary of Data Non-Conformances for Groundwater Analytical Data DE Karn and JC Weadock Background Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue				
MW-15008	10/2/2024						
MW-15016	10/3/2024	Radium-226	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The results are well				
MW-15019	10/2/2024	Radiuiii-220					
DUP-BACKGROUND	10/3/2024		below the applicable screening criteria and are therefore deemed usable as reported.				
MW-15008	10/2/2024	Combined radium					
MW-15019	10/2/2024	Combined fadium					



Appendix B Statistical Evaluation of October 2024 Assessment Monitoring Sampling Event



Date: January 30, 2025

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC

Kristin Lowery, TRC

Project No.: 553814.0001.0000 Phase 002, Task 002

Subject: Statistical Evaluation of October 2024 Assessment Monitoring Sampling Event

DE Karn Bottom Ash Pond, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018) for the DE Karn Power Plant Bottom Ash Pond (Karn Bottom Ash Pond), arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standard (GWPS). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019. Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule ¹ at the Karn Bottom Ash Pond.

An assessment monitoring event was conducted on September 30 through October 3, 2024. In accordance with §257.95, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix IV constituents are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h), as detailed in the October 15, 2018 Groundwater Protection Standards technical memorandum, which was also included in the 2018 Annual Groundwater Monitoring Report (TRC, January 2019).

The statistical evaluation of the assessment monitoring event data indicates the following constituent is present at statistically significant levels exceeding the GWPS in downgradient monitoring wells at the Karn Bottom Ash Pond:

Constituent	GWPS	#Downgradient Wells Observed
Arsenic	21 ug/L	2 of 4

The results of the assessment monitoring statistical evaluation for the downgradient wells are consistent with the results of the previous assessment monitoring data statistical evaluations, indicating that arsenic is the only constituent present at concentrations above the GWPS. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97. Consumers Energy will continue

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

Assessment Monitoring Statistical Evaluation

When the initial assessment monitoring event was completed in May 2018, the compliance well network at the Karn Bottom Ash Pond included six wells encircling the unit (DEK-MW-15002 through DEK-MW-15006 and DEK-MW-18001). Due to changes in groundwater flow direction on site, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer located downgradient of the unit and were determined to be no longer indicative of groundwater conditions influenced by the Karn Bottom Ash Pond. Therefore, monitoring wells DEK-MW-15003 and DEK-MW-15004 are no longer included for statistical analysis. Starting with the May 2021 statistical evaluation, the compliance well network includes DEK-MW-15002, DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001.

Following the assessment monitoring sampling event, compliance well data for the Karn Bottom Ash Pond were evaluated in accordance with the Groundwater Statistical Evaluation Plan (Stats Plan) (TRC, October 2017). An assessment monitoring program was developed to evaluate concentrations of CCR constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs). To evaluate whether or not a GWPS exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given assessment monitoring event compared to the GWPS must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance ², the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true mean concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the GWPS. If the confidence interval straddles the GWPS (i.e., the lower confidence level is below the GWPS, but the upper confidence level is above), the statistical test result indicates that there is insufficient confidence that the measured concentrations are different from the GWPS and thus no compelling evidence that the measured concentration indicates a exceedance of the GWPS. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule, and numerous other federal rules, are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected Appendix IV constituent, the concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Parameter-well combinations that included a direct exceedance of the GWPS within the past eight sampling events (May 2021 through October 2024)

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² USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.

were retained for further analysis. Arsenic in DEK-MW-15005, DEK-MW-15006, and DEK-MW-18001 at the Karn Bottom Ash Pond had individual results exceeding the GWPS.

Groundwater data were then evaluated utilizing Sanitas[™] statistical software. Sanitas[™] is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas[™] statistical program, confidence limits were selected to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each of the CCR Appendix IV constituents using a using a per test³ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas[™] output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well/constituent pair;
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the CCR assessment monitoring program. Initially, the assessment monitoring results were visually assessed for potential outliers or trends. No outliers were identified. Arsenic concentrations at DEK-MW-18001 appear to exhibit an upward trend on the time-series chart over the eight most recent sampling events (Attachment 1). This data set was tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend test showed that arsenic concentration at DEK-MW-18001 is generally increasing with time, as evidenced by the positive Sen's Slope and that this trend was shown to be statistically significant (Attachment 1). Confidence bands are identified by the UG as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval. At least 8 to 10 measurements should be available when computing a confidence band around a linear regression.

The Sanitas[™] software was used to test compliance at the downgradient monitoring wells using the confidence interval method or confidence bands for the most recent 8 sampling events. Eight

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³ Confidence level is assessed for each individual comparison (i.e. per well and per constituent).

independent sampling events provide the appropriate density of data as recommended per the UG yet are collected recently enough to provide an indication of current condition. The tests were run with a per-test significance of $\alpha = 0.01$. The software outputs are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations for well/constituent pairs with a direct GWPS exceedance are also included in Attachment 1. Non-detect data was handled in accordance with the Stats Plan for the purposes of calculating the confidence intervals.

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well, along with notes on data transformations, as appropriate. Due to the increasing trend, a confidence band was calculated for the arsenic data set at DEK-MW-18001. The arsenic data set at DEK-MW-15006 and DEK-15005 was found to be normally distributed. The confidence bands and interval tests compare the lower confidence limit to the GWPS. The statistical evaluation of the Appendix IV parameters shows exceedances for arsenic at two of the four monitoring locations (DEK-MW-15005 and DEK-MW-18001). The results of the assessment monitoring statistical evaluation for the other downgradient wells are consistent with the results of the previous assessment monitoring data statistical evaluations, indicating that arsenic is the only constituent present at concentrations above the GWPS. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97. Consumers Energy will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

Attachments

Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards

Attachment 1 Sanitas™ Output Files

Table

				Sa	ample Location:						DEK-M\	N-15002					
					Sample Date:	5/3/2021	10/4/2021	5/3/2022	10/4/2022	10/4/2022	5/2/2023	10/4/2023	10/4/2023	5/9/2024	5/9/2024	10/3/2024	10/3/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS						downg	radient					
Appendix III										Field Dup			Field Dup		Field Dup		Field Dup
Boron	ug/L	NC	NA	619	NA	1,420	1,530	1,100	1,340	1,370	1,270	1,280	1,330	1,310	1,240	1,450	
Calcium	mg/L	NC	NA	302	NA	148	73.1	105	70.2	68	122	71.7	69.4	94.3	94.4	95.4	
Chloride	mg/L	250*	NA	2,440	NA	148	102	99.3	105	103	81.7	86.3	88	76.3	75.1	84.5	
Fluoride	ug/L	4,000	NA	1,000	NA	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Sulfate	mg/L	250*	NA	407	NA	216	58.3	172	33.7	33.2	225	50.2	50.2	60.3	60.6	52.5	
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	926	599	779	584	631	899	596	576	694	746	656	
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.4	7.1	7.0	7.4		7.2	7.3		7.4		7.4	
Appendix IV																	
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Arsenic	ug/L	10	NA	21	21	2	2	2	3	4	< 1	1	1	3	3	2	
Barium	ug/L	2,000	NA	1,300	2,000	211	102	134	92	95	176	110	111	129	126	129	
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	NA	3	100	< 1	1	1	1	1	< 1	< 1	< 1	< 1	< 1	< 1	
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NA	1,000	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Lithium	ug/L	NC	40	180	180	36	29	28	25	27	29	25	25	31	31	32	
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	100	6	100	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	
Radium-226	pCi/L	NC	NA	NA	NA	0.582	1.47	< 0.423	0.219	0.287	0.431	0.272	0.342	0.292	0.299	0.230	0.452
Radium-228	pCi/L	NC	NA	NA	NA	0.811	2.29	< 0.530	1.81	2.70	< 1.5	1.13	< 0.878	< 0.511	< 0.538	< 0.600	< 0.607
Radium-226/228	pCi/L	5	NA	3.32	5	< 0.537	0.827	0.636	2.03	2.99	< 1.5	1.41	< 0.878	0.541	< 0.538	0.681	0.775
Selenium	ug/L	50	NA	2	50	< 1	3	1	< 1	1	< 1	< 1	< 1	< 1	< 1	1	
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

RSL - Regional Screening Level from 83 FR 36435.

UTL - Upper Tolerance Limit (95%) of the background data set.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL and UTL as established in

TRC's Technical Memorandum dated October 15, 2018.

* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the

GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

All metals were analyzed as total unless otherwise specified.

				Sa	ample Location:						DEK-MW-1500)5				
					Sample Date:	5/3/2021	5/3/2021	10/4/2021	5/3/2022	10/4/2022	5/2/2023	5/2/2023	10/5/2023	5/9/2024	10/3/2024	10/3/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS	downgradient										
Appendix III							Field Dup					Field Dup				Field Dup
Boron	ug/L	NC	NA	619	NA	926	948	991	787	911	856	864	957	1,030	1,030	1,020
Calcium	mg/L	NC	NA	302	NA	95.6	97.6	102	127	130	106	107	125	158	188	189
Chloride	mg/L	250*	NA	2,440	NA	65.2	65.1	82.3	141	138	86.7	87.4	89.2	147	150	150
Fluoride	ug/L	4,000	NA	1,000	NA	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	50.8	50.2	57.2	151	130	189	189	290	358	484	487
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	534	561	546	909	894	767	764	892	1,400	1,240	1,250
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.6		7.1	7.1	7.5	7.4		7.7	7.4	7.6	
Appendix IV																
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	45	44	68	54	54	32	32	48	32	44	44
Barium	ug/L	2,000	NA	1,300	2,000	173	170	192	305	312	228	224	267	341	381	359
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	< 1	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	38	39	41	36	36	27	28	27	32	31	30
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	8	8	7	12	8	8	8	7	6	7	7
Radium-226	pCi/L	NC	NA	NA	NA	0.291	< 0.187	1.12	0.620	0.544	0.355	0.417	0.512	0.653	0.647	
Radium-228	pCi/L	NC	NA	NA	NA	0.722	0.650	2.06	1.08	3.11	< 0.755	< 0.785	1.11	0.898	< 0.764	
Radium-226/228	pCi/L	5	NA	3.32	5	< 0.459	0.479	0.940	1.70	3.66	< 0.755	< 0.785	1.63	1.55	1.12	
Selenium	ug/L	50	NA	2	50	1	1	2	1	1	1	< 1	< 1	< 1	2	2
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.
-- - not analyzed.

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TRC's Technical Memorandum dated October 15, 2018.

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All metals were analyzed as total unless otherwise specified.

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				S	ample Location:					DEK-M	W-15006				
					Sample Date:	5/3/2021	10/4/2021	10/4/2021	5/3/2022	5/3/2022	10/4/2022	5/2/2023	10/5/2023	5/9/2024	10/3/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS					downg	gradient				
Appendix III								Field Dup		Field Dup					
Boron	ug/L	NC	NA	619	NA	938	1,050	1,080	893	888	871	944	1,050	1,110	1,040
Calcium	mg/L	NC	NA	302	NA	115	117	117	65.0	65.5	83.8	127	143	196	273
Chloride	mg/L	250*	NA	2,440	NA	63.5	78.9	74.7	68.6	67.9	70.6	61.2	62.6	49.5	53.2
Fluoride	ug/L	4,000	NA	1,000	NA	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	324	209	196	173	168	254	385	446	545	744
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	790	712	708	597	609	720	847	926	1,220	1,500
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.5	7.3		7.4		7.8	7.5	7.7	7.7	7.6
Appendix IV															
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	24	23	24	25	24	26	16	22	19	20
Barium	ug/L	2,000	NA	1,300	2,000	139	125	126	68	67	94	137	150	159	212
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	21	19	19	16	15	18	19	18	21	21
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	9	7	7	6	6	7	7	7	8	6
Radium-226	pCi/L	NC	NA	NA	NA	0.353	0.797	0.832	< 0.449	0.395	0.242	0.324	0.452	0.497	0.524
Radium-228	pCi/L	NC	NA	NA	NA	1.16	1.50	1.35	0.870	< 0.502	1.43	< 0.894	< 0.666	0.593	1.28
Radium-226/228	pCi/L	5	NA	3.32	5	0.804	0.704	0.518	1.29	0.742	1.67	< 0.894	1.04	1.09	1.80
Selenium	ug/L	50	NA	2	50	< 1	2	2	< 1	1	1	1	< 1	< 1	2
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable. NC - no criteria.

-- - not analyzed.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

RSL - Regional Screening Level from 83 FR 36435.

UTL - Upper Tolerance Limit (95%) of the background data set.

 ${\sf GWPS-Groundwater\ Protection\ Standard.\ \ GWPS\ is\ the\ higher\ of\ the\ MCL/RSL\ and\ UTL\ as\ established\ in\ MCL/RSL\ and\ utlessed\ in\ MCL/RSL\ and\$

TRC's Technical Memorandum dated October 15, 2018.

* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

 $\textbf{Bold} \ \ \text{value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the}$

GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

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				Sa	ample Location:				DEK-M\	N-18001			
					Sample Date:	5/3/2021	10/7/2021	5/3/2022	10/4/2022	5/3/2023	10/4/2023	5/8/2024	10/3/2024
Constituent	Unit	EPA MCL	EPA RSL	UTL	GWPS				downg	radient			
Appendix III													
Boron	ug/L	NC	NA	619	NA	1,180	1,370	869	1,060	931	987	917	953
Calcium	mg/L	NC	NA	302	NA	65.2	71.0	63.7	58.3	54.6	52.5	52.5	58.5
Chloride	mg/L	250*	NA	2,440	NA	51.6	55.2	65.9	62.5	62.2	69.4	66.1	78.1
Fluoride	ug/L	4,000	NA	1,000	NA	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250*	NA	407	NA	121	118	187	140	148	158	226	207
Total Dissolved Solids	mg/L	500*	NA	4,600	NA	486	494	555	551	575	551	670	624
pH, Field	SU	6.5 - 8.5*	NA	6.5 - 7.3	NA	7.3	7.4	7.6	7.6	7.6	7.4	7.4	8.1
Appendix IV													
Antimony	ug/L	6	NA	1	6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	NA	21	21	92	85	113	109	304	398	484	495
Barium	ug/L	2,000	NA	1,300	2,000	135	135	164	135	152	155	147	148
Beryllium	ug/L	4	NA	1	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	NA	0.2	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	NA	3	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	6	15	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NA	1,000	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	15	1	15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	40	180	180	25	24	22	23	20	19	19	18
Mercury	ug/L	2	NA	0.2	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	100	6	100	< 5	< 5	< 5	< 5	11	9	17	10
Radium-226	pCi/L	NC	NA	NA	NA	0.189	0.873	0.294	0.264	0.268	0.148	0.238	0.353
Radium-228	pCi/L	NC	NA	NA	NA	0.828	1.85	0.592	1.67	0.599	< 0.581	< 0.623	0.774
Radium-226/228	pCi/L	5	NA	3.32	5	0.639	0.979	0.885	1.93	0.868	< 0.581	< 0.623	1.13
Selenium	ug/L	50	NA	2	50	< 1	2	2	< 1	1	< 1	< 1	1
Thallium	ug/L	2	NA	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

RSL - Regional Screening Level from 83 FR 36435.

UTL - Upper Tolerance Limit (95%) of the background data set.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL and UTL as established in

TRC's Technical Memorandum dated October 15, 2018.

* - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April 2012.

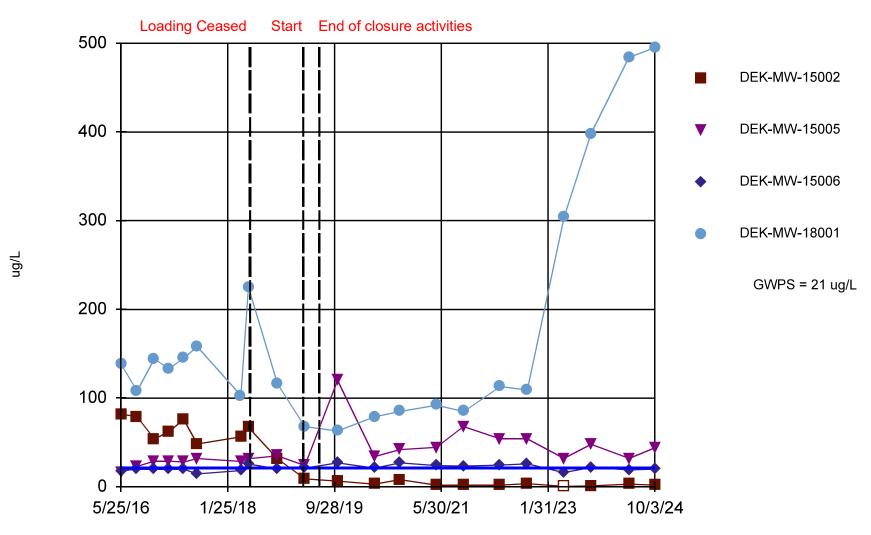
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules.

All metals were analyzed as total unless otherwise specified.

TRC | Consumers Energy X:\WPAAM\PJT2\553814\0001\2SA24\T514404.1-Appx B2 Page 4 of 4 January 2025

Attachment 1 Sanitas™ Output Files

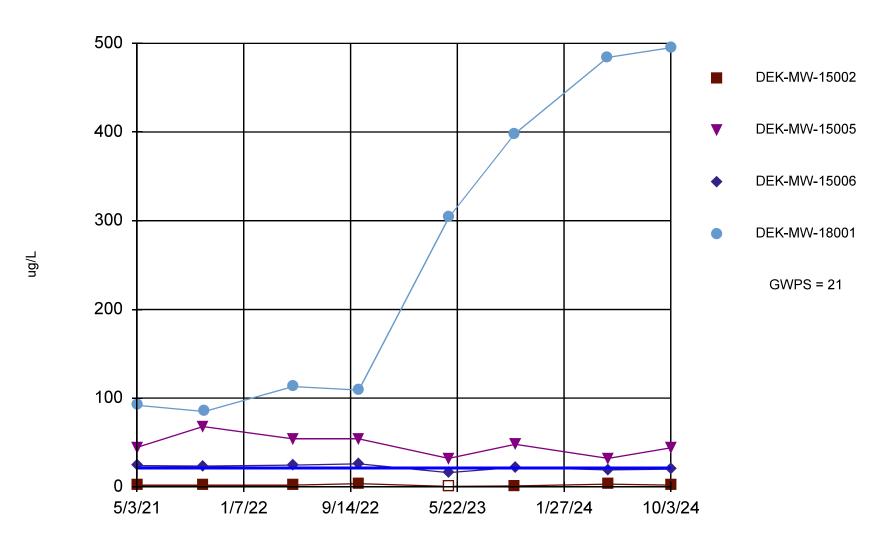
Arsenic Comparison to GWPS



Time Series Analysis Run 11/22/2024 10:57 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Arsenic Comparison to GWPS



Time Series Analysis Run 11/22/2024 11:00 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Sanitas™ v.10.0.23 Sanitas software licensed to Consumers Energy.

Summary Report

Constituent: Arsenic, Total Analysis Run 11/22/2024 11:02 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

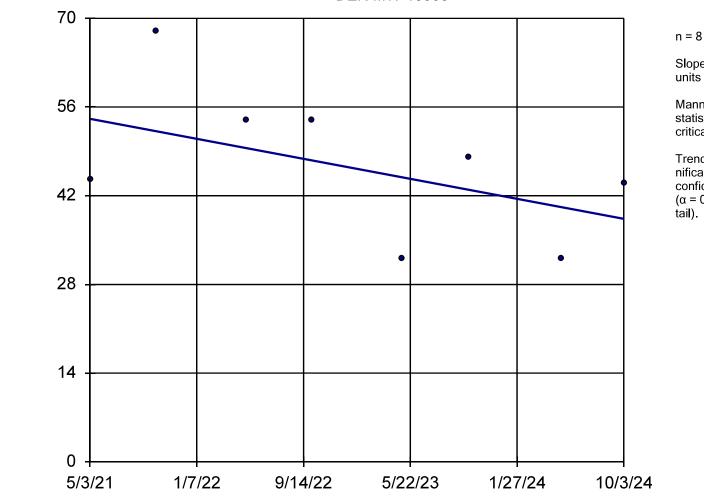
For observations made between 5/3/2021 and 10/3/2024, a summary of the selected data set:

Observations = 32 NDs = 3% Wells = 4 Minimum Value = 1 Maximum Value = 495 Mean Value = 82.75 Median Value = 29 Standard Deviation = 136.1 Coefficient of Variation = 1.644 Skewness = 2.216

<u>Well</u>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	<u>CV</u>	<u>Skewness</u>
DEK-MW-15002	8	12%	1	3.5	2.063	2	0.8634	0.4186	0.3308
DEK-MW-15005	8	0%	32	68	47.06	46.25	11.98	0.2546	0.2633
DEK-MW-15006	8	0%	16	26	21.88	22.75	3.325	0.152	-0.5443
DEK-MW-18001	8	0%	85	495	260	208.5	181.1	0.6966	0.2624

Arsenic, Total

DEK-MW-15005



Slope = -4.606units per year.

Mann-Kendall statistic = -12 critical = -20

Trend not significant at 98% confidence level $(\alpha = 0.01 \text{ per})$

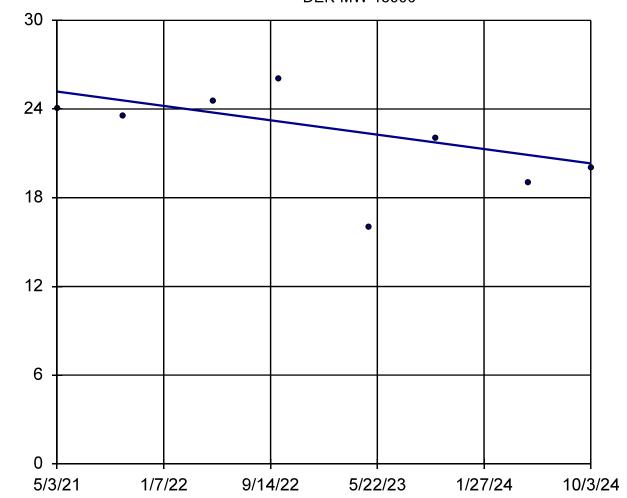
Sen's Slope Estimator Analysis Run 11/22/2024 11:04 AM

Data: DEK_HMPCCR_Sanitas_24Q4 Client: Consumers Energy

ng/L

Arsenic, Total

DEK-MW-15006



n = 8

Slope = -1.421 units per year.

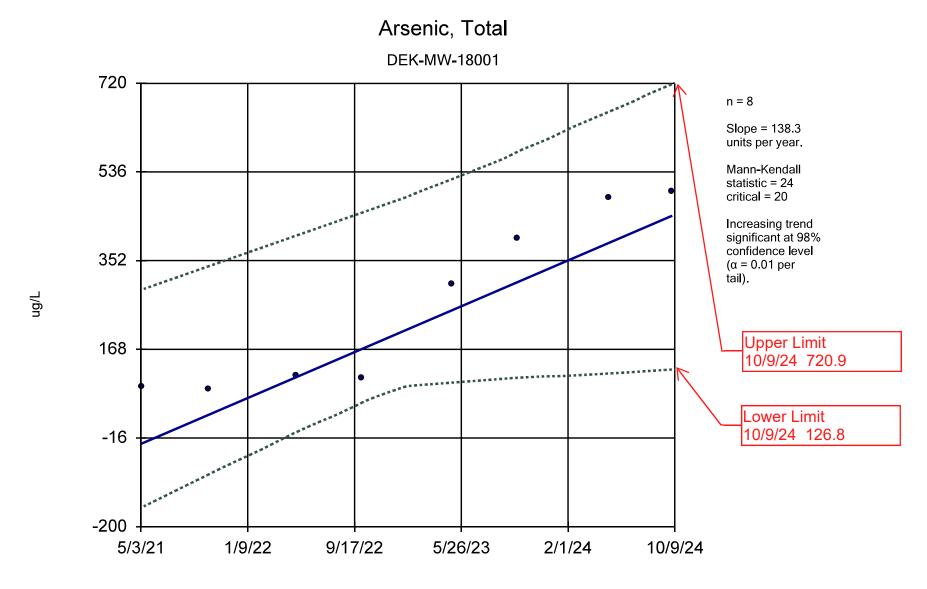
Mann-Kendall statistic = -10 critical = -20

Trend not significant at 98% confidence level ($\alpha = 0.01$ per tail).

Sen's Slope Estimator Analysis Run 11/22/2024 11:05 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

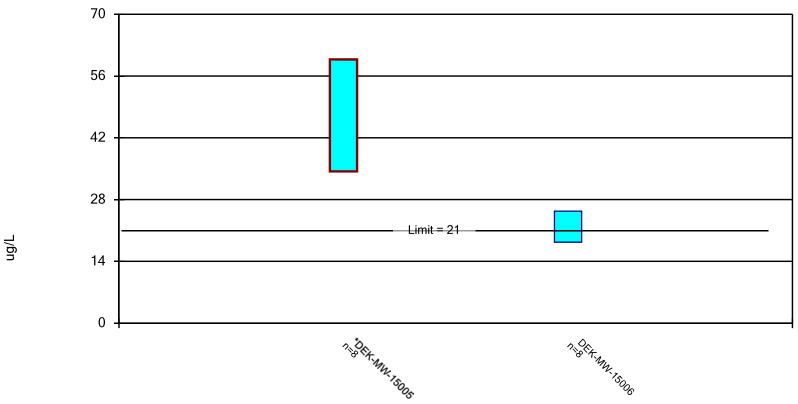
ng/L



Sen's Slope and 98% Confidence Band Analysis Run 11/22/2024 11:07 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 11/22/2024 11:11 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 11/22/2024 11:12 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

	DEK-MW-15005	DEK-MW-15006
5/3/2021	44.5 (D)	24 (D)
10/4/2021	68 (D)	23.5 (D)
5/3/2022	54 (D)	24.5 (D)
10/4/2022	54 (D)	26 (D)
5/2/2023	32 (D)	16 (D)
10/5/2023	48 (D)	22 (D)
5/9/2024	32 (D)	19 (D)
10/3/2024	44 (D)	20 (D)
Mean	47.06	21.88
Std. Dev.	11.98	3.325
Upper Lim.	59.76	25.4
Lower Lim.	34.36	18.35



Appendix C Laboratory Analytical Reports



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK BOTTOM ASH POND WELLS – 2024 Q4

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0801

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond Wells area during the week of 10/01/2024 for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/04/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, the report that follows presents the results of the requested analytical testing; the results apply only to the samples, as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate.

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CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
Н	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PΙ	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q4-2024 Karn Bottom Ash Pond Wells

Date Received: 10/4/2024 **Chemistry Project:** 24-0801

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0801-01	DEK-MW-15002	Groundwater	10/03/2024 18:02	DEK Bottom Ash Pond
24-0801-02	DEK-MW-15005	Groundwater	10/03/2024 11:46	DEK Bottom Ash Pond
24-0801-03	DEK-MW-15006	Groundwater	10/03/2024 16:07	DEK Bottom Ash Pond
24-0801-04	DUP-DEK-BAP-01	Groundwater	10/03/2024 00:00	DEK Bottom Ash Pond
24-0801-05	FB-DEK-BAP	Water	10/03/2024 11:46	DEK Bottom Ash Pond
24-0801-06	EB-DEK-BAP	Water	10/03/2024 18:02	DEK Bottom Ash Pond





Report Date:

10/18/24

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: 24-0801

Field Sample ID: **DEK-MW-15002** Collect Date: 10/03/2024 Lab Sample ID: 24-0801-01 Collect Time: 06:02 PM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueou	IS			Aliquot #: 24-0	801-01-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	0801-01-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	2		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	129		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1450		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	95400		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	105		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	32		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	24400		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	295		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	3		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	9320		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	1		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	89400		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 24-0)801-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0)801-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	84500		ug/L	1000.0	10/07/2024	AB24-1007-02



Report Date:

10/18/24



Sample Site: Laboratory Project: **DEK Bottom Ash Pond** 24-0801

Field Sample ID: **DEK-MW-15002** Collect Date: 10/03/2024 Lab Sample ID: 24-0801-01 Collect Time: 06:02 PM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	SO4, Aqι	ieous	Aliquot #: 24-0	801-01-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	ND		ug/L	1000.0	10/04/2024	AB24-1007-02	
Sulfate	52500		ug/L	1000.0	10/07/2024	AB24-1007-02	
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 24-0	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	7200		ug/L	25.0	10/09/2024	AB24-1009-03	
Total Dissolved Solids by SM 2540	Total Dissolved Solids by SM 2540C				Aliquot #: 24-0801-01-C04-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Total Dissolved Solids	656		mg/L	10.0	10/07/2024	AB24-1007-04	
Alkalinity by SM 2320B			Aliquot #: 24-0	Analyst: DLS			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	419000		ug/L	10000.0	10/10/2024	AB24-1010-01	
Alkalinity Bicarbonate	419000		ug/L	10000.0	10/10/2024	AB24-1010-01	
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01	
Sulfide, Total by SM 4500 S2D			Aliquot #: 24-0	801-01-C07-A01	Analyst: Merit		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	3930		ug/L	20.0	10/09/2024	AB24-1007-12	



Report Date:

10/18/24



A CENTURY OF EXCELLENCE

Sample Site:DEK Bottom Ash PondLaboratory Project:24-0801Field Sample ID:DEK-MW-15005Collect Date:10/03/2024Lab Sample ID:24-0801-02Collect Time:11:46 AM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueous			Aliquot #: 24-0801-02-C01-A01		Analyst: CLE
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Mercury	ND	ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCF	R Rule Appendix III-IV To	tal Metals Exp	Aliquot #: 24-0)801-02-C01-A02	Analyst: EB
Parameter(s)	Result	Flag Units	•	Analysis Date	Tracking
Antimony	ND	ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	44	ug/L	1.0	10/08/2024	AB24-1009-01
Barium	381	ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND	ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1030	ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND	ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	188000	ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND	ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND	ug/L	6.0	10/08/2024	AB24-1009-01
Copper	2	ug/L	1.0	10/08/2024	AB24-1009-01
Iron	1740	ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND	ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	31	ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	35800	ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	545	ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	7	ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	7	ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	11400	ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	2	ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND	ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	152000	ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND	ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	3	ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND	ug/L	10.0	10/08/2024	AB24-1009-01
Anions by EPA 300.0 Aque	ous, NO2, NO3		Aliquot #: 24-0)801-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Nitrate	ND	ug/L	100.0	10/04/2024	AB24-1004-02
Nitrite	ND	ug/L	100.0	10/04/2024	AB24-1004-02
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqueous	Aliquot #: 24-0)801-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Chloride	150000	ug/L	1000.0	10/07/2024	AB24-1007-02
	0.4	0001 Dags 7 of 22			





Report Date: 10/18/24

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

 Field Sample ID:
 DEK-MW-15005
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0801-02
 Collect Time:
 11:46 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	801-02-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	ND		ug/L	1000.0	10/04/2024	AB24-1007-02	
Sulfate	484000		ug/L	1000.0	10/07/2024	AB24-1007-02	
Nitrogen-Ammonia by SM4500NH3(h),	Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 24-0801-02-C03-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	5400		ug/L	25.0	10/09/2024	AB24-1009-03	
Total Dissolved Solids by SM 2540C	Total Dissolved Solids by SM 2540C				Aliquot #: 24-0801-02-C04-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Total Dissolved Solids	1240		mg/L	10.0	10/07/2024	AB24-1007-04	
Alkalinity by SM 2320B			Aliquot #: 24-0	801-02-C05-A01	Analyst: DLS		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	316000		ug/L	10000.0	10/10/2024	AB24-1010-01	
Alkalinity Bicarbonate	316000		ug/L	10000.0	10/10/2024	AB24-1010-01	
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01	
Sulfide, Total by SM 4500 S2D			Aliquot #: 24-0	801-02-C07-A01	Analyst: Merit		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	100		ug/L	20.0	10/09/2024	AB24-1007-12	





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Report Date:

10/18/24

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

 Field Sample ID:
 DEK-MW-15006
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0801-03
 Collect Time:
 04:07 PM

Matrix: Groundwater

Parameter(s)	Result	Flag	Units	RL	Analysis Data	Tracking
• •		riay			Analysis Date	
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	801-03-C01-A02	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	20		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	212		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1040		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	273000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	1		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	3330		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	21		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	47600		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	1080		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	6		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	10		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	9210		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	2		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	74000		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 24-0	801-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Anions by EPA 300.0 CCR F	Rule Analyte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	801-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	53200		ug/L	1000.0	10/07/2024	AB24-1007-02



Report Date:

10/18/24



Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

 Field Sample ID:
 DEK-MW-15006
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0801-03
 Collect Time:
 04:07 PM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, SC	D4, Aqι	ieous	Aliquot #: 24-0	801-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/04/2024	AB24-1007-02
Sulfate	744000		ug/L	1000.0	10/07/2024	AB24-1007-02
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater H	1 L		Aliquot #: 24-0	801-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	5300		ug/L	25.0	10/09/2024	AB24-1009-03
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	801-03-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1500		mg/L	10.0	10/07/2024	AB24-1007-04
Alkalinity by SM 2320B				Aliquot #: 24-0	801-03-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	345000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	345000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	801-03-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	70		ug/L	20.0	10/09/2024	AB24-1007-12



Report Date:

10/18/24



Laboratory Sarviose

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

 Field Sample ID:
 DUP-DEK-BAP-01
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0801-04
 Collect Time:
 12:00 AM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueou		Aliquot #: 24-0	801-04-C01-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	0801-04-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	44		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	359		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1020		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	189000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	1		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	1680		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	30		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	35300		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	524		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	7		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	6		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	11200		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	2		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	146000		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	3		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 24-0	801-04-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 24-0	801-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	150000		ug/L	1000.0	10/07/2024	AB24-1007-02



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A CENTURY OF EXCELLENCE

Report Date: 10/18/24

Sample Site: Laboratory Project: **DEK Bottom Ash Pond** 24-0801

Field Sample ID: DUP-DEK-BAP-01 Collect Date: 10/03/2024 Lab Sample ID: 24-0801-04 Collect Time: 12:00 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, SC)4, Aqւ	ieous	Aliquot #: 24-0	801-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/04/2024	AB24-1007-02
Sulfate	487000		ug/L	1000.0	10/07/2024	AB24-1007-02
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater H	1 L		Aliquot #: 24-0	801-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	5380		ug/L	25.0	10/09/2024	AB24-1009-03
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	801-04-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1250		mg/L	10.0	10/07/2024	AB24-1007-04
Alkalinity by SM 2320B				Aliquot #: 24-0	801-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	328000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	328000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	801-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	80		ug/L	20.0	10/09/2024	AB24-1007-12





24-0801-05

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: 24-0801 Field Sample ID: FB-DEK-BAP

Collect Date: 10/03/2024 Collect Time: 11:46 AM

Report Date:

10/18/24

Lab Sample ID: Matrix: Water

Mercury by EPA 7470A, To	Mercury by EPA 7470A, Total, Aqueous			Aliquot #: 24-0	801-05-C01-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01		
Metals by EPA 6020B: CCF	R Rule Appendix III-IV To	tal Metals	Ехр	Aliquot #: 24-0	801-05-C01-A02	Analyst: EB		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Arsenic	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Barium	ND		ug/L	5.0	10/08/2024	AB24-1009-01		
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Boron	ND		ug/L	20.0	10/08/2024	AB24-1009-01		
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01		
Calcium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01		
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01		
Copper	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Iron	ND		ug/L	20.0	10/08/2024	AB24-1009-01		
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Lithium	ND		ug/L	10.0	10/08/2024	AB24-1009-01		
Magnesium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01		
Manganese	ND		ug/L	5.0	10/08/2024	AB24-1009-01		
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01		
Nickel	ND		ug/L	2.0	10/08/2024	AB24-1009-01		
Potassium	ND		ug/L	100.0	10/08/2024	AB24-1009-01		
Selenium	ND		ug/L	1.0	10/08/2024	AB24-1009-01		
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01		
Sodium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01		
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01		
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01		
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01		
Anions by EPA 300.0 Aque	eous, NO2, NO3			Aliquot #: 24-0	801-05-C02-A01	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02		
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02		
Nitrogen-Ammonia by SM4	1500NH3(h), Groundwate	er HL		Aliquot #: 24-0	801-05-C03-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Ammonia	ND		ug/L	25.0	10/09/2024	AB24-1009-03		
	24	0001 Dago 1	2 of 22					



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

Field Sample ID: FB-DEK-BAP Collect Date: 10/03/2024
Lab Sample ID: 24-0801-05 Collect Time: 11:46 AM

Matrix: Water

Sulfide, Total by SM 4500 S2D			Aliquot #: 24-	0801-05-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Sulfide	ND	ug/L	20.0	10/09/2024	AB24-1007-12



Report Date:

10/18/24



A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond** Laboratory Project: **24-0801**

Field Sample ID: EB-DEK-BAP Collect Date: 10/03/2024
Lab Sample ID: 24-0801-06 Collect Time: 06:02 PM

Matrix: Water

Mercury by EPA 7470A, Total,		Aliquot #: 24-0	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR R	ule Appendix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0)801-06-C01-A02	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	ND		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	ND		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	ND		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	ND		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	ND		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01
Anions by EPA 300.0 Aqueou	s, NO2, NO3			Aliquot #: 24-0)801-06-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02
Nitrogen-Ammonia by SM450	0NH3(h), Groundwate	er HL_		Aliquot #: 24-0	801-06-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	10/09/2024	AB24-1009-03



Analytical Report

Report Date: 10/18/24

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond**

Laboratory Project: 24-0801 Field Sample ID: EB-DEK-BAP Collect Date: 10/03/2024 Lab Sample ID: 24-0801-06 Collect Time: 06:02 PM

Matrix: Water

Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	0801-06-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/09/2024	AB24-1007-12



Analytical Report

Report Date: 10/18/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS ENERGY

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 REVISION 5 ATTACHMENT A

Gonoral Standard Ope	ATTACHMENT A					
ITTLE: SAMPLE LOG-IN – SHIPMENT IN	SPECTION FORM					
Project Number: <u>Z4.0201</u> Inspection Sample Origin/Project Name: <u>04-2024</u> DE k						
Shipment Delivered By: Enter the type of shipment carrie						
Inter-Company Mail FedEx		24211				
Tracking Number:						
Shipping Containers: Enter the type and number of shipp)				
Cooler (1) Cardboard Box	_	Envelone/\/	foiler			
Loose/Unpackaged Containers	Custom Case Other					
		,	***************************************			
Condition of Shipment: Enter the as-received condition of	•		_			
Damaged Shipment Observed: None	Dented		ing			
Other						
Shipment Security: Enter if any of the shipping contained	•	-				
Shipping Containers Received: Opened	Sealed	_ N/A	_			
Enclosed Documents: Enter the type of documents enclosed	sed with the shipment.					
CoC Work Request		Other				
		. • • • • • • • • • • • • • • • • • • •				
Temperature of Containers: Measure the temperature of	-					
As-Received Temperature Range <u>() 용 - 3. 역</u>	°C Samples Receive	ed on Ice: Yes	No			
M&TE # and Expiration LS027723 / 66	0.27.25					
Number and Type of Containers: Enter the type and tot	al number of sample contai	ners received.				
Container Type Water Soil	Other	<u>Broken</u>	Leaking			
VOA (40mL or 60mL) 8	- Common	AND THE PROPERTY OF THE PROPER				
Quart/Liter (g/p)						
9-oz (amber glass jar)						
2-oz (amber glass)			P			
125 mL (plastic) 24		· · · · · · · · · · · · · · · ·	£444			
24 mL vial (glass)						
250 mL (plastic)						
Other						

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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Page _ 1 _ of _ 1 _

2000-00-1		SITE / CUSTOMER: PROJECT NUMBER: SAP CC or WO#:									ESTED		QA REQUIREMENT:										
2 11		m Ash Pond W			24-0801	REQUESTER:	Haro	ld R	legi	ster			I.	(Att	ach Li	st if N	Aore S	Space	is Need	ded)	Q111CEQUITEMENT.		
SAMPL	ING TEAM: /	HI, ER, T	4		TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD ⊠ OTH	HER_														□ NPDES ⊠ TNI		
SEND	REPORT TO:	Joseph Firlit			email:	nail: phone:				1								☐ ISO 17025					
C	OPY TO:	Harold Regis	ster		MATRIX CODES: GW = Groundwater OX = Other	CONTAINERS					1	1							☐ 10 CFR 50 APP. B				
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air				200				1 8			☐ INTERNAL INFO							
-	LAB	SAMPLE COL	LECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene	e # TVLOL					2.0			H	Metals	Suc	Amonia		Alkalinity	ide		1	□ OTHER
SA	MPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	ATION 2	None	HNO	H ₂ SC	HCI	МеОН	Total	Ani	Am	TDS	Alk	Sulfide			REMARKS		
24	-0801-01	10/3/24	1802	GW	DEK-MW-15002		7	4	1	1	1		x	x	x	x	x	x					
	-02	10/3/211	1146	GW	DEK-MW-15005		7	4	1	1	ı		x	x	x	x	x	x			1		
	-03	10/3/29	1607	GW	DEK-MW-15006		7	4	1	1 1	ı		x	x	x	x	х	x					
	-04	10/3/24	_	GW	DUP-DEK-BAP-01		7	4	1	1 1	ı		x	x	x	x	x	x					
	-05	10/5/24	1146	W	FB-DEK-BAP		4	1	1	I	ľ		x	x	x			x					
+	-06	10/3/24	1800	. W	EB-DEK-BAP		4	1	1	1 1	1		x	x	x			x					
																					7		
				-																			
																	إ_ا				T = 1,		
	ONIMA ONIMA	Vost	I) O	14/24 0810 R	ECEIVED BY:							С	OMM	ENTS	: :							
RELINC	QUISHED BY:		Ī	DATE/		-0801 Page 19 of	33						10								#: LS 0 277 23 ne Date: 06-27-25		



Report ID: S67050.01(01) Generated on 10/10/2024

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S67050.01-S67050.06

Project: 24-0801 PR#24101038 Collected Date(s): 10/03/2024

Submitted Date/Time: 10/04/2024 14:46

Sampled by: Unknown P.O. #: 4400121437

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Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit https://www.meritlabs.com/certifications.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:20	17 #69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Description

Qualifier

	·
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
М	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
Χ	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
0	Associated EIS outside of control limits
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
q	Qualifier ion ratio outside of control limits
X	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4500 S2 D 2011



Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S67050.01	DEK-MW-15002 (24-0801-01)	Groundwater	10/03/24 18:02
S67050.02	DEK-MW-15005 (24-0801-02)	Groundwater	10/03/24 11:46
S67050.03	DEK-MW-15006 (24-0801-03)	Groundwater	10/03/24 16:07
S67050.04	DUP-DEK-BAP-01 (24-0801-04)	Groundwater	10/03/24 00:01
S67050.05	FB-DEK-BAP (24-0801-05)	Groundwater	10/03/24 11:46
S67050.06	EB-DEK-BAP (24-0801-06)	Groundwater	10/03/24 18:02



Lab Sample ID: S67050.01

Sample Tag: DEK-MW-15002 (24-0801-01) Collected Date/Time: 10/03/2024 18:02

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:35, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	3.93	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67050.02

Sample Tag: DEK-MW-15005 (24-0801-02) Collected Date/Time: 10/03/2024 11:46

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:34, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.10	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67050.03

Sample Tag: DEK-MW-15006 (24-0801-03) Collected Date/Time: 10/03/2024 16:07

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:37, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.07	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67050.04

Sample Tag: DUP-DEK-BAP-01 (24-0801-04) Collected Date/Time: 10/03/2024 00:01

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:46, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.08	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67050.05

Sample Tag: FB-DEK-BAP (24-0801-05) Collected Date/Time: 10/03/2024 11:46

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:48, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67050.06

Sample Tag: EB-DEK-BAP (24-0801-06) Collected Date/Time: 10/03/2024 18:02

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:50, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		ma/L	1	18496-25-8	

Merit Laboratories Login Checklist

Lab Set ID:S67050

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0801 PR#24101038

Submitted: 10/04/2024 14:46 Login User: MMC

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	ction			Description	Note
Samı	ole Receiv	ving			
01.	X Yes	No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.1
02.	X Yes	No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	□ N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	No	□ N/A	COC adequately filled out	
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	No	□ N/A	Sample tag on bottles match COC	
09.	Yes	X No	N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	□ N/A	Do sample have correct chemical preservation	
11.	X Yes	No	□ N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditi	ons			
13.	X Yes	No	□ N/A	All bottles intact	
14.	X Yes	No	□ N/A	Appropriate analytical bottles are used	
15.	Yes	X No	□ N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC, TOX, DO or Alkalinity bottles contain	
Corre	ective action	on for all	exceptions	is to call the client and to notify the project manager.	
Clier	nt Review	Ву:		Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S67050 Submitted: 10/04/2024 14:46

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0801 PR#24101038

Initial Preservation Check: 10/04/2024 15:41 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S67050.01	125mL Plastic NaOH/Zn Acetate	>12			
S67050.02	125mL Plastic NaOH/Zn Acetate	>12			
S67050.03	125mL Plastic NaOH/Zn Acetate	>12			
S67050.04	125mL Plastic NaOH/Zn Acetate	>12			
S67050.05	125mL Plastic NaOH/Zn Acetate	>12			
S67050.06	125mL Plastic NaOH/Zn Acetate	>12			



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REPOR			Lanoratories, inc.	CHAI	N OF	CU	ST	TOD	Y RI	CO	RD					INVOIC	ETC
CONTACT NAME E	mil Blaj							CONT	ACT NAM	E					≭ SAM	ΛE	
Company Cons	sumers E	nergy						COMP	ANY								
ADDRESS 135 V	V. Trail S	treet					11	ADDRI	ESS								
Jackson Jackson				STATE MI ZJF	CODE 4	920	1	СПУ							STATE	ZIP CODE	
PHONE NO. 517-7	788-5888		FAX NO. 517-788-2533	P.O. NO. 440012	1437			PHON	E NO.			E-MA	AL ADDRESS			-	
-MAIL ADDRESS e	mil.blaj@	emsen	ergy.com	QUOTE NO.			li				1	ANALYSIS (ATT	ACH LIST IF	MORE SPAC	E IS REQUIR	RED)	
ROJECT NO./NAM				SAMPLER(S) - PLEASE	PRINT/SIG	N NA	ME L			N/A	7	THE			Certifica	tions	
			□1 DAY □2 DAYS □3 D	AYS STANDARD	Потн	FR				IVA	+			81113	□оню у	AP Drink	king Wate
			D X LEVEL II LEVEL III				2				1		-111		□D ₀ D	NPDI	ES
			WW=WASTEWATER S=S		D=SOLID	_		# Co	ntaine	\$ 2	Sulfide		+11		Project L	ocations	
	SL=SLUDG	E DW=	DRINKING WATER O=OIL	WP=WIPE A=AIR	W=WAS	TE	_		servati						Detroit	New	York
MERIT LAB NO.	YE		SAMPLE IDENTIFICATION-D		MATRIX	# OF	NONE	DH C	H,SO,	MeOH	Total				Other	nstructions	
67050.01	DATE 10/03/24	TIME 1802	DEK-MW-15002 (24-08	801-01)	GW	1			1	20	1					with NaOH/Z	ZnAcetat
	10/03/24	1146	DEK-MW-15005 (24-08		GW	1	H		1	1	1				"		
-	10/03/24	1607	DEK-MW-15006 (24-08		GW	1			1		1				n		
.00	10/03/24	-	DUP-DEK-BAP-01 (24		GW	1			1	H	1				"		
	10/03/24	1146	FB-DEK-BAP (24-0801		GW	1	H		1	H	1						
	10/03/24		EB-DEK-BAP (24-0801		GW	1	H		1	1	1				"		
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SIGNATURE/ORGA RELINQUISHED BY		1/10	hanna Mu	vray 10%	1/24 /	446 ME	-	SEAL	TURE/O	RGANIZ	-	SEAL INTACT	INITIALS	NOTES:	TEMP, OF	N ARRIVAL	
SIGNATURE/ORGA RECEIVED BY:	MIZATION	/		DAT	E TI	ME	1	SEAL				YES NO	INITIALS	+		31	
SIGNATURE/ORGA	ANIZATION		PLEASE NOTE: SIGNI				JL					YES NO			•). I	

ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 11/7/2024 10:08:34 AM

JOB DESCRIPTION

Karn/Weadock CCR DEK Bottom Ash Pond

JOB NUMBER

240-212644-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203

Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

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Definitions/Glossary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method Quantitation Limit

Practical Quantitation Limit

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)
Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

Not Detected at the reporting limit (or MDL or EDL if shown)

Not Calculated

Negative / Absent

Positive / Present

Presumptive Quality Control Job ID: 240-212644-1

Qualifiers

	_	-1
ĸ	а	α
•	•	•

MQL

NC

ND

NEG POS

PQL

PRES

QC

RER RL

RPD TEF

TEQ TNTC

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
U	Result is less than the sample detection limit.

Glossary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
\$	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number

Eurofins Cleveland

Case Narrative

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212644-1 Eurofins Cleveland

Job Narrative 240-212644-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/9/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.5°C.

Gas Flow Proportional Counter

Method 903.0: Radium 226 Batch 683235

160-683235

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL DEK-MW-15002 (240-212644-1), DEK-MW-15005 (240-212644-2), DEK-MW-15006 (240-212644-3), DUP-DEK-BAP-01 (240-212644-4), EB-DEK-BAP (240-212644-5), (LCS 160-683235/2-A), (MB 160-683235/1-A) and (240-212644-B-2-B DU)

Method 904.0: Radium-228 prep batch 160-684916

Insufficient sample volume was available to perform a sample duplicate for the following samples: DEK-MW-15002 (240-212644-1), DEK-MW-15006 (240-212644-3) and EB-DEK-BAP (240-212644-5). A laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method 904.0: Radium 228 Batch 683236

The associated sample is out of the precision limits requested by the client (DER is > 2 and RPD is greater than 40%). The client has requested the associated sample be reported. DEK-MW-15005 (240-212644-2) and (240-212644-B-2-C DU)

Method 904.0: Radium 228 batch 683236

The Radium-228 laboratory control sample (LCS) recovery associated with the following sample(s) is outside the upper QC limit of 120%indicating a potential positive bias for that analyte. This analyte was not observed above the MDC/RL in the associated samples; therefore the sample data is not adversely affected by this excursion. The data have been reported with this narrative. DEK-MW-15005 (240-212644-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rac

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cleveland

Job ID: 240-212644-1

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Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep 0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212644-1

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Sample Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212644-1	DEK-MW-15002	Water	10/03/24 16:02	10/09/24 08:00
240-212644-2	DEK-MW-15005	Water	10/03/24 11:46	10/09/24 08:00
240-212644-3	DEK-MW-15006	Water	10/03/24 16:07	10/09/24 08:00
240-212644-4	DUP-DEK-BAP-01	Water	10/03/24 00:00	10/09/24 08:00
240-212644-5	EB-DEK-BAP	Water	10/03/24 18:02	10/09/24 08:00

Job ID: 240-212644-1

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-15002

Date Collected: 10/03/24 16:02

Date Received: 10/09/24 08:00

	Lab	Sample	ID:	240-2	12644-1
--	-----	--------	-----	-------	---------

Matrix: Water

Job ID: 240-212644-1

Method: EPA 903.0	- Radium-226	(GFPC)								
		` ,	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.230		0.120	0.122	1.00	0.144	pCi/L	10/11/24 08:47	10/30/24 08:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/11/24 08:47	10/30/24 08:16	1

_										
Method: EPA 904.	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.451	U	0.383	0.385	1.00	0.600	pCi/L	10/24/24 08:31	11/04/24 12:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					10/24/24 08:31	11/04/24 12:17	1
Y Carrier	78.1		30 - 110					10/24/24 08:31	11/04/24 12:17	1

	Count Uncert.	Total						
	Uncort							
	Uncert.	Uncert.						
It Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
1	0.401	0.404	5.00	0.600	pCi/L		11/07/24 08:45	1
_	ult Qualifier 31							

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-15005

Date Collected: 10/03/24 11:46

Lab Sample ID: 240-212644-2 **Matrix: Water**

Date Received: 10/09/24 08:00

Method: EPA 903.0		(0.10)	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.647		0.155	0.166	1.00	0.112	pCi/L	10/11/24 08:47	10/30/24 08:16	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					10/11/24 08:47	10/30/24 08:16	1

 Method: EPA 904.	Ո - Radium-228	(GEPC)								
Michiga. El A 304.	0 - Radiani-220	(6110)	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.477	U *	0.475	0.477	1.00	0.764	pCi/L	10/11/24 08:52	10/22/24 14:40	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					10/11/24 08:52	10/22/24 14:40	1
Y Carrier	79.3		30 - 110					10/11/24 08:52	10/22/24 14:40	1

				and Radiun	1-220					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.12		0.500	0.505	5.00	0.764	pCi/L		11/01/24 11:16	1
Combined Radium 226 + 228	1.12		0.500	0.505	5.00	0.764	pCi/L		11/01/24	4 11:16

Job ID: 240-212644-1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-15006

Lab Sample ID: 240-212644-3 Date Collected: 10/03/24 16:07

Matrix: Water

Job ID: 240-212644-1

Date R	eceive	d: 10/09	9/24 08:0	00
Γ				/

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.524		0.145	0.153	1.00	0.120	pCi/L	10/11/24 08:47	10/30/24 08:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.5		30 - 110					10/11/24 08:47	10/30/24 08:17	1

Method: EPA 904.0 - Radium-228 (GFPC)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.28		0.436	0.452	1.00	0.520	pCi/L	10/24/24 08:31	11/04/24 12:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.0		30 - 110					10/24/24 08:31	11/04/24 12:17	1
Y Carrier	75.1		30 - 110					10/24/24 08:31	11/04/24 12:17	1

Method: TAL-STL Ra226 Ra228 - Combined Radium-226 and Radium-228

		••••••	rtaaran 220	and made						
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.80		0.459	0.477	5.00	0.520	pCi/L		11/07/24 08:45	1
226 + 228										

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DUP-DEK-BAP-01

Lab Sample ID: 240-212644-4 Date Collected: 10/03/24 00:00

Matrix: Water

Job ID: 240-212644-1

Date Received: 10/09/24 08:00

Method: EPA 903.0) - Radium-226	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.452		0.154	0.159	1.00	0.160	pCi/L	10/11/24 08:47	10/30/24 08:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	78.7		30 - 110					10/11/24 08:47	10/30/24 08:17	1

										•
Method: EPA 904.	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.322	U	0.370	0.372	1.00	0.607	pCi/L	10/24/24 08:31	11/04/24 12:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.6		30 - 110					10/24/24 08:31	11/04/24 12:17	1
Y Carrier	78.1		30 - 110					10/24/24 08:31	11/04/24 12:17	1

Method: TAL-STL Ra	226_Ra228 ·	- Combined	Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.775		0.401	0.405	5.00	0.607	pCi/L	_	11/07/24 08:45	1

Client Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: EB-DEK-BAP

Lab Sample ID: 240-212644-5 Date Collected: 10/03/24 18:02

Matrix: Water

Job ID: 240-212644-1

Date Received: 10/09/24 08:00

Method: EPA 903.0	- Radium-226	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0170	U	0.0622	0.0622	1.00	0.135	pCi/L	10/11/24 08:47	10/30/24 08:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.6		30 - 110					10/11/24 08:47	10/30/24 08:17	1

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.174	U	0.314	0.315	1.00	0.540	pCi/L	10/24/24 08:31	11/04/24 12:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	103		30 - 110					10/24/24 08:31	11/04/24 12:17	1
Y Carrier	83.0		30 - 110					10/24/24 08:31	11/04/24 12:17	1

Method: TAL-STL Ra2	26_Ra228	- Combined	l Radium-226	and Radiun	n-228					
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.157	U	0.320	0.321	5.00	0.540	pCi/L		11/07/24 08:45	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212644-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

		Percent Yield (Acceptance Limits)							
		Ва							
Lab Sample ID	Client Sample ID	(30-110)							
240-212644-1	DEK-MW-15002	89.4							
240-212644-2	DEK-MW-15005	87.6							
240-212644-2 DU	DEK-MW-15005	87.6							
240-212644-3	DEK-MW-15006	83.5							
240-212644-4	DUP-DEK-BAP-01	78.7							
240-212644-5	EB-DEK-BAP	90.6							
LCS 160-683235/2-A	Lab Control Sample	94.7							
MB 160-683235/1-A	Method Blank	94.7							
Tracer/Carrier Legend									
Ba = Ba Carrier									

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-212644-1	DEK-MW-15002	85.1	78.1	
240-212644-2	DEK-MW-15005	87.6	79.3	
240-212644-2 DU	DEK-MW-15005	87.6	72.1	
240-212644-3	DEK-MW-15006	98.0	75.1	
240-212644-4	DUP-DEK-BAP-01	96.6	78.1	
240-212644-5	EB-DEK-BAP	103	83.0	
LCS 160-683236/2-A	Lab Control Sample	94.7	80.0	
LCS 160-684916/2-A	Lab Control Sample	93.9	75.1	
LCSD 160-684916/3-A	Lab Control Sample Dup	93.4	82.2	
MB 160-683236/1-A	Method Blank	94.7	77.4	
MB 160-684916/1-A	Method Blank	96.8	72.5	

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

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Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-683235/1-A Client Sample ID: Method Blank

Matrix: Water Prep Type: Total/NA
Analysis Batch: 685958
Count Total

	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01640	U	0.0747	0.0747	1.00	0.141	pCi/L	10/11/24 08:47	10/30/24 08:16	1

 MB MB
 MB
 Carrier
 %Yield Ba Carrier
 Qualifier Limits
 Limits
 Prepared
 Analyzed Dil Factorial
 Dil Factorial

 Ba Carrier
 94.7
 30 - 110
 10/11/24 08:47
 10/30/24 08:16
 1

Lab Sample ID: LCS 160-683235/2-A Client Sample ID: Lab Control Sample

Matrix: Water Prep Type: Total/NA
Analysis Batch: 685958 Prep Batch: 683235

Total

Spike LCS LCS Uncert. %Rec

Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 9.58 1.00 75 - 125 8 915 0.961 0.125 pCi/L 93 LCS LCS

Ba Carrier 94.7 30 - 110

Lab Sample ID: 240-212644-2 DU

Client Sample ID: DEK-MW-15005

Matrix: Water

Prep Type: Total/NA

Matrix: Water Prep Type: Total/NA
Analysis Batch: 685958 Prep Batch: 683235

Radium-226 0.647 0.6943 0.171 1.00 0.112 pCi/L 0.14 1

DU DU

Carrier %Yield Qualifier Limits

Method: 904.0 - Radium-228 (GFPC)

87.6

%Yield

Qualifier

Limits

30 - 110

Carrier

Ba Carrier

Lab Sample ID: MB 160-683236/1-A

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 684520

Prep Batch: 683236

Count Total мв мв Uncert. Uncert. Qualifier **MDC** Unit Dil Fac Analyte Result $(2\sigma + / -)$ $(2\sigma + / -)$ RL Prepared Analyzed Radium-228 U 0.453 0.453 1.00 0.802 pCi/L 10/11/24 08:52 10/22/24 14:39 0.1460

MB MB Qualifier Dil Fac Carrier %Yield Limits Prepared Analyzed Ba Carrier 30 - 110 10/11/24 08:52 10/22/24 14:39 94 7 30 - 110 Y Carrier 77.4 10/11/24 08:52 10/22/24 14:39

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11/7/2024

Job ID: 240-212644-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-683236/2-A

Matrix: Water

Analysis Batch: 684520

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 683236

				Total						
	Spike	LCS	LCS	Uncert.					%Rec	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Radium-228	8.41	10.64	*	1.53	1.00	0.728	pCi/L	127	75 - 125	

LCS LCS

Carrier	%Yield	Qualifier	Limits
Ba Carrier	94.7		30 - 110
Y Carrier	80.0		30 - 110

Lab Sample ID: 240-212644-2 DU

Matrix: Water

Analysis Batch: 684520

Client Sample ID: DEK-MW-15005

Prep Type: Total/NA

Prep Batch: 683236

					Total						
	Sample	Sample	DU	DU	Uncert.						RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit
Radium-228	0.477	U *	1.501	*	0.666	1.00	0.861	pCi/L		0.90	1

DU DU

Carrier	%Yield	Qualifier	Limits
Ba Carrier	87.6		30 - 110
Y Carrier	72.1		30 - 110

Lab Sample ID: MB 160-684916/1-A

Matrix: Water

Analysis Batch: 686662

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 684916

	MB	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.04702	U	0.311	0.311	1.00	0.571	pCi/L	10/24/24 08:31	11/04/24 12:17	1
	МВ	MB								
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		30 - 110					10/24/24 08:31	11/04/24 12:17	1
Y Carrier	72.5		30 - 110					10/24/24 08:31	11/04/24 12:17	1

Total

Total

Count

Lab Sample ID: LCS 160-684916/2-A

Matrix: Water

Analysis Batch: 686662

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 684916

	Spike	LCS	LCS	Uncert.					%Rec
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits
Radium-228	8.37	9.504	-	1.33	1.00	0.532	pCi/L	114	75 - 125

LCS LCS

Carrier	%Yield	Qualifier	Limits
Ba Carrier	93.9		30 - 110
Y Carrier	75 1		30 - 110

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QC Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212644-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-684916/3-A

Matrix: Water

Analysis Batch: 686662

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 684916

				Total							
	Spike	LCSD	LCSD	Uncert.					%Rec		RER
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	RER	Limit
Radium-228	8.37	9.529		1.29	1.00	0.530	pCi/L	114	75 - 125	0.01	1

	LCSD	LCSD	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	93.4		30 - 110
Y Carrier	82.2		30 - 110

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QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Rad

Prep Batch: 683235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212644-1	DEK-MW-15002	Total/NA	Water	PrecSep STD	
240-212644-2	DEK-MW-15005	Total/NA	Water	PrecSep STD	
240-212644-3	DEK-MW-15006	Total/NA	Water	PrecSep STD	
240-212644-4	DUP-DEK-BAP-01	Total/NA	Water	PrecSep STD	
240-212644-5	EB-DEK-BAP	Total/NA	Water	PrecSep STD	
MB 160-683235/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-683235/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-212644-2 DU	DEK-MW-15005	Total/NA	Water	PrecSep STD	

Prep Batch: 683236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212644-2	DEK-MW-15005	Total/NA	Water	PrecSep_0	
MB 160-683236/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-683236/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-212644-2 DU	DEK-MW-15005	Total/NA	Water	PrecSep_0	

Prep Batch: 684916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212644-1	DEK-MW-15002	Total/NA	Water	PrecSep_0	
240-212644-3	DEK-MW-15006	Total/NA	Water	PrecSep_0	
240-212644-4	DUP-DEK-BAP-01	Total/NA	Water	PrecSep_0	
240-212644-5	EB-DEK-BAP	Total/NA	Water	PrecSep_0	
MB 160-684916/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-684916/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-684916/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Job ID: 240-212644-1

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-15002

Date Collected: 10/03/24 16:02 Date Received: 10/09/24 08:00 Lab Sample ID: 240-212644-1

Matrix: Water

Job ID: 240-212644-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			683235	BCE	EET SL	10/11/24 08:47
Total/NA	Analysis	903.0		1	685958	FLC	EET SL	10/30/24 08:16
Total/NA	Prep	PrecSep_0			684916	BCE	EET SL	10/24/24 08:31
Total/NA	Analysis	904.0		1	686662	CMM	EET SL	11/04/24 12:17
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/07/24 08:45

Client Sample ID: DEK-MW-15005

Date Collected: 10/03/24 11:46

Date Received: 10/09/24 08:00

Lab Sample ID: 240-212644-2

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			683235	BCE	EET SL	10/11/24 08:47
Total/NA	Analysis	903.0		1	685958	FLC	EET SL	10/30/24 08:16
Total/NA	Prep	PrecSep_0			683236	BCE	EET SL	10/11/24 08:52
Total/NA	Analysis	904.0		1	684520	FLC	EET SL	10/22/24 14:40
Total/NA	Analysis	Ra226_Ra228		1	686003	FLC	EET SL	11/01/24 11:16

Client Sample ID: DEK-MW-15006

Date Collected: 10/03/24 16:07

Date Received: 10/09/24 08:00

ah	Sample	ID:	240-212644-3
.av	Jailible	ıD.	240-2 12044-3

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			683235	BCE	EET SL	10/11/24 08:47
Total/NA	Analysis	903.0		1	685958	FLC	EET SL	10/30/24 08:17
Total/NA	Prep	PrecSep_0			684916	BCE	EET SL	10/24/24 08:31
Total/NA	Analysis	904.0		1	686662	CMM	EET SL	11/04/24 12:17
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/07/24 08:45

Client Sample ID: DUP-DEK-BAP-01

Date Collected: 10/03/24 00:00

Date Received: 10/09/24 08:00

Lab Sample ID: 240-21264	4-4
Matrix: Wa	ater

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			683235	BCE	EET SL	10/11/24 08:47
Total/NA	Analysis	903.0		1	685958	FLC	EET SL	10/30/24 08:17
Total/NA	Prep	PrecSep_0			684916	BCE	EET SL	10/24/24 08:31
Total/NA	Analysis	904.0		1	686662	CMM	EET SL	11/04/24 12:17
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/07/24 08:45

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: EB-DEK-BAP

Lab Sample ID: 240-212644-5

Date Collected: 10/03/24 18:02 Matrix: Water Date Received: 10/09/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			683235	BCE	EET SL	10/11/24 08:47
Total/NA	Analysis	903.0		1	685958	FLC	EET SL	10/30/24 08:17
Total/NA	Prep	PrecSep_0			684916	BCE	EET SL	10/24/24 08:31
Total/NA	Analysis	904.0		1	686662	CMM	EET SL	11/04/24 12:17
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/07/24 08:45

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212644-1

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212644-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-25
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-25
HI - RadChem Recognition	State	n/a	06-30-25
Illinois	NELAP	200023	11-30-25
lowa	State	373	12-01-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-25
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-25
Massachusetts	State	M-MO054	06-30-25
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-25
New Jersey	NELAP	MO002	06-30-25
New Mexico	State	MO00054	06-30-25
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-25
North Dakota	State	R-207	12-31-24
Oregon	NELAP	4157	09-01-25
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-25
Texas	NELAP	T104704193	07-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-25
Virginia	NELAP	460230	06-14-25
Washington	State	C592	08-30-25
West Virginia DEP	State	381	10-31-25

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 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Eurofins Cleveland

180 S. Van Buren Avenue Barberton, OH 44203 06 I NVOIHOLIChain of Custody Record

💸 eurofins

Environment	Testing

Client Information	Sampler: K, EP		Lab PM: Brooks,	Kris M			Carri	er Tracking No	(s):	COC No: 240-124392-290	52.1
Client Contact: Jacob Krenz	Phone:		E-Mail: Kris Bro	oks@e	t.eurofins	sus com	State	of Origin:	ul	Page: Page 1 of 1	
Company:	L	PWSID:	INIS.DIC	окъше	euronns				VC	Job#:	
TRC Environmental Corporation.						Analysi	s Reques	ted		Preservation Cod	
Address: 1540 Eisenhower Place	Due Date Requested:	Standard	124						1 1	D - HNO3	es.
City:	TAT Requested (days):	3101110114	0	100	1						
Ann Arbor State, Zip:	Stan	dard		60						137	
MI, 48108-7080	Compliance Project:			9.5							
Phone:	PO #:		- 0								
734-971-7080(Tel) 734-971-9022(Fax) Email:	215951 WO#:		<u> </u>	13							
шан. JKrenz@trccompanies.com	553814.0001		9	(og						90	
Project Name:	Project #:				1 1 1					Containers Other:	
Karn/Weadock CCR DEK Bottom Ash Pond Site:	24024154 ssow#:			Se ge	1 mg					Other:	
y116.	330vv#:		Sam	SD (<u>1</u>					0	
		Sample M	latrix	Perform MS/MSD (Yes or 903.0, Re226Ra228_GFPC	904.0 - Standard Target List					Special In	
		Type (v	V=water, ≅	Ra22	Star	1				N N	
		ımple (C=comp, o-	waste/oil,	3.0.	0.					otal	
Sample Identification	Sample Date T	ime G=grab) sτ-τι Preservation	Code							Special In	structions/Note:
DELCARIA (FOOD				X P	D						
DEK-MW-15002		ioz & v	Vater N	NV							
DEK-MW-15005	10/2/24 11	46 <i>C</i> V	Vater N	NX	$ \chi $						
DEK-MW-15006	10/3/24 16	07 G V	Vater V	NX	X						
DUP-DEK-BAP-01	10/3/24 -		Vater N	NIX	X						
EB-DEK-BAP	10/3/24 18	302 G V	Vater N	NX	Ϋ́						
			Vater								
				\vdash						6889°	
						+++				1000	
				-	-				++	22TeV	
										240-212644 COC	
			-		+	+	+				
Possible Hazard Identification				Same	o Dispos	sal / A fee ma	y he acco	sed if same	nles are ref	ained longer than 1	month)
Non-Hazard Flammable Skin Irritant	Poison B Unknown	Radiological			Return To	oui (A lee illa 'n Client	Disco	sal By Lab		Archive For	Months
	The Car	Naulological				tions/QC Requ		Sai Dy Lau			
Empty Kit Relinquished by:	RC EDD Date	۵۰	Tr:	me:				Method of Shi	pment		
Relinquished by:	12-1-T		nany	IRA	eived hur	101 /	-	ID:	ite/Time:		Company
WANING KIND	Date/Time: 10/4/	24 1547 000	Pany TRC	I.e.	, , , , , , , , , , , , , , , , , , ,	Most ih	<u> </u>	(6	<u> </u>	1 1025	COMPOSITY A
Relinquished by:	Date/Time: /2/	1122 com	ETA	Red	eived AY	ISSÄ LO		Da	ite/Time:	-24 8 Am	Company
Relinquished by:	Date/Time:	Com			eived by:	TON LU	ил		ite/Time:	5 (),771	Company
	·	190		1				1			

Eurofins Cleveland Sample Receipt Form/Narrative Login # :
Barberton Facility
Chent TRC Site Name Cooler unpacked by:
10.934 Opened on 10.934
FedEx: 1st Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other
Receipt After-hours, Drop-off Date/Time Storage Location
Eurofins Cooler # C Foam Box Client Cooler Box Other
Packing material used. Bubble Wrap Foam Plastic Bag None Other
COOLANT; Wet Ice Blue Ice Dry Ice Water None
1 Cooler temperature upon receipt
IR GUN # (CFC) Corrected Cooler Temp C Corrected Cooler Temp C
s Quantity Yes No
Ware the reals on the outside of the cooler's armed & dated?

7	6	Ŋ	4.	w				ب	
7 Did all bottles arrive in good condition (Unbroken)?	6. Was/were the person(s) who collected the samples clearly identified on the COC?	Were the custody papers relinquished & signed in the appropriate place?	Did custody papers accompany the sample(s)?	Shippers' packing slip attached to the cooler(s)?	-Were tamper/custody seals intact and uncompromised?	-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	-Were the seals on the outside of the cooler(s) signed & dated?	Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	
N N	(Ze) No	ON (Sep.) No	Yes No	Yes No	(Yes) No NA	Yes (No)	NA S	No Res)
	And the second second	10C	Oil and Grease	VOAs	(Receiving:	checked for nH hy	3	-

Could all bottle labels (ID/Date/Time) be reconciled with the COC?

Yes No

For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(YN)? Were correct bottle(s) used for the test(s) indicated?

12 Sufficient quantity received to perform indicated analyses? Are these work share samples and all listed on the COC? Yes No

Were all preserved sample(s) at the correct pH upon receipt? Were VOAs on the COC? If yes, Questions 13-17 have been checked at the originating laboratory

(Yes) No

Z

pH Strap Lot# HC447997

Page 22 of 25

Yes

15 14. Were air bubbles >6 mm in any VOA vials? Trip Blank Lot #

Contacted PM Was a VOA trip blank present in the cooler(s)?
Was a LL Hg or Me Hg trip blank present? Š via Verbal Voice Mail Other Yes No Yes No (S)

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by

VOA Sample Preservation - Date/Time VOAs Frozen. Sample(s) Sample(s) Sample(s) Time preserved: 20. SAMPLE PRESERVATION Sample(s) 19 SAMPLE CONDITION Preservative(s) added/Lot number(s): were received after the recommended holding time had expired were received with bubble >6 mm in diameter (Notify PM) were received in a broken container were further preserved in the laboratory

3

Login Container Summary Report

240-21264

lemperature readings			
Client Sample ID	<u>Lab ID</u>	Container Type	Container Preservation Preservation pH Temp Added Lot Number
DEK-MW-15002	240-212644-A-1	Plastic 1 liter - Nitric Acid	\$
DEK-MW-15002	240-212644-B-1	Plastic 1 liter - Nitric Acid	<2
DEK-MW-15005	240-212644-A-2	Plastic 1 liter - Nitric Acid	\$2
DEK-MW-15005	240-212644-B-2	Plastic 1 liter - Nitric Acid	2
DEK-MW-15006	240-212644-A-3	Plastic 1 liter - Nitric Acid	Δ
DEK-MW-15006	240-212644-B-3	Plastic 1 liter - Nitric Acid	△
DUP-DEK-BAP-01	240-212644-A-4	Plastic 1 liter - Nitric Acid	\$
DUP-DEK-BAP-01	240-212644-B-4	Plastic 1 liter - Nitric Acid	\$
EB-DEK-BAP	240-212644-A-5	Plastic 1 liter - Nitric Acid	\$
EB-DEK-BAP	240-212644-B-5	Plastic 1 liter - Nitric Acid	\$

Page 23 of 25 11/7/2024

Simple Color C	180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772		Chain of Custody Record	of Cus	tody R	ဓင္ဝ	ā				453				💸 eurofins	S Environment Testing
Figure F	Client Information (Sub Contract Lab)	Sampler			Lab P Broo	Ks Krie	2				Ö	rrier Track	ing No(s):		COC No.	
Trial North: Tria	Chert Conact: Shipping/Receiving	Phone:			E-Mai	2	2				Į.	of Orio			240-191846.1	
1 1 1 1 1 1 1 1 1 1	Company:				Kris.	3rooks.	Øet ei	rofinst	s.com		Σ	chigan			Page: Page 1 of 1	
107 COLD 107 COLD	i estAmerica Laboratories, Inc. Addiese					Accredit	tions R	equired (See note						Job #	
Self CR 314.298-8737 (Fax) NO #	13715 Rider Trail North,	Due Date Reques 11/7/2024	led:						.		1				240-212644-1 Preservation C	
Secretary Secr	City: Earth City	TAT Requested (d	ays):		T		H	F	\ 	lysis	Redu	sted	-			
1000 314-208-8107(Fax) 1000 2	State, Zip. MO, 63045															
Second Commitment Seco	98-8566(Tel)	# Od														
Cock CCR Groundwater Monitoring Somple Data Sample Data Time Cythol Chemistry Chem	Email	*OM														
Sample Date Sample Date	Project Name Karn/Weadock CCR Groundwater Monitoring	Project #: 24024154						6						8100		
Sample Ote Time Garde Sample Caccon	Site	\$SOW#													Uher:	
103/24 1607 Preservation	Sample Identification - Client ID /I ab ID)			Sample Type C=comp,										Number of		
10/2024 16/2		Sample Date	A	1000	3		-							no1	Special I	nstructions/Note.
10/3024 19/3	DEK-MW-15002 (240-212644-1)	10/3/24	16:02	9	Water	1	-							X		
10/3/24 Eastern Cardo-212644.3 10/3/24 Eastern Cardo-212644.5 10/3/24 Eastern Cardo-21264.5 10/3/24 Eastern Cardo-212644.5 10/3/24 Eastern Cardo-21264	DEK-MW-15005 (240-212644-2)	10/3/24	Eastern 11:46) (N oteN	#	-	+	+		+		1		VA protocol - Ra 0 pCi/L	a-226+228 action limit at
AsP or (240-212644-5) 10/3/24 Eastern G Water X X X X X X X X X X X X X X X X X X X	DEK-MW-15006 (240-212644-3)	10/3/24	Eastern 16:07) (o tel		-	-	+	\perp	+	1	+		VA protocol - Ra 0 pCi/L	1-226+228 action limit at
P (240-212644-5) The P (240-212644-5) The	DUP-DEK-BAP-01 (240-212644-4)	10/3/24	Eastern	O	Water		_	+	+		+		+		O pCi/L	I-226+228 action limit at
oration's accreditations are aubject to change. Eurofine Environment Testing North Central: LLC places the convierable of method, analyte & accreditation compliance upon our subcontext libroratories. This samples highward to analysis/least-strong convierable on the State of Origin itseed above for analysis/least-strong convierable or the samples must be shipped task to the Eurofine Environment Testing North Central: LLC altention inmediately. If all requested accreditation are current to date, return the signed Chain of Catalogy and Produce of Catalogy	EB-DEK-BAP (240-212644-5)	10/3/24	18:02		Motor	#	+	+	+	1	+			47	VA protocol - Ka 0 pCi/L.	-226+228 action limit at
The stock of the control of the cont			Eastern	2	vvater		-		-		_	\perp		-	/A protocol - Ra 0 pCi/L	-226+228 action limit at
The Since laboratory accreditations are subject to change. Eurofine Environment Tasting North Central, LLC places the ownership of method, analyte & accreditation compliance upon our abcontract laboratories. This sample should be brought to Eurofine Environment Tasting North Central, LLC alteratorio mimediately. If all requested accreditations are current to date, return the signed Chan of Cotatoly alteration in the State of Origin istated above for analyses/bestchmatry being analyzed, the samples must be shipped back to the Eurofine Environment Tasting North Central, LLC alteratorio mimediately. If all requested accreditations are current to date, return the signed Chan of Cotatoly alteration to the State of Origin istated above for analyzed the analyzed that any analyzed the shipped by the Requested L. II. III. IV. Other (specify) Primary Deliverable Rank: 2 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Special Instructions/CR Requirements: Image: Company Primary Deliverable Rank: 2 Company Primary Deliverable Rank: 2 Company Primary Deliverable Rank: 3 Company Received by Primary Deliverable Rank: 4 Company Received by Company C							+		+		+		_	30		
The Since laboratory accorditations are autject to change. Eurofine Environment Testing North Central, LLC places the ownership of method, analyse & accreditation currently maintain accreditation in the State of Origin listed above for analysis/least shaped back to the Eurofine Environment Testing North Central, LLC attention immediately. If all requested accreditations state and the brought to Eurofine Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody are sample shipment is shown on any state of Origin listed above for analysis/least shipment accreditation of the shipment accreditation of the company of the instructions and compliance to the Eurofine Environment Testing North Central, LLC attention immediately. If all requested a confidence of the samples are retained forget than 1 month) Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) information of the confidence of									-		-					
Ossible Hazard Identification Troconfirmed Troconfirmed The Sample Bazerd Identification Troconfirmed Troconf	ote: Since laboratory accreditations are subject to change, Eurofins Environn boratory does not currently maintain accreditation in the State of Origin listed	nent Testing North Central	LLC places the	ownership of r	nethod, analyte	& accrec		omplianc	- Juodin ex	our subc	ontract lat	Oratories	Pie			
Company Coustody Seal No. Company Content Company Comp	ccreditation status should be brought to Eurofins Environment Testing North Cossible Hazard Identification	Central, LLC attention imm	ediately. If all re	guested accre	oles must be shi ditations are cu	pped bac rent to d	k to the	Eurofins I'n the sig	Environi gned Cha	nent Ter in of Cu	ting North	Central, I	LC taborate d complian	e snipment is r by or other insi ce to Eurofins f	invarded under ch uctions will be pro nvironment Testin	ain-of-custody. If the vided. Any changes to g North Central, LLC,
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FSSICARIGODN Date: Time: Time: Method of Shipment	Peliverable Requested: I, II, III, IV, Other (specify)		1			Specie	Instr	octions.	OC R	quiren	Dispo	al By Le	q	Archive	For	Months
JESSICA RIGDON Date/Time: Company Received by Received by Received by Received by Received by Received by Date/Time:	mpty Kit Relinquished by:		ate		E	je:	1					and post of				
Date/Time: Company Received by: Date/Time: Company Received by: Date/Time: Da	JESSICA				⊣ ։		pene	×	-	7			Daja/Time	٥		Company
Date/Time: Company Received by: Date/Time: Date/Time: Date/Time: ∆ No Cooler Temperature(s) °C and Other Remarks:	en dusted by:				npany	8	Sived b	3	5	3	3	3	Date/Time	>	3	Company
Custody Seal No		Date/Time:		Con	npany	- Re	eived b	33					Date/Time			Company
			1		100	Š	ler Ten	perature	(s) °C an	Other	emarks:					

180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

Eurofins Cleveland

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212644-1

List Source: Eurofins St. Louis
List Number: 2
List Creation: 10/10/24 11:26 AM

Creator: Worthington, Sierra M

oreator. Worthington, Sierra M		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

N/A

6

8

10

12

IR

14

Residual Chlorine Checked.



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2024 Q4

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0802

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 10/01/2024, for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/04/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, the report that follows presents the results of the requested analytical testing; the results apply only to the samples, as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate.

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CASE NARRATIVE

I. <u>Sample Receipt</u>

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q4-2024 Karn Bottom Ash Pond & Lined Impoundment

Date Received: 10/3/2024 **Chemistry Project:** 24-0802

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0802-01	DEK-MW-18001	Groundwater	10/03/2024 08:37	DEK Bottom Ash Pond & Lined Impoundment
24-0802-02	DEK-MW-18001 MS	Groundwater	10/03/2024 08:37	DEK Bottom Ash Pond & Lined Impoundment
24-0802-03	DEK-MW-18001 MSD	Groundwater	10/03/2024 08:37	DEK Bottom Ash Pond & Lined Impoundment





A CENTURY OF EXCELLENCE

Field Sample ID: DEK-MW-18001

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Laboratory Project: 24-0802
Collect Date: 10/03/2024
Collect Time: 08:37 AM

Report Date:

10/18/24

Lab Sample ID: 24-0802-01 Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueous				7 mquot #1 = 1 0	802-01-C01-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	Mercury ND		ug/L	0.2	10/05/2024	AB24-1005-01	
Metals by EPA 6020B: CCR Ru	ıle Appendix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	802-01-C01-A02	Analyst: EE	
Parameter(s)	eter(s) Result Flag U		Units	RL	Analysis Date	Tracking	
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01	
Arsenic	495		ug/L	1.0	10/08/2024	AB24-1009-01	
Barium	148		ug/L	5.0	10/08/2024	AB24-1009-01	
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01	
Boron	953		ug/L	20.0	10/08/2024	AB24-1009-01	
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01	
Calcium	58500		ug/L	1000.0	10/08/2024	AB24-1009-01	
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01	
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01	
Copper	ND		ug/L	1.0	10/08/2024	AB24-1009-01	
Iron	763		ug/L	20.0	10/08/2024	AB24-1009-01	
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01	
Lithium	18		ug/L	10.0	10/08/2024	AB24-1009-01	
Magnesium	11600		ug/L	1000.0	10/08/2024	AB24-1009-01	
Manganese	144		ug/L	5.0	10/08/2024	AB24-1009-01	
Molybdenum	10		ug/L	5.0	10/08/2024	AB24-1009-01	
Nickel	ND		ug/L	2.0	10/08/2024	AB24-1009-01	
Potassium	6590		ug/L	100.0	10/08/2024	AB24-1009-01	
Selenium	1		ug/L	1.0	10/08/2024	AB24-1009-01	
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01	
Sodium	130000		ug/L	1000.0	10/08/2024	AB24-1009-01	
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01	
Vanadium	2		ug/L	2.0	10/08/2024	AB24-1009-01	
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01	
Anions by EPA 300.0 Aqueous	s, NO2, NO3			Aliquot #: 24-0	802-01-C02-A01	Analyst: KDF	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	ND		ug/L	100.0	10/04/2024	AB24-1004-02	
Nitrite	ND		ug/L	100.0	10/04/2024	AB24-1004-02	
Anions by EPA 300.0 CCR Rul	e Analyte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	802-01-C02-A02	Analyst: KDF	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	78100		ug/L	1000.0	10/07/2024	AB24-1007-02	



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **24-0802**

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0802-01
 Collect Time:
 08:37 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analy	ons by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0802-01-C02-A02							
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Fluoride	ND		ug/L	1000.0	10/04/2024	AB24-1007-02		
Sulfate	207000		ug/L	1000.0	10/07/2024	AB24-1007-02		
Nitrogen-Ammonia by SM4500NH3(h	en-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0802-01-C03-A0							
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Ammonia	2020		ug/L	25.0	10/09/2024	AB24-1009-03		
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	802-01-C04-A01	Analyst: LMO		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Total Dissolved Solids	624		mg/L	10.0	10/04/2024	AB24-1004-01		
Alkalinity by SM 2320B				Aliquot #: 24-0	802-01-C05-A01	Analyst: DLS		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Alkalinity Total	175000		ug/L	10000.0	10/10/2024	AB24-1010-01		
Alkalinity Bicarbonate	175000		ug/L	10000.0	10/10/2024	AB24-1010-01		
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01		
Sulfide, Total by SM 4500 S2D	ulfide, Total by SM 4500 S2D Aliquot #: 24-0802-01-C07-A0							
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Sulfide	167		ug/L	20.0	10/09/2024	AB24-1007-12		



Report Date:

10/18/24

24-0802



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project:

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0802-02
 Collect Time:
 08:37 AM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueous				Aliquot #: 24-0	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	97.0		%	0.2	10/05/2024	AB24-1005-01	
Metals by EPA 6020B: CCR Rule App	endix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0)802-02-C01-A02	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	103		%	1.0	10/08/2024	AB24-1009-01	
Arsenic	99		%	1.0	10/08/2024	AB24-1009-01	
Barium	105		%	5.0	10/08/2024	AB24-1009-01	
Beryllium	95		%	1.0	10/08/2024	AB24-1009-01	
Boron	110		%	20.0	10/08/2024	AB24-1009-01	
Cadmium	99.9		%	0.2	10/08/2024	AB24-1009-01	
Calcium	101		%	1000.0	10/08/2024	AB24-1009-01	
Chromium	100		%	1.0	10/08/2024	AB24-1009-01	
Cobalt	98		%	6.0	10/08/2024	AB24-1009-01	
Copper	85		%	1.0	10/08/2024	AB24-1009-01	
Iron	113		%	20.0	10/08/2024	AB24-1009-01	
Lead	101		%	1.0	10/08/2024	AB24-1009-01	
Lithium	94		%	10.0	10/08/2024	AB24-1009-01	
Magnesium	102		%	1000.0	10/08/2024	AB24-1009-01	
Manganese	102		%	5.0	10/08/2024	AB24-1009-01	
Molybdenum	112		%	5.0	10/08/2024	AB24-1009-01	
Nickel	92		%	2.0	10/08/2024	AB24-1009-01	
Potassium	101	•		100.0	10/08/2024	AB24-1009-01	
Selenium	111		%	1.0	10/08/2024	AB24-1009-01	
Silver	100		%	0.2	10/08/2024	AB24-1009-01	
Sodium	103		%	1000.0	10/08/2024	AB24-1009-01	
Thallium	100		%	2.0	10/08/2024	AB24-1009-01	
Vanadium	101		%	2.0	10/08/2024	AB24-1009-01	
Zinc	90		%	10.0	10/08/2024	AB24-1009-01	
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 24-0	802-02-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	99		%	100.0	10/04/2024	AB24-1004-02	
Nitrite	100		%	100.0	10/04/2024	AB24-1004-02	
Anions by EPA 300.0 CCR Rule Analy	yte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	802-02-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	104		%	1000.0	10/07/2024	AB24-1007-02	



Analytical Report

Report Date: 10/18/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Laboratory Project: **24-0802**Collect Date: 10/03/2024

Field Sample ID: **DEK-MW-18001 MS**

Collect Time: 08:37 AM

Lab Sample ID: 24-0802-02 Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	93		%	1000.0	10/04/2024	AB24-1007-02
Sulfate	107		%	1000.0	10/07/2024	AB24-1007-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	er HL		Aliquot #: 24-0	802-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	91		%	25.0	10/09/2024	AB24-1009-03
Alkalinity by SM 2320B				Aliquot #: 24-0	802-02-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	98.4		%	10000.0	10/10/2024	AB24-1010-01
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	802-02-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	96		%	20.0	10/09/2024	AB24-1007-12



Report Date:

10/18/24



A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **24-0802**

 Field Sample ID:
 DEK-MW-18001 MSD
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0802-03
 Collect Time:
 08:37 AM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueo		Aliquot #: 24-0	Analyst: CLE				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	98.0		%	0.2	10/05/2024	AB24-1005-01	
Metals by EPA 6020B: CCR Rule App	endix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	0802-03-C01-A02	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	101		%	1.0	10/08/2024	AB24-1009-01	
Arsenic	105		%	1.0	10/08/2024	AB24-1009-01	
Barium	101		%	5.0	10/08/2024	AB24-1009-01	
Beryllium	96		%	1.0	10/08/2024	AB24-1009-01	
Boron	109		%	20.0	10/08/2024	AB24-1009-01	
Cadmium	97.6		%	0.2	10/08/2024	AB24-1009-01	
Calcium	100		%	1000.0	10/08/2024	AB24-1009-01	
Chromium	101		%	1.0	10/08/2024	AB24-1009-01	
Cobalt	100		%	6.0	10/08/2024	AB24-1009-01	
Copper	91		%	1.0	10/08/2024	AB24-1009-01	
Iron	96		%	20.0	10/08/2024	AB24-1009-01	
Lead	101		%	1.0	10/08/2024	AB24-1009-01	
Lithium	94		%	10.0	10/08/2024	AB24-1009-01	
Magnesium	103		%	1000.0	10/08/2024	AB24-1009-01	
Manganese	98		%	5.0	10/08/2024	AB24-1009-01	
Molybdenum	111		%	5.0	10/08/2024	AB24-1009-01	
Nickel	94		%	2.0	10/08/2024	AB24-1009-01	
Potassium	101			100.0	10/08/2024	AB24-1009-01	
Selenium	112		%	1.0	10/08/2024	AB24-1009-01	
Silver	97.8		%	0.2	10/08/2024	AB24-1009-01	
Sodium	105		%	1000.0	10/08/2024	AB24-1009-01	
Thallium	100		%	2.0	10/08/2024	AB24-1009-01	
Vanadium	102		%	2.0	10/08/2024	AB24-1009-01	
Zinc	96		%	10.0	10/08/2024	AB24-1009-01	
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 24-0	802-03-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	94		%	100.0	10/04/2024	AB24-1004-02	
Nitrite	98		%	100.0	10/04/2024	AB24-1004-02	
Anions by EPA 300.0 CCR Rule Analy	yte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	802-03-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	104		%	1000.0	10/07/2024	AB24-1007-02	



Analytical Report

Report Date: 10/18/24

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Laboratory Project: 24-0802

Field Sample ID: DEK-MW-18001 MSD Collect Date: 10/03/2024 Lab Sample ID: 24-0802-03 Collect Time: 08:37 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	SO4, Aqu	ueous	Aliquot #: 24-0	802-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	93		%	1000.0	10/04/2024	AB24-1007-02
Sulfate	106		%	1000.0	10/07/2024	AB24-1007-02
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	er HL		Aliquot #: 24-0	802-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	91		%	25.0	10/09/2024	AB24-1009-03
Alkalinity by SM 2320B				Aliquot #: 24-0	802-03-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	97.9		%	10000.0	10/10/2024	AB24-1010-01
Sulfide, Total by SM 4500 S2D				Aliquot #: 24-0	802-03-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	94		%	20.0	10/09/2024	AB24-1007-12



Analytical Report

Report Date: 10/18/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS **ENERGY**

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 **REVISION 5** ATTACHMENT A

			on Date: 10-03-24		
ple Origin/Project Name:	24-	2024 06	EK BAP+LI		
oment Delivered By: Enter	r the type of	shipment carr	ier.		
Inter-Company Mail_		FedEx	UPS	USPS _	
Tracking Number:			UPSOther/Carry In (whom	TRC	
oping Containers: Enter th	ne type and r	number of ship	ping containers received.		
Cooler	Cardboard Bo	ox	Custom Case	Envelope/M	lailer
Loose/Unpackaged Co	ontainers		Other		
dition of Shipment: Enter	the as-recei	ved condition	of the shipment container.		
Damaged Shipment Ol	bserved: No	one	Dented	Leak	ing
Other					
oment Security: Enter if a	ny of the shi	pping containe	ers were opened before rece	ipt.	
-			Sealed	-	
losed Documents: Enter the			-		
CoC Wor	rk Request _		Air Data Sheet	Other	
perature of Containers: N	Measure the	temperature of	f several sample containers.		
	ture Range	4.9-5.8	°C Samples Receive	ed on Ice: Yes	/ No
As-Received Tempera	turo rumgo_				
M&TE # and Expiration	on LS 02	<u> </u>	6-17-25		
M&TE # and Expiration	on LS 02	<u> </u>	tal number of sample contai	ners received.	
M&TE # and Expiration Type of Contain Container Type	on <u>US ox</u> ers: Enter t <u>Water</u>	<u> </u>	6-17-25		<u>Leaking</u>
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Opt.)	on <u>US ox</u> ers: Enter t <u>Water</u>	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Oppl.) Quart/Liter (g/p)	ers: Enter t Water	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Opt) Quart/Liter (g/p) 9-oz (amber glass jar)	ers: Enter t Water	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Optl) Quart/Liter (g/p) 9-oz (amber glass)	ers: Enter t Water	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Opt.) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic)	ers: Enter t Water 6 12	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Optl) Quart/Liter (g/p) 9-oz (amber glass)	ers: Enter t Water 6	7723 / o	tal number of sample contai	ners received.	
M&TE # and Expiration nber and Type of Contain Container Type VOA (40mL or Opt.) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic)	ers: Enter t Water 6 12	7723 / o	tal number of sample contai	ners received.	

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page	of I	
1 450 _		_

SAMPL	ING SITE / CI	JSTOMER:			PROJECT NUMBER:	SAP CC or W	/O#:							ANALYSIS REQUESTED OA RECUIRE				0.0000000000000000000000000000000000000			
Q4-202	4 DEK Botto	m Ash Pond	& Lined Impo	ound.	24-0802	REQUESTER	R: Haro	ld I	Regi	ister									is Need		QA REQUIREMENT:
SAMPL	ING TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD		OUND TIME REQUIRED: □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER														□ NPDES ⊠ TNI
SEND	REPORT TO:	Joseph Firl	it		email: phone:								1								□ ISO 17025
C	OPY TO:	Harold Reg	gister		MATRIX CODES: GW = Groundwater OX = Other			C	ONT	AIN	VER	S	1								☐ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air		16	I	PRES	SER	VA7	IVE	als								☐ INTERNAL INFO
	LAB	SAMPLE CO	LLECTION	RIX	S = Soil / General Solid WP = Wip	e eral Waste	AL#			2.		Ξ.	Total Metals	suc	Ammonia		Alkalinity	de			□ OTHER
SAN	MPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TION 2		TOTAL None HNO3 H2SO4 NaOH HCI MeOH Other		Tota	Anions	Amı	TDS	Alka	Sulfide			REMARKS		
24	-0802-01	10/3/24	0837	GW	DEK-MW-18001		7	4	1	1	1		x	x	x	x	x	x			
	-02	4 11	0837	GW	DEK-MW-18001 MS		6	3	1	1	1		X.	x	x		x	x			
	-03	1111	0837	GW	DEK-MW-18001 MSD		6	3	1	1	1		х	x	X		х	х			
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PEI DIO	WALLED DI			A TELE	TO UT	EGENTED DIT								100	, Imo						
RELINQ	UISHED BY:	1		ATE/	13 40	CECEIVED BY:	1/1	1	5	X	0			MME							
RELINO	UISHED BY:			DATE/		eteleven by	100						Re	ceived npera	on Io	e? [4.4	Yes	8 °C	No 1	M&TE Cal. Du	#: LS 0271 23 e Date: 06-27-24 EG 100:



Report ID: S67051.01(01) Generated on 10/10/2024

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S67051.01-S67051.03

Project: 24-0802 PR#24101038 Collected Date(s): 10/03/2024

Submitted Date/Time: 10/04/2024 14:46

Sampled by: Unknown P.O. #: 4400121437

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Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit https://www.meritlabs.com/certifications.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:201	7 #69699 PJLA Testing
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Description

Qualifier

!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
Χ	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
0	Associated EIS outside of control limits
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
q	Qualifier ion ratio outside of control limits
X	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4500 S2 D 2011



Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S67051.01	DEK-MW-18001 (24-0802-01)	Groundwater	10/03/24 08:37
S67051.02	DEK-MW-18001 Field MS (24-0802-02)	Groundwater	10/03/24 08:37
S67051.03	DEK-MW-18001 Field MSD (24-0802-03)	Groundwater	10/03/24 08:37



Lab Sample ID: S67051.01

Sample Tag: DEK-MW-18001 (24-0802-01) Collected Date/Time: 10/03/2024 08:37

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 18:52, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.167	0.02		ma/L	1	18496-25-8	



Lab Sample ID: S67051.02

Sample Tag: DEK-MW-18001 Field MS (24-0802-02)

Collected Date/Time: 10/03/2024 08:37

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 19:11, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.360	0.02		ma/L	1	18496-25-8	1

1-*Sample Spiked @ 0.200ppm level



Lab Sample ID: S67051.03

Sample Tag: DEK-MW-18001 Field MSD (24-0802-03)

Collected Date/Time: 10/03/2024 08:37

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	3.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/09/24 19:09, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.356	0.02		ma/L	1	18496-25-8	1

1-*Sample Spiked @ 0.200ppm level

Merit Laboratories Login Checklist

Lab Set ID:S67051

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0802 PR#24101038

Submitted: 10/04/2024 14:46 Login User: MMC

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selection			Description	Note	
Samp	ole Recei	/ing			
01.	X Yes	No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.1
02.	X Yes	☐ No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chaiı	n of Custo	ody			
06.	X Yes	☐ No	N/A	COC adequately filled out	
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	No	N/A	Sample tag on bottles match COC	
09.	Yes	X No	N/A	Subcontracting needed? Subcontacted to:	
Prese	ervation				
10.	X Yes	No	N/A	Do sample have correct chemical preservation	
11.	X Yes	No	N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottle	e Conditi	ons			
13.	X Yes	No	N/A	All bottles intact	
14.	X Yes	No	N/A	Appropriate analytical bottles are used	
15.	Yes	X No	N/A	Merit bottles used	
16.	X Yes	No	N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC, TOX, DO or Alkalinity bottles contain	
Corre	ective acti	on for all	exceptions	is to call the client and to notify the project manager.	
Clien	t Review	Ву:		Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S67051 Submitted: 10/04/2024 14:46

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0802 PR#24101038

Initial Preservation Check: 10/04/2024 15:42 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S67051.01	125mL Plastic NaOH/Zn Acetate	>12			
S67051.02	125mL Plastic NaOH/Zn Acetate	>12			
S67051.03	125mL Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

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C.O.C. PAGE	#	1	_OF_	1

REPOR		,	Laboratories, Inc.	CHAIN	OF	CL	IST	OD	YR	EC	O	RD					INVOI	CE TO
CONTACT NAME E	mil Blaj							CONTACT NAME SAME										
COMPANY Cons	sumers E	energy						COMPANY										
ADDRESS 135 V	V. Trail S	Street						ADDRESS										
Jackson Jackson				STATE MI ZIP	CODE 4	920	1	СПҮ								STATE	ZIP CODE	
PHONE NO. 517-	788-5888	ĺ	FAX NO. 517-788-2533	P.O. NO. 4400121	437		1	PHONE	E NO.				E-N	MAIL ADDRESS				
-MAIL ADDRESS	emil.blaj(acmsen		QUOTE NO.			٦i					ANAL	YSIS (AT	TACH LIST IF	MORE SPA	CE IS REQUI	RED)	
PROJECT NO./NAM				SAMPLER(S) - PLEASE P	RINT/SIG	BN NA	ME			_	T/A					Certifica	-	
			□1 DAY □2 DAYS □3 D	AVE METANIDADD	Пот	JED				P	I/A					□оню ч	/AP Drin	king Wate
			TD X LEVEL II LEVEL III													□D ₀ D	□NPD	ES
	SW=GROUN		WW=WASTEWATER S=S		D=SOLI	_	1	# 00	ntaine	nrn 9		Sulfide				Project I	ocations	
	SL=SLUDG				W=WAS		L.		serval							Detroit	New	York
MERIT LAB NO.		AR	SAMPLE TAG IDENTIFICATION-DESCRIPTION			# OF BOTTLES	NONE	END HO	H,50.	MaOH	OTHER	Total				Other	lanta settem -	
FOR LAB USE ONLY	DATE 10/03/24	0837	DEK-MW-18001 (24-0802-01)			1	Z	1	I	2 2	O	1					with NaOH/	
7051.01 .07	10/03/24		DEK-MW-18001 (24-0802-01) DEK-MW-18001 Field MS (24-0802-02)			1	Н	+	+	+	H	/	-	++		n	with NaOTE	ZiiAcciai
·UL					GW	-	Н	+	1	1	H	/				-		
.()3	10/03/24	0037	DEK-MW-18001 Field	M3D (24-0802-03)	1	1	Н	+	+	+	H	V	+			Dlease eni	ke MS/MSD	and renor
					+		Н	+	$^{+}$	+	H					-	centration a	
					+		Н		+	+	Н			++		spike coi	icentration a	nd/or rec
					+		H	+	+	+	Н					+		
					+		Н	+	H	+	H					+		
					+		H		H	+	H					-		
					+		Н	+	H	+	Н	+	-			+		
					+	-	H	+	H	+	H	+	-			+		
					+		H	+	H	+	H		+			-		
				Do-V.			Ц			L	П							
RELINQUISHED BY SIGNATURE/ORGA		A.	ONSUMERS ENERGY	10-04- 24	14		1	SIGNA	QUISH!	ORGA		TION					DATE	TIME
RECEIVED BY: SIGNATURE/ORGA	ANIZATION	10	Laure Mur	racy 10/4/2	24 /	IME 446			VED BY		NIZA	TION					DATE	TIME
RELINQUISHED BY SIGNATURE/ORGA		/		DATE	1	IME	41	SEAL				SEAL INT	NOD	INITIALS	NOTES:	TEMP, O	N ARRIVAL	
RECEIVED BY: SIGNATURE/ORGA	ANIZATION			DATE	1	IME	1	SEAL	NO.			SEAL INT		INITIALS			3.1	

ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 10/30/2024 5:59:02 PM

JOB DESCRIPTION

Karn/Weadock CCR DEK Bottom Ash Pond

JOB NUMBER

240-212372-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203

Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

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Definitions/Glossary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

Qualifiers

F	₹	а	d

Qualifier Qualifier Description

U Result is less than the sample detection limit.

Glossary Abbreviation

\tilde{\pi}	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid

CFL Contains Free Liquid
CFU Colony Forming Unit
CNF Contains No Free Liquid

DER Duplicate Error Ratio (normalized absolute difference)

Dil Fac Dilution Factor

DL Detection Limit (DoD/DOE)

DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample

These commonly used abbreviations may or may not be present in this report.

DLC Decision Level Concentration (Radiochemistry)

EDL Estimated Detection Limit (Dioxin)

LOD Limit of Detection (DoD/DOE)

LOQ Limit of Quantitation (DoD/DOE)

MCL EPA recommended "Maximum Contaminant Level"

MDA Minimum Detectable Activity (Radiochemistry)

MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit
ML Minimum Level (Dioxin)
MPN Most Probable Number
MQL Method Quantitation Limit

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

NEG Negative / Absent
POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive
QC Quality Control

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin)
TEQ Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

Eurofins Cleveland

Case Narrative

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1 Eurofins Cleveland

Job Narrative 240-212372-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these
 situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise
 specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The sample was received on 10/4/2024 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.1°C and 1.5°C.

Gas Flow Proportional Counter

Method 903.0: Radium 226 Batch 682572

160-682572

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL DEK-MW-18001 (240-212372-1), (240-212371-A-8-A) and (240-212371-B-8-C DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Rad

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cleveland

Job ID: 240-212372-1

Page 5 of 19 10/30/2024

Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep 0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212372-1

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Sample Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212372-1	DEK-MW-18001	Water	10/03/24 08:37	10/04/24 08:00

Job ID: 240-212372-1

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Client Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-18001

Date Received: 10/04/24 08:00

Date Collected: 10/03/24 08:37

Lab Sample ID: 240-212372-1

Matrix: Water

Job ID: 240-212372-1

Method: EPA 903.0	- Radium-226	(GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.353		0.119	0.123	1.00	0.115	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					10/08/24 08:27	10/25/24 09:24	1
=										

Ba Carrier	87.6		30 - 110					10/08/24 08:27	10/25/24 09:24	7
Method: EPA 904.0	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.774		0.420	0.426	1.00	0.599	pCi/L	10/08/24 08:29	10/17/24 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110					10/08/24 08:29	10/17/24 14:10	1
Y Carrier	79.6		30 - 110					10/08/24 08:29	10/17/24 14:10	1

Method: TAL-STL Ra	226_Ra228	- Combined	Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.13		0.437	0.443	5.00	0.599	pCi/L		10/30/24 15:56	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

		Percent Yield (Acceptance Limits)						
		Ва						
Lab Sample ID	Client Sample ID	(30-110)						
240-212372-1	DEK-MW-18001	87.6						
LCS 160-682572/2-A	Lab Control Sample	92.5						
MB 160-682572/1-A	Method Blank	87.6						
Tracer/Carrier Legend								
Ba = Ba Carrier								

Method: 904.0 - Radium-228 (GFPC)

Y = Y Carrier

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-212372-1	DEK-MW-18001	87.6	79.6	
LCS 160-682573/2-A	Lab Control Sample	92.5	81.9	
MB 160-682573/1-A	Method Blank	87.6	78.5	
Tracer/Carrier Legend				
Ba = Ba Carrier				

Eurofins Cleveland

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-682572/1-A Client Sample ID: Method Blank

Total

Count

Matrix: Water

Analysis Batch: 685116

Prep Type: Total/NA

Prep Batch: 682572

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ (2σ+/-) RL MDC Unit Prepared Analyzed Dil Fac Radium-226 0.01844 U 0.0601 0.0602 1.00 0.115 pCi/L 10/08/24 08:27 10/25/24 09:24

MB

Qualifier Limits Prepared Dil Fac Carrier %Yield Analyzed Ba Carrier 87.6 30 - 110 10/08/24 08:27 10/25/24 09:24

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 682572

Total %Rec LCS LCS Spike Uncert. Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 1.00 9.58 10.06 1.06 0.123 pCi/L 105 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 92.5 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: LCS 160-682572/2-A

Lab Sample ID: MB 160-682573/1-A Client Sample ID: Method Blank

Matrix: Water

Matrix: Water

Analysis Batch: 685116

Analysis Batch: 683951

Prep Type: Total/NA

Prep Batch: 682573

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ (2σ+/-) RL MDC Unit Prepared Analyzed Dil Fac Radium-228 U 0.294 0.294 1.00 10/08/24 08:29 10/17/24 14:12 0.05134 0.542 pCi/L MB MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 87.6 30 - 110 10/08/24 08:29 10/17/24 14:12 30 - 110 10/08/24 08:29 10/17/24 14:12 Y Carrier 78.5

Lab Sample ID: LCS 160-682573/2-A Client Sample ID: Lab Control Sample

Matrix: Water Prep Type: Total/NA Analysis Batch: 683951 Prep Batch: 682573

Total LCS LCS %Rec Spike Uncert.

Analyte Added Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits 1.00 Radium-228 8.42 10.09 1.36 0.548 pCi/L 120 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 92.5 30 - 110 Y Carrier 81.9 30 - 110

Eurofins Cleveland

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

Rad

Prep Batch: 682572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212372-1	DEK-MW-18001	Total/NA	Water	PrecSep STD	
MB 160-682572/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-682572/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 682573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212372-1	DEK-MW-18001	Total/NA	Water	PrecSep_0	· ———
MB 160-682573/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-682573/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Client Sample ID: DEK-MW-18001 Lab Sample ID: 240-212372-1

Date Collected: 10/03/24 08:37 Matrix: Water

Date Received: 10/04/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:10
Total/NA	Analysis	Ra226_Ra228		1	686003	FLC	EET SL	10/30/24 15:56

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212372-1

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-25
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-25
HI - RadChem Recognition	State	n/a	06-30-25
Illinois	NELAP	200023	11-30-25
lowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-25
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-25
Massachusetts	State	M-MO054	06-30-25
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-25
New Jersey	NELAP	MO002	06-30-25
New Mexico	State	MO00054	06-30-25
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-25
North Dakota	State	R-207	12-31-24
Oregon	NELAP	4157	09-01-25
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-25
Texas	NELAP	T104704193	07-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-25
Virginia	NELAP	460230	06-14-25
Washington	State	C592	08-30-25
West Virginia DEP	State	381	10-31-25

Job ID: 240-212372-1

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 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Eurofins Cleveland

Eurofins Cleveland

180 S. Van Buren Avenue

Chain of Custody Record Barberton, OH 44203



eurofins

Environment Testing

Phone: 330-497-9396 Fax: 330-497-0772											- 4	30							
Client Information	Sampler:	JK	1550	Lab Bro	PM: oks, K	(ris N	4				Car	rier Trackir	ng No(s):			OC No: 40-124393-29(053.1		
Client Contact: Jacob Krenz	Phone:	243	310	E-M Kris		ks@	et.eurc	finsus.	com		Sta	te of Origin	:			age: age 1 of 1			
Company: TRC Environmental Corporation.			PWSID:						Analy	/sis F	Reque	sted			Jo	ob #:			
Address: 1540 Eisenhower Place	Due Date Request	ed:	•												P	reservation Co	des:		٦
City: Ann Arbor	TAT Requested (d	ays):		_	ш														
State, Zip: MI, 48108-7080	Compliance Proje	ct: A Yes	ΔNo		ш	ı								11					
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO #: 215951				Ш	1													
Email: JKrenz@trccompanies.com	WO #: 553814.0001				Or No)														
Project Name: Karn/Weadock CCR DEK Bottom Ash Pond & I	Project #: 24024154				(Yes	٥	is i								containers				
Site:	SSOW#:				ample	0 (Ye	Targel						-		of con	ther:			
Sample Identification	Sample Date	Sample Time		Matrix (W=water, 3=solid, 0=waste/oil, 8T=Tissue, A=Ale	Field Filtered S	Perform MS/MSD (Yes or No)									Total Number o	Special Ir	nstruction	ns/Note:	
DEK-MW-18001				tion Code:	Y	×ρ	D		+						<u> </u>				-
DEN-10001	10/3/24	ce57	6	Water	14	41	7		_	\vdash	-		++	-	2				4
				Water	++	+	+		-	Н		++	++	\perp					_
	-				11	4-				Ш			\perp				_		
					11	_	1						\perp	\perp			_		
					Ш	\perp									1	1000	-		
					Ш					Ш						65	Coc		
																_ ^2	2312		
																240			
					П												-		
					П					П									
Possible Hazard Identification	r in				s	amp	le Dis	posal (A fee	may b	e asse	ssed if	samples	are reta	ined	longer than :	month)		П
Non-Hazard Flammable Skin Irritant Pois Deliverable Requested: I, II, III, IV, Other (specify)	son B Unkn	own 🗀 I	Radiological					n To Cl				osal By L	.ab	L Ar	chive	For	Month	าร	_
Empty Kit Relinquished by:		Date:					ui iiioti	0000110		oquii ci	nonto.	District	of Chiama	-4-					_
Religionershed by:	Date/Time;	<u> </u>		Company	Lime		eceived I	bv:			_	Method	Date/Ti				Company		_
Relinquished by:	101364	1440			•			20			111		Date/Ti	1-1-1	u	1445	Company		
	Date/Time: 10/3/24	1500		Company		Re	eceived I	by:				•	Date/TI	me/-2	2	800	Company	<u>`</u>	
Relinquished by:	Date/Time:			Company		Re	eceived i	by:	1	11			Date/Ti	me:			Company	,	
Custody Seals Intact: Custody Seal No.: Δ Yes Δ No						C	ooler Ter	mperatur	é(s)°C a	nd Othe	r Remar	ks:							

	VOA Sample Preservation - Date/Time VOAs Frozen.
	Sample(s) were nurther preserved in the laboratory Time preservedPreservative(s) added/Lot number(s):
	20. SAMPLE PRESERVATION
	Sample(s) Were received with buodic >0 mm in diameter (inothly rivi)
	19 SAMPLE CONDITION were received after the recommended holding time had expired
	18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
	Concerning
	Contacted PM Date by via Verbal Voice Mail Other
	Was a LL Hg or Me Hg trip blank present?
	15 Were air bubbles >6 mm in any VOA vials? Larger than this. Yes NO NA 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes NO
	n upon receipt:
	If yes, Questions 13-17 have been checked at the originating laboratory
·	. ~
	For each sample, does the COC specify preservatives (MN), # of containers (MN), and sample,
	Did all bottles arrive in good condition (Unbroken)?
	6 Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
	Did custody papers accompany the sample(s)?
•	Shippers' packing slip attached to the cooler(s)? Yes Mo
	(LLHg/MeHg)? Yes No
	IR GUN # // (CF 0'/ °C) Observed Cooler Temp°
	e upon receipt
	Packing material used. But log Foam Pastic Bag None Oner COOLANT (Wet Ice) Blue Ice Dry Ice Water None
	×
	Storage Location
	FAS Waypoint Client Drop C
	Client M (EAV (O)) Site Name Cooler impacked by
T	
	Burofins - Cleveland Sample: Receipt Form/Narrative Login# :-

Page 15 of 19

Color Description (R Gun# Observed Corrected Colorated	Wet Ice Blue Ice Dry Ic	A COMMAND AND A COMMAND A COMMAND AND A COMMAND AND A COMMAND AND A COMMAND AND A COMM		IR GUN #:	Other	Box	Client	# T
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	Coolant (Circle)	Corrected Temp °C	Observed Temp °C	IR Gun # (Circle)	ption)escri ircle)	ooler E (C	Ç

Login Container Summary Report

240-212372

10/30/2024

10/4/2024

Cooler Temperature(s) °C and Other Remarks:

Eurofins Cleveland

180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772	Cha	in of	hain of Custody Record	ody R	ecol	p								💸 eurofins	ofins	Environment Testing	0.0
	Sampler			Lab PM	3			1		2	arrier Trac	Carrier Tracking No(s)		COC No.			Г
Client Information (Sub Contract Lab)	i			Broo	Brooks, Kris M									240-191635.1	1635.1		
Shipping/Receiving	Phone			E-Mail Kris B	E-Mail: Kris.Brooks@et.eurofinsus.com	et.eu	rofinsu	S.COM		in ≥	State of Origin	gin:		Page:	1		Т
Company: TestAmerica Laboratories, Inc.					Accreditations Required (See note)	ions Re	quired (See note		1				# qof	5		7
Address: 13715 Rider Trail North	Due Date Requested:							,		1.				240-212372-1 Preservation C	240-212372-1 Preservation Codes		\top
City:	TAT Requested (days):					\vdash		Ana	SIS		Analysis Requested	+					
State Zip State Zip MO, 63045					100												
Phone 314-298-8566(Tel) 314-298-8757(Fax)	PO#																
	#OM				_												
Project Name Karn/Weadock CCR Groundwater Monitoring	Project #: 24024154													znonisi			
Site:	**MOSS													Moon in			
				Matrix (Wwater, Sesolid, Owweste/oil,	2 benefit?, ble Siran amoth	3.0/PrecSep_5 4.0/PrecSep_0								o nacimalist list			
Sample Identification - Cilent ID (Lab ID)	Sample Date Ti	Time	G=grab) 81=Theue, A=A	BT=Tissue, A=Air)	4	- 10	-								pecial In	Special Instructions/Note:	N
TOTAL ADDRESS AND ASSESSMENT ASSESSMENT AND ASSESSMENT ASSESSMENT AND ASSESSMENT	1	08:37	in in in in in in in in in in in in in i	- Annah	1									X			1
UE I -MW-18001 (240-2123/2-1)	10/3/24 Eas	Eastern	ŋ	Water		×	×							TVA pro	ocol - Ra-	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
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Note. Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/hests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC	ent Testing North Central, LLC above for analysis/tests/matrix lentral, LLC attention immediate	places the ov being analyze	mership of m ad, the sampl sested accred	ethod, analy es must be s itations are	te & accre hipped ba current to	ditation ck to the	compliar e Eurofir turn the	nce upon is Enviro	our sub ument To	contract seting No ustody a	laboratori orth Centr ttesting to	es. This al, LLC la	sample shi boratory or ipliance to	oment is forwarde other instructions Eurofins Environs	d under cha will be provent	in-of-custody. If the rided. Any changes to North Central, LLC.	1
Possible Hazard Identification					Sam	ole Dis	sposal	(A fee	may	e ass	i pesse	fsamol	es are r	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	r than 1	nonthi	_
Unconfirmed					<u></u>] Retur	Return To Client	lient	Ü	\Box_{Disi}	Disposal Bv Lab	Lab		Archive For		Months	-
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank:	ank: 2			Spec	al Inst	ruction	Special Instructions/QC Requirements	equire	ments						Simon	1
Empty Kit Relinquished by:	Date:				Time:						Metho	Method of Shipment:	ent:				_
Relinquished by MLISSA LOAR	DateO	2	Com	Company	œ	Received by	Jerra		9	3	W. Jecthinston	Date	Date/Time:	0836		Company	_
Relinquished by	Dath/Lips		Com	Company	œ	Received by	þý					Date	Date/Time:	<u>}</u>			_

inquished by.

Custody Seal No.:

Custody Seals Intact:

Login Sample Receipt Checklist

Client: TRC Environmental Corporation. Job Number: 240-212372-1

Login Number: 212372 List Source: Eurofins St. Louis List Number: 2 List Creation: 10/07/24 12:24 PM

Creator: Forrest Chevenne I

Creator: Forrest, Cheyenne L		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
s the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q4

CC: HDRegister, P22-521 Darby Litz, Project Manager

TRC Companies, Inc. 1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 24-0805

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 10/01/2024 for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/03/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj Sr. Technical Analyst Project Lead



Testing performed in accordance with the A2LA scope of accredidation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q4-2024 DEK-JCW Background Wells

Date Received: 10/3/2024 **Chemistry Project:** 24-0805

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
24-0805-01	MW-15002	Groundwater	10/03/2024 07:00	DEK JCW Background
24-0805-02	MW-15008	Groundwater	10/02/2024 14:05	DEK JCW Background
24-0805-03	MW-15016	Groundwater	10/03/2024 06:05	DEK JCW Background
24-0805-04	MW-15019	Groundwater	10/02/2024 14:52	DEK JCW Background
24-0805-05	DUP-Background	Groundwater	10/02/2024 00:00	DEK JCW Background
24-0805-06	FB- Background	Water	10/03/2024 07:25	DEK JCW Background



Report Date:

10/18/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0805**

 Field Sample ID:
 MW-15002
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0805-01
 Collect Time:
 07:00 AM

Mercury by EPA 7470A, Total, Aqueous	3		Aliquot #: 24-0	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Apper	ndix III-IV Tot	al Metals	з Ехр	Aliquot #: 24-0	805-01-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	885		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	223		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	269000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	3		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	28900		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	24		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	6		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	18		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Anions by EPA 300.0 CCR Rule Analyte	e List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	805-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	3020000		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	35400		ug/L	1000.0	10/08/2024	AB24-1007-05
Total Dissolved Solids by SM 2540C				Aliguot #: 24-0	805-01-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	5620	-	mg/L	10.0	10/07/2024	AB24-1007-04





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Count on Us®

All allytical Report Seport Date: 10/18/24

Sample Site: **DEK JCW Background** Laboratory Project: **24-0805**

 Field Sample ID:
 MW-15008
 Collect Date:
 10/02/2024

 Lab Sample ID:
 24-0805-02
 Collect Time:
 02:05 PM

Mercury by EPA 7470A, Total, Aqueou	s		Aliquot #: 24-0	805-02-C01-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Appe	ndix III-IV To	otal Metals	s Exp	Aliquot #: 24-0	0805-02-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	71		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	129		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	94200		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	10		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	12800		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	15		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	2		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	11		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Anions by EPA 300.0 CCR Rule Analyt	te List, CI, F,	SO4, Aqı	ueous	Aliquot #: 24-0)805-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	423000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	2380		ug/L	1000.0	10/08/2024	AB24-1007-05
Total Dissolved Solids by SM 2540C				Aliguot #: 24-0	0805-02-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
. ,		ı iag			_	_
Total Dissolved Solids	1030		mg/L	10.0	10/04/2024	AB24-1004-01



Report Date:

10/18/24



A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0805**

 Field Sample ID:
 MW-15016
 Collect Date:
 10/03/2024

 Lab Sample ID:
 24-0805-03
 Collect Time:
 06:05 AM

Mercury by EPA 7470A, Total, Aqueous		Aliquot #: 24-0	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Apper	ndix III-IV Tot	al Metals	з Ехр	Aliquot #: 24-0	805-03-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	23		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	219		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	610		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	260000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	2		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	20500		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	34		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	8		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	3		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Anions by EPA 300.0 CCR Rule Analyte	List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	805-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	214000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	129000		ug/L	1000.0	10/08/2024	AB24-1007-05
Total Dissolved Solids by SM 2540C				Aliguot #: 24-0	805-03-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1300	_	mg/L	10.0	10/04/2024	AB24-1004-01





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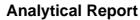
All allytical Report Seport Date: 10/18/24

Sample Site: **DEK JCW Background** Laboratory Project: **24-0805**

 Field Sample ID:
 MW-15019
 Collect Date:
 10/02/2024

 Lab Sample ID:
 24-0805-04
 Collect Time:
 02:52 PM

Parameter(s) Result Flag Units QL Analysis Date Tracking Mercury ND ug/L 0.2 10/05/2024 AB24-1005-01 Metals by EPA 6020B: CCR Rule Appendix III-IV Total Betals Experimentals Aliquot #: 2±55-04-C01-A02 Analysis EB Parameter(s) Result Flag Units RL Analysis Date Tracking Antimony ND ug/L 1.0 10/14/2024 AB24-1014-02 Arsenic ND ug/L 1.0 10/14/2024 AB24-1014-02 Barium 337 ug/L 1.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 2.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 0.2 10/14/2024 AB24-1014-02 Cadmium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cadrium 184000 ug/L 1.0 10/14/2024 AB24-1014-02 Cadrium ND ug/L 1.0 10/14/2024 AB24-10	Mercury by EPA 7470A, Total, Aqueou	s		Aliquot #: 24-0	805-04-C01-A01	Analyst: CLE	
Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0805-04-C01-A02 Analyst: EB Parameter(s) Result Flag Units RL Analysis Date Tracking Antimony ND ug/L 1.0 10/14/2024 AB24-1014-02 Arsenic ND ug/L 5.0 10/14/2024 AB24-1014-02 Barium 337 ug/L 5.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 2.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 2.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 1.0 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 1.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 1.0 10/14/2024 AB24-1014-02 <td< th=""><th>Parameter(s)</th><th>Result</th><th>Flag</th><th>Units</th><th>RL</th><th>Analysis Date</th><th>Tracking</th></td<>	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Parameter(s) Result Flag Units RL Analysis Date Tracking Antimony ND ug/L 1.0 10/14/2024 AB24-1014-02 Arsenic ND ug/L 1.0 10/14/2024 AB24-1014-02 Barium 337 ug/L 5.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 1.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1.00 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 1.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Libium <td>Mercury</td> <td>ND</td> <td></td> <td>ug/L</td> <td>0.2</td> <td>10/05/2024</td> <td>AB24-1005-01</td>	Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Antimony ND ug/L 1.0 10/14/2024 AB24-1014-02 Arsenic ND ug/L 1.0 10/14/2024 AB24-1014-02 Barium 337 ug/L 5.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 1.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Iron 190409	Metals by EPA 6020B: CCR Rule Appe	ndix III-IV To	tal Metal	s Exp	Aliquot #: 24-0	9805-04-C01-A02	Analyst: EB
Arsenic ND ug/L 1.0 10/14/2024 AB24-1014-02 Barium 337 ug/L 5.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 1.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadrium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 6.0 10/14/2024 AB24-1014-02 Coper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 1.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 2.0 10/14/2024 AB24-1014-02 Silver ND	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Barium 337 ug/L 5.0 10/14/2024 AB24-1014-02 Beryllium ND ug/L 1.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 1.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4	Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Beryllium ND ug/L 1.0 10/14/2024 AB24-1014-02 Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lead ND ug/L	Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron 276 ug/L 20.0 10/14/2024 AB24-1014-02 Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/	Barium	337		ug/L	5.0	10/14/2024	AB24-1014-02
Cadmium ND ug/L 0.2 10/14/2024 AB24-1014-02 Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 1.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND	Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Calcium 184000 ug/L 1000.0 10/14/2024 AB24-1014-02 Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Mickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3	Boron	276		ug/L	20.0	10/14/2024	AB24-1014-02
Chromium ND ug/L 1.0 10/14/2024 AB24-1014-02 Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List,	Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Cobalt ND ug/L 6.0 10/14/2024 AB24-1014-02 Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Mickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI,	Calcium	184000		ug/L	1000.0	10/14/2024	AB24-1014-02
Copper 3 ug/L 1.0 10/14/2024 AB24-1014-02 Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 AB24-1014-02 Ladd ND ug/L 1.0 10/14/2024 AB24-1014-02 AB24-1014-02 Ladd ND ug/L 1.0 10/14/2024 AB24-1014-02 AB24-	Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Iron 19000 ug/L 20.0 10/14/2024 AB24-1014-02 Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Au=vus Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Ug/L 1000.0 10/08/2024 AB24-1007-05 <td< td=""><td>Cobalt</td><td>ND</td><td></td><td>ug/L</td><td>6.0</td><td>10/14/2024</td><td>AB24-1014-02</td></td<>	Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Lead ND ug/L 1.0 10/14/2024 AB24-1014-02 Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05	Copper	3		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium 13 ug/L 10.0 10/14/2024 AB24-1014-02 Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units R Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05	Iron	19000		ug/L	20.0	10/14/2024	AB24-1014-02
Molybdenum ND ug/L 5.0 10/14/2024 AB24-1014-02 Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-005-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 <td>Lead</td> <td>ND</td> <td></td> <td>ug/L</td> <td>1.0</td> <td>10/14/2024</td> <td>AB24-1014-02</td>	Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Nickel 4 ug/L 2.0 10/14/2024 AB24-1014-02 Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-005-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05	Lithium	13		ug/L	10.0	10/14/2024	AB24-1014-02
Selenium ND ug/L 1.0 10/14/2024 AB24-1014-02 Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Silver ND ug/L 0.2 10/14/2024 AB24-1014-02 Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Nickel	4		ug/L	2.0	10/14/2024	AB24-1014-02
Thallium ND ug/L 2.0 10/14/2024 AB24-1014-02 Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C	Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Vanadium 3 ug/L 2.0 10/14/2024 AB24-1014-02 Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Zinc ND ug/L 10.0 10/14/2024 AB24-1014-02 Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analysi: KDR Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Vanadium	3		ug/L	2.0	10/14/2024	AB24-1014-02
Parameter(s) Result Flag Units RL Analysis Date Tracking Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Chloride 365000 ug/L 1000.0 10/08/2024 AB24-1007-05 Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0)805-04-C02-A01	Analyst: KDR
Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride ND ug/L 1000.0 10/08/2024 AB24-1007-05 Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO	Chloride	365000		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate 121000 ug/L 1000.0 10/08/2024 AB24-1007-05 Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO				-			
				-			
	Total Dissolved Solids by SM 2540C				Aliquot #: 24-0)805-04-C03-A01	Analyst: LMO
,,		Result	Flag	Units	-		-
Total Dissolved Solids 1260 mg/L 10.0 10/04/2024 AB24-1004-01	. ,		~9			_	_





A CENTURY OF EXCELLENCE

Report Date: 10/18/24

Sample Site: **DEK JCW Background** Laboratory Project: 24-0805

Field Sample ID: **DUP-Background** Collect Date: 10/02/2024 Lab Sample ID: 24-0805-05 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueou	s		Aliquot #: 24-0	805-05-C01-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01
Metals by EPA 6020B: CCR Rule Appe	ndix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	805-05-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	68		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	129		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	94600		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	1		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	12500		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	14		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	2		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	9		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	805-05-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	424000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	2340		ug/L	1000.0	10/08/2024	AB24-1007-05
Total Dissolved Solids by SM 2540C				Aliquot #: 24-0	805-05-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1010	9	mg/L	10.0	10/04/2024	AB24-1004-01
i star Brosorvou Gollas	1010		9/ ⊏	10.0	10/0 1/2027	, LDZ 1 100+ 01





Report Date: 10/18/24

Sample Site: **DEK JCW Background** Laboratory Project: 24-0805

Field Sample ID: FB- Background Collect Date: 10/03/2024 Lab Sample ID: 24-0805-06 Collect Time: 07:25 AM

Matrix: Water

Mercury by EPA 7470A, Total, Aqueous				
Result	Flag Unit	s RL	Analysis Date	Tracking
ND	ug/L	0.2	10/05/2024	AB24-1005-01
opendix III-IV To	tal Metals Exp	Aliquot #: 24-0	0805-06-C01-A02	Analyst: EB
Result	Flag Unit	s RL	Analysis Date	Tracking
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	5.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	20.0	10/14/2024	AB24-1014-02
ND	ug/L	0.2	10/14/2024	AB24-1014-02
ND	ug/L	1000.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	6.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	20.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	10.0	10/14/2024	AB24-1014-02
ND	ug/L	5.0	10/14/2024	AB24-1014-02
ND	ug/L	2.0	10/14/2024	AB24-1014-02
ND	ug/L	1.0	10/14/2024	AB24-1014-02
ND	ug/L	0.2	10/14/2024	AB24-1014-02
ND	ug/L	2.0	10/14/2024	AB24-1014-02
ND	ug/L	2.0	10/14/2024	AB24-1014-02
ND	ug/L	10.0	10/14/2024	AB24-1014-02
	Result ND Pependix III-IV To Result ND ND ND ND ND ND ND ND ND ND ND ND ND	Result Flag Unit ND ug/L opendix III-IV Total Metals Exp Result Flag Unit ND ug/L ND ug/L	Result Flag Units RL ND ug/L 0.2 Opendix III-IV Total Metals Exp Aliquot #: 24-0 Result Flag Units RL ND ug/L 1.0 ND ug/L 1.0 ND ug/L 5.0 ND ug/L 1.0 ND ug/L 0.2 ND ug/L 1.00 ND ug/L 1.0 ND ug/L 2.0 ND ug/L 2.0 ND ug/L 0.2 ND ug/L 0.2 ND ug/L 0.2 ND ug/L 0.2 ND ug/L <td< td=""><td>Result Flag Units RL Analysis Date ND ug/L 0.2 10/05/2024 Opendix III-IV Total Metals Exp Aliquot #: 24-0805-06-C01-A02 Result Flag Units RL Analysis Date ND ug/L 1.0 10/14/2024 ND ug/L 1.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 20.0 10/14/2024 ND ug/L 0.2 10/14/2024 ND ug/L 1.0 10/14/2024 ND ug/L 10.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 5.0 1</td></td<>	Result Flag Units RL Analysis Date ND ug/L 0.2 10/05/2024 Opendix III-IV Total Metals Exp Aliquot #: 24-0805-06-C01-A02 Result Flag Units RL Analysis Date ND ug/L 1.0 10/14/2024 ND ug/L 1.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 20.0 10/14/2024 ND ug/L 0.2 10/14/2024 ND ug/L 1.0 10/14/2024 ND ug/L 10.0 10/14/2024 ND ug/L 5.0 10/14/2024 ND ug/L 5.0 1



Analytical Report

Report Date: 10/18/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS **ENERGY**

Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 **REVISION 5** ATTACHMENT A

Project Number:	805	Inspecti	on Date: 10-03-24	Inspection By:	EB
Sample Origin/Project Name					
Shipment Delivered By: Ente	er the type of	f shipment car	rier.		
Inter-Company Mail_		FedEx	UPS	USPS	
Tracking Number:			Other Carry In (who	m) TRC	
Shipping Containers: Enter t	he type and	number of ship	pping containers received.		
Cooler	Cardboard B	ox	Custom Case	Envelope/N	Aailer
Loose/Unpackaged Co			Other		
Condition of Shipment: Ente	r the as-rece	ived condition	of the shipment container		
Damaged Shipment C	bserved: No	one V	Dented	Leak	cing
Other					
Shipment Security: Enter if a	nny of the sh	ipping contain	ers were opened before rec	ceipt.	
			Sealed	-	^
					and the second s
Enclosed Documents: Enter t					
CoC Wo	ork Request _		Air Data Sheet	Other	
Temperature of Containers:	Measure the	temperature o	of several sample container	S.	
As-Received Tempera	ature Range_	5.6-6.0	C Samples Recei	ived on Ice: Yes	✓ No
M&TE # and Expirati	ion LSo2	ון 23 / ס	6.27-25		
Number and Type of Contain	iers: Enter	the type and to	otal number of sample cont	ainers received	
Container Type	<u>Water</u>	Soil	Other	Broken	<u>Leaking</u>
VOA (40mL or 60mL)		5011	Other	Dioken	Leakin
Quart/Liter (g / p)			•		
9-oz (amber glass jar)					
2-oz (amber glass)			***************************************	<u> </u>	***************************************
	<u> </u>				
125 mL (plastic)			***************************************		
125 mL (plastic) 24 mL vial (glass)					
•	5				

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

		- 1	
Page	1	of	1

	USTOMER:			PROJECT NUMBER:	SAP CC or	WO#:							ANALYSIS REQUESTED				O A DECLUDE OF THE
Q4-2024 JCW-DEK	Background W	ells		24-0805 REQUESTE		JESTER: Harold Register							(Att	tach	List if More Space	e is Needed)	QA REQUIREMENT
SAMPLING TEAM:				URNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OT		THER_										□ NPDES ⊠ TNI	
SEND REPORT TO:	Joseph Firlit			email:	phone:												☐ ISO 17025
COPY TO:	Harold Regis	ster		MATRIX CODES: GW = Groundwater OX = Ot	her		C	ON	TA	INE	RS						☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sh W = Water / Aqueous Liquid A = Air	idge			PRI	ESE	RV	ATIVE	200	CID				☐ INTERNAL INFO
LAB	SAMPLE COL	LECTION	RIX	S = Soil / General Solid WP = W O = Oil WT = G	Vipe Seneral Waste	TOTAL#		5 7 T T		MeOH AAI					□ OTHER		
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / Lo	OCATION	TOT	None	None HNO ₃ H ₂ SO ₄ NaOH HCI		HCI MeO Other		Anions		SOI		REMARKS	
24-0805-01	10/3/24	6700	GW	MW-15002		.3	2	1				x	x	1	x		
-02	106/24	1405	GW	MW-15008		3	2	1				x	x	1	x		
-03	10/3/24	060T	GW	MW-15016		3	2	1				x	x		x		
-04	ic lo lay	1958	GW	MW-15019		3	2	1				x	x		x		
-05	10/2/24	_	GW	DUP-Background		3	2	1				x	x		x		
↓ -06	16/3/24	0735	W	FB- Background		1	-					X					
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RELINQUISHED BY:	>		3 b	ME: (4) 340	RECEIVED BY:	W	2	/	2				OMM		TS:		#:_LS027723

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ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

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JOB DESCRIPTION

Karn/Weadock CCR Background Wells

JOB NUMBER

240-212370-1

Eurofins Cleveland 180 S. Van Buren Avenue Barberton OH 44203



Eurofins Cleveland

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

11/7/2024

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Definitions/Glossary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Qualifiers

LOQ

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)

Limit of Quantitation (DoD/DOE) MCL EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

MDL Method Detection Limit ML Minimum Level (Dioxin) MPN Most Probable Number MQL Method Quantitation Limit

NC Not Calculated

Not Detected at the reporting limit (or MDL or EDL if shown) ND

NEG Negative / Absent POS Positive / Present

PQL Practical Quantitation Limit

PRES Presumptive **Quality Control**

RER Relative Error Ratio (Radiochemistry)

RL Reporting Limit or Requested Limit (Radiochemistry)

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) TEQ Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC**

Eurofins Cleveland

Case Narrative

Client: TRC Environmental Corporation. Project: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Eurofins Cleveland Job ID: 240-212370-1

Job Narrative 240-212370-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 10/4/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.1°C and 1.5°C.

Gas Flow Proportional Counter

Method 903.0: Radium 226 Batch 682570

160-682570

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL MW-15008 (240-212370-2), MW-15016 (240-212370-3), MW-15019 (240-212370-4), DUP-BACKGROUND (240-212370-5), EQ-BACKGROUND (240-212370-6), (240-212371-A-1-A) and (240-212371-B-1-D DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Eurofins Cleveland

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Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep 0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212370-1

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Sample Summary

Client: TRC Environmental Corporation.

240-212370-6

Project/Site: Karn/Weadock CCR Background Wells

EQ-BACKGROUND

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212370-1	MW-15002	Water	10/03/24 07:00	10/04/24 08:00
240-212370-2	MW-15008	Water	10/02/24 14:05	10/04/24 08:00
240-212370-3	MW-15016	Water	10/03/24 06:01	10/04/24 08:00
240-212370-4	MW-15019	Water	10/02/24 14:52	10/04/24 08:00
240-212370-5	DUP-BACKGROUND	Water	10/02/24 00:00	10/04/24 08:00

10/03/24 07:05

10/04/24 08:00

Water

Job ID: 240-212370-1

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Lab Sample ID: 240-212370-1 Client Sample ID: MW-15002

Date Collected: 10/03/24 07:00 Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0		(- /	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.13		0.219	0.241	1.00	0.122	pCi/L	10/08/24 08:22	11/07/24 07:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.2		30 - 110					10/08/24 08:22	11/07/24 07:57	

Method: EPA 904.0	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.80		0.718	0.737	1.00	0.923	pCi/L	10/08/24 08:25	10/17/24 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.2		30 - 110					10/08/24 08:25	10/17/24 14:13	1
Y Carrier	78.9		30 - 110					10/08/24 08:25	10/17/24 14:13	1

Method: TAL-STL Ra	226_Ra228 -	Combined	l Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	2.93		0.751	0.775	5.00	0.923	pCi/L		11/07/24 13:23	1
226 + 228										

Job ID: 240-212370-1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Lab Sample ID: 240-212370-2 **Client Sample ID: MW-15008**

Matrix: Water

Job ID: 240-212370-1

Date Collected: 10/02/24 14:05 Date Received: 10/04/24 08:00

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.439		0.174	0.179	1.00	0.206	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.6		30 - 110					10/08/24 08:22	10/25/24 07:36	1

Method: EPA 904.	0 - Naululli-220	(GIFC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.539	U	0.513	0.515	1.00	0.821	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	82.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra	1226_Ra228 -	Combined	l Radium-226	and Radiun	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.978		0.542	0.545	5.00	0.821	pCi/L		11/07/24 13:23	1

Client: TRC Environmental Corporation.

+ 228

Project/Site: Karn/Weadock CCR Background Wells

Lab Sample ID: 240-212370-3 **Client Sample ID: MW-15016**

Date Collected: 10/03/24 06:01 Matrix: Water Date Received: 10/04/24 08:00

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.280		0.155	0.157	1.00	0.208	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.9		30 - 110					10/08/24 08:22	10/25/24 07:36	1
Method: EPA 904	.0 - Radium-228	(GFPC)								
Method: EPA 904.	.0 - Radium-228	(GFPC)	Count	Total						
Method: EPA 904.	.0 - Radium-228	(GFPC)	Count Uncert.	Total Uncert.						
		(GFPC) Qualifier			RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Method: EPA 904. Analyte Radium-228		Qualifier	Uncert.	Uncert.	RL 1.00	MDC 0.753		Prepared 10/08/24 08:25	Analyzed 10/17/24 14:14	Dil Fac
Analyte	Result 0.152	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)				_ <u></u>		Dil Fac
Analyte Radium-228	Result 0.152	Qualifier	Uncert. (2σ+/-) 0.422	Uncert. (2σ+/-)				10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra	226_Ra228	- Combined	l Radium-226	and Radiur	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.432	U	0.450	0.450	5.00	0.753	pCi/L		11/07/24 13:23	1

Job ID: 240-212370-1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Lab Sample ID: 240-212370-4 **Client Sample ID: MW-15019**

Date Collected: 10/02/24 14:52 Matrix: Water Date Received: 10/04/24 08:00

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.614		0.177	0.185	1.00	0.154	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.9		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0) - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.631	U	0.500	0.503	1.00	0.771	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.9		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	79.3		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra	a226_Ra228 -	Combined	d Radium-226	and Radiur	m-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.24		0.530	0.536	5.00	0.771	pCi/L		11/07/24 13:23	1
226 + 228										

Job ID: 240-212370-1

Client: TRC Environmental Corporation.

Date Received: 10/04/24 08:00

Project/Site: Karn/Weadock CCR Background Wells

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-212370-5 Date Collected: 10/02/24 00:00

Matrix: Water

Job ID: 240-212370-1

Method: EPA 903.0 - Radium-226 (GFPC)

(2σ+/-)	(2 0+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fa
Uncert.	Uncert.						
Count	Total						

Analyte Result Qualifier Radium-226 0.333 0.146 0.149 1.00 0.170 pCi/L 10/08/24 08:22 10/25/24 09:21

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 87.1 30 - 110 10/08/24 08:22 10/25/24 09:21

Method: EPA 904.0 - Radium-228 (GFPC)

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.439	U	0.505	0.507	1.00	0.830	pCi/L	10/08/24 08:25	10/17/24 14:14	1

Carrier %Yield Qualifier Limits Prepared Analyzed Ba Carrier 30 - 110 10/08/24 08:25 10/17/24 14:14 87.1 79.6 30 - 110 10/08/24 08:25 10/17/24 14:14 Y Carrier

Method: TAL-STL Ra226 Ra228 - Combined Radium-226 and Radium-228

	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.772	U	0.526	0.528	5.00	0.830	pCi/L		11/07/24 13:23	1

+ 228

11/7/2024

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Lab Sample ID: 240-212370-6 **Client Sample ID: EQ-BACKGROUND**

Date Collected: 10/03/24 07:05 Matrix: Water Date Received: 10/04/24 08:00

Method: EPA 903.	0 - Radium-226	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0255	U	0.0703	0.0703	1.00	0.130	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.	0 - Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.314	U	0.350	0.351	1.00	0.573	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	82.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra2	26_Ra228	- Combined	I Radium-226	and Radiur	n-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.340	U	0.357	0.358	5.00	0.573	pCi/L		11/07/24 13:23	1

Job ID: 240-212370-1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(30-110)	
240-212370-1	MW-15002	74.2	
240-212370-2	MW-15008	86.6	
240-212370-3	MW-15016	88.9	
240-212370-4	MW-15019	86.9	
240-212370-5	DUP-BACKGROUND	87.1	
240-212370-6	EQ-BACKGROUND	89.4	
LCS 160-682570/2-A	Lab Control Sample	93.0	
MB 160-682570/1-A	Method Blank	95.9	
Tracer/Carrier Legend			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-212370-1	MW-15002	74.2	78.9	
240-212370-2	MW-15008	86.6	82.6	
240-212370-3	MW-15016	88.9	80.0	
240-212370-4	MW-15019	86.9	79.3	
240-212370-5	DUP-BACKGROUND	87.1	79.6	
240-212370-6	EQ-BACKGROUND	89.4	82.6	
LCS 160-682571/2-A	Lab Control Sample	93.0	82.6	
MB 160-682571/1-A	Method Blank	95.9	80.0	

Tracer/Carrier Legend

Ba = Ba Carrier Y = Y Carrier

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12

13

14

LCS LCS

Qual

Total

Uncert.

(2σ+/-)

0.357

RL

1.00

Total

Uncert.

 $(2\sigma + / -)$

1.24

Result

9 912

Count

Uncert.

 $(2\sigma + / -)$

LCS LCS

Qual

Result

8.969

Spike

Added

30 - 110

8.42

Spike

Added

9.58

RL

1.00

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-682570/1-A

Matrix: Water

Analysis Batch: 685116 Count Total MB MB

Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ (2σ+/-) Radium-226 0.07966 U 0.0783 0.0787

MB Qualifier Carrier %Yield

Limits Ba Carrier 95.9 30 - 110

Lab Sample ID: LCS 160-682570/2-A

Matrix: Water

Analysis Batch: 685116

Analyte

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 93.0 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-682571/1-A

Matrix: Water

Analyte

Radium-226

Analysis Batch: 683952

Radium-228 0.4992 U 0.354 MB MB

MB MB

Result Qualifier

Carrier %Yield Qualifier Limits Ba Carrier 95.9 30 - 110 30 - 110 Y Carrier 80.0

Lab Sample ID: LCS 160-682571/2-A

Matrix: Water

Analyte

Radium-228

Y Carrier

Analysis Batch: 683952

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 93.0 30 - 110

82.6

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 682570

Prepared Analyzed Dil Fac 10/08/24 08:22 10/25/24 07:36

> Prepared Dil Fac Analyzed

10/08/24 08:22 10/25/24 07:36

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 682570

Total %Rec Uncert. $(2\sigma + / -)$ RL MDC Unit %Rec

1.00 1.05 0.110 pCi/L

MDC Unit

0.122 pCi/L

MDC Unit

0.536 pCi/L

RL

1.00

MDC Unit

0.525

pCi/L

103

Limits 75 - 125

Client Sample ID: Method Blank Prep Type: Total/NA

Prep Batch: 682571

Prepared Analyzed Dil Fac 10/08/24 08:25 10/17/24 14:13

Prepared Analyzed Dil Fac 10/08/24 08:25 10/17/24 14:13 10/08/24 08:25 10/17/24 14:13

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 682571

%Rec %Rec Limits

75 - 125

106

Eurofins Cleveland

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Rad

Prep Batch: 682570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212370-1	MW-15002	Total/NA	Water	PrecSep STD	
240-212370-2	MW-15008	Total/NA	Water	PrecSep STD	
240-212370-3	MW-15016	Total/NA	Water	PrecSep STD	
240-212370-4	MW-15019	Total/NA	Water	PrecSep STD	
240-212370-5	DUP-BACKGROUND	Total/NA	Water	PrecSep STD	
240-212370-6	EQ-BACKGROUND	Total/NA	Water	PrecSep STD	
MB 160-682570/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-682570/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 682571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212370-1	MW-15002	Total/NA	Water	PrecSep_0	
240-212370-2	MW-15008	Total/NA	Water	PrecSep_0	
240-212370-3	MW-15016	Total/NA	Water	PrecSep_0	
240-212370-4	MW-15019	Total/NA	Water	PrecSep_0	
240-212370-5	DUP-BACKGROUND	Total/NA	Water	PrecSep_0	
240-212370-6	EQ-BACKGROUND	Total/NA	Water	PrecSep_0	
MB 160-682571/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-682571/2-A	Lab Control Sample	Total/NA	Water	PrecSep 0	

Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Client Sample ID: MW-15002

Date Collected: 10/03/24 07:00 Date Received: 10/04/24 08:00 Lab Sample ID: 240-212370-1

Matrix: Water

Job ID: 240-212370-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	687288	SWS	EET SL	11/07/24 07:57
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:13
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15008

Date Collected: 10/02/24 14:05

Date Received: 10/04/24 08:00

Lab Sample ID: 240-212370-2

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 07:36
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15016

Date Collected: 10/03/24 06:01

Date Received: 10/04/24 08:00

Lab Sample ID: 240-212370-3

Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 07:36
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15019

Date Collected: 10/02/24 14:52

Date Received: 10/04/24 08:00

Lab Sample	ID: 240-212370-4
	Matrix: Water

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

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Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Client Sample ID: DUP-BACKGROUND Lab Sample ID: 240-212370-5

Date Collected: 10/02/24 00:00 Matrix: Water

Date Received: 10/04/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: EQ-BACKGROUND Lab Sample ID: 240-212370-6

Date Collected: 10/03/24 07:05 Matrix: Water

Date Received: 10/04/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Job ID: 240-212370-1

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Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date		
Alaska (UST)	State	20-001	05-06-25		
ANAB	Dept. of Defense ELAP	L2305	04-06-25		
ANAB	Dept. of Energy	L2305.01	04-08-25		
ANAB	ISO/IEC 17025	L2305	04-06-25		
Arizona	State	AZ0813	12-08-24		
California	Los Angeles County Sanitation Districts	10259	06-30-22 *		
California	State	2886	06-30-25		
Connecticut	State	PH-0241	03-31-25		
Florida	NELAP	E87689	06-30-25		
HI - RadChem Recognition	State	n/a	06-30-25		
Illinois	NELAP	200023	11-30-25		
lowa	State	373	12-01-24		
Kentucky (DW)	State	KY90125	12-31-24		
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24		
Louisiana	NELAP	04080	06-30-22 *		
Louisiana (All)	NELAP	04080	06-30-25		
Louisiana (DW)	State	LA011	12-31-24		
Maryland	State	310	09-30-25		
Massachusetts	State	M-MO054	06-30-25		
Missouri	State	780	06-30-25		
Nevada	State	MO00054	07-31-25		
New Jersey	NELAP	MO002	06-30-25		
New Mexico	State	MO00054	06-30-25		
New York	NELAP	11616	03-31-25		
North Carolina (DW)	State	29700	07-31-25		
North Dakota	State	R-207	12-31-24		
Oregon	NELAP	4157	09-01-25		
Pennsylvania	NELAP	68-00540	02-28-25		
South Carolina	State	85002001	06-30-25		
Texas	NELAP	T104704193	07-31-25		
US Fish & Wildlife	US Federal Programs	058448	07-31-25		
USDA	US Federal Programs	P330-17-00028	05-18-26		
Utah	NELAP	MO00054	07-31-25		
Virginia	NELAP	460230	06-14-25		
Washington	State	C592	08-30-25		
West Virginia DEP	State	381	10-31-25		

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Eurofins Cleveland

Eurofins Cleveland

180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record

🔅 eurofins

Environment Testing

Phone (330) 497-9396 Phone (330) 497-0772												
Client Information	Sampler:	- JA	SSC	Lab P Broo	M: ks, Kris	М		C	arrier Tracking	No(s):	COC No: 240-124390-3	3282.1
lent Contact: acob Krenz	Phone:		376	E-Mai Kris		net euro	insus.com	s	tate of Origin:		Page: Page 1 of 1	
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20. SAMPLE PRESERVATION
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Concerning
Contacted PM Date by via Verbal Voice Mail Other
17 Was a LL Hg or Me Hg trip blank present?Yes Yo
Were air bubbles >6 mm in any VOA vials? Larger than this. Yes Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes
Were VOAs on the COC? Yes Wo
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8. Could all bottle labels (LD/Date/Lime) be reconciled with the COC? 9. For each sample, does the COC specify preservatives (MN), # of containers (MN), and sample type of grab/comp(MN)?
Did all bottles arrive in good condition (Unbroken)?
Did custody papers accompany the sample(s)?
-Were tamper/custody seals intact and uncompromised?
the outside of the cooler(s)? If Yes Quantity
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rial used. Bubble Wrap Foam Plastic Bag None
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Page 21 of 25

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W1-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

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10/4/2024

Login Container Summary Report

240-212370

MW-15016 Client Sample ID **EQ-BACKGROUND** DUP-BACKGROUND DUP-BACKGROUND MW-15019 MW-15019 MW-15016 MW-15008 MW-15008 MW-15002 MW-15002 Temperature readings Lab ID 240-212370-A-1 240-212370-A-6 240-212370-B-5 240-212370-A-5 240-212370-B-4 240-212370-A-4 240-212370-B-3 240-212370-A-3 240-212370-B-2 240-212370-A-2 240-212370-B-1 Plastic 1 liter - Nıtrıc Acıd Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acid Plastic 1 liter - Nıtric Acıd Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acıd Plastic 1 liter - Nitric Acid Plastic 1 liter - Nitric Acid Container Type ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ Container pH Temp Temp <u>Preservation Preservation</u>
<u>Added Lot Number</u>

11/7/2024 Page 23 of 25

EQ-BACKGROUND

240-212370-B-6

Plastic 1 liter - Nitric Acid

Page 1 of 1

-- 52

Months

Ver: 05/06/2024

Eurofins Cleveland

Edicilis Cievelatio 180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330, 407 0308	Ü	Chain (of Cus	Chain of Custody Record	ecol	p					8 42294 1		· •	💸 eurofins	IS Environment Testing
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MW-15016 (240-212370-3)	10/3/24	06:01 Eastern	ტ	Water		×	×						N	TVA protocol - F 5.0 pCi/L	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.
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Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any chances to	ment Testing North Central d above for analysis/tests	al, LLC places t /matrix being a	he ownership on alyzed, the sa	of method, analy	te & accr	editation ack to th	complia se Eurofi	nce upon	our subco	ntract labo	ratories. Ti	is sample laborator	shipment or other	s forwarded under	LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the atrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to
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Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212370-1

List Source: Eurofins St. Louis
List Number: 2
List Creation: 10/07/24 12:24 PM

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Creator: Forrest, Cheyenne L		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Enclosure 4

2024 Annual Nature and Extent Data Summary, DE Karn, Consumers Energy, Essexville, Michigan. (TRC, January 30, 2025)



Date: January 30, 2025

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC

Kristin Lowery, TRC

Project No.: 553814.0001.0000 Phase 2 Task 2

Subject: 2024 Annual Nature and Extent Data Summary, DE Karn Bottom Ash Pond,

Consumers Energy, Essexville, Michigan

Introduction

In response to the United States Environmental Protection Agency's (U.S. EPA's) Resource Conservation and Recovery Act (RCRA) Coal Combustion Residual rule ("CCR Rule") promulgated on April 17, 2015, as amended, Consumers Energy Company (Consumers Energy) has conducted groundwater monitoring at the DE Karn Bottom Ash Pond CCR Unit. During the statistical evaluation of the initial assessment monitoring event (May 2018) for the Karn Bottom Ash Pond, arsenic was present in one or more downgradient monitoring well(s) at statistically significant levels exceeding the Groundwater Protection Standards (GWPSs)¹.

The CCR Rule 40 CFR §257.96(a) requires that an owner or operator initiate an assessment of corrective measures (ACM) to prevent further release, to remediate any releases, and to restore impacted areas to original conditions if any Appendix IV constituent has been detected at a statistically significant level exceeding a GWPS. The *Assessment of Corrective Measures* (ACM) (TRC, September 2019) was initiated on April 14, 2019 and was certified and submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on September 11, 2019 in accordance with the schedule in §257.96.

Per §257.95(g)(1), in the event that the facility determines, pursuant to §257.93(h), that there is a statistical exceedance of the GWPSs for one or more of the Appendix IV constituents, the facility must characterize the nature and extent of the release of CCR as well as any site conditions that may affect the remedy selected. Installation of additional monitoring wells at locations downgradient of the Karn Bottom Ash Pond groundwater monitoring system was not necessary or feasible due to the presence of existing monitoring wells sampled under the groundwater surface water interface (GSI) Compliance Monitoring Program administered under a Michigan-approved Hydrogeological Monitoring Plan (HMP) (Consumers Energy, 2019), and the proximity of the surface water bodies. Monitoring wells designated for nature and extent characterization are shown on Figures 1 and 2 and data collected over the past year (March through October 2024) from these nature and extent groundwater monitoring wells are included in Tables 1 and 2.

¹ TRC. 2019. Statistical Evaluation of Initial Assessment Monitoring Sampling Event, DE Karn Bottom Ash Pond, Consumers Energy Company, Essexville, Michigan. January 14.

Approach

Given the proximity of the Karn Bottom Ash Pond to the Karn Landfill at the Karn property, the nature and extent of contamination was assessed from a site-wide perspective rather than on a per CCR unit basis. The nature and extent of groundwater impacted by a release from the Karn Bottom Ash Pond overlaps with groundwater impacted by operation of the Karn Landfill. Additionally, looking at impacted groundwater on a site-wide basis was more practical from a risk mitigation standpoint, given:

- The likely age of the release(s);
- A long operational history of ash management;
- The historical use of CCR as fill; and
- The influence of geochemistry on several of the Appendix IV constituent concentrations in groundwater.

Consistent with the ACM, the evaluation of the nature and extent of contamination in groundwater focuses on the constituent which triggered corrective measures, arsenic.

Groundwater Nature and Extent Relative to Groundwater Protection Standards

As discussed in the ACM, the nature and extent of contamination (i.e., arsenic) in groundwater relative to GWPSs, which have been selected to be protective of the drinking water pathway, has been defined per the RCRA CCR Rule requirements based on the site-specific hydrogeology. Current data continue to support that although arsenic concentrations exceed the GWPS in on-site groundwater monitoring locations, there are currently no adverse effects on human health or the environment from either surface water or groundwater due to CCR management at the Karn Bottom Ash Pond. The arsenic concentrations are bounded by the nearby surface water features (the discharge channel to the south, Saginaw River to the west, and Lake Huron to the east and north) and are contained within the limits of the property. The property is owned and operated by Consumers Energy and groundwater is not used for drinking water. There are no on-site drinking water wells and there are no surface water potable water intakes within 3 miles of the site, so the drinking water pathway is not complete.

The distribution of arsenic in the shallow water-bearing unit as compared to the GWPS is presented in Figure 1. Three categories were assigned to groundwater data collected from March to October 2024, as follows:

- White No Exceedances: all concentrations were below the GWPS
- Yellow Two or More Exceedances: individual observations above the GWPS²
- Orange Statistically Significant GWPS Exceedances³

The highest concentrations of arsenic observed in the vicinity of the Karn Bottom Ash Pond have

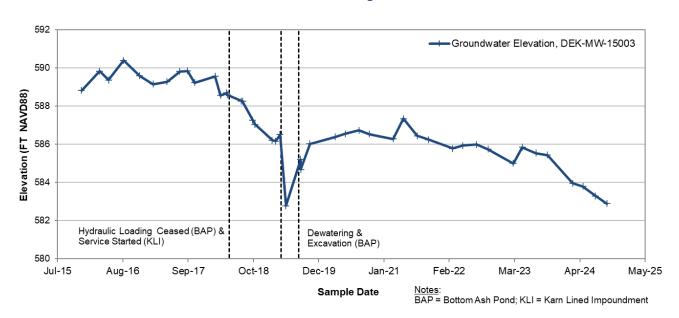
² Although an exceedance is defined as a single detection above the GWPS, confidence intervals will be used to determine compliance per the CCR Rule using the Karn Bottom Ash Pond monitoring well network. Compliance with the GWPSs established under § 257.95(h) will be achieved by demonstrating that concentrations of constituents listed in Appendix IV to this part have not exceeded the GWPSs for a period of three consecutive years using the statistical procedures and performance standards in § 257.93(f) and (g).

³ A statistically significant exceedance occurs when the lower confidence limit is above the GWPS based upon most recent assessment monitoring statistical evaluation using the eight most recent sampling events (May 2021 through October 2024). Statistical evaluation was only performed on the Karn Bottom Ash Pond downgradient compliance wells (DEK-MW-15002, DEK-MW-15006, DEK-MW-15006, and DEK-MW-18001).

historically been observed at DEK-MW-15003, a monitoring well located to the north of the bottom ash pond and associated with the shifted "highest" elevation of mounded groundwater relative to the Karn Bottom Ash Pond. Although historically the point source discharge of sluiced bottom ash into the Karn Bottom Ash Pond created localized mounding of the potentiometric surface, the Karn Lined Impoundment went into service on June 7, 2018 and continuously collected the process water and bottom ash that previously went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the pooled area is no longer present. The groundwater elevation data collected from the groundwater monitoring system of the former bottom ash pond this event demonstrate a reduction in groundwater elevation measurements by several feet when compared to groundwater elevations measured prior to the cessation of loading in June 2018.

Monitoring well DEK-MW-15003 had been at or near the local high point of mounded groundwater at the Karn site following the discontinuing of loading to the Karn Bottom Ash Pond. However, in late 2023, the Karn Generating Facility stopped operating and consequently stopped routine discharge to the discharge ditch north of the Karn Lined Impoundment.⁴ This operational change triggered a decrease in groundwater elevation at DEK-MW-15003 and additional flattening of the mounded groundwater.

Groundwater Elevation Changes – DEK-MW-15003



Data show that groundwater quality is continuing to change after sluicing to the Karn Bottom Ash Pond ceased in June 2018, when the bottom ash and transport water was diverted to the Karn Lined Impoundment. Arsenic has been the only constituent to have triggered corrective action. TRC used Sanitas™ to compare groundwater data collected while the pond was still in operation ("background" for the purposes of the statistical comparison, December 2015 to June 2018) to data collected once hydraulic loading ceased ("compliance" for the purposes of the statistical comparison, June 2018 to

⁴ Discharge to this ditch was completed under authorization of the National Pollutant Discharge Elimination System (NPDES) permit.

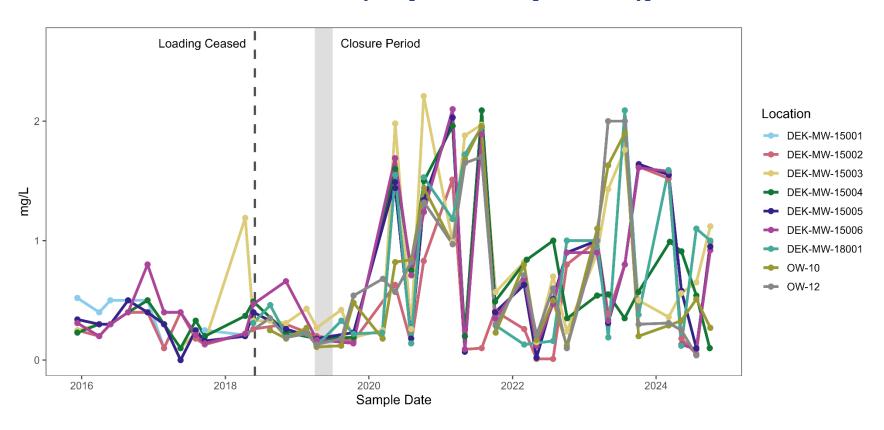
present), as shown by the time-series charts and Welch's t-test results (Attachment A).

Mean arsenic concentrations in groundwater at DEK-MW-15002 and DEK-MW-15003 from June 2018 to present are lower than concentrations observed while the pond was in operation (prior to June 2018), indicating that the discontinuation of hydraulic loading to the Karn Bottom Ash Pond and the completed source removal of CCR was successful in removing a source of arsenic. However, attainment of the GWPS at all the Bottom Ash Pond downgradient monitoring wells may not be feasible due to influences other than the former pond, such as the presence and former operation of the nearby Karn Landfill and the historical use of CCR as fill. Mean arsenic concentrations in groundwater at DEK-MW-15004, DEK-MW-15005, and DEK-MW-15006 from June 2018 to present are higher than concentrations observed while the pond was in operation. Although mean arsenic concentrations at DEK-MW-18001 are lower than concentrations observed while the pond was in operation, the arsenic concentrations in have increased since October 2022 and are currently higher than the groundwater concentrations observed while the pond was in operation. These changes in arsenic concentrations following CCR removal at the Karn Bottom Ash Pons demonstrate that there are other influences on groundwater conditions besides the operation of the former pond.

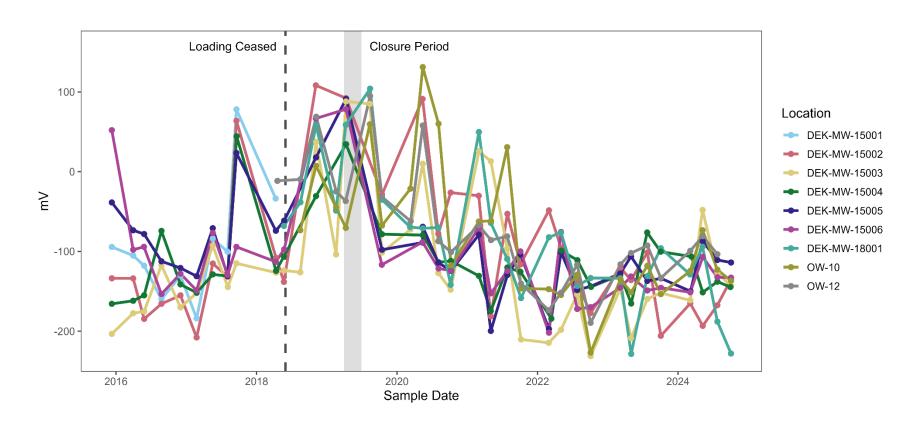
In addition to the groundwater flow direction changes mentioned above, redox conditions which also affect contaminant transport, are still stabilizing in the Bottom Ash Pond Area following removal activities and will continue to be evaluated further. As shown on the charts below, the dissolved oxygen concentration and oxidation-reduction potential (ORP) showed highly variable results following CCR removal activities.

Specifically, dissolved oxygen transitioned from the suboxic/anoxic state of 0.5 mg/L or less to an oxic state of greater than 1.5 mg/L immediately following CCR removal. In the same time period, the electric potential transitioned from a moderately negative electric potential near -100 mV to a moderately positive electric potential of +100 mV. The observed trends for these two key field-measured parameters demonstrate that the preferred equilibrium redox state (e.g. preferred redox couple chemistry) also shifted during the time period immediately following CCR removal. Recent data indicate that trends in the redox conditions may be stabilizing at values similar to pre-dewatering conditions based on measurements of dissolved oxygen in the anoxic range of 0.5 – 1.0 mg/L and negative electric potential. Groundwater quality in the Karn Bottom Ash Pond area will continue to be evaluated in support of conceptual site model refinement and remedy selection.

Groundwater Chemistry Changes Post-Dewatering - Dissolved Oxygen



Groundwater Chemistry Changes Post-Dewatering - Oxidation-Reduction Potential



Groundwater Nature and Extent Relative to GSI

As discussed above, the drinking water pathway is not complete. Due to the presence of the surrounding surface water bodies, another relevant pathway is the groundwater surface water interface pathway. Monitoring performed under the Michigan-approved GSI Compliance Monitoring Program demonstrates protection of human health and the environment with criteria determined to be protective at the potential point of exposure. Transect/porewater GSI compliance sampling data collected quarterly show that biogeochemical conditions are contributing to the reduction of arsenic in groundwater as observed in transect push-point samples located along the water's edge of Saginaw Bay, where arsenic concentrations are generally much lower than the arsenic concentrations observed in the perimeter dike wells. Compliance with water quality criteria is demonstrated on a quarterly basis by evaluating the total chronic loading based on contribution from each GSI compliance sample location with respect to the total flux observed in the state-authorized site-specific mixing zone, per the HMP.

The distribution of arsenic in the shallow water-bearing unit as compared to the mixing zone GSI criteria is presented in Figure 2. Three categories were assigned to the data from March to October 2024, as follows:

- White No Exceedances: all concentrations were below the mixing zone GSI criteria
- Light Blue Two consecutive exceedances of the chronic mixing zone GSI criterion
- Dark Blue Two consecutive exceedances of the acute mixing zone GSI criterion

Groundwater monitoring locations along the DE Karn Intake Channel and between the coal ash management areas and the power plant complex (DEK-MW-15002, DEK-MW-15005, DEK-MW-15006) document that contaminant concentrations of arsenic are less than the authorized mixing zone-based chronic concentration of 100 ug/L. Although arsenic concentrations in the perimeter dike wells at the GSI (MW-06, MW-10, MW-12, and MW-14) are above the chronic concentration of 100 ug/L, the total chronic loading (i.e., mass flux), calculated from concentrations observed in transect groundwater samples collected from push-point samplers advanced at locations T1-3GSI through T6-3GSI, remains below the chronic mixing zone GSI criterion, indicating current conditions are protective of the GSI pathway.

Summary

The nature and extent of arsenic in the shallow water-bearing unit is defined in accordance with the Federal CCR rule. Risk from potential exposure to groundwater is managed. The drinking water pathway is not complete. Monitoring performed under the Michigan-approved GSI Compliance Monitoring Program demonstrates protection of human health and the environment with criteria determined to be protective at the potential point of exposure (i.e., state-authorized site-specific mixing zone criteria).

Attachments

- Table 1 Summary of Groundwater Sampling Results (Analytical): DE Karn Nature and Extent Monitoring Wells
- Table 2 Summary of Groundwater Sampling Results (Analytical): DE Karn Nature and Extent GSI Monitoring Locations

Figure 1 Nature and Extent Summary: GWPS Exceedances
Figure 2 Nature and Extent Summary: GSI Pathway Compliance

Attachment A Statistical Evaluation

Tables

Table 1

Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent Monitoring Wells Essexville, Michigan

								Sa	mple Location:	I	DEK-MV	V-15003			DEK-M	W-15004		<u> </u>	MV	V-01	
									Sample Date:	3/5/2024	5/8/2024	7/24/2024	10/3/2024	3/11/2024	5/9/2024	7/24/2024	9/30/2024	3/4/2024	5/7/2024	7/22/2024	10/1/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^^					1			1					
Appendix III																					
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	644	652	649	666	905	955	903	923	5,320	5,350	5,780	6,430
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	41.6	34.6	29.4	35	75.9	72.3	72.9	68.6	85.7	86.8	86.5	98.5
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	59.9	57.3	60	63.6	66.1	65.7	67.5	72.9	91.7	86.2	88.4	97.1
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,370			1,530
Sulfate	mg/L	NA	250 ^E	250 ^E	500EE	600,000	1,200,000	NC	NC	51.1	34.1	36.9	37.9	198	174	159	165	< 1	< 1	2.04	29.9
Total Dissolved Solids	mg/L	NA	500E	500E	500	NC	NC	NC	NC	322	312	318	304	612	610	584	574	520			572
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	8.1	8.1	7.9	8.1	7.6	7.6	7.5	7.4	8.1	8.0	7.9	7.9
Appendix IV																					
Antimony	ug/L	6	6.0	6.0	2.0	1,100	2,300	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			
Arsenic	ug/L	21¹	10	10	10	340	680	100	680	350	298	390	382	160	145	143	150	6	5	5	6
Barium	ug/L	2,000	2,000	2,000	1,200	3,400	6,800	NC	NC	56	47	37	46	143	135	135	128	51			
Beryllium	ug/L	4	4.0	4.0	33	300	600	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			
Cadmium	ug/L	5	5.0	5.0	2.5	12	24	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2			
Chromium	ug/L	100	100	100	11	16	32	NC	NC	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Cobalt	ug/L	15	40	100	100	370	740	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6			
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,370			1,530
Lead	ug/L	15	4.0	4.0	14	250	500	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	24	21	22	21	35	38	34	33	81	79	77	82
Mercury	ug/L	2	2.0	2.0	0.20#	1.4	2.8	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2			
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	21	23	24	22	9	9	8	7	< 5	< 5	< 5	< 5
Radium-226/228	pci/L	5	NC	NC	NC	NC	NC	NC	NC		< 0.619		< 0.753								
Selenium	ug/L	50	50	50	5.0	62	120	55	120	1	< 1	< 1	2	< 1	1	< 1	1	5	4	4	2
Thallium	ug/L	2	2.0	2.0	2.0	47	94	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2			
MI Part 115 Parameters																					
Iron	ug/L	NA	300€	300€	500,000EE	NC	NC	NC	NC	194	160	159	215	4,190	4,040	3,980	3,770	159	176	210	733
Copper	ug/L	NA	1,000E	1,000E	20	33	66	NC	NC	< 1	< 1	< 1	< 1	11	1	< 1	< 1				
Nickel	ug/L	NA	100	100	120	1,000	2,100	NC	NC	< 2	< 2	< 2	< 2	3	< 2	2	2				
Silver	ug/L	NA	34	98	0.2	0.54	1.1	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2				
Vanadium	ug/L	NA	4.5	62	27	79	160	NC	NC	< 2	< 2	2	3	< 2	< 2	< 2	2	< 2	< 2	3	4
Zinc	ug/L	NA	2,400	5,000E	260	260	520	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.
- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^^ Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and EGLE policy and procedure 09-014 dated June 20, 2012.
- ^E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Indicates an exceedance of applicable GSI criteria. Result The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium. Result Indicates an exceedance of acute-based GSI criteria.

All metals were analyzed as total unless otherwise specified.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Groundwater samples were not collected from OW-11 and OW-12 in October 2024. OW-12 was decommissioned in as part of the Karn Lined Impoundment closure activities. OW-11 yielded insufficient volume for sample collection and analysis.

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Table 1

Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent Monitoring Wells Essexville, Michigan

								S-0	mple Location:		NAVA	V-03		T	NAVA	V-06		T	MV	/-08	
								Sa	Sample Date:	3/4/2024	5/7/2024	7/22/2024	10/1/2024	3/4/2024	5/6/2024	7/22/2024	10/1/2024	3/4/2024	5/6/2024	7/22/2024	10/1/2024
		T	Ī				Ī	1	T Sample Date.	3/4/2024	3/1/2024	112212024	10/1/2024	3/4/2024	3/0/2024	112212024	10/1/2024	3/4/2024	3/0/2024	112212024	10/1/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ ^{^/}	Acute MZ^^												
Appendix III																					
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	8,460	8,630	8,880	8,740	606	667	466	548	3,730	3,410	3,660	4,640
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	139	138	139	129	151	260	127	114	151	157	146	164
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	85.2	83.2	85.3	96.2	13.8	25.5	14.8	10.4	57.8	59.3	61.9	66.9
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			1,110	< 1,000			< 1,000	< 1,000			< 1,000
Sulfate	mg/L	NA	250 ^E	250 ^E	500⋿	600,000	1,200,000	NC	NC	< 1	< 1	< 1	< 1	164	494	153	90.4	266	315	241	325
Total Dissolved Solids	mg/L	NA	500 ^E	500 ^E	500	NC	NC	NC	NC	700			680	758			752	876			916
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	7.6	7.6	7.9	7.9	7.0	7.0	7.3	7.4	7.2	7.2	7.2	7.3
Appendix IV																					
Antimony	ug/L	6	6.0	6.0	2.0	1,100	2,300	NC	NC	< 1				< 1				< 1			
Arsenic	ug/L	21¹	10	10	10	340	680	100	680	5	10	4	6	93	93	138	160	107	99	73	78
Barium	ug/L	2,000	2,000	2,000	1,200	3,400	6,800	NC	NC	199				118				44			
Beryllium	ug/L	4	4.0	4.0	33	300	600	NC	NC	< 1				< 1				< 1			
Cadmium	ug/L	5	5.0	5.0	2.5	12	24	NC	NC	< 0.2				< 0.2				< 0.2			
Chromium	ug/L	100	100	100	11	16	32	NC	NC	2	2	1	2	1	2	< 1	< 1	1	1	< 1	< 1
Cobalt	ug/L	15	40	100	100	370	740	NC	NC	< 6				< 6				< 6			
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			1,110	< 1,000			< 1,000	< 1,000			< 1,000
Lead	ug/L	15	4.0	4.0	14	250	500	NC	NC	< 1				< 1				< 1			
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	91	87	80	80	42	50	30	26	112	107	97	98
Mercury	ug/L	2	2.0	2.0	0.20#	1.4	2.8	NC	NC	< 0.2				< 0.2				< 0.2			
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	17	16	16	16
Radium-226/228	pci/L	5	NC	NC 50	NC	NC	NC 100	NC	NC 100												
Selenium	ug/L	50	50	50	5.0	62	120	55	120	4	3	4	3	< 1	1	< 1	< 1	3	3	2	2
Thallium	ug/L	2	2.0	2.0	2.0	47	94	NC	NC	< 2				< 2				< 2			
MI Part 115 Parameters	,,		2225	2225	500 000==	110	NO	110	110	7.10	4 0 4 0	744	0.10	0.400	0.400	0.570	1.010	0.400	0.770	0.000	0.000
Iron	ug/L	NA	300⋿	300⋿	500,000EE	NC	NC	NC	NC	719	1,010	744	912	2,490	6,160	2,570	1,840	8,420	8,770	8,300	8,820
Copper	ug/L	NA	1,000E	1,000E	20	33	66	NC	NC												
Nickel	ug/L	NA	100	100	120	1,000	2,100	NC	NC												
Silver	ug/L	NA	34	98	0.2	0.54	1.1	NC	NC												
Vanadium	ug/L	NA	4.5	62	27	79	160	NC	NC	< 2	< 2	2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	NA	2,400	5,000 ^E	260	260	520	NC	NC												

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.
- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^^ Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and EGLE policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Indicates an exceedance of applicable GSI criteria. Result The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium. Result Indicates an exceedance of acute-based GSI criteria.

All metals were analyzed as total unless otherwise specified.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Groundwater samples were not collected from OW-11 and OW-12 in October 2024. OW-12 was decommissioned in as part of the Karn Lined Impoundment closure activities. OW-11 yielded insufficient volume for sample collection and analysis.

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Table 1

Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent Monitoring Wells Essexville, Michigan

								Sar	nple Location:		MV	V-10		1	MV	V-12	1
									Sample Date:	3/4/2024	5/6/2024	7/22/2024	10/1/2024	3/4/2024	5/6/2024	7/22/2024	10/1/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^^				•					•
Appendix III																	
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	2,710	3,090	4,020	4,200	3,680	3,600	4,000	4,380
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	302	264	243	230	200	186	199	196
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	23.6	30.1	42.8	53.6	48.7	47.1	52.8	47.9
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			< 1,000	< 1,000			< 1,000
Sulfate	mg/L	NA	250 ^E	250 ^E	500EE	600,000	1,200,000	NC	NC	666	546	421	377	204	185	213	241
Total Dissolved Solids	mg/L	NA	500 ^E	500 ^E	500	NC	NC	NC	NC	1,410			1,090	970			984
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	6.9	7.1	7.2	7.3	7.2	7.2	7.3	7.3
Appendix IV																	
Antimony	ug/L	6	6.0	6.0	2.0	1,100	2,300	NC	NC	< 1				< 1			
Arsenic	ug/L	21¹	10	10	10	340	680	100	680	455	645	550	598	471	330	347	505
Barium	ug/L	2,000	2,000	2,000	1,200	3,400	6,800	NC	NC	117				161			
Beryllium	ug/L	4	4.0	4.0	33	300	600	NC	NC	< 1				< 1			
Cadmium	ug/L	5	5.0	5.0	2.5	12	24	NC	NC	< 0.2				< 0.2			
Chromium	ug/L	100	100	100	11	16	32	NC	NC	< 1	< 1	< 1	< 1	9	< 1	< 1	< 1
Cobalt	ug/L	15	40	100	100	370	740	NC	NC	< 6				< 6			
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			< 1,000	< 1,000			< 1,000
Lead	ug/L	15	4.0	4.0	14	250	500	NC	NC	< 1				< 1			
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	111	119	125	120	111	106	97	102
Mercury	ug/L	2	2.0	2.0	0.20#	1.4	2.8	NC	NC	< 0.2				< 0.2			
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	13	9	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226/228	pci/L	5	NC	NC	NC	NC	NC	NC	NC								
Selenium	ug/L	50	50	50	5.0	62	120	55	120	2	2	2	3	6	5	7	3
Thallium	ug/L	2	2.0	2.0	2.0	47	94	NC	NC	< 2				< 2			
MI Part 115 Parameters	/1	N10	0005	0005	500 00055	NO	NO	NO	NO	44.400	44.000	7.050	7.040	0.450	4.000	1.000	0.700
Iron	ug/L	NA	300E	300E	500,000EE	NC	NC	NC	NC	11,100	11,200	7,350	7,010	2,450	1,090	1,880	2,720
Copper	ug/L	NA	1,000E	1,000E	20	33	66	NC	NC								
Nickel	ug/L	NA	100	100	120	1,000	2,100	NC	NC								
Silver	ug/L	NA	34	98	0.2	0.54	1.1	NC	NC								
Vanadium 	ug/L	NA	4.5	62	27	79	160	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	NA	2,400	5,000 ^E	260	260	520	NC	NC								

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

- -- not analyzed.
- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.
- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^{^^} Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and EGLE policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Indicates an exceedance of applicable GSI criteria. Result The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium. Result Indicates an exceedance of acute-based GSI criteria.

All metals were analyzed as total unless otherwise specified.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Groundwater samples were not collected from OW-11 and OW-12 in October 2024. OW-12 was decommissioned in as part of the Karn Lined Impoundment closure activities. OW-11 yielded insufficient volume for sample collection and analysis.

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Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent Monitoring Wells Essexville, Michigan

Sample Location:						MV	V-14		<u> </u>	MW-16							
									Sample Date:	3/4/2024	5/6/2024	7/22/2024	10/1/2024	3/4/2024	5/6/2024	7/22/2024	10/1/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^^	Acute MZ^^								
Appendix III																	
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	3,080	3,100	2,270	3,850	1,360	1,260	1,750	1,970
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	181	179	269	181	331	301	335	313
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	67.8	71.4	63.1	79.1	83.6	80.1	63.6	52
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			< 1,000	< 1,000			< 1,000
Sulfate	mg/L	NA	250 ^E	250 ^E	500EE	600,000	1,200,000	NC	NC	196	222	798	187	1,040	928	1,100	1,200
Total Dissolved Solids	mg/L	NA	500 ^E	500 ^E	500	NC	NC	NC	NC	952			946	1,910			566
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	7.1	7.1	7.0	7.1	7.3	7.3	7.4	7.2
Appendix IV																	
Antimony	ug/L	6	6.0	6.0	2.0	1,100	2,300	NC	NC	< 1				2			
Arsenic	ug/L	21¹	10	10	10	340	680	100	680	362	169	74	224	8	1	1	1
Barium	ug/L	2,000	2,000	2,000	1,200	3,400	6,800	NC	NC	45				42			
Beryllium	ug/L	4	4.0	4.0	33	300	600	NC	NC	< 1				< 1			
Cadmium	ug/L	5	5.0	5.0	2.5	12	24	NC	NC	< 0.2				< 0.2			
Chromium	ug/L	100	100	100	11	16	32	NC	NC	< 1	1	< 1	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	40	100	100	370	740	NC	NC	< 6				< 6			
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000			< 1,000	< 1,000			< 1,000
Lead	ug/L	15	4.0	4.0	14	250	500	NC	NC	< 1				< 1			-
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	81	81	89	80	124	116	126	131
Mercury	ug/L	2	2.0	2.0	0.20#	1.4	2.8	NC	NC	< 0.2				< 0.2			
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	6	6	11	< 5	21	17	19	18
Radium-226/228	pci/L	5	NC	NC	NC	NC	NC	NC	NC								
Selenium	ug/L	50	50	50	5.0	62	120	55	120	8	12	77	8	10	4	20	23
Thallium	ug/L	2	2.0	2.0	2.0	47	94	NC	NC	< 2				< 2			
MI Part 115 Parameters	1																
Iron	ug/L	NA	300⋿	300E	500,000EE	NC	NC	NC	NC	2,730	1,070	623	1,230	2,300	141	90	44
Copper	ug/L	NA	1,000 ^E	1,000E	20	33	66	NC	NC								
Nickel	ug/L	NA	100	100	120	1,000	2,100	NC	NC								
Silver	ug/L	NA	34	98	0.2	0.54	1.1	NC	NC								
Vanadium	ug/L	NA	4.5	62	27	79	160	NC	NC	< 2	< 2	< 2	2	< 2	< 2	< 2	< 2
Zinc	ug/L	NA	2,400	5,000 ^E	260	260	520	NC	NC								

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

- -- not analyzed.
- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.
- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^{^^} Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and EGLE policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Indicates an exceedance of applicable GSI criteria. Result The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium. Indicates an exceedance of acute-based GSI criteria. Result

All metals were analyzed as total unless otherwise specified.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Groundwater samples were not collected from OW-11 and OW-12 in October 2024. OW-12 was decommissioned in as part of the Karn Lined Impoundment closure activities. OW-11 yielded insufficient volume for sample collection and analysis.

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Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent Monitoring Wells Essexville, Michigan

Sample Locat								mple Location:	n: OW-10				T	OV	V-11		I	OV	V-12		
	·							Sample Date:	3/5/2024	5/8/2024	7/24/2024	10/3/2024	3/5/2024	5/8/2024	7/24/2024	10/1/2024 ²	3/5/2024	5/9/2024	7/24/2024	10/1/2024 ²	
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^/	Acute MZ^^	3/3/2024	3/0/2024	1/24/2024	10/3/2024	3/3/2024	3/6/2024	1/24/2024	10/1/2024	3/3/2024	J/9/2024	1/24/2024	10/1/2024
Appendix III																					
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	1,200	1,270	1,120	1,310	3,370	3,340	3,250		1,420	1,410	1,390	
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	128	141	126	139	10.7	10.3	8.9		165	179	180	
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	78.6	82.6	79	87.9	59.3	55.4	57.7		39.1	33.7	41	
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	3,440	3,390	3,080		< 1,000	< 1,000	< 1,000	
Sulfate	mg/L	NA	250 ^E	250 ^E	500⋿	600,000	1,200,000	NC	NC	< 1	< 1	< 1	< 1	20	19.4	23		234	308	386	
Total Dissolved Solids	mg/L	NA	500 ^E	500 ^E	500	NC	NC	NC	NC	682	832	682	650	224	312	228		1,010	1,290	1,230	
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	7.2	7.3	7.1	7.3	9.6	9.5	9.3		7.2	7.1	7.1	
Appendix IV																					
Antimony	ug/L	6	6.0	6.0	2.0	1,100	2,300	NC	NC	< 1	< 1	< 1	< 1	4	3	3		< 1	< 1	< 1	
Arsenic	ug/L	21¹	10	10	10	340	680	100	680	2	2	2	5	1,080	948	1,080		58	33	45	
Barium	ug/L	2,000	2,000	2,000	1,200	3,400	6,800	NC	NC	164	160	174	339	31	27	25		212	216	245	
Beryllium	ug/L	4	4.0	4.0	33	300	600	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	12	24	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	16	32	NC	NC	2	2	2	5	1	< 1	1		1	< 1	< 1	
Cobalt	ug/L	15	40	100	100	370	740	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	< 6		< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	9,800	20,000	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	3,440	3,390	3,080		< 1,000	< 1,000	< 1,000	
Lead	ug/L	15	4.0	4.0	14	250	500	NC	NC	< 1	< 1	< 1	4	< 1	< 1	< 1		< 1	< 1	< 1	
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	34	37	32	34	11	12	< 10		59	63	52	
Mercury	ug/L	2	2.0	2.0	0.20#	1.4	2.8	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC NC	< 5	< 5	< 5	< 5	151	146	153		7	7	8	
Radium-226/228	pci/L	5	NC 50	NC 50	NC 5.0	NC 60	NC 100	NC FF	NC 100		1.5		< 1.21		< 0.521			2	1.16		
Selenium	ug/L	50	50	50	5.0	62	120	55 NG	120	2		1 1	2	10	/	12			1 7	1	
Thallium MI Part 115 Parameters	ug/L		2.0	2.0	2.0	47	94	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	< 2		< 2	< 2	< 2	
Iron	ug/L	NA	300€	300E	500,000EE	NC	NC	NC	NC	3,130	3,380	3,710	5,370	140	21	60		6,250	5,200	4,870	
Copper	ug/L	NA	1,000E	1,000E	20	33	66	NC	NC	3	2	2	4	< 1	< 1	2		< 1	1	2	
Nickel	ug/L	NA NA	100	100	120	1,000	2,100	NC	NC	4	4	5	8	2	< 2	3		6	3	7	
Silver	ug/L	NA	34	98	0.2	0.54	1.1	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NA	4.5	62	27	79	160	NC	NC	3	3	5	15	358	169	178		2	< 2	< 2	
Zinc	ug/L	NA	2,400	5,000E	260	260	520	NC	NC	< 10	< 10	< 10	17	< 10	< 10	< 10		< 10	< 10	< 10	

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.
- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^^ Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and EGLE policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Indicates an exceedance of applicable GSI criteria. Result The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium. Result Indicates an exceedance of acute-based GSI criteria. All metals were analyzed as total unless otherwise specified.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Groundwater samples were not collected from OW-11 and OW-12 in October 2024. OW-12 was decommissioned in as part of the Karn Lined Impoundment closure activities. OW-11 yielded insufficient volume for sample collection and analysis.

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Summary of Groundwater Sampling Results (Analytical) DE Karn Nature and Extent GSI Monitoring Locations Essexville, Michigan

Sample Location						mple Location:		T1-3	3GSI			T2-3	3GSI			T3-:	3GSI				
									Sample Date:	3/7/2024	5/7/2024	7/23/2024	10/2/2024	3/7/2024	5/7/2024	7/23/2024	10/2/2024	3/7/2024	5/7/2024	7/23/2024	10/2/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^^	Acute MZ^^												
Appendix III																					
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	91	516	49	483	3,900	5,260	4,510	4,770	1,390	114	202	39
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	60.6	92.4	51.6	87.9	231	153	142	256	137	80.8	171	41.9
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	42.9	36.2	40.9	46.8	49.1	57.1	62.1	125	49.8	39.3	27.6	44.1
Sulfate	mg/L	NA	250 ^E	250 ^E	500EE	600,000	1,200,000	NC	NC	34.6	14.9	22.3	< 1	249	193	12.4	< 1	11.1	42.7	139	6.55
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	7.6	7.4	7.8	7.2	7.0	7.1	6.8	6.6	7.4	7.2	7.0	7.5
Appendix IV																					
Arsenic	ug/L	21¹	10	10	10	340	680	100²	680	2	< 1	2	1	1	< 1	1	5	196	6	< 1	13
Chromium	ug/L	100	100	100	11	16	32	NC	NC	< 1	2	< 1	3	1	2	1	1	< 1	2	1	2
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	< 10	17	< 10	15	67	102	73	174	70	< 10	32	< 10
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	6	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	50	50	50	5.0	62	120	NC	NC	< 1	< 1	1	1	1	2	2	3	1	< 1	< 1	1
MI Part 115 Parameters																					
Iron	ug/L	NA	300 ^E	300 ^E	500,000EE	NC	NC	NC	NC	1,730	233	22	617	118	51	237	16,100	285	546	220	443
Vanadium	ug/L	NA	4.5	62	27	260	520	NC	NC	< 2	< 2	< 2	3	< 2	2	2	< 2	< 2	< 2	< 2	2

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SU - standard units; pH is a field parameter.

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- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan

Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for

surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}.

- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^^ Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- ^E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Result	Indicates an exceedance of applicable GSI criteria. The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and selenium
Result	Indicates an exceedance of acute-based GSI criteria.

All metals were analyzed as total unless otherwise specified.

Transect samples were unable to be collected during the first quarter 2023 event due to site conditions.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Compliance demonstrated on a mass flux basis.

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Summary of Groundwater Sampling Results (Analytical)
DE Karn Nature and Extent GSI Monitoring Locations
Essexville, Michigan

Sample Loca ¹								ample Location:		T4-	3GSI			T5-	3GSI			T6-:	3GSI		
									Sample Date:	3/7/2024	5/7/2024	7/23/2024	10/2/2024	3/7/2024	5/7/2024	7/23/2024	10/2/2024	3/7/2024	5/7/2024	7/23/2024	10/2/2024
Constituent	Unit	GWPS*	MI Residential**	MI Non- Residential**	MI GSI^	MI AMV***	MI FAV***	Chronic MZ^^	Acute MZ^^												
Appendix III																					
Boron	ug/L	NA	500	500	4,000	34,000	69,000	44,000	69,000	153	129	271	121	170	326	277	1,900	57	71	142	81
Calcium	mg/L	NA	NC	NC	500EE	NC	NC	NC	NC	64.9	70.3	73.9	89.7	112	191	70.1	125	64.1	46.2	57.1	46.8
Chloride	mg/L	NA	250 ^E	250 ^E	50	320,000	640,000	NC	NC	45	29.2	44.2	41.8	46.3	64.6	29.7	41	40.5	27.9	45.2	52.6
Sulfate	mg/L	NA	250 ^E	250 ^E	500EE	600,000	1,200,000	NC	NC	7.19	39.3	< 1	25.5	156	234	38.5	231	40.5	32	10.8	2.41
pH, Field	su	NA	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	NC	NC	7.8	7.7	7.5	7.6	7.7	7.5	7.5	7.3	7.5	7.7	7.7	7.4
Appendix IV																					
Arsenic	ug/L	21¹	10	10	10	340	680	100²	680	4	38	3	78	217	254	463	361	2	< 1	1	1
Chromium	ug/L	100	100	100	11	16	32	NC	NC	< 1	1	< 1	2	2	2	1	1	1	2	< 1	1
Lithium	ug/L	180	170	350	440	910	1,800	NC	NC	20	17	24	13	22	34	25	63	< 10	< 10	< 10	< 10
Molybdenum	ug/L	100	73	210	120	29,000	58,000	1,320	NC	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	7	< 5
Selenium	ug/L	50	50	50	5.0	62	120	NC	NC	< 1	< 1	< 1	< 1	< 1	3	1	2	< 1	< 1	< 1	1
MI Part 115 Parameters																					
Iron	ug/L	NA	300⋿	300 ^E	500,000EE	NC	NC	NC	NC	347	154	142	344	996	598	82	85	186	41	73	57
Vanadium	ug/L	NA	4.5	62	27	260	520	NC	NC	< 2	< 2	< 2	< 2	2	2	< 2	< 2	< 2	< 2	< 2	2

Notes

ug/L - micrograms per liter; mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NA - not applicable.

NC - no criteria.

-- - not analyzed.

- * GWPS (Groundwater Protection Standard) is the higher of the Maximum Contaminant Level (MCL)/Regional Screening Level from 83 FR 36435 (RSL) and Upper Tolerance Limit (UTL) as established in TRC's Technical Memorandum dated October 15, 2018.
- ** Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 21, 2020, updated October 12, 2023.
- ^ Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using

hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan

Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for

surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is

to the Great Lakes or connecting waters per footnote {FF}.

- *** Aquatic Maximum (AMV) and Final Acute Values (FAV) are taken from EGLE Rule 323.1057 Part 4 Water Quality Standards (Rule 57), March 15, 2018. Hardness-dependent criteria calculated using site-specific hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018). Chromium AMV & FAV criteria are based on hexavalent chromium.
- ^^ Mixing Zone (MZ) GSI Criteria from Michigan Department of Environment, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
- ^E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.

BOLD font denotes concentrations detected above the GWPS.

Result	Indicates an exceedance of applicable GSI criteria. The chronic-based mixing zone criteria (Chronic MZ) replaces the MI GSI criteria for arsenic, boron, molybdenum, and seleniun
Result	Indicates an exceedance of acute-based GSI criteria.

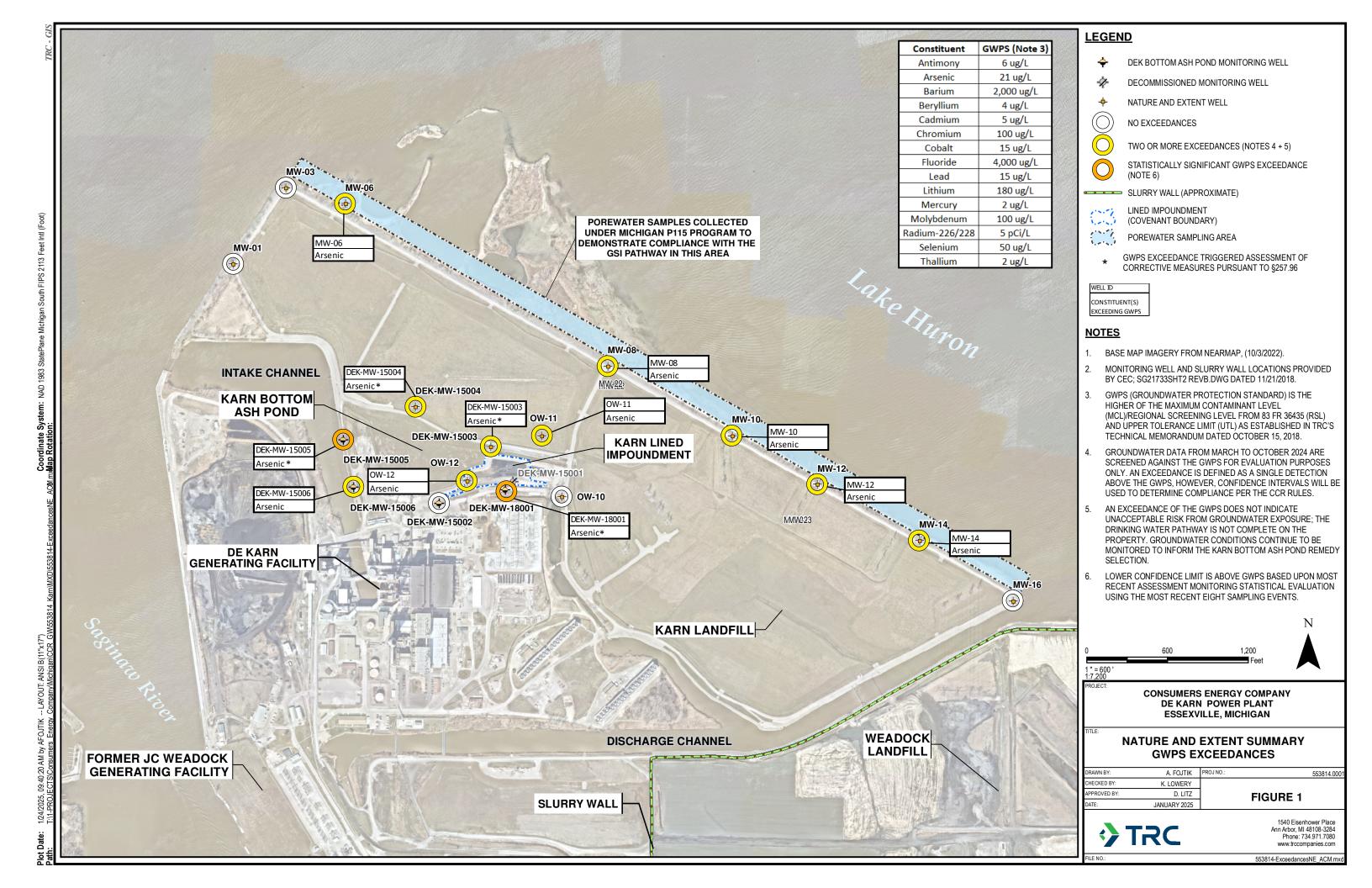
All metals were analyzed as total unless otherwise specified.

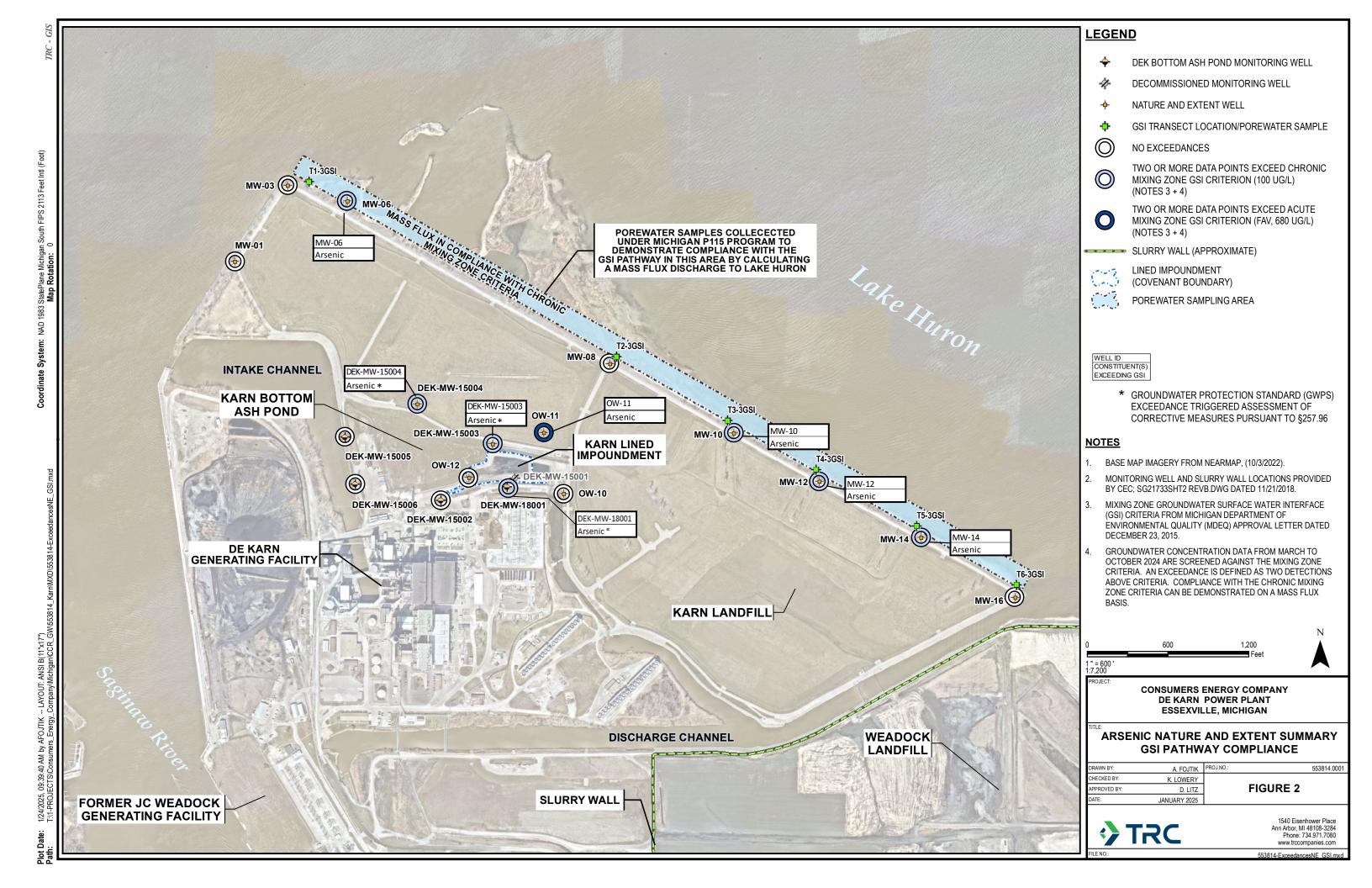
Transect samples were unable to be collected during the first quarter 2023 event due to site conditions.

- ¹ Constituent triggered an Assessment of Corrective Measures for the Karn Bottom Ash Pond as described in TRC's letter report dated January 14, 2019.
- ² Compliance demonstrated on a mass flux basis.

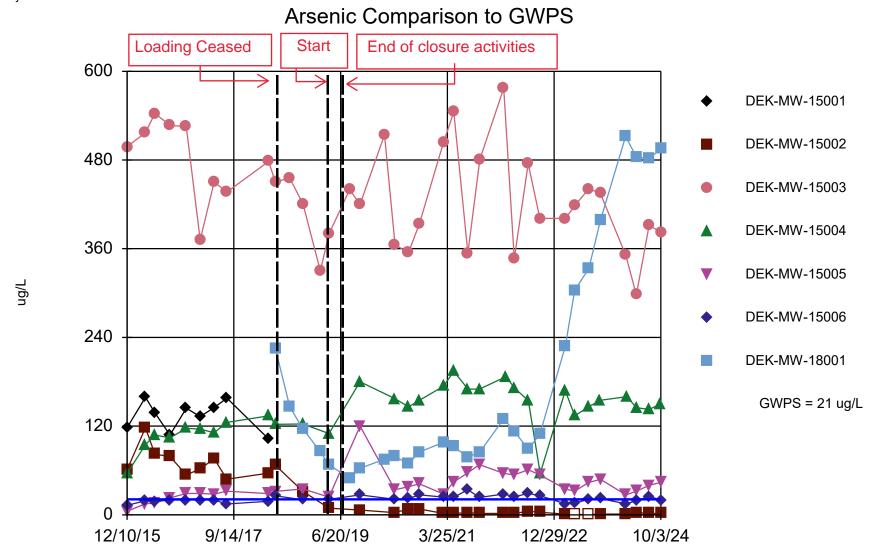
January 2025

Figures



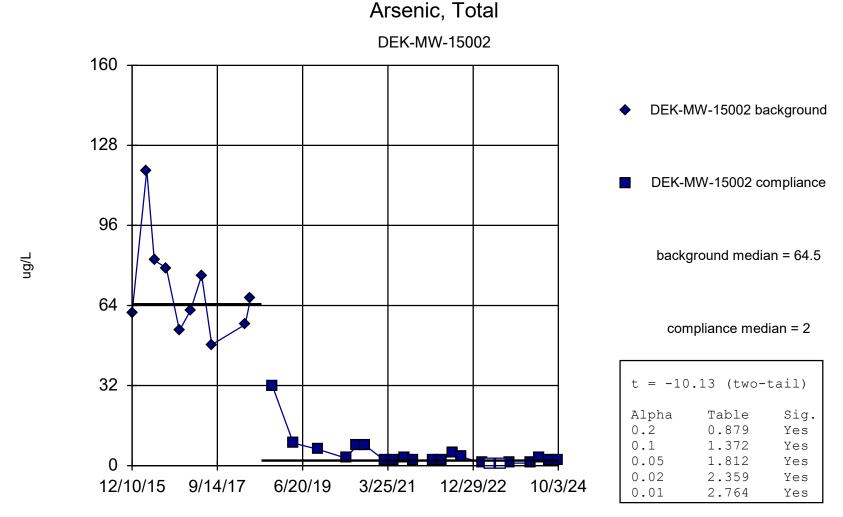


Attachment A Statistical Evaluation



Time Series Analysis Run 11/22/2024 12:12 PM

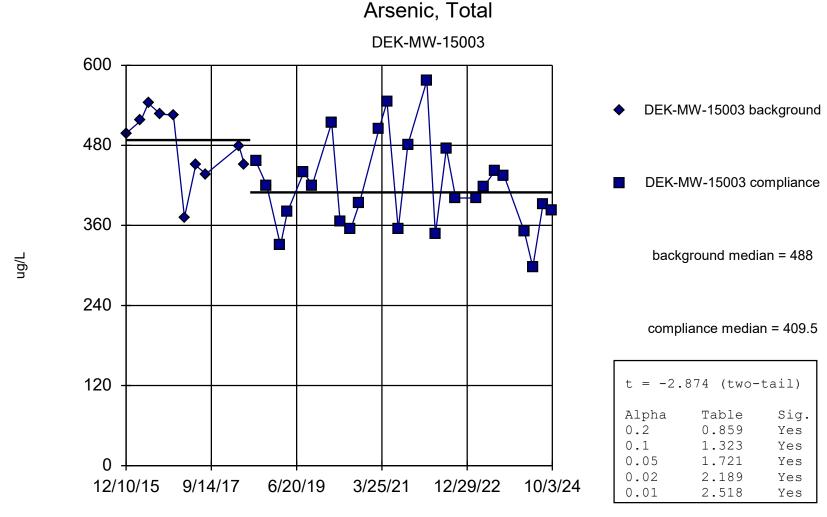
Client: Consumers Energy Data: Copy of DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8668, critical = 0.842.

Welch's t-test Analysis Run 11/22/2024 12:15 PM

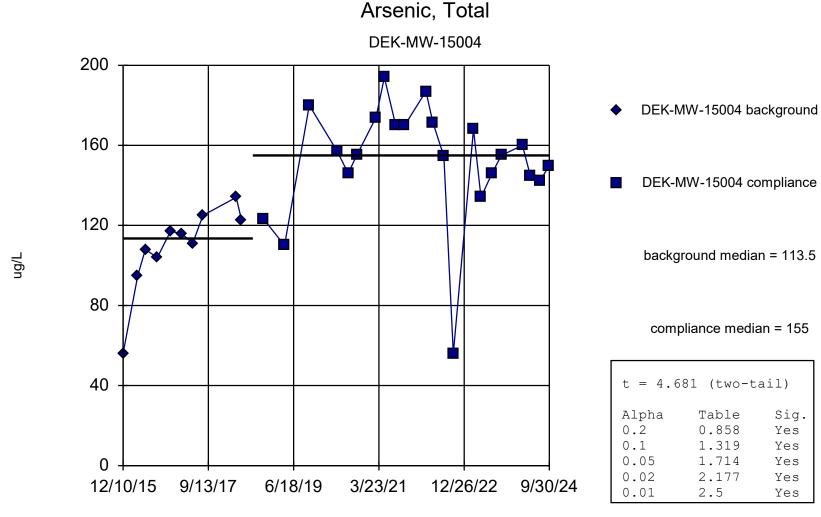
Client: Consumers Energy Data: Copy of DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9262, critical = 0.842.

Welch's t-test Analysis Run 11/21/2024 3:51 PM

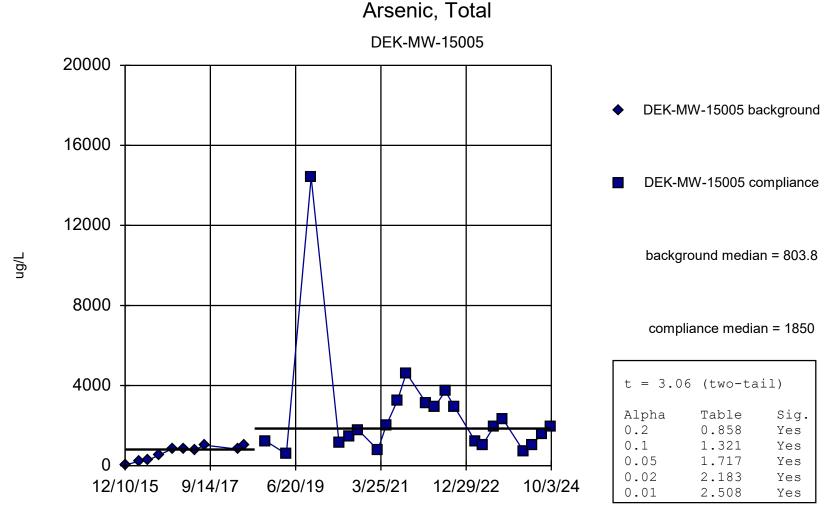
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.852, critical = 0.842.

Welch's t-test Analysis Run 11/21/2024 3:52 PM

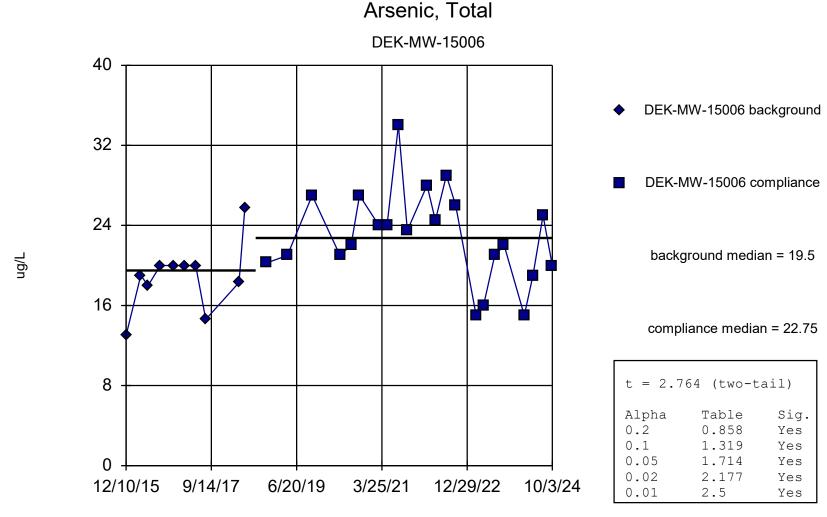
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8767 after square transformation, critical = 0.842.

Welch's t-test Analysis Run 11/21/2024 3:54 PM

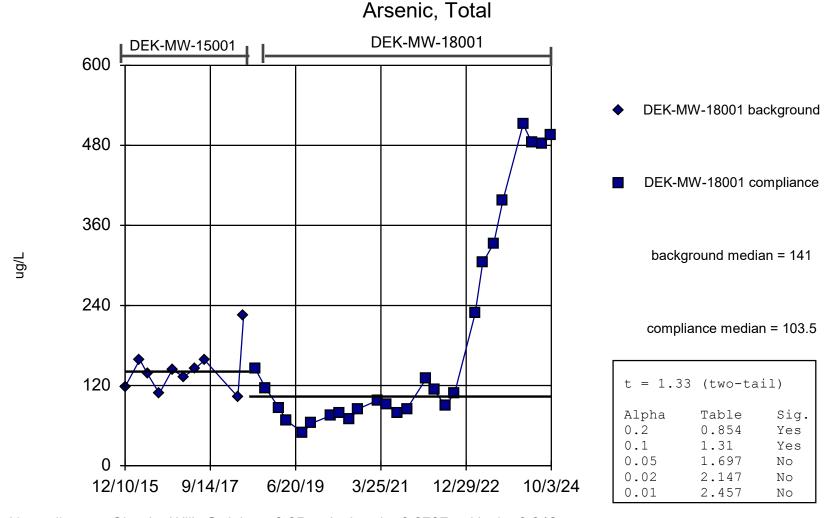
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8992, critical = 0.842.

Welch's t-test Analysis Run 11/21/2024 3:58 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8737, critical = 0.842.

Welch's t-test Analysis Run 11/21/2024 3:57 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Constituent: Arsenic, Total (ug/L) Analysis Run 11/22/2024 12:16 PM
Client: Consumers Energy Data: Copy of DEK_HMPCCR_Sanitas_24Q4

				3,
T	DEK-MW-15002	DEK-MW-15002		
12/10/2015	61 (D)			
3/30/2016	118 (D)			
5/26/2016	82 (D)			
8/24/2016	79 (D)			
12/1/2016	54 (D)			
2/23/2017	62 (D)			
5/18/2017	76 (D)			
8/3/2017	48.3 (D)			
4/12/2018	56.4 (D)			
5/23/2018	67 (D)			
11/5/2018		31.7 (D)		
4/11/2019		9 (D)		
10/15/2019		6.5 (D)		
5/13/2020		3 (D)		
8/3/2020		8 (D)		
10/6/2020		8 (D)		
3/1/2021		2 (D)		
5/3/2021		2 (D)		
7/28/2021		3 (D)		
10/4/2021		2 (D)		
3/1/2022		2 (D)		
5/3/2022		2 (D)		
7/26/2022		5 (D)		
10/4/2022		3.5 (D)		
3/8/2023		1 (D)		
5/2/2023		<1 (D)		
7/26/2023		<1 (D)		
10/4/2023		1 (D)		
3/5/2024		1 (D)		
5/9/2024		3 (D)		
7/24/2024		2 (D)		
10/3/2024		2 (D)		

Constituent: Arsenic, Total (ug/L) Analysis Run 11/21/2024 3:52 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

	DEK-MW-15003	DEK-MW-15003
12/10/2015	498 (D)	
3/30/2016	517 (D)	
5/26/2016	543 (D)	
8/24/2016	527 (D)	
12/1/2016	525 (D)	
2/23/2017	372 (D)	
5/18/2017	450 (D)	
8/4/2017	437 (D)	
4/12/2018	478 (D)	
5/23/2018	450 (D)	
8/16/2018		456 (D)
11/6/2018		420 (D)
2/18/2019		330 (D)
4/11/2019		380 (D)
8/13/2019		440 (D)
10/15/2019		420 (D)
3/11/2020		514 (D)
5/14/2020		365 (D)
8/3/2020		355 (D)
10/6/2020		393 (D)
3/2/2021		504 (D)
5/3/2021		545 (D)
7/27/2021		354 (D)
10/7/2021		481 (D)
2/28/2022		577 (D)
5/3/2022		346.5 (D)
7/26/2022		475 (D)
10/4/2022		401 (D)
3/8/2023		401 (D)
5/2/2023		418 (D)
7/26/2023		441 (D)
10/4/2023		435 (D)
3/5/2024		351 (D)
5/8/2024		297.5 (D)
7/24/2024		392 (D)
10/3/2024		382 (D)

Constituent: Arsenic, Total (ug/L) Analysis Run 11/21/2024 3:53 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

	DEK-MW-15004	DEK-MW-15004
12/10/2015	56 (D)	
3/30/2016	95 (D)	
5/26/2016	108 (D)	
8/24/2016	104 (D)	
12/1/2016	117 (D)	
2/23/2017	116 (D)	
5/18/2017	111 (D)	
8/3/2017	125 (D)	
4/12/2018	134 (D)	
5/23/2018	122.5 (D)	
11/6/2018		123 (D)
4/11/2019		110 (D)
10/15/2019		180 (D)
5/14/2020		157 (D)
8/4/2020		146 (D)
10/7/2020		155 (D)
3/2/2021		174 (D)
5/3/2021		194 (D)
7/28/2021		170 (D)
10/4/2021		170 (D)
3/14/2022		187 (D)
5/4/2022		171.5 (D)
7/27/2022		154.5 (D)
10/6/2022		56 (D)
3/7/2023		168 (D)
5/3/2023		134 (D)
7/25/2023		146 (D)
10/3/2023		155 (D)
3/11/2024		160 (D)
5/9/2024		145 (D)
7/24/2024		142.5 (D)
9/30/2024		150 (D)

Constituent: Arsenic, Total (ug/L) Analysis Run 11/21/2024 3:54 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

]	DEK-MW-15005	DEK-MW-15005
12/10/2015	5 (D)	
3/30/2016	15 (D)	
5/26/2016	16 (D)	
8/24/2016	23 (D)	
12/1/2016	29 (D)	
2/23/2017	29 (D)	
5/18/2017	28 (D)	
8/3/2017	31.9 (D)	
4/11/2018	28.7 (D)	
5/24/2018	31.7 (D)	
11/6/2018		35 (D)
4/11/2019		24 (D)
10/15/2019		120 (D)
5/13/2020		34 (D)
8/3/2020		38 (D)
10/7/2020		42 (D)
3/2/2021		28 (D)
5/3/2021		44.5 (D)
7/28/2021		57 (D)
10/4/2021		68 (D)
3/1/2022		56 (D)
5/3/2022		54 (D)
7/26/2022		61 (D)
10/4/2022		54 (D)
3/7/2023		35 (D)
5/2/2023		32 (D)
7/26/2023		44 (D)
10/5/2023		48 (D)
3/6/2024		27 (D)
5/9/2024		32 (D)
7/24/2024		40 (D)
10/3/2024		44 (D)

Constituent: Arsenic, Total (ug/L) Analysis Run 11/21/2024 3:59 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

	DEK-MW-15006	DEK-MW-15006
12/10/2015	13 (D)	
3/30/2016	19 (D)	
5/25/2016	18 (D)	
8/24/2016	20 (D)	
12/1/2016	20 (D)	
2/23/2017	20 (D)	
5/18/2017	20 (D)	
8/3/2017	14.6 (D)	
4/11/2018	18.3 (D)	
5/24/2018	25.7 (D)	
11/5/2018		20.25 (D)
4/11/2019		21 (D)
10/15/2019		27 (D)
5/13/2020		21 (D)
8/4/2020		22 (D)
10/7/2020		27 (D)
3/2/2021		24 (D)
5/3/2021		24 (D)
7/28/2021		34 (D)
10/4/2021		23.5 (D)
3/1/2022		28 (D)
5/3/2022		24.5 (D)
7/26/2022		29 (D)
10/4/2022		26 (D)
3/7/2023		15 (D)
5/2/2023		16 (D)
7/26/2023		21 (D)
10/5/2023		22 (D)
3/5/2024		15 (D)
5/9/2024		19 (D)
7/24/2024		25 (D)
10/3/2024		20 (D)

Constituent: Arsenic, Total (ug/L) Analysis Run 11/21/2024 3:58 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

	DEK-MW-18001	DEK-MW-18001
12/10/2015	118 (D)	
3/30/2016	159 (D)	
5/26/2016	138 (D)	
8/24/2016	108 (D)	
12/1/2016	144 (D)	
2/23/2017	133 (D)	
5/18/2017	145 (D)	
8/3/2017	158 (D)	
4/10/2018	103 (D)	
5/23/2018	225 (D)	
8/17/2018		146 (D)
11/6/2018		116 (D)
2/18/2019		85.5 (D)
4/10/2019		68 (D)
8/14/2019		49 (D)
10/15/2019		63 (D)
3/9/2020		75 (D)
5/14/2020		79 (D)
8/3/2020		69 (D)
10/6/2020		85 (D)
3/2/2021		98 (D)
5/3/2021		92 (D)
7/27/2021		78 (D)
10/7/2021		85 (D)
3/1/2022		130 (D)
5/3/2022		113 (D)
7/26/2022		89 (D)
10/4/2022		109 (D)
3/7/2023		228 (D)
5/3/2023		304 (D)
7/26/2023		333 (D)
10/4/2023		398 (D)
3/4/2024		512 (D)
5/8/2024		484 (D)
7/24/2024		482 (D)
10/3/2024		495 (D)



Enclosure 5 May 2024 and October 2024 Field Notes

TRC

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance
PROJECT NUMBER:	553814.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	5/6/2024 TO 5/9/2024
PURPOSE OF FIELDWORK:	Second Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Whaley

SIGNED LAW 5/10/24

CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp. DATE: S & 2024 PROJECT NUMBER: 553814.0001.0000 AUTHOR: JJ JK AW	TIME ARRIVED: 0708
	TIME LEFT: 1645
WEATHER	
	/ 1 -
TEMPERATURE: SS-70°F WIND: 15-30 MPH VISIBILITY:	Llar
WORK / SAMPLING PERFORMED	
Check in with site contact	
Calibrate YSI	
Sample train lined Impoundment wells; OW-10, OW 15003 (DUP-KLI), SUFFACE water at KLI-F	1-11, DEF -MU.
PROBLEMS ENCOUNTERED CORRECTIVE A	ACTION TAKEN
None	
COMMUNICATION	
NAME REPRESENTING SUBJECT / COMMEN	TS
Darby Litz TRC PM - Updates	
Jon Gaeth Consumers Site Contact	·
· · ·	,,,
INVESTIGATION DERIVED WASTE SUMMARY	
WASTE MATRIX QUANTITY COMMENTS	
Groundwater NM Purge to Ground	
·	

5/10/24

77_{DATE}



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2024	GW Comp DATE:	5-8-24	TIME ARRIVED: 0700
PROJECT NUMBER:	553814.0001.0	0000 AUTHO	PR: JJ (JK) AW	TIME LEFT: 1600
		WEATH	ER	
EMPERATURE: 1	2 °F WIND:	15-20 MPH	VISIBIL	ITY: clear
		ORK / SAMPLING	PERFORMED	
Sampled	DEK-MM- 1801	р I		
PROE	BLEMS ENCOUNTERE	D	CORRECT	IVE ACTION TAKEN
		,		
		COMMUNIC		
NAME	REPRESENTING		SUBJECT / COM	MENTS
Darby Litz	TRC	PM - Updates		
Jon Gaeth	Consumers	Site Contact		
NAME TO THE PARTY OF		GATION DERIVED	WASTE SUMMARY	TO.
WASTE MATRIX	QUANTITY	D / . C	COMMEN	18
Groundwater	NM	Purge to Groun	na	
4				

DATE

CHECKED BY



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2024	GW Comp DATE:	5/8/20	TIME ARRIVED: り30
PROJECT NUMBER:	553814.0001.0	O000 AUTH	OR: JJ JK AW	TIME LEFT: (Ce)C
		WEATH	ER	•
TEMPERATURE: <u>Le</u>	°F WIND:	30 MPH	VISI	BILITY: OUR COUT
		ORK / SAMPLING		
MW-15	009, Dup 7	101 mu	1-15019	MW-15002
MW-1501	14 EB #01	(FB #01		
	,			
PPO	BLEMS ENCOUNTERE	D.	COPPE	CTIVE ACTION TAKEN
PROI	SLEWIS ENCOUNTERE	<u> </u>	CORREC	STIVE ACTION TAKEN
		COMMUNIC	CATION	
NAME	REPRESENTING		SUBJECT / Co	OMMENTS
Darby Litz	TRC	PM - Updates		
Jon Gaeth	Consumers	Site Contact		
	INVESTION	GATION DERIVE	D WASTE SUMMARY	
WASTE MATRIX	QUANTITY		СОММЕ	ENTS
Groundwater	NM	Purge to Grou	nd	
		1		
		1		
	<u> </u>			
	5/13/20			2/1/1/ /1/29
	- Communication			V V / / 413/01

DATE

REVISED 04/2019



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2024	GW Comp DATE:	C-9-2	Ч	TIME ARRIVED:	0700
PROJECT NUMBER		1	DR: JJ JK	7,000		00
		WEATH	ED			
TEMPERATURE: 7	O °F WIND:	10~20 MPH		VISIBILITY	: Clear	
	W	ORK / SAMPLING	PERFORM	ED		
Sampled	DEK BAP	wells/	ow-12			
unable ons it	to collect	Sample	From	KLÎ-	-\$c\$	
PRO	BLEMS ENCOUNTERE	D		CORRECTIVE	ACTION TAKEN	
SCS u	ial Dry		no	Sample	collected	
ALABAT.	T DEDDECENTING	COMMUNIC		DUEST LOOK NEE		
NAME Dorby Litz	REPRESENTING TRC	DM Hadatas		BJECT / COMME	NIS	
Darby Litz Jon Gaeth	Consumers	PM - Updates Site Contact				
						
	INVESTI	GATION DERIVE	- WASTE SI	IMMA DV		
WASTE MATRIX	QUANTITY		- TIAGIL 00	COMMENTS		
Groundwater	NM	Purge to Grou	nd			
Je	16	5-15-24				
sign j ed		DATE	CHECK	ED BY		DATE



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn E	3AP/LI: 2024 GW	CAMPLED MANE
PROJECT NO.:	553814.000	1.0000	SAMPLER NAME: J. Jasso, J. Krenz, A. Whaley
WATER LEVEL MEASU	JREMENTS COLL	ECTED WITH:	
	RON DIPPER-T		TRC A2
NAME AND MODEL OF IN			SERIAL NUMBER (IF APPLICABLE)
PRODUCT LEVEL MEA	ASUREMENTS CO	OLLECTED WITH	•
	NA		NA
NAME AND MODEL OF IN		·	SERIAL NUMBER (IF APPLICABLE)
DEPTH TO BOTTOM O	F WELL MEASUR	REMENTS COLLE	ECTED WITH:
	RON DIPPER-T		
NAME AND MODEL OF IN			TRC A2
NAME AND MODEL OF IN	NSTRUMENT		SERIAL NUMBER (IF APPLICABLE)
PURGING METHOD			
PERI	STALTIC PUMP		TRC A2
NAME AND MODEL OF PI	UMP OR TYPE OF I	BAILER	SERIAL NUMBER (IF APPLICABLE)
SAMPLING METHOD			
PERI	STALTIC PUMP		TRC A2
NAME AND MODEL OF PI	UMP OR TYPE OF I	BAILER	SERIAL NUMBER (IF APPLICABLE)
GEOTECH	DISPOSABLE FIL	TER.	0.45 MICRON
NAME AND MODEL OF FI	ILTERATION DEVIC	Ε	FILTER TYPE AND SIZE
DEDICA	TED POLY TUBIN	G	✓ LOW-FLOW SAMPLING EVENT
TUBING TYPE			
PURGE WATER DISPO	SAL METHOD		
✓ GROUND	DRUM	☐ POTW	DOLYTANK DOTHER
DECONTAMINATION A	ND FIELD BLANI	K WATER SOURCE	CE
STO	ORE BOUGHT		LABORATORY PROVIDED
POTABLE WATER SOURCE	CE		DI WATER SOURCE
(5/13/2	4	She suff dielan
SIGNED	11.710	DATE	CHECKED BY DATE

◆ TRC

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	/ Compliand	e	MODEL: YSI Pro DSS	SAMPLER:	AW, JK, JJ	
PROJECT NO.:	553814.0001.0000			SERIAL #:	DATE: B/8/24		
PH	CALIBRATION CHECK			SPECIFIC CONDU	CTIVITY CALIBR	RATION CHECK	
(LOT #)3 (\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	pH 4 / 10 (LOT #): 7 (2) 0 (500) (EXP. DATE): 70 1) 1 POST-CAL. READING / STANDARD	CAL. RANGE	TIME	CAL. READING (LOT #): 3610103 (EXP. DATE): // /) Y POST-CAL. READING / STANDARD	TEMPERATURE	CAL. RANGE TIME	
700 17CU	400 1400	WITHIN	1235	1360/1760	シ ラ	WITHIN (1)36	
1	1	WITHIN RANGE	• •			WITHIN RANGE	
1	1	WITHIN RANGE		/		WITHIN RANGE	
1	1	WITHIN RANGE		1		WITHIN RANGE	
ORF	P CALIBRATION CHECK			D.O. CALI	BRATION CHEC	CK	
CAL. READING (LOT #): 23 6 160 C4C	TEMPERATURE			CAL. READING	TEMPERATURE		
(EXP. DATE): 7 / YE POST-CAL. READING / STANDARD	(022000)	CAL. RANGE	TIME	POST-CAL. READING /SATURATED AIR.	(°CELSIUS)	RANGE TIME	
		WITHIN	ハつぐ		22	WITHIN RANGE	
२००७ / ५०३	7-23	WITHIN	127 \	8-35 /875	<i>2</i> 3	WITHIN	
		RANGE WITHIN		,		RANGE	
<u>'</u>		RANGE WITHIN		,		RANGE	
TURBU	DITY CALIBRATION CHEC	RANGE		·	COMMENTS	RANGE	
	READING (NTU)	T		AUTOCAL SOLUTION		SOLUTION (S)	
(LOT #): 13097	(LOT #):	ا 🛴 ا		(LOT #):		······································	
(EXP. DATE): 4/)	(EXP. DATE):	CAL. RANGE	TIME	(EXP. DATE):		AND EXPIRATION DATES BRATION CHECK	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	1.		CALIBRATED PARAMETERS	CALIBRATI	ON RANGES (1)	
0 10	1	WITHIN	123	□ pH	pH: +/- 0.2 S.	U.	
100/100	1	WITHIN RANGE	123	COND	COND: +/- 1% OI	F CAL. STANDARD	
, i		I - Larrence		│ │ │ ORP			
		WITHIN RANGE]	ORP: +/- 25 m\	/	
/	1			□ D.O.	ORP: +/- 25 mV D.O.: VARIES	/	
1	/ / NOTES	RANGE WITHIN			D.O.: VARIES	/ F CAL. STANDARD	
1	1	RANGE WITHIN		□ D.O.	D.O.: VARIES TURB: +/- 5% OI		
	1	RANGE WITHIN			D.O.: VARIES TURB: +/- 5% OI	F CAL. STANDARD	
	NOTES	RANGE WITHIN			D.O.: VARIES TURB: +/- 5% OI (1) CALIBRATION RAN THE MODEL OF THE 1	F CAL. STANDARD	
SIGNED	NOTES	RANGE WITHIN			D.O.: VARIES TURB: +/- 5% OI (1) CALIBRATION RAN THE MODEL OF THE 1	F CAL. STANDARD	



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	/ Complian	се	MODEL: YSI Pro DSS	SAMPLER:	AW, JK, JJ
PROJECT NO.:	553814.0001.0000			serial #: Kental	DATE: §	-9-24
PH	CALIBRATION CHECK			SPECIFIC CONDU	CTIVITY CALIBI	RATION CHECK
pH 7 (LOT #):4G A O 6 2 9 (EXP. DATE): 7 cm / 2 G POST-CAL, READING / STANDARD	pH 4 / 10 (LOT #): 4 G A O 6 3 1 (EXP. DATE): Tan/26 POST-CAL. READING / STANDARD	CAL. RANGE	TIME	CAL. READING (LOT #): 4GC 1196 (EXP. DATE): Mar/25 POST-CAL. READING/STANDARD	TEMPERATURE	
7.02 /7.02	4.00 / 4.00	WITHIN RANGE	1206	1213 / 1213	17.4	WITHIN 1201
/ / /	/	WITHIN	.000	/ /	7 74 1	WITHIN
1	1	WITHIN		,		WITHIN
/	<u> </u>	WITHIN		,		WITHIN
ORP	CALIBRATION CHECK	RANGE	l	D.O. CAL	BRATION CHE	
CAL. READING (LOT #):23 L 100 15 6	TEMPERATURE (°CELSIUS)	CAL.	TIME	CAL. READING	TEMPERATURE	CAL. TIME
(EXP. DATE): 11-7-2028 POST-CAL. READING / STANDARD	(CELGIOS)	RANGE		POST-CAL. READING /SATURATED AIR	(°CELSIUS)	RANGE
230.2 / 270.2	20.1	WITHIN RANGE	1212	8.91 18.91	19.3	WITHIN PANGE
1		☐ WITHIN RANGE		1		WITHIN RANGE
1		WITHIN RANGE		1		WITHIN RANGE
1		WITHIN RANGE		/		WITHIN RANGE
TURBIC	ITY CALIBRATION CHEC	CK			COMMENTS	· · · · · · · · · · · · · · · · · · ·
CALIBRATION	READING (NTU)			AUTOCAL SOLUTION	✓ STANDARD	SOLUTION (S)
(LOT#): DT water (EXP. DATE):	(LOT #): A 3097 (EXP. DATE): APR-25	CAL. RANGE	TIME	(LOT #): (EXP. DATE):		AND EXPIRATION DATES BRATION CHECK
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	<u> </u>		CALIBRATED PARAMETERS	CALIBRATI	ON RANGES (1)
0.00 / 0.00	100.0 / 100.0	WITHIN RANGE	1231	pH	pH: +/- 0.2 S.	U.
1	1	WITHIN RANGE		COND	COND: +/- 1% O	F CAL. STANDARD
1	1	WITHIN RANGE		ORP	ORP: +/- 25 m\	/
1	/	WITHIN RANGE		D.O.	D.O.: VARIES	
	NOTES			☐ TURB	TURB: +/- 5% O	F CAL. STANDARD
						NGES ARE SPECIFIC TO WATER QUALITY METER
	PROBLEMS ENCOUNTERED			CORRECTION	VE ACTIONS	
						,
_ fl	JG 5-1	5-24		Elas	MI	distry



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	Compliand	се	···	SAMPLER:	AWJK, JJ	
PROJECT NO.:	553814.0001.0000			SERIAL #: Rental	DATE: 5 18-12-4		
PH	CALIBRATION CHECK			SPECIFIC CONDUC	CTIVITY CALIBR	ATION CHECK	
pH 7 (LOT #):4G B 1040 (EXP. DATE): FC666 POST-CAL READING/STANDARD	pH 4 / 10 (LOT #): 46 A 63 (EXP. DATE): 5 CA / 26 POST-CAL READING / STANDARD	CAL. RANGE	TIME	CAL. READING (LOT#): 46 L196 (EXP. DATE): NAT /25 POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE TIME	
7.05 17.05	4.00 14.00	WITHIN RANGE	2150	1100 /1100	12.2	WITHIN PANGE	
1	1	WITHIN RANGE		/		WITHIN RANGE	
	1	WITHIN RANGE		/		WITHIN RANGE	
. /	CALIDDATION OUTCK	RANGE		J / DO 041	DDATION OUT	RANGE	
CAL. READING	TEMPERATURE	l		CAL. READING	BRATION CHEC TEMPERATURE	K T	
(LOT #): Z3L1COS6 (EXP. DATE): NOS/Z8 POST-CAL. READING / STANDARD	(°CELSIUS)	CAL. RANGE	TIME	POST-CAL. READING /SATURATED AIR	(°CELSIUS)	CAL. RANGE TIME	
246.5 1240.5	13.0	WITHIN RANGE	ושיט	10.33 /10.33	12.4	WITHIN CO725	
1		WITHIN RANGE				WITHIN RANGE	
/		WITHIN		/		WITHIN	
/		WITHIN RANGE		/		WITHIN RANGE	
	ITY CALIBRATION CHEC READING (NTU)	K	I	AUTOCAL SOLUTION	COMMENTS STANDARD	SOLUTION (S)	
(LOT #): (EXP. DATE):	(LOT#): ASSA7 (EXP. DATE): Sep124	CAL. RANGE	TIME	4.07.4%	LIST LOT NUMBERS A	ND EXPIRATION DATES	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	<u> </u>		CALIBRATED PARAMETERS	CALIBRATIO	N RANGES ⁽¹⁾	
	1	WITHIN RANGE WITHIN RANGE WITHIN RANGE	072	COND	pH: +/- 0.2 S.U COND: +/- 1% OF ORP: +/- 25 mV	J. CAL. STANDARD	
1	/	WITHIN RANGE		D.O	D.O.: VARIES		
	NOTES			TURB	TURB: +/- 5% OF	CAL. STANDARD	
Meter rent	ed from Geo	otech				GES ARE SPECIFIC TO VATER QUALITY METER	
	PROBLEMS ENCOUNTERED			CORRECTION	/E ACTIONS		
Nor	re						
SIGNED WALL	us .	5/10/7	24	CHECKED BY	e M	5/15 DATE /	



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	/ Compliand	ce	MODEL:	YSI Pro	DSS		SAMPLE	R:	AW, (JK).	1.1
PROJECT NO.:	553814.0001.0000			SERIAL	- 0	n for l		DATE:		8-5-9·	
				102.1.11	•			<u> </u>			
PH 0	pH 4 / 10			1		AL. RE	FIC CONDU		CALIBE RATURE	RATION C	HECK
(LOT #):46A0629	(LOT#): 46A0631	CAL.			(LOT #):		_	I LIVII L	INTOIL	CAL.	
(EXP. DATE): Jun/16	(EXP. DATE): 3nn/26	RANGE	TIME		(EXP. DAT	re): Mo	5/25	(°CEI	LSIUS)	RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD			1			NG / STANDARD	ļ			
7.00 / 7.00	4,00/4,00	WITHIN RANGE	0627		141	3 /	1413	<u></u>	7.3	WITHIN RANGE	0625
	1	WITHIN RANGE				/				WITHIN RANGE	
/	1	WITHIN RANGE				1				WITHIN RANGE	
1		WITHIN RANGE				1				WITHIN RANGE	
	CALIBRATION CHECK			-			D.O. CAL	IBRATIO	ON CHEC	K	
CAL. READING (LOT #): 13 L 1 00156	TEMPERATURE				С	AL. RE	ADING	TEMPE	RATURE		
(EXP. DATE): 11-7-28	(°CELSIUS)	CAL.	TIME					(°CE	LSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD		1			POST-CAL	. READING	S/SATURATED AIR	l '	201007		
230.7 / 230.7	20.1	WITHIN RANGE	0629	1	8.9	15 /	8.95	19	9, 6	WITHIN RANGE	0633
1		WITHIN RANGE	,			/			., -	WITHIN RANGE	
1		WITHIN		1		1				WITHIN	
1		WITHIN				/				WITHIN	
TURBID	ITY CALIBRATION CHEC		1	_]	L			COMMI	ENTS	KANGE	
CALIBRATION	READING (NTU)			1	☐ AUT	OCAL S	SOLUTION	√ s	TANDARD	SOLUTION	(S)
(LOT #): Dr water (EXP. DATE):	(LOT #): A 309 7 (EXP. DATE): APR-25	CAL. RANGE	TIME		(LOT #): (EXP. DAT	re\.				ND EXPIRATI	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	1			<u> </u>		ARAMETERS	<u> </u>	CALIBRATIO	ON RANGES (1)
0.0 10.0	100.0 / 100.0	WITHIN	0620			рН		pH:	+/- 0.2 S.I	J.	
/	/	WITHIN		İ		CON	D	COND:	+/- 1% OF	CAL. STAN	IDARD
1	,	WITHIN				ORP		ORP:	+/- 25 mV	,	
1	1	WITHIN		-		D.O.		D.O.:	VARIES		
<u> </u>	NOTES	TVANGE	1	_		TURE	3	TURB:	+/- 5% OF	CAL. STAN	IDARD
				1				(1)			
				1		-				IGES ARE SP WATER QUAL	
				-							
F	PROBLEMS ENCOUNTERED						CORRECT	IVE ACTION	ls		
1/	N	C-17	_5 V	1							
SIGNED	The state of the s	5-17			CH	IECKED	BY				DATE
1/	U										

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WATER LEVEL DATA Karn

PROJECT NAME: CEC KarnAWeadock: 2024 GW Compliance DATE: 5 14 12 4

PROJECT NUMBER: 553814,0000/553814,0001/5538150000 AUTHOR: AW, JJ, JK

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW-01	1019	тос	17.25	24.37	NA	NM
MW-02	1621	TOC	17.59	3034	NA	NM
MW-03	1024	TOC	17.55	30.70	NA	NM
MW-04	(027	TOC	(8.78)	3085	NA	NM
MW-06	1639	TOC	9.54	24.30	NA	NM
MW-08	1056	TOC	17.93	27.45	NA	NM
MW-10	1116	тос	17.00	24.85	NA	NM
MW-12	1152	TOC	18.61		NA	NM
MW-14	12.17	тос	1440	1920	NA	NM
MW-16	1230	TOC	14.05	21.28	NA	NM
MW-17	1310	тос	14,27	24,36	NA	NM
MVV-18	0914	тос	26.84	39.64	NA	NM
MVV-19	0920	тос	17.18	2994	NA	NM
MW-20	0953	TOC	53.00	72.00	NA	NM
MW-21	0945	тос	51.90	60.51	NA	NM
MW-22	1100	тос	173	29.53	NA	NM
MW-23	1140	тос	14.78	15.05	NA	NM
OW-01	0957	тос	941.50	04.40	NA	NM
OW-02	1101	тос	(le.29	2197	NA	NM
OW-03	uu	TOC	17.48	78.75	NA	NM
OW-04	1216	тос	10-30	16.27	NA	NM
OW-05	1228	тос	13.50	(8.00	NA	NM
OW-06	1254	TOC	22.85	25.70	NA	NM
OW-07	1150	TOC	15.60	23.97	NA	NM
OW-08	1257	TOC	(60	(7.90	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

GNED 5-15-2
DATE

CHECKED ST

DATE



WATER LEVEL DATA

ROJECT NAME:	CEC Karn/	Weadock: 2024 (3VV Compliance	D	ATE: (5/10/124	
ROJECT NUMBER:5	53814.0009	1553814.0001	1551828.00	900 A	UTHO	R: Jake Krenz,	Javier Jasso, Ar
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH BOTTO (FEET	M	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	1251	TOC	1041	1278	3	NA	NM
OW-10	1300	TOC	7.80	17.90	e)	NA	NM
OW-11	0907	TOC	2430	25.4	\	NA	NM
OW-12	1406	TOC	18.25	23.4	1	NA	NM
OW-13	1400	TOC	3.91	14.	35	NA	NM
_OW-15	0900	TOC	3.85	19.7	0	NA	NM
EW-01	1114	тос	1390	DWN	h	NA	NM
EW-02	1126	тос	15.33			NA	NM
EW-03	ilus	тос	14.65			NA	NM
EW-04	12002	тос	14.60			NA	NM
EW-05	1208	тос	14.00			NA	NM
EW-06	1220	TOC	10.65	V		NA	NM
PZ-01	1105	тос	13.48	14.14	Ø	NA	NM
PZ-02	1107	TOC	1550	230	O	NA	NM
PZ-03	1124	тос	15.28	20.5	U	NA	NM
PZ-04	1120	тос	15.00	20.9	1	NA	NM
PZ-05	1131	тос	14.72	24.4	~	NA	NM
PZ-06	1157	TOC	1560	20	36	NA	NM
PZ-07	1208	тос	1490)	21.0	0	NA	NM
PZ-08	1200	тос	14-610	20.0	20	NA	NM
PZ-09	1214	тос	1938	21-5	1	NA	NM
PZ-10	1233	тос	(094)	17.7)	NA	NM
PZ-11	1724	тос	1390	180	U	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

ED DATE

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WATER LEVEL DATA

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance						DATE: 5/6/24				
PROJECT NUMBER: 557814.0000/557814.0001/557878-0000 AUTHOR: J. Jasso										
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)		DEPTH TO PRODUCT (FEET)	WATER ELEVATION			
DEK-MW-18001	c403		9.48	19.0	080					
DEK-MW-15002					- ikimim					
DEK-MW-15003	2910		1895	27	95					
DEK-MW-15004	0916		29.04	41.9	80		<u> </u>			
DEK-MW-15005	0973		9.89	22.	30					
DEK-MW-15006					<u> </u>	and the second s				
DEK-MW-22001	0926		1025	24.	20					
DEK-MW-22002	0937		11.81	26.	85	, *				
DEK-MW-22003	0937		11.75	24.	40	·				
DEK-MW-22004	0930		1025	72.	40					
DEK-MW-22005	0120		8 lo	20.	25					
DEK-MW-22006	cus		8.89	170			<u> </u>			
MVV-15002										
MVV-15008										
MVV-15016										
MW-15019					· · · · · · · · · · · · · · · · · · ·					
Tw-21-003	100		18-20	26.1	15					
Tw-21-002	1013		12.87	20.	54					
Tw-21-001	1017		[2.80]	17.	58					
Tw. 21-017	wyo		2281	36.	90					
Te-21-0129	1034		30.30	27-	80					
Tw.21012]	1035		20 49	34.	(e)					
Tu. 21 -0120	1030		2045	154.	70					
Tu.21-0120 Tu.21-0415	1044		21.75		51					
Tu->1-01/1	1046		21.57	35	30					

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED SIGNED DATE

CHECKED DATE

SEJEIN.0000/ SEJEIN.0001/ SE 1828.0000 WATER LEVEL DATA

PROJECT NAME:	CEC Karn LF: 2023 GW Compliance					DATE: \$1661			
PROJECT NUMBER: 514494.0000.0000						AUTHOR: Jake Krenz, Javier Jasso, And			
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	вот	H TO TOM ET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION		
Tw-240117	1047		21.81	42	20				
Tw-21.010	1050		2097	28					
Tw-21-009	(05)		20.55	27.					
Tu-21-000	1735		1382	19					
Tw 21-007	1237		12.56	18.					
Tw-21-006	1241		9.70	(3.9	46				
Tu 21-00 5	1244		1021		8)				
Te-21-004	1247		13.05	16	.60				

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	1		100						
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	-								
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				-					
				-					

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED S-15-24

DATE

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PROJECT	NAME:	CEC Ka	ırn BAP/LI: 2	024 GW	С	PR	EPARED			CHE	CKED	
PROJECT	NUMBER	: 553814.	.0001.0000		BY:	AW, JK,	اً رَ ٰ DATE: اِلْ	13/24	BY:	JK	DATE: 5-17-24	
SAMPLE I	ب W:ر	し、「ら	007	WEL	L DIAME	TER: 🗸	2"] 6" [OTHER			
WELL MATE	RIAL:	√ PVC [_ss _] IRON [GALV	ANIZED	STEEL		OTHER			
SAMPLE TY	PE: [☑ GW [] ww [] sw [] DI		LEACHATE		OTHER			
PURG	ING	TIME:\ \	3(ATE:5	छ। य	(5	SAMPLE	TIME:	145	5/	DATE: 5 8 1211	
PURGE METHOD:	-		PERISTALTIC	PUMP			1 2 2 1			VITY: 4		
	L	BAILER				ORP:						
DEPTH TO			T/ PVC			TURB		<u>. </u>		ODERATE	☐ VERY	
DEPTH TO			T/ PVC	[] CAI	LONS	- 		95)				
WELL VOLU		NA L	LITERS		LONS					RROUS Fe		
VOLUME R	40			DOR: <u>\10</u>		COLO	ATE (0.45 um)			No		
COLOR:			BIDITY	DOINT IL			ATE (0.45 dill)	L 1 L		LTRATE OD	OB:	
NONE	☐ SLIC		MODERATE	D.	VERY	<u> </u>		S/MSD		DUP-	OK. (
DISPOSAL	METHOD:					COM	MENTS:					
TIME	PURGE	PH	CONDUCTIVIT	Y OF	RP	D.O.	TURBIDITY	TEME	PERATURE	WATER		
	RATE (ML/MIN)	(SU)	(umhos/cm)	(m		(mg/L)	(NTU)		(°C)	LEVEL (FEET)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
(431	200	7.70	676	~[0]		6.3	113:0	•	15.2	(a). (a)		
1436	2	7.54	521	-11		1,50	8-6	l	2-6	68		
1441		7.69	511	- 11		1.23	8.5	į	28	68		
inus		7.68	500	~~	1.3	1. 25		i	18	68		
1451		760	495		~~~	1,29			12.7	689		
' '		7, -			***				L <u>~</u>	1 2 -		
								<u> </u>				
								<u> </u>				
								_				
								_				
					1							
N pH: +/-		BILIZATION COND.: +/-		VIPLETE V P: +/- 10		SUCCESS O.: +/- 0 .	SIVE READING 3 TURB: +				/ING LIMITS: TEMP.: +	
			<u></u>	· · · · · · · · · · · · · · · · · · ·								
BOTTLES	<u> </u>		ATIVE CODE:			B - HNO3			- NaOH		HCL F	
NUMBER	SIZE	TYPE	PRESERVA		ILTERE				YPE	PRESERVA		
	250 mL	PLASTIC	A		Y X		125 mL		ASTIC	D	□Y□N	
	125 mL	PLASTIC	A	ᆜ	-=	N	40 mL		/OA	E	T V N	
	60 mL	VOA	Α		\equiv	N	2 1L	PLA	ASTIC	В	□ Y 🔀 N	
	125 mL	PLASTIC	В			N					□Y □ N	
	125 mL	PLASTIC	С		Y	N						
SHIPPING	METHOD:	Lab Do	p off	DATE SHI	IPPED:		0-24		IRBILL NU	JMBER:		
сос иим	COC NUMBER: SIGNATURE: DATE SIGNED: \$\(\begin{align*} \lambda											

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PROJECT	NAME:	CEC Ka	ırn BAP/LI: 20	24 GW C	PRE	PARED		CHEC	KED
PROJECT	NUMBER	553814	.0001.0000	BY:	AW, JK, J	DATE: St	3/24 BY:	JK	DATE: 5-13-24
SAMPLE II	o:Mu	J- 15	5008	WELL DIAME	ETER: 🗸	2"	6" OTHE	R	
WELL MATE	RIAL:	√ PVC [ss 🔲	RON GAL	/ANIZED S	TEEL	OTHE	R	
SAMPLE TY	PE: [☑ GW [ww:	SW 🗌 DI		LEACHATE	OTHE	R	
PURG	ING	TME: ()	FL DA.	TE: 5/60/21		AMPLE		• •	ATE: 5 18 WE
PURGE METHOD:	_	PUMP F BAILER	PERISTALTIC P	UMP .		(<u>69<</u> sı -125.√m		ΤΙVΙΤΥ: <u>[7 (e</u> 576 — mg	
DEPTH TO	WATER:	426	T/ PVC	······································	TURBIL	OITY: 9.9	1 NTU		
DEPTH TO	BOTTOM:	17.42	T/ PVC		TH-NO	NE 🗌 SLI	GHT_ 🗌 N	MODERATE	☐ VERY
WELL VOLU	JME:	NA [LITERS	GALLONS	TEMPE	RATURE: 🔟	ا ع ر) ا	ERROUS Fe _	mg/L
VOLUME R	EMOVED:	(Q)	LITERS	GALLONS	COLOF	<u>: _ رابو</u>	w	DDOR: <u>1</u>	1016
COLOR:	B	newn	ust ode	OR: non	FILTRA	TE (0.45 um)	YES [ANO	
		TURE	BIDITY		FILTRA	TE COLOR:		FILTRATE ODO	₹:
NONE	suc	ЭНТ 🔲 І	MODERATE	VERY	QC SA	MPLE: 🗌 MS.	/MSD 1	DUP- B	ckground
DISPOSAL	METHOD:	✓ GROUN	D DRUM	OTHER	сомм	ENTS:			·
TIME	PURGE RATE		CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	LEVEL	CUMULATIVE PURGE VOLUME
1211	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	215	(°C)	(FEET)	(GAL OR L) INITIAL
1245	200°	490		223_	8.37		(7.7)	4,2 3	
1250		6.96	2341	-107-5	1.36	9.5	11.9	421	431
1241		6.90		-107.0		10.8	11/	453	3
1300		695	1851	7145	681	10.0	II. T	U)T	3
1305		695	1757	-(250	077	10.0	11.5	764	4
(340		6.95	1755	-125.3	671	10.0	11.5	4.31	7
1315		6.95	1760	-125.5	670	9.95	11.5	471	<u></u>
N	OTE: STAI	BILIZATION	TEST IS COMP	PLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITHIN	THE FOLLOWIN	IG LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D	.O.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +</td>	TEMP.: +
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	1 D - NaOH	I E- H	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUMB	ER SIZE	TYPE	PRESERVAT	IVE FILTERED
æ	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	□ Y □ N
2	125 mL	PLASTIC	Α	□ Y ½	N	40 mL	VOA	E	□ Y □ N
	60 mL	VOA	А		N L	1 L	PLASTIC	В	□ Y 🐼 N
2	125 mL	PLASTIC	В	☐ Y Dx	N				□ Y □ N
	125 mL	PLASTIC	С		N			and the second state of the second se	□ Y □ N
SHIPPING	METHOD.	Lab Drop	app D	ATE SHIPPED:	8-10	- 24	AIRBILL 1	NUMBER:	
	Carrier aparter of a feetings of the sec	wiop		arran, dan di kata kata kata kata kata kata kata kat					112 15:4
TOOC MOIN!	COC NUMBER: SIGNATURE: DATE SIGNED: 5/1/8 /) 9								

○ **STRC**

PROJECT NAME: CEC	Karn BAP/LI: 20	024 GW C	PRI	EPARED		CHE	CKED			
PROJECT NUMBER: 5538	14.0001.0000	BY:	AW, JK, J	J DATE LIS) 서 BY:	31L	DATE: 5~13-24			
SAMPLE ID: Mu - 15	016	WELL DIAN	METER: 🗸	2"	6" 🗌 ОТНІ	ER				
WELL MATERIAL: PVC	ss	IRON 🗌 GAL	VANIZED S	TEEL	□ отні	ER				
SAMPLE TYPE:	□ ww □	SW 🗌 DI		LEACHATE	ОТН	ER				
PURGING TIME: 1 C	らに	ATES 18 12	1	AMPLE	TIME: \S	- 1	DATE: 5/6/24			
PURGE PUMP	PERISTALTIC	PUMP		<u>, 10</u> s			e 🗦 umhos/cm			
L_ BAILER					 	169 n	ng/L			
DEPTH TO WATER: 3.4C T/ PVC TURBIDITY: 4.4 NTU										
DEPTH TO BOTTOM: 7.75 T/ PVC NONE SLIGHT MODERATE VERY										
WELL VOLUME: NA	LITERS	GALLONS				FERROUS Fe	mg/L			
VOLUME REMOVED: 7	LITERS	GALLONS	COLO	7: <u>Cleu</u>		ODOR:	1010			
COLOR: Brown	00	DOR: NOY	_ FILTRA	TE (0.45 um)	YES	Ф ио				
	RBIDITY	6.	FILTRA	TE COLOR:		FILTRATE ODG	OR:			
	MODERATE	VERY	QC SA	MPLE: MS	/MSD	DUP-				
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:										
TIME PURGE PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE WATER				
(ML/MIN) (SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)			
1517 290 700	6661	-90.1	63	260	15.	3,40	1			
1517 700	1814	293.6	1.85	63	12.8	3.70	. (
1522 708	1773	-103.5	1,00	35	12.9	3.70				
1527 710		-110.5	-	23	19-7	3.70				
1533 7.10		-114.8	078	(7	12.6	3.7				
1537 7.10	1748	_ 47.5	073	(0	12.6	370				
1542 7.10	1757	-117.5	070	w	12.4	3.80	0			
1547 7.1	0 767	-117.5	669	9.9	12.	(385				
NOTE: STABILIZATIO	N TEST IS COM	PLETE WHEN 3	SUCCESSI	IVE READINGS	ARE WITHIN	THE FOLLOWI	ING LIMITS:			
pH: +/- 0.1 COND.: +	/- 3 % ORP	: +/- 10 E	D.O.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +</td>	TEMP.: +			
BOTTLES FILLED PRESER	VATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOl	H E- I	HCL F			
NUMBER SIZE TYPE	PRESERVAT	IVE FILTERE	ED NUME	BER SIZE	TYPE	PRESERVA ⁻	TIVE FILTERED			
250 mL PLASTIC	C A		N	125 mL	PLASTIC	D	□ Y □ N			
125 mL PLASTIC	C A		N	40 mL	VOA	Е	□ Y □ N			
60 mL VOA	A			ス 1L	PLASTIC	В	□ Y 🔯 N			
(125 mL PLASTI	С В		N		ļ		□ Y □ N			
125 mL PLASTI	c c	Y	N				□ Y □ N			
SHIPPING METHOD: Lab Da	SHIPPING METHOD: Lab Doo of DATE SHIPPED: 5-10-24 AIRBILL NUMBER:									
COC NUMBER: SIGNATURE: DATE SIGNED: \$\(\frac{1}{2} \rightarrow \frac{1}{2} \r										

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PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED										
PROJECT NUMBER: 553814.0001.0000 BY: AW, JK, JJ DATE: 517-24										
SAMPLE ID) mu		5067	WELL D	DIAMETE	ER: 🔽 2"	4"	6" 🗌 ОТН	ĒR	
WELL MATE	RIAL:	PVC [_ss _	IRON 🔲	GALVAN	NIZED STEE	EL	ОТН	ER	
SAMPLE TYI	PE:	☑ GW [_ww □	sw 🗌	DI	LEA	CHATE	□ отн	ER	
PURG	ING	TIME: \$3	46 DA	TE:5/8	jzy	SAM	1000	TIME: 1 U		DATE: 5 (8/34)
PURGE METHOD:	<u></u>	PUMP F BAILER	PERISTALTIC P	PUMP		PH: (e.)	97 SI		י <u>ללס</u> ז <u>ללס</u>	umhos/cm mg/L
DEPTH TO	WATER:	330	T/ PVC			TURBIDITY	1: <u>5. </u> 6	NTU		
DEPTH TO	воттом:	16.87	T/ PVC			NONE	SLIC	энт 🔲	MODERATE	☐ VERY
WELL VOLU	ME:	NA [LITERS	GALLO	NS	TEMPERAT	TURE: 16	<u>o_</u> .c	FERROUS Fe	mg/L
VOLUME RI	EMOVED:		LITERS	GALLO	NS	COLOR:	Cle	w	ODOR:	20 K
COLOR:	Ch	QCV	OD	OR: ∩©√	4	FILTRATE ((0.45 um)	YES	∄ -NO	
		TURE	BIDITY			FILTRATE C	COLOR:		FILTRATE OD	OR:
NONE	SLIC	тне П	MODERATE	☐ VEI	RY	QC SAMPL	LE: MS/	MSD	DUP-	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:										
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY	ORP (mV)		D.O. TU	URBIDITY (NTU)	TEMPERATU	RE WATER LEVEL (FEET)	PURGE VOLUME
1348	200	707	2037	- LOG:	8 6		(6)	16-0	5.30	
1353	7	G(a)	2039	- 104°		40	5,8	14.5	5.3	
1356		192	2041	- 47		· ·	5, E	11.10	53	
L				- 71				11.4		
1463		695	2046	-104		<u> ୧</u>	5,6	10.6	-	
1408		6.95	2046	<u>.,104</u>		80	5.9	10.0		<u> </u>
1413		6.95	2644	-104	1. 10	77	<u>5, E</u>	10.0	93	7 2
		all l								_
	100									
N(OTE: STAF	RII IZATION	TEST IS COMP	Y FTF WHE		CCESSIVE	READINGS	ARE WITHIN	THE FOLLOW	ING LIMITS:
pH: +/- (COND.: +/-		+/- 10		+/- 0.3	TURB: +/-		= 10</td <td>TEMP.: +</td>	TEMP.: +
BOTTLES	FILLED	PRESERVA	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - NaOl	H E-	HCL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILT	ERED	NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTERED
l	250 mL	PLASTIC	А	□ Y	X N		125 mL	PLASTIC	D	□Y□N
N N	125 mL	PLASTIC	А	Y	X N		40 mL	VOA	E	□ Y □ N
	60 mL	VOA	Α	ΠY	Пи	2	1 L	PLASTIC	В	
\	125 mL	PLASTIC	В	ΠY	N X					□ Y □ N
	125 mL	PLASTIC	С	Y	N				T	□ Y □ N
SHIPPING	METHOD:	hab ha	00 0 0 D	ATE SHIPP	ED:	8-10-3	24	AIRBILL	NUMBER:	1 1 1
COC NUME	PER.	4-	51	GNATURE:	·			DATE OF	GIALID.	43/24

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PROJECT NA	ME:	CEC Ka	ırn BAP/LI: 2	024 G	w c			PRE	ΞPΑ	RED				CHE	CKE	D	
PROJECT NU	JMBER:	553814.	.0001.0000		E	3Y:	А۷	V, JK, J	J	DATE:) ^y	BY:	7	K	DA	TE: 5-1	3-24
SAMPLE ID:	老	B. He	+4EB	#91	ELL D	IAME	TE	R: 🗸	2" [] 4" []	6"	OTHE	R				
WELL MATERIA		PVC [ss [IRON				IZED S			Ē	OTHE	R			**************************************	
SAMPLE TYPE	: [∕] GW []ww [sw		DI			LEA	CHATE		OTHE	R				
PURGIN	IG 1	гіме:	D	ATE:				S	AMF	PLE	TIME	TUC	9 C		DATE	5/8	3/26
PURGE	Q.	UMP F	PERISTALTIC	PUMP				PH:	N	1 1sı	n c	ONDUC	TIVIT	Y: <u>/</u>	' M	um	hos/cm
METHOD:		AILER .	+	Λ			┵	ORP:			A		<u> </u>	<u>h</u>	mg/L		
DEPTH TO WA	/		T/ PVC /				4,	TURBII			<u> </u> N1		400				D)/
DEPTH TO BOTTOM: T/ PVC T GALLONS								_ NOI		L SLI	۱Hن	 -		ERATE		∐ VE	
WELL VOLUM	\	NA L	LITERS		ALLO		-+	COLOF		URE:		=+	ODOF				mg/L
COLOR:	VED.		/	DOR:	712201		-+			0.45 um)		L		<u>``</u> IO			
		TURE	BIDITY				\dashv	FILTRA				· ·	FILTE	RATE OF	OOR:		
NONE	SLIG	нт 🔲 г	MODERATE	. [VEF	RY	-			.E: MS	/MSD			UP-			
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS: EQ - Background																	
1 11/11/4 1	URGE RATE	PH	CONDUCTIVIT	Y	ORP	\top	ſ	0.0.	TU	JRBIDITY	TEM	PERATUR	RE	WATE		CUMUL URGE V	
1	IL/MIN)	(SU)	(umhos/cm)		(mV)		(r	ng/L)	y- 1	(NTU)	·,	(°C)		(FEET		(GAL C	4.0
														water and the second second		INITI	AL
										nan de spel de le più me pèrical de l'Après de spel per l'après de l'Après de spel per l'après de spel per l'a							
								w	,			************					
			LANGE BY THE PARTY OF THE PARTY											ng pan, and are the Community of the P			
					-							V-107-0-0-7-0-7-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7-1-0-7					

					nemen incomés addisme						ļ						
												************				*******************	
											<u> </u>						
NOT	E: STAB	ILIZATION	TEST IS COM	//PLETI	E WHE	N 3 S	SUC	CESS	IVE F	READINGS	ARE '	WITHIN	THE	FOLLO	VING L	.IMITS:	
pH: +/- 0.1		OŅD.: +/-	3 % ORI	P: +/- 1	0	D.¢	0.:	+/- 0.3		TURB: +/-	10 %	or	= 1</td <td>10</td> <td>TE</td> <td>MP.: +</td> <td></td>	10	TE	MP.: +	
BOTTLES FI	ILLED	PRESERV	ATIVE CODES	3 A - 1	ONE	!	В-	ниоз		C - H2SO4	D	- NaOl-	1	E -	HCL	F	
NUMBER	SIZE	TYPE	PRESERVA	TIVE	FILT	EREC)	NUME	ER	SIZE	Т	YPE	PR	ESERV	ATIVE	FIL	TERED
2	250 mL	PLASTIC	А] Y		N			125 mL	PL	ASTIC		D	4 - 00-0044 (5) 891-110-00	-=	N
1	125 mL	PLASTIC	A] Y		N		.	40 mL		/OA		E	******	-=-	N
	60 mL	VOA	Α	[_ Y		N	0	L	1 L	PL	ASTIC		В			N
	125 mL	PLASTIC	В		_ Y		N								··· 1044/11 *** #**		□ N
1	125 mL	PLASTIC	С		IJY	Ш	N			1	<u> </u>		Ì			<u> </u> Y	N
SHIPPING ME	ETHOD:	Lab D	nop off	DATE S	SHIPPI	ED:		2	-10	-24	Α	NRBILL I	NUME	BER:	~		
COC NUMBER	R:			SIGNA	TURE:)	_ [OATE SIG	GNEC) ;		13/4	<u> </u>

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PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED											
PROJECT	NUMBER	R: 553814	1.0001.0000	BY:	AW,	(jk) 11	DATE:5-8.	-24	BY: E	h	DATE: 5/15/24
SAMPLE	ID: DEK	-MW - 1	18001	WELL DIAM	/IETER	: 🗸 2"	4"	6" 🗌	OTHER		
WELL MAT	ERIAL:	✓ PVC	ss 🔲	IRON GA	_VANIZ	ED STE	EL		OTHER		
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI		LE	ACHATE		OTHER		
PURC	SING	TIME: 12	26 DA	ATE: 5-8-2	4			TIME:	1303	3 D.	ATE: 5-8-24
PURGE	7	PUMP	PERISTALTIC I	PUMP	P	н: <u>7</u>	. 36 sı	n co	NDUCTIV	ITY: 74°	umhos/cm
METHOD):	BAILER			0	RP:	14.1 m	V DO:	O	.12 mg	g/L
DEPTH TO	WATER:	9.50	T/ PVC		T	URBIDIT	Y: 3.03	NTL	J		
DEPTH TO	воттом:	19.70	T/ PVC			NONE	SLIC	GHT	□ моі	DERATE	☐ VERY
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 12.3 °C FERROUS Fe mg/L											
VOLUME F	REMOVED:	<u> </u>	X LITERS	GALLONS	С	OLOR:	<u>Clear</u>	<u> </u>	ODO	OR: _	none
COLOR:		Clear		OOR: <u>none</u>	FII	LTRATE	(0.45 um)	YES	X	NO	
		TURI	BIDITY		FII	TRATE	COLOR:		FIL	TRATE ODOR	R:
NONE SLIGHT MODERATE VERY QC SAMPLE: MS/MSD DUP-											
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:											
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.0). Т	URBIDITY	TEMPE	RATURE	WATER	CUMULATIVE
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg		(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)
1228	200	7.19	783	16.8	1.7		18,16		3, 3	9.63	INITIAL
1233	200	7.28	759	-24,7	0.4	6	1.15		1.4	9.63	1
1238	200	7.32	762	-59.6	0.0		5.11	~	۱،٦	9.63	2
1238	200	7.34	760	-75.5	0.		50		7	9,63	3
1248	soo	7,34	751	- 80.3	0.0	2 '	3.98	15	2.4	9.63	4
1253	200	7.36	749	-90.6	0.1		2.94	13	1.4	9.63	5
1258	300	7.37	747	-93,6	0.1		3,21	13	1,2	9.63	6
1303	200	7.36	747	- 94.1	0.1	2 3	3.03	1,	L.3	9.63	7
	IOTE: STAI	RII IZATION	TEST IS COM	PLETE WHEN 3	SUCC	FSSIVE	READINGS	ARF WI	ITHIN THE	FOLLOWIN	G LIMITS:
pH: +/-		COND.: +/-).O.: +/		TURB: +/-		or =</td <td></td> <td>TEMP.: +</td>		TEMP.: +
BOTTI E	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HI	NO3	C - H2SO4	n -	NaOH	F - H	CL F-
NUMBER	1	TYPE	PRESERVAT	····		UMBER	1	TYF	I	RESERVATI	
1	250 mL	PLASTIC	A		 -	3	125 mL	PLAS		D	□ Y X N
3	125 mL	PLASTIC	А		+		40-ml-	V0		<u></u>	T Y D N
6	60 mL	VOA	A	□ Y 1 X 0		2	1 L	PLAS	TIC	В	□ Y X N
3	125 mL	PLASTIC	В			~					□ Y □ N
3	125 mL	PLASTIC	С		N						□ Y □ N
SHIPPING	METHOD:	Fedex	D	ATE SHIPPED:		5-8~	<u>-</u> 2 Y	AIR	BILL NUM	IBER:	

<>	 2	C

PROJECT	NAME:	CEC K	arn BAP/LI: 20	24 GW C	PRI	EPARED			CHECK	KED	
			.0001.0000				a ad BY	· ./h		DATE: SISTU	
O STATE OF STATE											
SAMPLE ID: DEK- MW- 1500 2 WELL DIAMETER: 2" 4" 6" OTHER											
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER											
SAMPLE TYPE:											
PURG	PURGING TIME: 0954 DATE: 5-9-24 SAMPLE TIME: 1031 DATE: 5-9-24 PURGE PURGE PUMP PERISTALTIC PUMP PH: 7.39 SU CONDUCTIVITY: 780 umhos/cm										
PURGE METHOD			PERISTALTIC F	PUMP							
	<u> </u>	BAILER					V DO:		.18 mg.	/L	
DEPTH TO WATER:											
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 11.1 °C FERROUS FE											
VOLUME REMOVED: 1 SALLONS COLOR: Chear ODOR: 1000											
COLOR:		'hear		OR: <u>none</u>		ATE (0.45 um)	YES		NO	<u> </u>	
	[a		BIDITY			TE COLOR:	MCD		TRATE ODOR	K-BAP	
NONE			MODERATE			MPLE: MS	UNIOD	<u> </u>	טטר- עוּג	אליכו ריי	
DISPOSAL	METHOD:	✓ GROUN	ID DRUM	OTHER	COMIN	MENTS:					
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERA	ATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C))	(FEET)	(GAL OR L)	
0956	200	7.47	818	~128.8	1.72	5.53	11.7	3	7.16	INITIAL	
1001	200	7,44	812	-149,6	0.69	5.19	11.1	<u> </u>	7,16		
1006	200	7,43	810	-162.0	0.18	5.72	11.0	2	7.16	2	
1011	200	7,41	801	-171.1	0.18	5.47	10.1	8	7.16	3	
1016	200	7.40	'7९९	- 177.9	0.18	6.02	11.0)	7,16	4	
1021	200	7.40	790	-185.1	0.18	6.39	11.1		7.16	5	
1026	200	7,39	789	- 188.4	0.18	5.06	11.2	L	7.16	6	
1031	200	7.39	780	- 193.3	0,18	5.36	11, 1		7.16	7	
N	NOTE: STAF	BILIZATION	TEST IS COMP	PLETE WHEN 3	SUCCESS	IVE READINGS	ARE WITH	HIN THE	FOLLOWING	G LIMITS:	
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D	.O.: +/- 0.3	TURB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +</td>	10	TEMP.: +	
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - Na	aOH	E- HC	CL F	
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUME	BER SIZE	TYPE	Р	RESERVATI\	/E FILTERED	
2	250 mL	PLASTIC	Α		N 2	125 mL	PLASTI	С	D	□ Y 🔀 N	
2	125 mL	PLASTIC	Α	□ Y 🔼	N	40 mL	-VOA-		—— <u>E</u>	T Y M	
4	60 mL	VOA	А	□ Y X	N 4	1 L	PLASTI	С	В	□ Y X N	
a	125 mL	PLASTIC	В	□ Y ¥	N					□ Y □ N	
2	125 mL	PLASTIC	С		N					□ Y □ N	
SHIPPING METHOD: LOS OFF DATE SHIPPED: 5-10-24 AIRBILL NUMBER:											
COC NUM		y-cj 45		GNATURE:	10		DATE	SIGNE	:D: (5-15-24	
TOOC MOIN	N.			J. 17 11 OINE.	-7-						

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PROJECT	NAME:	CEC K	arn BAP/LI: 20	24 GW C	PR	EPARED		CHEC	KED		
PROJECT	NUMBER	t: 553814	1.0001.0000	BY:	AW, 🕼, .	JJ DATE: 5.	7-24 BY:	eh.	DATE: 5/15/24		
SAMPLE ID: DEIC-MW-15005 WELL DIAMETER: ☑ 2" ☐ 4" ☐ 6" ☐ OTHER WELL MATERIAL: ☑ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER SAMPLE TYPE: ☑ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER											
SAMPLE TYPE: GW WW SW DI LEACHATE OTHER											
PURGING TIME: 0801 DATE: 5-9-24 SAMPLE TIME: 0837 DATE: 5-9-24 PURGE PURGE PUMP PERISTALTIC PUMP PH: 7,44 SU CONDUCTIVITY: 1166 umhos/cm											
METHOD: BAILER ORP: -37.1 mV DO: _0.58 mg/L											
DEPTH TO WATER: 9.80 T/ PVC TURBIDITY: 4.80 NTU											
DEPTH TO BOTTOM: T/ PVC											
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 10.7 °C FERROUS Femg/L											
VOLUME REMOVED: 7 IN LITERS GALLONS COLOR: Clear ODOR: NOTE											
COLOR:		cleur	OD	DR: 101	_ FILTRA	ATE (0.45 um)	YES [∑ NO			
TURBIDITY FILTRATE COLOR: FILTRATE ODOR: FILTRATE ODOR: DUP-											
DISPOSAL	METHOD:	☑ GROUN	ND DRUM	OTHER	COMM	MENTS:					
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	LEVEL	CUMULATIVE PURGE VOLUME		
7-2	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L) 3.02	(NTU) 4.51	(°C)	(FEET)	(GAL OR L) INITIAL		
0807	200	6.76	1014				10.5	10.02	 		
0807	200	7,39	951	66.0	0.41	4.50	10.4	10.02	1		
0812	200	7,38	1013	-14.4	0.40	5.33	10.5	10.02	2		
0817	200	7.43	1060	-53.8	0.65	4.76	10.6	10.02	3		
0877	200	7.43	1115	-74.7	0.68	4,27	10.7	10.02	4		
0827	్నిల్లా	7.44	1139	- 79.8	0.65	 	10.9	10.02	\$		
0832	200	7.44	1147	-85.7	0.60	4.68	10.6	10.02	6		
0837	200	7,44	1166	- 87,4	0.58	4.80	10.7	10.02	7		
	IOTE: STA	! BILIZATION	TEST IS COMP	LETE WHEN 3	SUCCESS	IVE READINGS	ARE WITHIN T	HE FOLLOWIN	G LIMITS:		
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D.	O.: +/- 0.3	TURB: +/-	10 % or <	= 10</td <td>TEMP.: +</td>	TEMP.: +		
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HO	CL F		
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUME	BER SIZE	TYPE	PRESERVATIV	/E FILTERED		
1	250 mL	PLASTIC	Α	□ Y X	N j	125 mL	PLASTIC	D	□ Y Æ N		
i	125 mL	PLASTIC	А	□ Y x	N	40 mL	VOA	E	□ Y □ N		
2	60 mL	VOA	А	□ Y (A)	N	1 L	PLASTIC	В	□ Y □ N		
1	125 mL	PLASTIC	В	□ Y ∑	N				□ Y □ N		
1	125 mL	PLASTIC	С	□ Y Y	N				□ Y □ N		
SHIPPING METHOD: Lab brop of DATE SHIPPED: 5-10-24 AIRBILL NUMBER:											
COC NUM				GNATURE:		2	DATE SIG	NED:	5-15-24		

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PROJECT	NAME:	CEC K	arn BAP/LI: 2	024 GW C	PR	EPARED			CHEC	KED
		553814	.0001.0000	BY:	AW, (ik)	JJ DATE: \$-	1-24 BY	ER		DATE: 5/15/24
SAMPLE I WELL MAT SAMPLE T	ERIAL:	∠ - MW · ☑ PVC ☑ GW	- 15006 ss		METER: VANIZED S	2"		THER THER THER		
PURC	SING	TIME: 11) D	ATE: 5-9-2	4 S	AMPLE	TIME:	1138	? D/	ATE: 5-9-24
PURGE METHOD	_ =	PUMP BAILER	PERISTALTIC	PUMP			SU CONE	UCTIV		
DEPTH TO) WATER:	9,30	T/ PVC		TURB	DITY: 3.15	NTU		***************************************	
DEPTH TO	ВОТТОМ:	_NM_	T/ PVC		☐ NO	NE SLI	IGHT [] мо	DERATE	VERY
WELL VOL	UME:	NA	LITERS	GALLONS	TEMP	ERATURE:	<u>11.8</u> °c	REE	ROUS Fe _	mg/L
VOLUME F	REMOVED:		LITERS	GALLONS	COLO			ODO		none
COLOR:	<u> </u>	Clear	0	DOR: none	_ FILTRA	ATE (0.45 um)	YES	<u> </u>	NO	
⋉ NONE	SLI	GHT 🗌	BIDITY MODERATE	☐ VERY		TE COLOR:	/MSD	FIL	TRATE ODOF	k:
DISPOSAL	_METHOD:	☑ GROUN	ID DRUM	1 OTHER	COM	MENTS:				
TIME	PURGE RATE	PH (SU)	CONDUCTIVIT	Y ORP (mV)	D.O. (mg/L.)	TURBIDITY (NTU)	TEMPERA		WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1113	JOO O	7.65	1090	71.5	3.77	14.25	12.		9.41	INITIAL
1118	200	7.66	1079	-62.5	0.71	10.64			9.41	1
						4.68	11,		9,41	2
1123	200	7.67	1091	-93.5	0.13	 	110		 	3
1128	200	7.66	1092	-100.8	0.14	3.65	11.		9,41	
1133	200	7.65	1092	-104.5	0.13	3.24	11.		9,41	4
1138	200	7,65	1095	- 107.0	0,13	3.15	11,3	7	9,41	5

pH: +/-		BILIZATION		1PLETE WHEN 3 P: +/- 10 D	SUCCESS 0.O.: +/- 0.3			HIN THE		G LIMITS: TEMP.: +
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	4 D - Na	аОН	E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTERE	D NUME	BER SIZE	TYPE	Р	RESERVATI	/E FILTERED
)	250 mL	PLASTIC	А		N)	125 mL	PLASTI	С	D	□ Y Ø N
1	125 mL	PLASTIC	А	□ Y ⊠	N -	49 mL	VOA-			
2	60 mL	VOA	А	□ Y 図 ()	N 2	1 L	PLASTI	С	В	□ Y [DX]N
	125 mL	PLASTIC	В	□ Y X	N					□ Y □ N
	125 mL	PLASTIC	С		N					□ Y □ N
SHIPPING	METHOD:			DATE SHIPPED:			AIRBI	LL NUM	IBER:	
COC NUM	IRFR:			SIGNATURE:			DATE	SIGNE	D:	

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PROJECT	NAME:	CEC K	arn BAP/LI: 20	024 GW C	PR	EPARED		CHEC	(ED			
PROJECT NUMBER: 553814.0001.0000 BY: AWJK, JJ DATE: 5/8/24 BY: EK DATE: 5/15/24												
SAMPLE ID: OW-(O WELL DIAMETER: 2" 4" 6" OTHER												
WELL MAT	WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER											
SAMPLE TYPE:												
PUR	PURGING TIME: 102 DATE: 5/8/24 SAMPLE TIME: 107 DATE: 5/8/24											
PURGE PUMP PERISTALTIC PUMP PH: 7.32 SU CONDUCTIVITY: 968 umhos/cm												
METHOD: DRP:												
DEPTH TO WATER: 7.83 T/ PVC TURBIDITY: 17.98 NTU												
DEPTH TO	DEPTH TO BOTTOM: 1745 T/ PVC NONE SLIGHT MODERATE VERY											
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 12.4 °C FERROUS Fe mg/L												
VOLUME REMOVED: 8-0 A LITERS GALLONS COLOR: Clar - Close ODOR: None COLOR: Volume REMOVED: 8-0 DOR: None FILTRATE (0.45 um) Yes No												
COLOR:				OR: NONC				∐ NO	1810			
NONE	Ø SLI		BIDITY MODERATE	☐ VERY		TE COLOR: <u> </u>	MSD	FILTRATE ODOR	None			
	<u> </u>		ND DRUM									
DIGI COAL		C OKOGI	10 DICOM		TOOMIN	IENTS: 1,55	owed me	tals col	CUMULATIVE			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE WATER LEVEL	PURGE VOLUME			
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR(L)			
1028	ZOO	7.51	1005	89.5	3.09	39.67	12.6	7.83				
1033		7.46	1012	61.2	1.16	52.11	12.7	8-30	1.0			
1038		7.93	979	·	9.72	54.75	12.3	8.42	2.0			
1043		7.38	950	-145.3	0.51	25.72	12,5	8.50	30			
1048		7.36	937	-45.6	3.45	19.44	12.5	8.55	4.0			
1053		7.35	928	-47.8	0.42	20.14	12.6	8.60	5.0			
1058		7.34	916	-65.6	0.36	18.20	12.4	8.67	6.0			
1103		7.33	910	-71.4	3.35	17.04	12.5	8.70	7.0			
1108	4	7.32	908	-73.4	C:33	17.98	12.4	8.70	8.0			
N	NOTE: STA	BILIZATION	TEST IS COMI	PLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITHIN	THE FOLLOWING	LIMITS:			
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D.	.O.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +</td>	TEMP.: +			
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	H E- HC	L F			
NUMBER	SIZE	TYPE	PRESERVAT			ER SIZE	TYPE	PRESERVATIV				
	250 mL	PLASTIC	A	X Y	N \	125 mL	PLASTIC	D	□Y X N			
1	125 mL	PLASTIC	A		N	40 mL	VOA	E				
之	60 mL	VOA	Α		N 7	1 L	PLASTIC	В	□ Y X N			
1	125 mL	PLASTIC	В		N 1	125	Plastic	13	X Y □ N			
)	125 mL	PLASTIC	С		N		الرق ال	1-2	_ N □ Y			
SHIPPING METHOD: Fed-EX DATE SHIPPED: 5/8/24 AIRBILL NUMBER:												
COC NUM		1000		GNATURE:	A \\	<u> </u>	DATE SIG		10/24			
TOO DIACIN			į O	W () - C (L.	* * * * * * * * * * * * * * * * * * *	/\	10,110,010	-·· 3	1.11.21.2.77			

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PROJECT	NAME:	CEC K	arn BAP/Li: 20	024 GW C	PR	EPARED		CHEC	KED		
PROJECT	NUMBER	: 553814	.0001.0000	BY:	AV), JK,	JJ DATE: 5/6	Plzy BY: E	K	DATE 5/15/29		
SAMPLE II	D: /2(N	-1(WELL DIAM	IETER: 🗸] 2"	6" OTHE	R			
WELL MATE		√ PVC	ss 🗌	IRON GAL	VANIZED	STEEL.	OTHE	R			
SAMPLE TY	PE: [√ GW	□ ww □	SW 🗌 DI		LEACHATE	OTHE	R			
PURGING TIME: 12 16 DATE: 5/8/24 SAMPLE TIME: 1246 DATE: 5/8/24											
PURGE		PUMP	PERISTALTIC I	PUMP	PH:	<u>9.53</u> s		TIVITY: 384.	umhos/cm		
METHOD		BAILER		· · · · · · · · · · · · · · · · · · ·	ORP:	<u>64.1</u> m		e.lo mg	/L		
DEPTH TO	WATER:	<u> 29. </u>	T/ PVC	1547		IDITY: 6.10					
DEPTH TO	воттом:	<u> </u>		ansducer	- X NC			MODERATE	VERY		
WELL VOLU		NA	LITERS	GALLONS	TEMP	ERATURE: 15	.8 °C F	ERROUS Fe	mg/L		
VOLUME R			LITERS	GALLONS	COLC	R: <u>Llea</u> C		DDOR:	None		
COLOR:	<u>G5</u>	ay - Cli	ocaly or	OR: None	FILTR	ATE (0.45 um)	YES	X NO			
			SIDITY	_		ATE COLOR:		FILTRATE ODOR	:		
NONE			MODERATE	VERY		- 7	/MSD [DUP			
DISPOSAL	METHOD:	☑ GROUN	ID DRUM	OTHER	СОМІ	MENTS: /3	<u>- hll</u>				
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	WATER	CUMULATIVE		
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR 🖄		
1216	200	048.48m	448.2	69.4	2.87	240.22	15.1	74.25	INITIAL		
1221		9.18	349.9	66.4	2.19	658.20		25.30	1.00.5		
1226	- 0	CL	adsost	tubing a			recharge				
1231		9.54	357.9	76.3	2.60	A 44.11	15.4	turbies to	3.0201		
123/	- N	(A)	م: ل ه			-			1.0		
1241	<u>_</u>	1952	3540	64.1	horge	1 / 1 ^	15.8	24.70	1.5		
1246	- N	200	collect	Sample			ccharge	25.30	20		
/ 6		'Y	CONCL!	SOFTE			. و				
	500	nple	INIPIL	ion fi	ichec	1 @ 1	350 0	lue to	well		
	_		1 .	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	1,5,00		0	<u> </u>	WC2/		
1	0		THET IS COM	DI ETE MUEN 2	SUCCESS	IVE DEADINGS	ADE WITHIN T	HE FOLLOWING	G I IMITS:		
pH: +/-		COND.: +/-			.O.: +/- 0.		10 % or <		TEMP.: +		
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	CL F		
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTERE	D NUM	BER SIZE	TYPE	PRESERVATI\	/E FILTERED		
	250 mL	PLASTIC	Ä		N	125 mL	PLASTIC	D	□ Y 🖄 N		
ı	125 mL	PLASTIC	Α	KZ Y 🖂	N	40 mL	VOA	E	□ Y □ N		
2	60 mL	VOA	Α	□ Y D	N 2	2 1L	PLASTIC	В	□ Y 🐼 N		
1	125 mL	PLASTIC	В		N				☐ Y ☐ N		
	125 mL	PLASTIC	С	□ Y Ø	N				□ Y □ N		
SHIPPING METHOD: FCL - EX DATE SHIPPED: 518124 AIRBILL NUMBER:											
COC NUMI	BER:			IGNATURE:	A. w	light -	DATE SIG	NED:	5/10/24		
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PROJECT	NAME:	CEC K	arn BAP/LI: 20	024 GW C	PR	EPARED		CHEC	KED .
PROJECT	NUMBER	: 553814	1.0001.0000	BY:	AW (IK)	JJ DATE: 5-9	1-24 BY:	EN	DATE: SISTZU
SAMPLE I	D: ()W-12	_	WELL DIAM	ETER: 🗸	2"	6" OTHE	R	
WELL MAT	ERIAL:	✓ PVC	☐ ss ☐	IRON GAL	VANIZED S	STEEL	OTHE	R	
SAMPLE T	YPE:	√ GW	□ ww □	SW DI		LEACHATE	OTHE	R	
PURC	SING	TIME: 13	L08 DA	TE: 5-9-29	/ s	AMPLE	TIME: 12	Ť	ATE: 5-9-24
PURGE METHOD)·		PERISTALTIC I	PUMP	PH:	<u>7,14</u> s -80,9 m		. 15	umhos/cm
DEPTH TO	LJ	BAILER	T/ D\/C		TURBI		V DO: _	o.43 mg	J/L
<u> </u>	BOTTOM:		T/ PVC					MODERATE	VERY
WELL VOL		NA.	LITERS	GALLONS				ERROUS Fe	
	REMOVED:	•-7	LITERS	GALLONS	COLO				none
COLOR:		range	, OD	OR: none	_ FILTRA	TE (0.45 um)	YES	⊠ NO	 -
	'	TUR	BIDITY		FILTRA	TE COLOR:		FILTRATE ODOF	₹:
NONE	SLI	GHT 🗌	MODERATE	🗡 VERY	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROUI	ND 🗌 DRUM	OTHER	COMN	MENTS:			
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	RE WATER	CUMULATIVE
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)
1210	200	7.29	954	-23.6	3.78	360.52	13,3	18.32	INITIAL
1215	200	7.28	977	-38.4	0.75	110.70	12.9	18,32)
1220	200	7.19	1069	-58.4	0,28	47.34	12.7	18.32	, a
1225	200	7.16	1136	-68.6	0.27	26.04	12.6	18.32	3
1230	200	7.16	1157	-72.4	0.27	16.65	12.6	18.32	4
1235	300	7.15	1180	-76,5	0.26	10.93	12.6	18.32	S
1240	200	7.14	1194	-79,1	0,26	6.80	12.5	18,32	6
1245	200	7.14	1199	- 80,9	0.25	5.34	12.5	18.32	7
N	IOTE: STAE	BILIZATION	TEST IS COM	PLETE WHEN 3	SUCCESS	IVE READINGS	ARE WITHIN 1	THE FOLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D.	O.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +</td>	TEMP.: +
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUME	BER SIZE	TYPE	PRESERVATIV	VE FILTERED
	250 mL	PLASTIC	А		N J	125 mL	PLASTIC	D	□ Y 🔯 N
1	125 mL	PLASTIC	А		N	40_m	¥0A	E	
2	60 mL	VOA	A		N 2	1 L	PLASTIC	В	□ Y X N
1	125 mL	PLASTIC	В		N		·		□ Y □ N
1	125 mL	PLASTIC	С		N				□ Y □ N
SHIPPING	METHOD:		Di	ATE SHIPPED:			AIRBILL N	UMBER:	
COC NUM	DED:		91	GNATURE:			DATE SIG	NED:	

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PROJECT NAME:	CEC Ka	arn BAP/LI: 20	24 GW C	PRE	PARED		CHEC	KED		
PROJECT NUMBE	R: 553814.	.0001.0000	BY: (/	ÁW JK, JJ	DATE:518	124 BY:	ER	DATE: 5/15/24		
SAMPLE ID: DE	2-MW-	15003	WELL DIAME	TER: 🗸	2"	6"	ER			
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER										
SAMPLE TYPE:	☑ GW [ww	SW 🗌 DI	L	EACHATE	ОТНІ	ER			
PURGING	TIME: 140	DA DA	TE: 5/8/24		MPLE	TIME: 144	4 DA	TE:5/8/24		
PURGE METHOD:	PUMP F	PERISTALTIC F	PUMP		5.67 s -486 m		TIVITY: 393.	umhos/cm		
DEPTH TO WATER:	1895	T/ D\/C		TURBIC				/L		
	4 16			X NON	-		MODERATE	☐ VERY		
DEPTH TO BOTTOM		T LITERS	GALLONS				***************************************			
WELL VOLUME: VOLUME REMOVED	NA L	LITERS	GALLONS	+	77 =		FERROUS Fe	mg/L		
	en r		OR: NOME	COLOR			ODOR: <u>A</u> X NO	onc_		
COLOR:			DR: NOME		TE (0.45 um)	∐ YES				
DNONE DS	_	BIDITY	☐ VERY		E COLOR:	 /MSD	FILTRATE ODOR	: <u> </u>		
		MODERATE					<u> </u>			
DISPOSAL METHOD	:[V] GROUN	D DRUM	☐ OTHER	COMM	ENTS: Radio	m Dup	also colle			
TIME PURGE RATE	1	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	LEVEL	CUMULATIVE PURGE VOLUME		
(ML/MIN)	(SU)	(umhos/cm)	(MV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OF(L)		
1404 200	8.10	288.8	86.4 2	40	6.04	14.6	18.95	INITIAL		
1409	7.73	377.0	82.0	1,74	5.94	18.6	20.40	1.0		
1414	7.72	380.5	71.1	41	4.97	19.2	20.48	2.0		
149 7.8	89.78	3 11 12 Lan	18.4	.02	4.58	18.3	20.54	3.0		
1424	7.99	387.7	3.1 c	2.76	3.64	18.9	20.70	4.0		
1429	8.03	≥94.4	-10.7	D.74	3.38	19.1	20.76	5.0		
1434	8.05	397.6	-384 0	3.67	341	19.4		6.0		
1439	T	399.6		2.62	3.11	14.3		7.0		
1444	8.09	393.0	-48.00	2.56	3.00	18.9	V	6.0		
						1				
NOTE: STA	BILIZATION	TEST IS COMP	LETE WHEN 3 SU	UCCESSIV	E READINGS	ARE WITHIN	THE FOLLOWING	S LIMITS:		
pH: +/- 0.1	COND.: +/-).: +/- 0.3	TURB: +/-			TEMP.: +		
BOTTLES FILLED	PRESERVA	ATIVE CODES	A - NONE B	- HNO3	C - H2SO4	D - NaOH	I E- HC	L F		
NUMBER SIZE	TYPE	PRESERVATI	VE FILTERED	NUMBE	ER SIZE	TYPE	PRESERVATIV	/E FILTERED		
2 250 mL	PLASTIC	Α	□ Y X N		125 mL	PLASTIC	D	□ Y X N		
Z 125 mL	PLASTIC	Α	□ Y X N	l .	40 mL	VOA	E	□ Y □ N		
4 60 mL	VOA	А		4	1 L	PLASTIC	В	□ Y X N		
2 125 mL	PLASTIC	В	□ Y X N	ı				□ Y □ N		
2 125 mL	PLASTIC	С	□ Y \ \	ı				□ Y □ N		
SHIPPING METHOD	Fed.	EX DA	ATE SHIPPED:	5/8/29	/	AIRBILL I	NUMBER:			
COC NUMBER:			GNATURE:	1. 4/10	1	DATE SIG	SNED:	110/24		

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PROJECT	NAME:	CEC K	arn BAP/LI: 20	24 GW C	PR	EPARED		CHEC	KED
PROJECT	NUMBER	1: 553814	1.0001.0000	BY:	AV), JK,	JJ DATE:5/	PLEY BY:	EN.	DATE: 5/15/24
SAMPLE I WELL MATI SAMPLE TY	ERIAL:	1-PC	S	WELL DIAM		2"		er Er Surfac	ie water
PURG	SING	TIME: /S4	JS DA	TE:5/8/24	′ 5	SAMPLE	TIME: 15	50 D	ATE: \$5/8/24
PURGE METHOD	. =	PUMP BAILER	Sunfle	'UMP -	PH:	P.71 s		CTIVITY: <u>(e.1</u> 2	z umhos/cm
DEPTH TO	WATER:	_N/A	T/ PVC				<u></u> utu		
DEPTH TO	BOTTOM:	<u> NA</u>	T/ PVC		⊠ ,NC		7 A	MODERATE	VERY
WELL VOL		NA ACA	LITERS	GALLONS				FERROUS Fe	mg/L
VOLUME F			LITERS	GALLONS	COLO			ODOR: _	None_
COLOR:		leas		OR: Whe			∐ YES	NO NO	
NONE	∑ s⊔	GHT 🔲	BIDITY MODERATE	☐ VERY		AMPLE: MS	/MSD	FILTRATE ODOF	₹:
DISPOSAL	METHOD:	✓ GROUN	ND DRUM	OTHER	COM	MENTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O.	TURBIDITY (NTU)	TEMPERATU	RE WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1545		8.71	614	99-6	9.84		12.6	411	INITIAL
1550	NA	8.71	617		9.90	9.23	19:6	NA	
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D	.O.: +/- 0. :	3 TURB: +/-	10 % or	THE FOLLOWIN	TEMP.: +
	S FILLED		ATIVE CODES		B - HNO3		ı	· · · · · · · · · · · · · · · · · · ·	
NUMBER	SIZE	TYPE	PRESERVATI				TYPE	PRESERVATI'	
	250 mL	PLASTIC	A			125 mL	PLASTIC	D	
2	125 mL 60 mL 125 mL 125 mL	VOA PLASTIC PLASTIC	A A B C		N N N N N N N N N N N N N N N N N N N	40 mL 1 L	PLASTIC	В В	
SHIPPING COC NUM	METHOD:	Fed		ATE SHIPPED:	518 A.M	124	AIRBILL DATE SIG	NUMBER:	5110/24

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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Page _ of _

AMP	LING SITE / CU	STOMER:			PROJECT NUMBER: SAP CC or WO#: 24-0343 REQUESTER: Harold Register									Al	NAL	YSIS	REC		QA REQUIREMENT	; ::				
22-20)24 JCW-DEK	Background We	ells		24-0343		REQUESTER:	Haro!	d R	egis	ter_			(Attac	h List	if M	ore S	pace i	is Nee	ded)	_		
JAMP	LING TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □	□ STAN	DARD 🛭 OTH	ER_					_									- 1	□ NPDES ⊠ TNI	
SENI	REPORT TO:	Joseph Firlit			email:		phone:															- 11	□ ISO 17025	
(COPY TO:	Harold Regist	er		WW = Wastewater SL = S W = Water / Aqueous Liquid A = A	Other Sludge Air					ERV	ATI	VE	stals								- -	□ 10 CFR 50 APP. B □ INTERNAL INFO	
~	LAB	SAMPLE COLL	ECTION	MATRIX	S = Soil / General Solid WP =	= Wipe = General	Waste	TOTAL#	ile	ဦ ဦ	OH	5	MeOH Other	Total Metals	Anions	TDS		•					□ OTHER	,
S.A	AMPLE ID	DATE	TIME	MA	FIELD SAMPLE ID /	LOCA	TION	T	ဍိ		g R) 원	ğ	Ţ	Ā	Ē					_	\perp	REMARKS	_
2	24-0343-01	5/8/24	(45)	GW	MW-15002			3	2	1				х	х	х						_		_
	-02	3/8/24	(315	GW	MW-15008			3	2	1				х	х	х				_		_		_
	-03	5/8/24	1447	GW	MW-15016			3	2	1				х	x	х								
	-04	5/6/24	1413	GW	MW-15019			3	2	1				х	х	х								
	-05	5/8/DL		GW	DUP-Background			3	2	1				х	х	х						_		_
	-06	slelay	1605	W	FB- Background			1						х								_		
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RELI	NQUISHED BY:	1		DATE/	TIME:	REC	CEIVED BY:		1					CC	MMI	ENTS	:	L	<u> </u>			II		-04
RELINQUISHED BY: 5/10/2					TIME:	REG	CEIVED BY:						_	Re	ceive	d on I	ce? [□ Yes	s 🗆 1	No	M&T	E#:		
							V							Te	mpera	ature:			_°C		Cal. I	Due I	Date:	

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180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record

MICHIGAN 190

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Environment Testing

Client Information
Client Contact
PWSID: Analysis Requested Job F.
Due Date Requested:
1540 Eisenhower Place 1540 Eisenhowe
TAT Requested (days): Ann Arbor State, Zip; MI, 48108-7080 Compliance Project: A Yes A No Phone: 734-971-7080(Tel) 734-971-9022(Fax) TBD WO #: Kvenz@trccompanies.com Project Mame: (Arn/Weadock CCR Background Well Sample Identification Sample Identification TAT Requested (days): TAT Requested (days): A Yes A No Post: TBD WO #: Kvenz@trccompanies.com Project #: 24024154 Sample Time Sample Matrix Type Sample (C=comp, O-meaning) Sample Identification Special Instructions/Note: Special Instructions/Note:
Mil
Fronce: 34-971-7080(Tel) 734-971-9022(Fax) TBD Wo #: Krenz@trccompanies.com Project #: Carn/Weadock CCR Background Well Sample Identification Sample Identification Sample Date Sample Date Sample Date Sample Date Sample Date WW-15002 Water
Wow Washed Wash
WW-15002 S/8/34 N45/ C Water MA++
WW-15002 S/B/BY NS C Water MA + 1
MW-15002 S/B/DY IUS / C Water MA + 1
MW-15002 S/8/34 NSI C Water MATS
MW-15002 S/8/34 NSI C Water MATS
WW-15002 S/8/34 NAS C Water MAH
1W-15008 5/8/24 13:5 G Water MV ++
1W-15016 S/8/24 1457 Q Water NN 1+
vW-15019 5/8/24 14/3 6 Water NATH
DUP-Background 6/8/24 — C Water UN X X
EQ-Backgroud SIE 125 (GC C Water WV H)
Water
Possible Hazard Identification Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Special Instructions/QC Requirements: Sample Disposal (X fee may 36 assessed if samples at C retained to figure as C retained to figure as C retained to fig
Empty Kit Relinquished by: Date: Time: Method of Shipment:
Relinquished by
Relinquished by: Date/Time: Company Received by: Date/Time: Company Compa
Relinquished by: Date/Time: Company Received by: Date/Time: Company
Custody Seals Intact: Custody Seal No.: Cooler Temperature(s) °C and Other Remarks:

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Page	of

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AMPLING SITE /	CUSTOMER:			PROJECT NUMBER: SAP CC or WO#:											YSIS	QA REQUIREME	NT:				
)2-2024 DEK Lin	ed Impoundment			24-0341	REQUESTER:	Haro	ld R	egis	ter				(Attac	h Lis	if M	ore S	pace i	s Need	led)		
AMPLING TEAM:				TURNAROUND TIME REQUIRED:																☐ NPDES	
/	1. Whaley			□ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD 🖾 OTH	ER_				—	_ :									⊠ TNI	
SEND REPORT TO				email:	phone:	_			_				Ì							☐ ISO 17025	ļ
COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other			СО	NT	AIN	ERS										☐ 10 CFR 50 APP. I	3
	TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air	;		P	RES	ERV	ATI	VE	stals		_						☐ INTERNAL INFO	'
	SAMPLE COLL	ECTION	×	S = Soil / General Solid WP = Wipe O = Oil WT = Gene		AL#		_	4			Total Metals	suc	Ammonia		Alkalinity	ge			☐ OTHER	
LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	TOTAL	None		NaOF	H	MeOH	Tota	Anions	Amn	TDS	Alka	Sulfide			REMARKS	
24-0341-01	5 18 124	1444	GW	DEK-MW-15003		7	4	1	1			x	х	х	х	х	х				
-02	518124	1108	GW	OW-10		7	4	1	1 1			х	x	х	х	x	x				
-03		1246	GW	OW-11	·	7	4	1	1 1			х	х	х	x	х	x				
-04			GW	OW-12		7	4	1	1 1			x	х	х	х	х	х				
-05			w	KLI-SCS		7	\vdash	+	1 1	+		x	х	x	х	х	х	-			
-06	518124	1550	sw	KLI-PCS		7	4	1	1 1		_	x_	х	x	х	х	х	-			
07_			SW	SW-DIICH		7	4	1	I			х	х	X	Х	X	X		-	Dry	
-08	5/8/24		GW	DUP-KLI		7	4	1	1 1			х	x	х	х	х	х	_		-	(5
-09			W	EB-KLI		4	1	1	1 1		_	x	х	х			х				
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Page _____ of ____

SAMPLING SITE / CU	STOMER:		PROJECT NUMBER: SAP CC or WO#:										·A	NAL	YSIS		QA REQUIREMEN	IT.				
Q2-2024 DEK Lined	Impoundment			24-0341	REQUESTER:	Haro	ld R	egis	ter			(Attach List if More Space is Needed)										
SAMPLING TEAM:				TURNAROUND TIME REQUIRED:		••••	-													1	□ NPDES	
				□ 24 HR □ 48 HR □ 3 DAYS □ STAI	NDARD ⊠ OTH	ER_									•						⊠ TNI	
SEND REPORT TO:	Joseph Firlit			email:	phone:										.					1	☐ ISO 17025	
COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other _			CO	NTA	AINE	RS											☐ 10 CFR 50 APP. B	
	TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		#	P	RES	ESERVATIVE			stals		_						1	☐ INTERNAL INFO	
LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = General	al Waste	[AL)		5	4 E			Total Metals	Anions	Ammonia		Alkalinity	ide	•			OTHER	-
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	ATION	TOTAL None HNO ₃ H ₂ SO ₄ NaOH HCI MeOH				Othe	Tota	Ani	Amı	TDS	Alka	Sulfide				REMARKS		
-24-0341-01			-GW-	DEK-MW-15003		. 7	4	. <u>ļ.</u>				X	X	-х	ж	-X	λ					,
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			- G-W -	OW-11			4						×			- 1		_	_	_		_
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180 S. Van Buren Avenue

Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

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Environment Testing

Client Information	ation Sampler: La											ier Traci	ing No(s	s):		COC No: 240-120144-29054.1				
Client Information Client Contact	Phone:	are,	E-Mail	1:	s@et.e				-	Stat	e of Orlg	n:	1		Page: Page 1 of 1					
Jacob Krenz Company:			PWSID:	INIS.	DIOOKS	swere.	uronre						/V <u>\</u>			Job#:				
TRC Environmental Corporation. Address:	Due Date Requested				-		_	A	nalys	sis R	eque	sted	$\overline{}$	Т		Preservation Co	des:	-		
1540 Eisenhower Place														D-HNO3						
City: Ann Arbor	TAT Requested (day:	-	,										1					j		
State, Zip: MI, 48108-7080	ンナ Compliance Project:	andose	Mo								ı			1						
Phone:	PO#:		***							1				1				ı		
734-971-7080(Tel) 734-971-9022(Fax) Email:	TBD 2159	<u>5 l</u>	,		(ON							1 1]		
JKrenz@trccompanies.com	553814.0001				S O		_								1918			1		
Project Name: Karn/Weadock CCR DEK Lined Impoundment	Project #: 24024154				9 (Y	GFPC	rget List								ntalı					
Site:	SSOW#:				amb O(V	31 <u></u> ' 1	ā 1								Total Number of containers	Other:				
			Cample Ma	trix	S per	6Ra2	dard T								ğ					
			Type (w-	water,	Filte	Re226Re	Sta.								Ž					
Comple Identification	Sample Date	Sample Time	(C≔comp, o=w	olid. stefoli,	leld er fö	903.0,	904.0			- 1				1 1	Gal	Special Ir	nstructions/Note	<u>.</u> :		
Sample Identification	Sample Date	- Inne	G=grab) BT-The Preservation C			D C	10.00	A VALUE							Ī					
DEK-MW-15003	518/24 L	441	6 W	ater	NN	K.	X								z					
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OW-11		1246		ater	NN	X	X							\prod	Z					
OW-12		1245		ater	NN	X	X			1			T	1 1	2					
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Possible Hazard Identification					9-							SSM0 11	samo	ies are	retain	ed longer than :	month)	——		
Non-Hazard Flammable Skin Irritant Poiso	on B Unknow	wn \square_R	Radiological		Ī			Clien				sal By				nive For	Months			
Deliverable Requested: I, II, III, IV, Other (specify)	EDD				Sp	ecial In	struct	ions/Q	C Red	uiren	ents:							ľ		
Empty Kit Relinquished by:		ate:			Time:							Method	of Ships	ment						
Relinquished by	Date/Time:	24//	O O Compa	ny R	`_	Receive	•	20	le	D)	ti	<u> </u>	Date	e/Time:	าโลน	10:10	Company 17=7A	- 0		
Relinquished by:	Date/Fime: 5/10/24	10.1	Compa		_	Receiv	774	122	C A	R I	2 D O	N	Date	5-1	1-2	24 0800	Company			
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Custody Seals Intact: Custody Seal No.:			<u>_</u>			Cooler	Tempe	rature(s)°C an	d Other	Remari	s:					.\	\dashv		
Δ Yes Δ No						<u> </u>						-					Ver: 06/08/2021			

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

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SAMPL	ING SITE / CU	STOMER:			PROJECT NUMBER:	SAP CC or WC	D#:							Δ΄	NAT	YSI			٦				
Q2-202	4 DEK Botto	n Ash Pond We	ells		24-0339	REQUESTER:	Haro	ld R	egis	ster				(Attac	h Lis	st if N	More S	Space	is Ne	eded)		QA REQUIREMENT]:
SAMPL	ING TEAM:				TURNAROUND TIME REQUIRED:																	□ NPDES	
					□ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD 🛮 OTH	IER_					_		İ								⊠ TNI	
	REPORT TO:	Joseph Firlit			email:	phone:																□ ISO 17025	
CC	OPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other_			СО	NT	AINE	ERS											☐ 10 CFR 50 APP. B	
		TRC	<u>.</u>		WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			P	RES	ERV	ATI	VE	tals		64		5-					\square INTERNAL INFO	
	LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gener	al Waste	TOTAL#		_	4 H			Total Metals	suc	Ammonia		Alkalinity	de				□ OTHER	_
SAN	MPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	ATION	TOT	None	ONH	NaOF	HCI	MeOH	Tota	Anions	Amr	TDS	Alka	Sulfide				REMARKS	
24	-0339-01	5-9-24	[03]	GW	DEK-MW-15002		7	4	1 1	. 1			х	х	x	x	х	х					
	-02	5-9-24	0837	GW	DEK-MW-15005		7	4	I 1	1			х	x	х	x	х	x					
	-03	5-924	1138	GW	DEK-MW-15006		7	4	1 1	. 1			х	х	х	х	х	х					
	-04	5-9-24		GW	DUP-DEK-BAP-01	_	7	4	1 1	1			х	х	х	х	x	х					
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180 S. Van Buren Avenue Barberton, OH 44203 **Chain of Custody Record**

MICHIGAN 190

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Environment Testing

Phone: 330-497-9396 Fax: 330-497-0772	Sampler:			Lab	PM: oks, Kr	ric M						Carrie	Track	ng No(:	5):		COC 1	No: 120142-	29052	1		7
Client Information Client Contact:	Phone:	<u></u>		E-Ma	id:							State o	of Origin	n:			Page:		***			7
Jacob Krenz Company:		-	PWSID:	Kris	.Brook	s@et.e	euron	insus.c		·		<u> </u>					Job #	1 of 1				1
TRC Environmental Corporation.					<u> </u>				Ana	llysis	Req	uest	ed				-		Cadaa			4
Address: 1540 Eisenhower Place	Due Date Request	ed:					ı										D-H	ervation NO3	Codes			١
City: Ann Arbor	TAT Requested (da	iys):								•												
State, Zip: MI, 48108-7080	Compliance Project	t: Δ Yes	Δ No		1					1			\									1
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO#: TBD																					
^{Emall:} JKrenz@trccompanies.com	WO#: 553814.0001				or No				ľ							,	, <u> </u>					
Project Name:	Project #:				le (Yes		<u> </u>									lagi						
Karn/Weadock CCR DEK Bottom Ash Pond Site:	24024154 \$\$0w#:				- 8	GFP(get L									Containare	Other	=				
oue.	SSOW#.				Sam	228	Ā									7						4
		Sample	Type (w	atrix water, solid, sate/oil,	leid Filtered erformMS/N	903.0, Ra226Ra228_GFPC	904.0 - Standard Target Lis									Total Number		Spacia	ıl İnstr	uctions/N	lote:	
Sample Identification	Sample Date	Time	G=grab) вт-ты Preservation	ode	XX	7-1	D	- - 34 kg			r v) (j. 4				5	1	Specie		dedetish	-	1
DEK-MW-15002	5-9-24	1031	A	ater	Na	1	χ	S. O	W-1 (A-1)	8450 BA C						(3	Į –					
DEK-MW-15005	5-9-24	0837	G v	ater	NN	/ X	X									9	2					1
DEK-MW-15006	5-9-24	1138		ater	M I	1 .1	X	+	┪	1						3	2]
DUP-DEK-BAP-01	5-9-24	46	G v	ater	NA	/ X	x									Ĵ						_
EB-DEK-BAP	5-9-24	1200	G v	ater	MA	/ X	X									3	L.					╛
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						1 .	7	. ,		1	1 1		i_	L	i I							_
Possible Hazard Identification Non-Hazard Flammable Skin Irritant	Poison B Unkne	own 🗆 F	Radiological	<u>.</u>	Si			osal (To Cli		e may	_		ed if al By		les ar		ned loi hive Fo	nger tha	n 1 m	onth) Months		٥
Deliverable Requested: I, II, III, IV. Other (specify)					Sp			ctions		Requi	remer	its:										
Empty Kit Relinquished by:		Date:			Time	:						1	Method	of Ship	ment				*			٦.
Relinquished by:	Date/Dime: 5-10-2	4/10	10 Comp	any			ved by	-//	· /) T	っ ス	_		Dat	e/Time:	7/20	24	lo: l		ompany	=7A	┧:
Relinbushed by:	Date/Time:	17 10	Comp				ved by		<u>۔</u>	<u> </u>		-			e/ime:			080	5 0	BUT N		1
Relinquished by:	Date/Time:		Comp	any		Recei	Vec b)) S 1	C A	RI	6 D	U-Ņ-		Dat	e/Time:	:		_ ,_,		ompany		1
Custody Seals Intact: Custody Seal No.:						Coole	r Tem	perature	(s) °C	and O	ther Re	marks:				,						1
Δ Yes Δ No	· · · · · · · · · · · · · · · · · · ·		·			1													1/	er: 06/08/2	021	_

CHAIN OF CUSTODY

Consumers	Energy)

CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

		,	
Page	1	of	1

Counto	n Us'

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

AMPLING SITE / CU	STOMER:			PROJECT NUMBER:	SAP CC or WC	#:												STED		QA REQUIE	REMENT:	
2-2024 DEK Bottor	n Ash Pond & L	ined Imp	ound.	24-0340	REQUESTER:	Harc	ld F	Regi	ster				(Attac	h Lis	t if M	ore S	pace i	is Nee	ded)			
AMPLING TEAM:				TURNAROUND TIME REQUIRED:												ļ				☐ NPDES		
1	· Krenz			□ 24 HR □ 48 HR □ 3 DAYS □ ST	ANDARD 🛛 OTH	ER_														⊠ TNI		
END REPORT TO:	Joseph Firlit			email:	phone:															☐ ISO 17025		
COPY TO:	Harold Registe	er		MATRIX CODES: GW = Groundwater OX = Other			C	TMC	AINI	ERS										☐ 10 CFR 50	APP. B	
į	TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air				RE	SERV	ATI	VE	tals								☐ INTERNA	L INFO	
	SAMPLE COLL	ECTION	×	S = Soil / General Solid WP = Wipo O = Oil WT = General Solid WT = General Solid		AL#					_	I Me	su	ionia		linity	qe			□ OTHER_		
LAB SAMPLE ID		TIME	MATRIX	FIELD SAMPLE ID / LO		TOTAL#	None	HNO3	H ₂ SO ₄	HCI	MeOF Other	Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide			REMA	RKS	
	DATE	1 HVIE				╁	<u> </u>	-	+		-						,,			KEIVE	KIKO	
24-0340-01	5-8-24	1303	GW	DEK-MW-18001		7	4	1	1 1		_	х	х	х	х	х	Х					
-02		1	GW	DEK-MW-18001 MS		6	3	1	1 1			х	х	х		х	х					
-03	J	1	GW	DEK-MW-18001 MSD		6	3	1	1 1			х	x	x		х	x					
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				_	ic oud or							Te	mpera	iture:	0.2	ري.ر	<u>'</u> _°C		Cal. Du	ie Date: 5.23.	24	
Fed-B	-ye		5.9.	24 1130	oseuser	العا	7						-									١

Eurofins Cleveland

180 S. Van Buren Avenue

Barberton, OH 44203

Chain of Custody Record

MICHIGAN 190

💸 eurofins

Environment Testing

Phone: 330-497-9396 Fax: 330-497-0772	Sampler:				ab PN		14						Ca	rrier Tr	acking i	lo(s):			COC No: 240-120143-	29053 1		
Client Information Client Contact:	Phone:			E	-Mail:	-	ris M						Sta	te of C	rigin:			1	Page:			
Jacob Krenz	<u> </u>		Tourese.	K	(ris.B	rook	s@et	euro	finsu	s.con	n								Page 1 of 1 Job #:			
Company: TRC Environmental Corporation.			PWSID:							Ar	nalys	is R	eque	estec	ı			ſ	300 11 .			
Address: 1540 Eisenhower Place	Due Date Request	ed:												T					Preservation (D - HNO3	Codes:		
City: Ann Arbor	TAT Requested (da	ays):																				
State, Zip: MI, 48108-7080	Compliance Project	ct: A Yes	Δ No		\dashv													٠,.				
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO#: TBD					6						İ										
Emall: JKrenz@trccompanies.com	WO#: 553814.0001					No S												5				
Project Name: Karn/Weadock CCR DEK Bottom Ash Pond & I	Project #: 24024154					sample (Ye.	FPC	et List										ntaine				
Site:	SSOW#:					Samp	228 G	d Targ						ŀ				00 00	Other:			
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W-water 3-solid, G-wastefo		Perform MS/N	903.0, Re226Re228_GFPC	904.0 - Standard Target Lis										Total Number of containers	Specia	i Instru	ctions/No	te:
	\searrow	$>\!\!<$	Preservati	on Code	:: <u>}</u>	Φ	ℚ□	D								<u>. 15 - 2</u>	1	X				
DEK-MW-18001	5-8-24	1303	6	Water	_	UN	1 X	X							Ш	\perp		2				
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Possible Hazard Identification						Sa	mple	Dis	posal	(A)	fee m	ay be	asse	ssed	if sar	nples a	re reta	aine	d longer tha	n 1 moi	th)	· · · · · ·
Non-Hazard Flammable Skin Irritant Poiso	on B Unkno	own \Box_F	Radiological			┸			To C				⁻ Disp	osal E	By Lab		∟ <i>A</i>	rchiv	ve For	A	ionths	
Deliverable Requested: I, II, III, IV, Other (specify)						Sp	ecial	Instr	uction	is/QC	S Req	uiren	ients:									
Empty Kit Relinquished by:		Date:			Ţ	ime:				_	<u> </u>			Met		nipment	0					
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Relinguished by:	Date/Time: 5/10/2 Li	100.15	<u></u>	ompany	7,[1	Rece	F	2 2	10	A D	10	0.0	u		ate/Time	1080	_	10:10	1 69	pany (=)=	TA .
Relinquished by:	Date/Timę:	110.76		ompany	<u> </u>	<u> </u>	Rece	ived b	у у:	1 4	n N	10	U.U.			Date/Time			1,1,10	_	pany	7.7
Custody Seals Intact: Custody Seal No.: Δ Yes Δ No							Coole	er Ten	nperatu	ıre(s) '	°C and	Other	Remar	ks:	<u></u> !							

TRC

PROJECT NAME:	CEC Karn LF/BAP/KLI: 2024 GW Compliance
PROJECT NUMBER:	553814.0000/553814.0001
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	9/30/24/70
PURPOSE OF FIELDWORK:	Karn Sitewide Water Levels
WORK PERFORMED BY:	J. Jasso

SIGNED DATE

CHECKED BY DATE

PAGE 2 OF \$6.7



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Weadock	c LF: 2023 GW Co	SAMPLER NAME:	Javier Jasso
PROJECT NO.:	514403.0000	.0000	SAMELIN WAVIL.	Javier Jasso
WATER LEVEL MEAS	JREMENTS COLLE	CTED WITH:		
	RON DIPPER-T			TRC A2
NAME AND MODEL OF IN	NSTRUMENT		SERIAL NUMBER	(IF APPLICABLE)
PRODUCT LEVEL MEA	ASUREMENTS CO	LLECTED WITH	:	
	NA			NA
NAME AND MODEL OF I	NSTRUMENT		SERIAL NUMBER	(IF APPLICABLE)
DEPTH TO BOTTOM O	OF WELL MEASUR	EMENTS COLL	ECTED WITH:	
HE	RON DIPPER-T			TRC A2
NAME AND MODEL OF	NSTRUMENT		SERIAL NUMBER	R (IF APPLICABLE)
PURGING METHOD				
PER	RISTALTIC PUMP			TRC A2
NAME AND MODEL OF F	PUMP OR TYPE OF E	BAILER	SERIAL NUMBER	R (IF APPLICABLE)
SAMPLING METHOD				
PEF	RISTALTIC PUMP			TRC A2
NAME AND MODEL OF	PUMP OR TYPE OF E	BAILER	SERIAL NUMBE	R (IF APPLICABLE)
GEOTEC	H DISPOSABLE FIL	TER.		0.45 MICRON
NAME AND MODEL OF	FILTERATION DEVIC	E	FILTER TYPE AI	ND SIZE
DEDIC	ATED POLY TUBIN	IG	✓ LOV	V-FLOW SAMPLING EVENT
TUBING TYPE			_	
PURGE WATER DISF	POSAL METHOD			
☑ GROUND	☐ DRUM	POTW	POLYTANK	OTHER
DECONTAMINATION	I AND FIELD BLAN	IK WATER SOU	RCE	
S	STORE BOUGHT			LABORATORY PROVIDED
POTABLE WATER SOL	JRCE .		DI WATER SOL	JRCE (2)
SIGNED	<u> </u>	6/4/24 DATE	CHECKED BY	10-8- DATE
REVISED 04/2019	and the state of t			



WATER LEVEL DATA

PROJECT NAME:	CEC Karn/Weadock: 2024 GW Compliance	DATE: 9(30/14
PROJECT NUMBER:	553814.0001	AUTHOR: AW, JJ, JK

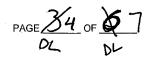
11002011101112211	735	074.0001		7.01110		
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW -01	1649	тос	17.34	24.24	NA	NM
MW-02	1650	TOC	1764	36.38	NA	NM
MW-03	1055	тос	17.47	30.75	NA	NM
MW-04	1056	TOC	16.38	33 60	NA	NM
MW-06	1115	тос	9.89	24.31	NA	NM
MW-08	1134	TOC	18.62	27.50	. NA	NM
MW-10	1157	TOC	16.90	2488	NA	NM.
MW-12	199 <	тос	18:71	24.10	NA	NM
MW-14	1742	TOC	1450	19.00	NA	NM
MW-16	1300	тос	14.08	21.35	NA	NM
MW-17	1343	тос	14.60	24.34	NA	NM
MW-18	6690	тос	27.45	3961	NA	NM
M W-19	09 59	тос	17.49	30.00	NA	NM
M W-20	1613	тос	53.00	7200	NA	NM
MW-21	1005	тос	52.10	60.00	NA	NM
MW-22	1138	тос	17.90	29.59	NA	NM
MW-23	1218	TOC	14.80	15.10	NA	NM
OW-01	ISHE	тос	3/595	A400	NA	NM
OW-02	1140	TOC	16.80	21.95	NA	NM
OW-03	1150	тос	17.60	28.70	NA	NM
OW-04	1246	тос	10.30	1626	NA	NM
OW-05	1258	тос	13.45	18.00	NA	NM
OW-06	13.76	тос	2275	2480	NA	NM
OW-07	12.20	тос	15.65	23.91	NA	NM
OW-08	1330	тос	11.43	17.90	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED DATE

CHECKED TO THE CHECKED

DATE





NM; OW-12 has been decommissioned (DL - 12/5/2024)

WATER LEVEL DATA

PROJECT NAME:	CEC Karn/Weadock: 2024 GW Compliance	DATE:	9/30/24
PROJECT NUMBER:	553814.0001	AUTHOR:	Jake Krenz, Javier Jasso, And

						
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	133 D	тос	10-73	12.75	NA	NM
OW-10	1345	TOC	6.60	17.95	NA	NM
OW-11	1350	тос	25.00	2550	NA	NM
→OW-12	0914	тос	25.00	25.44	NA	NM
OW-13	NM	TOC	NM	NM	NA	NM
OW-15	0°160	TOC	5.33	15.25	NA	NM
EW-01	1157	тос	13.98	DYM	NA	NM
EW-02	1204	TOC	15.37		NA	NM
EW-03	1214	тос	14.61		NA	NM
EW-04	1231	тос	1460		NA	NM
EW-05	1238	тос	14.10		NA	NM
EW-06	12.46	тос	1095	V	NA	NM
PZ-01	1144	тос	Dry	14.10	NA	NM
PZ-02	1144	тос	15.70	23.10	NA	NM
PZ-03	1901	тос	15.25	19.60	NA	NM
PZ-04	1207	TOC	1490	2095	NA	NM
PZ-05	1910	тос	14.75	21.18	NA	NM
PZ-06	1228	тос	1532	20.33	NA	NM
PZ-07	133	тос	1490	21.00	NA	NM
PZ-08	1236	тос	1464	2054	NA	NM
PZ-09	1244	тос	15.36	21.41	NA	NM
PZ-10	1258	TOC	11.23	17.74	NA	NM
PZ-11	1254	TOC	12.93	18.10	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

a) 10/4/20

CHECKE

DATE



WATER LEVEL DATA

PROJECT NAME:	CEC Karn/	Weadock: 2024 (GW Compliance		DATE:	91	30/2	(
PROJECT NUMBER:	5538	14.000	1		AUTHO	₹: J.	Jasso			
WELL LOCATION	TIME REFERENCE		WATER BOT		TH TO DEPTH TO PRODUCT (FEET)		WATER ELEVATION			
DEK-MW-18001	6909 TEC 1		(0.18	19.0	06	o NA		NN		N
DEK-MW-15002	0908	\	8.36	154	7Ce				,,,,	
DEK-MW-15003	0917		19.84	27.	90					
DEK-MW-15004	5976		29.46	41.8						
DEK-MW-15005	0930		0.00	22	30					
DEK-MW-15006	NW		NW	NI	N					
DEK-MW-22001	0937		10.67		18					
DEK-MW-22002	6934		12.50	76	40					
DEK-MW-22003	0938		12.75	24	,44					
DEK-MW-22004	0436		1118	22	45					
DEK-MW-22005	0943		9.74							
DEK-MW-22006	०९५।		1057	19.	6					
TUMW 8002 003			1831	24	.JC		·			
TUNIVE PORCO)	1035		13.00	ろの	яl		ar			
TW. 1006/	1044		1292	17	59					
TUMBAHOOD 13	1.1		23.00		53					
Tw-21-0625	1103		20.59	2)	81					
Tu-21 612 I	1104		20:75	36	·43					
Tw 216125	1105		20.57	5	470					
Tw.21-0115	1130		39.00	27	Loc					
Tw 21-011I	1121		21.78		370					
Tw. 21-0117			22.03			ļ				<u> </u>
Tu-21-010	1121		21.10		.co					
Tu-21-000	11127		22.00	27	1.91					

	100010112	1	1	-1.00	3-7-			l
	Tw. 21-0115	1128		22.03	52-3			
	Tu-21-010	1121		21.10	28.00			
	Tu-21-009	1127		22.00	27.91			
	TW-21.000	1305	V	14.16	19.80	V		
	ALL WA	TER LEVELS		REFERENCE PC G., 1.1 + 0.00 T/P\	OINT AND TAPE COR	RECTION FACTO	OR /	
1	/ Salcely	ć	_	,	1//	2/1/2	11-8-	
	SIGNED		DATE	-	CHECKED	14	DATE	
	·							
						•		



WATER LEVEL DATA

PROJECT NAME:	CEC KARN	LF 2023 GW C	OMLPIANCE	DATE:	DATE: 9 130 124					
PROJECT NUMBER:	514404.000	00.000		AUTHO	AUTHOR: J JASSO					
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION				
Tu-21-007	1310	TOC	13.05	18.80	NA	NM				
Tu-21-006	131)	TOC	10.00	13.50						
TW 21-005	1314	TOU	10.88	14.60						
TW-21-004	1319	Toc	13.31	16-ley	\bigvee	V				
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ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

10/4/21 SIGNED DATE

CHECKED

DATE

DATE

REVISE 04/2019



PROJECT NAME:	CEC Karn LF: 2024 GV	V Complia	DATE: 9-30	-24	TIME ARRIVED: 615
PROJECT NUMBER:	553814.0000	.0000	AUTHOR: JJ		TIME LEFT: 1330
	gangangan (1987), kanalangan	oeses said		al electricación esclaveración accon	
			WEATHER		
TEMPERATURE:	Ψ°F WIND:	5-10	MPH	VISIBILIT	Y: <u>clear</u>
	Annual professional and a second of the control of the	entre interchances	AMPLING PERFORM	NED	
Collect 5:	te wide wa	ter	levels	- " '	0.000.000
					
	·	*****			
				<u> </u>	
		· · · ·			we also with the second of the
PROB	LEMS ENCOUNTERI	ED		CORRECTIV	E ACTION TAKEN
					
		CC	MMUNICATION		
NAME	REPRESENTING		Grand Control of the	SUBJECT / COMM	IENTS
Darby Litz	TRC		Jpdates		
Jon Gaeth	Consumers	Site C	Contact		·
	INVEST	IGATION	I DERIVED WASTE	SUMMARY	
WASTE MATRIX	QUANTITY			COMMENTS	
Groundwater	NM	To G	round		
		_			
		i	• • •		

REVISED 04/2019

SIGNED



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance
PROJECT NUMBER:	553814.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	10/3/2024 FOR
PURPOSE OF FIELDWORK:	Fourth Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, E. Rinehart

SIGNED DATE

CHECKED BY

10/8/24

DATE



PROJECT NAME:	CEC Karn BAP/LI: 2024	GW Comp	DATE: 10/3/26	TIME ARRIVED: 673
PROJECT NUMBER			AUTHOR: (J) JK AW	TIME LEFT: () 1
· · · · · · · · · · · · · · · · · · ·			WEATHER	
TEMPERATURE /	() or			
TEMPERATURE:	O °F WIND:		<u> </u>	LITY: OUX CX
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well SM	mpa BEL	(- V9	W- 18001 MS +	msD, Mw-19, Ms
msD1 mu	18,040 #a	ol ; FI	13 NO 1	
		-		
•				
	-			
PROI	BLEMS ENCOUNTERE	D .	CORRECT	IVE ACTION TAKEN
		CON	MUNICATION	
NAME	REPRESENTING		SUBJECT / COM	MENTS
Darby Litz	TRC	PM - U	pdates	
Jon Gaeth	Consumers	Site Co	ntact	
•.	INVESTION	GATION E	DERIVED WASTE SUMMARY	
WASTE MATRIX	QUANTITY		COMMEN	TS
Groundwater	NM	Purge t	o Ground	
COMP. ENGLISH THE STATE OF THE	10 (4/)	U		10/8/21
SIGNED	, may 2	DATE	CHECKED BY	DATE

REVISED 04/2019



PROJECT NAME:	CEC Karn LF: 2024 GW Co	omplian DATE:	10/3/24	TIME ARRIVED: 7.20			
PROJECT NUMBER:	553814.0000.000	00 AUTHO	R: J K, JJ, ER -AK	TIME LEFT: 2053			
		WEATH					
TEMPERATURE: うえ	/74 °F WIND:		VISIBIL	ITY: Clas C			
TEIMI EIGHTOILE. JA				TITY: CW3.C			
0		K / SAMPLING					
Arrive on site	@ 1:20, mee!	c with to	am to discus	sorder of sampling			
57017 30MB11	ud [H-101 m]	Elrich, =	sampt 219pili	zing LH-102 individ			
sample ow-	10, 0w-11	5 - 0	المرام م	data to Elvic			
CO1005 4001	1200CCC 9349	705 C	Wells, sell	DENG TO FINCE			
·							
PROB	BLEMS ENCOUNTERED	· · · · · · · · · · · · · · · · · · ·	CORRECT	IVE ACTION TAKEN			
ON-11 200 gc	KOMKEZ ONKI'V V	aS ub el.	called PM to discuss what,				
not collected	y, viddle sampl , insufficient wa	ter (DZ)		mples - discarded			
,			1 L bottle N)			
		;					
	·	COMMUNIC	ATION				
NAME	REPRESENTING		SUBJECT / COM	MMENTS			
Darby Litz	TRC I	M/Updates					
Jon Gaeth	Consumers S	Site Contact					
	INVESTIGA	TION DERIVE	WASTE SUMMARY				
WASTE MATRIX	QUANTITY		COMMEN	TS			
Groundwater	NM 7	To Ground					
a	in larin			11111			
WANT MARKET	A 10/8/15	<u>4</u>		10-8.			
SIGNED		DATE	CHECKED BY	DATE			



	CEC Karn BAP/LI: 2024	GW Comp DAT	E: 10-	3.24	TIME ARRIVED: 71>
PROJECT NUMBER:	553814.0001.0	0000 AUT	HOR: J	JK KK	TIME LEFT: \$ 205
		VA/E A	rurn		
	10.4		THER		
TEMPERATURE: 52	/// WIND:	10 M	PH	VISIBILI	TY: Claw
	and the second s	ORK / SAMPLI	<u> </u>	<u> 20 20 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 1940 - 19</u>	
Sumpk	OW-2, 0 160-15003, DEI) W-7,	DEK	- MW-150	105, 00-11
DEK-N	16-15003 DEI	K.Mw-1	5006,	DEK-MU-	15002
Collected	- Com dut	Bo	sells_		
	Planta	·-			
M-MAN-IN					
PROE	BLEMS ENCOUNTERE	D		CORRECTI	VE ACTION TAKEN
012-16 to	es not hold.	st. i-la ad	4 4	Hered PIN	
		21 G Am 6 Y Law 1/2			
w dr					
work					
wh					
wdv					
W dv	REPRESENTING		VICATION		MENTS
NAME			VICATION		MENTS
NAME Darby Litz	REPRESENTING	COMMU	NICATION		MENTS
NAME Darby Litz	REPRESENTING TRC	COMMU PM - Updat	NICATION		MENTS
NAME Darby Litz	REPRESENTING TRC	COMMU PM - Updat	NICATION		MENTS
NAME Darby Litz	REPRESENTING TRC Consumers	PM - Updat Site Contac	NICATION es	SUBJECT / COM	MENTS
NAME Darby Litz Jon Gaeth	REPRESENTING TRC Consumers	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth WASTE MATRIX	REPRESENTING TRC Consumers	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth	REPRESENTING TRC Consumers INVESTI	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth WASTE MATRIX	REPRESENTING TRC Consumers INVESTI	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth WASTE MATRIX	REPRESENTING TRC Consumers INVESTI	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth WASTE MATRIX	REPRESENTING TRC Consumers INVESTI	PM - Updat Site Contac	NICATION es	SUBJECT / COM	
NAME Darby Litz Jon Gaeth WASTE MATRIX	REPRESENTING TRC Consumers INVESTI QUANTITY NM	PM - Updat Site Contac	NICATION es	SUBJECT / COM	

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WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GV	V Complian	ce	MODELY NO DSS	SAMPLER: JJ	
PROJECT NO.:	553828.0000.0000			SERIAL#: AM	DATE: 10/3/54	
PH (CALIBRATION CHECK			SPECIFIC CO	NDUCTIVITY CALIBRATION	CHECK
(LOT #): 365018 (EXP. DATE): 605	PH 4 / 10 (LOT #): (LUL) 3 (EXP. DATE): (L) C POST-CAL. READING / STANDARD	CAL. RANGE	TIME	CAL. READING (LOT #): UCE CITS (EXP. DATE): POST-CAL. READING / STAND.	(°CELSIUS) RANGE	TIME
70170	uce / yee	WITHIN RANGE		1366/136	WITH	IIN CE
<u>'</u>	,	RANGE WITHIN		,	RANC	IIN
1	,	RANGE WITHIN		·	RANC	IIN
ORP	CALIBRATION CHECK	RANGE	l	D.O.	CALIBRATION CHECK	3E
CAL. READING (LOT #):)2) (6431) (EXP. DATE): 91) (62) POST-CAL. READING / STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME	CAL. READING POST-CAL. READING /SATURAT	TEMPERATURE CAL. (*CELSIUS) RANGE	TIME
シント / カラト /	73	WITHIN RANGE WITHIN RANGE WITHIN RANGE		835183 1 1	N → N WITH RAN	IIN GE
1		WITHIN		/	WITH	
TURBID	ITY CALIBRATION CHEC	K			COMMENTS	
(LOT #): 47097 (EXP. DATE): 45000	READING (NTU) (LOT #): (EXP. DATE): POST-CAL. READING / STANDARD	CAL RANGE	TIME	(LOT #): (EXP. DATE): CALIBRATED PARAMETE	LIST LOT NUMBERS AND EXPIR UNDER CALIBRATION C	ATION DATES
101 1 4	1	WITHIN		pH	pH: +/- 0.2 S.U.	<u> </u>
ren / rec	1	WITHIN RANGE	dsu	COND ORP	COND: +/- 1% OF CAL. ST	ANDARD
		RANGE		D.O.	D.O.: VARIES TURB: +/- 5% OF CAL. ST	ANDARD
NOTES PROBLEMS ENCOUNTERED					(1) CALIBRATION RANGES ARE THE MODEL OF THE WATER QL	SPECIFIC TO
				CORRECTIVE ACTIONS		
				3		
SIGNED) 1d4/20	DATE	-	CHECKED BY	SPOS	/ <i>O-8 -</i> DATE

? TRC

WATER QUALITY METER CALIBRATION LOG

F	PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance				MODEL: Sysentroll			SAMPLER: JK, JJ, ER			
F	PROJECT NO.:	553814.0001.0000			SERIAL#	lasitu	,	DATE:	9/30	/24 -	10/3/	RY
-	PH (CALIBRATION CHECK				SPEC	CIFIC CONDU	ICTIVITY	CALIBR	ATION C	HECK	
	pH 7 LOT #): 412 0 037 0 EXP. DATE): Apr (16 POST-CAL READING / STANDARD	pHØ/10 (LOT #): 3&10691 (EXP. DATE): Sep / 25 POST-CAL. READING/STANDARD	CAL. RANGE	TIME		(LOT #): 46 E	READING 6784 Lw/25 Ading/standard		RATURE	CAL. RANGE	TIME	
<u> </u>		4.0 / 4.0	WITHIN	9:05	9-50		1 1260	19	8	WITHIN RANGE	9:15	
10-1+	7.02/7.02	4.0 / 4.0	WITHIN	8:45	10-1	1260	11260	19.	3	WITHIN	8.55	
0-2	7.62 7.00	40 140	WITHIN	1510	K-10-1		-	-		WITHIN RANGE		e d
10-5	7.06 / 7.06	4.0 / 4.0	WITHIN RANGE	750	10-5	1070	11070	11-	85	WITHIN RANGE	807	
. · J		CALIBRATION CHECK	· · · · · · · · · · · · · · · · · · ·	I	_		D.O. CAL	IBRATI	ON CHEC	K		
,	CAL. READING (LOT #)? TLK (00 140 (EXP. DATE): 2027/10/11 POST-CAL. READING / STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME			READING	(°CE	ERATURE	CAL. RANGE	TIME	
4150	2.29 / 7.29	20.39	WITHIN		a 50	9.08	19.08	18,	* 1	WITHIN	9:20	1
10-1	231 / 231	19 93	WITHIN		10-1	9.03	19.00		98	WITHIN	0.0	*
(0		10.0	Ø WITHIN	217	EKTON				7.5	WITHIN		EN
	240 /240	12.42	✓ RANGE		10.0	10.5	110.5	11	Y o	WITHIN		1
10-3		TE GLIBRATION CHE	RANGE CK	100]0-3	10.5	,,,,,	COMM	IENTS	RANGE	<u> </u>]
i		READING (NTU)	1		7	AUTOCA	L SOLUTION			SOLUTION	(S)	1
	(LOT #): A3067 (EXP. DATE): A00-/25	(LOT #): (EXP. DATE):	CAL. RANGE	TIME		(LOT #): (EXP. DATE):				AND EXPIRAT		;
	POST-CAL READING / STANDARD	POST-CAL. READING / STANDARD	+	ļ.		CALIBRATE	D PARAMETERS		CALIBRATI	ON RANGES	(1)	1
91-70	(60) / (60)	1	WITHIN			☐ pH	1	pH:	+/- 0.2 S.	U.		
104	100 / W	1	WITHIN RANGE	6:51	Ī,,		OND	COND:	+/- 1% O	F CAL. STAI	NDARD	
104			RANGE		Eh	□ or	RP	ORP:	+/- 25 m\	/		
10-3	(00 / 65)	1	WITHIN			□ D.	.0.	D.O.:	VARIES			
10-3		NOTES	1 70 1101	-1000	_	П т	URB	TURB:	+/- 5% O	F CAL, STA	NDARD	
10-1	LaMOTTE, 202	OT 10/10.	0/0	8:15	•			(1) CALIS	PATION DA	NGES ARE SI	DECIEIC TO	
10-3	10/00,0		-,-	9.00	1					WATER QUA		
	1-700	2,00		W.100. 11	-				···			
		PROBLEMS ENCOUNTERED					CORREC	TIVE ACTIO	ons			7
					-							1
										,		1

	SIGNED - M	A/1 9/30/	DATE	_		CHECK	LLAW (tol	Ó	101	6/24 DATE	_
6	(/// J/ // //	10-3	-24									



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	Compliand	ce	MODEL: 451 800 1255	SAMPLER:	JK, JSÉ	2 AV		
PROJECT NO.:	553814.0001.0000			SERIAL#:	DATE: 10 mg	24 10	0/3/		
PH C	CALIBRATION CHECK			SPECIFIC CON	DUCTIVITY CALIBI				
рН 7 (LOT #): ЦС ДО 7-7 (С	PH4/10 (LOT #): 4(5) N3 7 (EXP. DATE): ARRAGE POST-CAL READING / STANDARD	CAL. RANGE	TIME	CAL. READING (LOT #): 4 CE 07 \$ 4 (EXP. DATE): MAY / 2 C POST-CAL. READING / STANDA		CAL. RANGE	TIME		
7.05/7.05	4.0 /4.0	X WITHIN RANGE	0756	1063 / 1063	12.8	WITHIN RANGE	0756		
1	1	☐ WITHIN RANGE				☐ WITHIN RANGE			
1	.1	☐ WITHIN RANGE		/		☐ WITHIN RANGE			
1	.1	☐ WITHIN RANGE		/		☐ WITHIN RANGE			
ORP	CALIBRATION CHECK	1	L	D.O. 0	CALIBRATION CHE	CK			
CAL. READING	TEMPERATURE			CAL. READING	TEMPERATURE				
(LOT #):Z 3 G10 00 46 (EXP. DATE): 2028 /07/04	(°CELSIUS)	CAL. RANGE	TIME		(°CELSIUS)	CAL. RANGE	TIME		
POST-CAL READING / STANDARD		TET MATERIAL		POST-CAL. READING /SATURATE		C3 WITHIN			
241.31241.3	12.5		0802	10.4 / 10.	9 12:4	WITHIN RANGE	0 809		
		RANGE	<u> </u>	. '		RANGE			
		RANGE				RANGE WITHIN	 		
/		RANGE				RANGE			
	ITY CALIBRATION CHEC	CK		_	COMMENTS				
	READING (NTU)	4		AUTOCAL SOLUTION	I STANDARI	SOLUTION	(S)		
(LOT #): 24004711 (EXP. DATE): 2/25	(LOT#): 232502120 (EXP. DATE) \$1/14	CAL. RANGE	TIME	(LOT #): (EXP. DATE):		LIST LOT NUMBERS AND EXPIRATION DATE UNDER CALIBRATION CHECK			
POST-CAL READING / STANDARD	POST-CAL, READING / STANDARD	1.,		CALIBRATED PARAMETE	RS CALIBRAT	ION RANGES	(1)		
0.0 / 0.0	10.397 10.0	WITHIN RANGE	0815	☐ pH	рН: +/- 0.2 S	.U.			
1	10.01	☐ WITHIN		☐ COND	COND: +/- 1% C	OF CAL. STA	NDARD		
. /	/	☐ WITHIN		□ ORP	ORP: +/- 25 m	V			
1	1	☐ WITHIN		□ D.O.	D.O.: VARIES				
<u> </u>	NOTES			☐ TURB	TURB: +/- 5% (OF CAL. STA	NDARD		
					(1) CALIBRATION RATHE MODEL OF THE				
	PROBLEMS ENCOUNTERED			COR	RECTIVE ACTIONS				
ashun tat	10/3	(24 DATE		CHECKED BY	249	10.	-8-2 DATE		



EQUIPMENT SUMMARY

	Kain BAPILI 2024							
PROJECT NAME:	CEC Weadock I F: 2 023 GW Co	SAMPLER NAME: Javier Jasso						
PROJECT NO.:	514403,0000.0000 DL	OAWI ELIYAWI.						
WATER LEVEL MEASU	JREMENTS COLLECTED WITH:							
HEF	RON DIPPER-T	TRC A2						
NAME AND MODEL OF IN	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
PRODUCT LEVEL MEA	ASUREMENTS COLLECTED WITH	l:						
	NA	NA						
NAME AND MODEL OF I	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
DEPTH TO BOTTOM O	OF WELL MEASUREMENTS COLL	ECTED WITH:						
HE	RON DIPPER-T	TRC A2						
NAME AND MODEL OF I	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
PURGING METHOD								
PER	RISTALTIC PUMP	TRC A2						
NAME AND MODEL OF F	PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)						
SAMPLING METHOD								
PEF	RISTALTIC PUMP	TRC A2						
NAME AND MODEL OF	PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)						
GEOTECH	H DISPOSABLE FILTER	0.45 MICRON						
NAME AND MODEL OF	FILTERATION DEVICE	FILTER TYPE AND SIZE						
DEDIC	ATED POLY TUBING	LOW-FLOW SAMPLING EVENT						
TUBING TYPE		_						
PURGE WATER DISF	POSAL METHOD							
✓ GROUND	☐ DRUM ☐ POTW	DOLYTANK OTHER						
DECONTAMINATION	I AND FIELD BLANK WATER SOU	IRCE						
5	STORE BOUGHT	LABORATORY PROVIDED						
POTABLE WATER SOL	JRCE .	DI WATER SOURCE						
	16/4/24	(h-(1)/1) 10-8-2;						
SIGNED	DATE	CHECKED BY DATE						
REVISED 04/2019	photon .							



EQUIPMENT SUMMARY

PROJECT NAME: CEC Karn BAP/L	1 - 1	/ SAMPLER NAME: J. Jasso, J. Krenz, E. Rinehart						
PROJECT NO.: 553814.000	र्ज	Onivi LEN IVAIVIL. J. Jassu, J. Nieliz, E. Nillehalt						
		the second section of the second section of the second section of the second section s						
WATER LEVEL MEASUREMENTS COLLECT	ED WITH:							
HERON DIPPER-T		TRC A2						
NAME AND MODEL OF INSTRUMENT		SERIAL NUMBER (IF APPLICABLE)						
PRODUCT LEVEL MEASUREMENTS COLLE	CTED WITH	Н:						
NA		NA						
NAME AND MODEL OF INSTRUMENT		SERIAL NUMBER (IF APPLICABLE)						
DEPTH TO BOTTOM OF WELL MEASUREM	ENTS COLL	LECTED WITH:						
HERON DIPPER-T		TRC A2						
NAME AND MODEL OF INSTRUMENT		SERIAL NUMBER (IF APPLICABLE)						
PURGING METHOD								
PERISTALTIC PUMP		TRC A2						
NAME AND MODEL OF PUMP OR TYPE OF BAILI	ΞR	SERIAL NUMBER (IF APPLICABLE)						
SAMPLING METHOD								
PERISTALTIC PUMP		TRC A2						
NAME AND MODEL OF PUMP OR TYPE OF BAIL	ER	SERIAL NUMBER (IF APPLICABLE)						
GEOTECH DISPOSABLE FILTER	t	0.45 MICRON						
NAME AND MODEL OF FILTERATION DEVICE		FILTER TYPE AND SIZE						
DEDICATED POLY TUBING		☑ LOW-FLOW SAMPLING EVENT						
TUBING TYPE		_						
PURGE WATER DISPOSAL METHOD								
☑ GROUND ☐ DRUM	□ POTW	☐ POLYTANK ☐ OTHER						
DECONTAMINATION AND FIELD BLANK W	ATER SOU	RCE						
STORE BOUGHT		LABORATORY PROVIDED						
POTABLE WATER SOURCE		DI WATER SOURCE						
Sha Ross	9/30/2	7 Minum Volk 1018124						
SIGNED	D ATE	CHECKED BY DATE						



EQUIPMENT SUMMARY

PROJECT NAME: CECKOIN BAPILL GW	SAMPLER NAME: J. Jasso, J. Krenz, E. Rinehar, A. Kast					
PROJECT NO.: 5538/4.000	SAIVIFLER NAIVIE. J. Jasso, J. Rieliz, E. Rillellait, A. Rast					
WATER LEVEL MEASUREMENTS COLLECTED WITH:						
HERON DIPPER-T	TRC A2					
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)					
PRODUCT LEVEL MEASUREMENTS COLLECTED WITH	l:					
NA	NA					
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)					
DEPTH TO BOTTOM OF WELL MEASUREMENTS COLL	ECTED WITH:					
HERON DIPPER-T	TRC A2					
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)					
PURGING METHOD						
PERISTALTIC PUMP	TRC A2					
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)					
SAMPLING METHOD						
PERISTALTIC PUMP	TRC A2					
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)					
GEOTECH DISPOSABLE FILTER	0.45 MICRON					
NAME AND MODEL OF FILTERATION DEVICE	FILTER TYPE AND SIZE					
DEDICATED POLY TUBING	LOW-FLOW SAMPLING EVENT					
TUBING TYPE	-					
PURGE WATER DISPOSAL METHOD						
☑ GROUND ☐ DRUM ☐ POTW	DOLYTANK DOTHER					
DECONTAMINATION AND FIELD BLANK WATER SOUR	RCE					
STORE BOUGHT	LABORATORY PROVIDED					
POTABLE WATER SOURCE	DI WATER SOURCE					
asim Vest 10/24/2						
SIGNED DATE	CHÈCKED BY (\ DATE					

○ STRC

PROJECT	PROJECT NAME: CEC Karn RAP/WSP: Additions PREPARED CHECKED									
PROJECT	NUMBER	R: 553814	1.0002.0000	BY:	AW, JJ, JK,	ER DATE(C	() (BY:	ER	DATE: 10-8-24	
SAMPLE	D:DFK.	- Mle	18001	WELL DIAM	/IETER: 🗸	2"	6" OTH	IER		
WELL MAT		☑ PVC	ss [IRON 🗌 GAI	VANIZED S	STEEL	□ от⊦	IER		
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI		LEACHATE	□ от⊦	IER		
PURG	SING	TIME & &	0 2 D	ATELULZ 124		AMPLE	TIME: O'V		DATE: 1013/34	
PURGE METHOD	٠	PUMP BAILER	PERISTALTIC	PUMP		<u> ら.パナ</u> s <u>- ファゼ</u> m		1.60	mg/L umhos/cm	
DEPTH TO	WATER:	1018	T/ PVC		TURBI	4 -	NTU			
DEPTH TO	воттом:	19.68	T/ PVC		ДДио		GНТ □	MODERATE	☐ VERY	
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE		<u>}`)</u> ℃	FERROUS Fe	: mg/L	
VOLUME F	REMOVED:	<u> </u>	LITERS	GALLONS	COLO	r clea	<u> </u>	ODOR:	VOV_	
COLOR:		109/	or	DOR: NON	FILTRA	TE (0.45 um)	YES	Ø NO		
	_		BIDITY			TE COLOR:		FILTRATE OD	OR:	
NONE	SLI		MODERATE	VERY		MPLE: A MS	/MSD	DUP-		
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:										
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	JRE WATER		
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET		
6000	200	$g_{\mathcal{F}}$	1249	-114	lo	13	13.5	- 10.14	INITIAL	
0007		ઇ.1ઇ	957	-179	1.97	4.1	13.6	1030	' 1	
0817		8.K	945	- 191	1, 39	4.4	13.6	1030	a	
0817		6.13	444	- 205	1.21	4.3	13.6	1030	3	
4630		8.13	943	. 318	Llo	4.3	134	1070	ų į	
063J		8 13	947	206	1.09	4.3	13.7	1030	,	
6837		812	941	778	1.00	4.3	13,5	1030	9	
<i>(</i> 837		8 12	941	-378	1.00	4.3	13.7	1030	7	
09-7-1									J	
	***************************************	***************************************								
<u> </u>	NOTE: STA	BII IZATION	LTEST IS CON	/PLETE WHEN 3	SUCCESS	IVE READINGS	L ARE WITHIN	THE FOLLOV	MING LIMITS:	
pH: +/-		COND.: +/-			i.O.: +/- 0.3			= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-	
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOl	H E-	HCL F	
NUMBER	SIZE	TYPE	PRESERVAT	TIVE FILTERE		ER SIZE	TYPE	PRESERVA	ATIVE FILTERED	
r	250 mL	PLASTIC	Α		м 3	125 mL	PLASTIC	D		
3	125 mL	PLASTIC	Α		N	40 mL	VOA	E	□ Y @ N	
W	60 mL	VOA	Α		N 2	1L	PI	B		
3	125 mL	PLASTIC	В		N				☐ Y ☐ N	
ß	125 mL	PLASTIC	С		N				☐ Y ☐ N	
SHIPPING	METHOD:	Feder		ATE SHIPPED:	10/3/	2024	AIRBILL	NUMBER:		
COC NUMI	BER:		S	GIGNATURE:			DATE SI	GNED: / /	14111	
									1	

										_
PROJEC	T NAME:	CEC k	(arn LF: 2024	GW Comp	PR	EPARED		CHEC	KED	
PROJEC [*]	T NUMBE	R: 55381	4.0000.0000	BY:	JK, JJ, 🛭	B DATE:/0/3	ZY BY.W	that with	DATE: W16/24	
SAMPLE	ID: DE	K-ML	0-15005	WELL DIAN	IETER: 🔽	2"	6" OTHE	ER]
WELL MA	TERIAL:	☑ PVC	□ ss □	IRON 🗌 GAL	VANIZED:	STEEL	□ отн	ER		
SAMPLE 1	ΓΥΡΕ:	☑ GW	□ ww □	SW 🗆 DI		LEACHATE	ОТНЕ	ER		
PUR	GING	TIME: //	//3 DA	TE: 10/3	S	SAMPLE	TIME: //	46 DA	TE: 10-3-24	
PURGE	_	PUMP	PERISTALTIC I	PUMP (***********	7.62 S		TIVITY: _/361.	umhos/cm	
METHO		BAILER				<u>-//3.9</u> m		D. 95 mg/	/L	
	O WATER:	·				IDITY: 0.4			- Veny	
	О ВОТТОМ				NC			MODERATE	☐ VERY	
WELL VOI				GALLONS		erature: <u>/</u> dr: C/27		FERROUS Fe	mg/L	
COLOR:	REMOVED	<u>6.6</u>	· ·	GALLONS					<i>l</i> o	_
COLOR:	<u></u>			OR: <u>//6</u>		ATE (0.45 um)				DUP-
NONE	□ SLI		BIDITY MODERATE	☐ VERY		ATE COLOR: AMPLE:		FILTRATE ODOR:	14-B10-01E	KDEK-BA
			ND DRUM			MENTS: 14S.		issues (Ra	i l-Bdp-01^E, Linse)	01
	PURGE					1	1	MATED	CUMULATIVE	
TIME	RATE	PH	CONDUCTIVITY		D.O.	TURBIDITY	TEMPERATU	LEVEL	PURGE VOLUME	radius;5
1111	(ML/MIN)	(SU) 7.69	(umhos/cm)	(mV) 45.3	(mg/L)	(NTU)	(°C)	(FEET) 10.63	(GAL OR L) INITIAL	analysis analysis
[[]3 []]6	009	7.7	1326.3		7.3	6.93	16.88		6.6	0v.,
	<u> </u>		1345.	Cas d	1.06	9.04	14.8	1 _	Provide Administration and Control of the Control o	(Q1-)
1119	-	7.7	1359.7		1.01	1	14.7		1.2	
1122	A ANDREAS AND AND AND AND AND AND AND AND AND AND	7.7	1368.9	-99.4 -106.0	1.0	12.84	14.71		1.8	-
1125		7.69	1364.5	**************************	0.99	23.61	14.72		2.4	
1128	 	7.68	1347.5	109.5	0.98	190.19	14.23			
1131		7.69	1367.9	- 86.9	1.03	0,6	14.95		3.6	p
11 34		7.67	13 21.4	-103.6	0.97		1	10.74	4.7	n.
1137	 	7.65		-109.2	0.96	5.31	14.72		4.8	-
1140	<u> </u>	7.64	1373.4	-111.5	0.96	8.38	14.7		5.4	_
								THE FOLLOWIN		
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D	.O.: +/- 0.3	3 TURB: +/-	10 % or	= 10<br	TEMP.: +/-	-
BOTTLE	SFILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3		D - NaOH	E- HC	L F	_
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	(\OU		TYPE	PRESERVATIV	E FILTERED	_
1	250 mL	PLASTIC	A		N C.Y	2 125 mL	PLASTIC	D		
1	125 mL	PLASTIC	A		N	40 mL	VOA	E	□ Y □ N	
x	60 mL	VOA	A		N 2	- 16	Plastic	O		_
1	125 mL	PLASTIC	В		N			n Anna Amara Amerikan di Antoniano esperante de Sementa de Sementa de Sementa de Sementa de Sementa de Sementa	DY DN	
	125 mL	PLASTIC	<u> </u>		N					
SHIPPING	METHOD:	Drop -0	F D/	ATE SHIPPED:	10-4	-24	AIRBILL N	IUMBER:]
COC NUM				GNATURE:	fh.	1 m	DATE SIG	SNED:	10-1-24	"



* TRC WATER SAMPLE LOG (CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Co		PREPARED	CHECKED
PROJECT NUMBER:	553814.0001.0000	BY:	JK, JJ, ER DATE: 10/5/24	BY: WALL DATE: 10/6/7

SAMPLE	ID: DE	K-MU	0-15005							
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)	
1143	200	7.63	1374.9	-11Z.y		0.65			6. O	LM - w
1146	200	7.62	1	-113.9		0.45			6.6	
i X								and the second term of the second terms of	And devices the control of the contr	
Total and by administration and a second and			and the second terror of the s			de maria de la Proposició de la primer de la	TO A COMMENT OF THE PROPERTY AND A COMMENT OF THE PROPERTY OF		and developed the second state of the property and the second second second second second second second second	
e yekungengana yoti, riyamineki			to white the contrate medical and make make a deep contrate.		ang Mangalan and American and Capital Commission of Commission and	a della e i i inches latti della di esperita i con di addica si	and produced order to a contract of the second order of the second order of the second order of the second order of the second order of the second order of the second order of the second order of the second order of the second order of the second order	na pod dobece pod obli do na popular na konstante		
research communities researches	or the second se	e e e e e e e e e e e e e e e e e e e	ernelement terrelementelementelementelementelementelementelementelementelementelementelementelementelementelem	2000 - 1840 (1950 1950 1950 1950 1950 1950 1950 1950				VII. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1. 10.1		
and the other part burns as shown	T						and the second of the second o		en el esta mare en entre notario el esta el care el antirología de la care el esta el entre el esta el esta el	
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	 	<u> </u>				a material constitution to the second con-			THE RESERVE OF THE PERSON OF T	
and the standard standard standards	na ang mananan na mang mananan na m					po rustata e a servicio de la compansión de la compansión de la compansión de la compansión de la compansión de				
			and and an an annual contract of the annual contract of the co			Martine, 172 a. Martine, and the Martine, beautiful and a second grade	and other miner (White county beautiful parameter) a social to a feetings.			
MARTINE FOR PROJECT OF A STREET WAS TO STREET						pring (hamm, torida) hamili i'a - pri bisa na nashinggan				
(1-page - Mark Strang Mark Arrivan Strangers			to be the state of							
- And the state of						and the second second second second				
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and the second second second second second second									The same of the sa	
Maria Lorinava, Maria, arrapt m		en en en en en en en en en en en en en e	de de familie de la familie de la familie de la familie de la familie de la familie de la familie de la familie	An Edit (All Admitted Williams), such a marches a facility are as					en en en en en en en en en en en en en e	
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ga (sianga a sa sangan sagar sagar	1			Access to the contract of the contract of		**************************************				
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		1						<u> </u>	And the same has agreement to a specific at the same states of the sam	ļ
	-			THE SECTION STATE AND ADDRESS OF THE PARTY O					AND AND THE SECOND CO. LOW COMMERCIAN CO. CO. CO. CO. CO. CO. CO. CO. CO. CO.	
								1		

SIGNATURE: January 1887

DATE SIGNED: 10-3-29

♦ TRC

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C					ļ.				CHECKED		
PROJEC ⁻	T NUMBE	R: 55381	4.0001.0000		BY: J	IK, JJ, ER	DATE: (0 -	3-24	BY: W	un Vai	DATE: WE N
SAMPLE	ID: ¿	000-1		WELL (DIAMET	ER: 🔽 2	" 🗌 4" 🗍	6" 🔲	OTHER	******************************	
WELL MAT	ERIAL:	☑ PVC	☐ SS ☐] IRON [GALVA	NIZED ST	EEL		OTHER		
SAMPLE T	YPE:	☑ GW] sw 🗆	DI		EACHATE		OTHER		
PUR	GING	TIME: / 3	356	DATE: 10-3	>-211	SA	MPLE	TIME:	1356		DATE: /0-3-24
PURGE METHO	٠.	PUMP BAILER	PERISTALTIO	CPUMP			S			/ITY:	umhos/cm
DEPTH TO		25.0	T/ PVC							col	(188)
		75.48				□ NON	ITY: E	— GHT	MC MC	DERATE	☐ VERY
WELL VOL			LITERS	☐ GALLO	NS	TEMPER	ATURIE _	****************	°C FE	RROUS Fe	e mg/L
VOLUME	VOLUME REMOVED ☑ LITERS ☐ GALLO					COLOR:			OD	OR:	
COLOR:	Gr	cy .		DDOR:		FILTRAT	E (0.45 um)	☐ YES	; 🗆	NO	
		TUR	BIDITY			FILTRATE	E COLOR:	THE SPECK S. LEWIS CO. CO., T. CO., CO., CO., CO., CO., CO., CO., CO.	Fil	TRATE OF	OOR:
Z NONE	☐ SL	IGHT 🗌	☐ VEI	RY	QC SAM	IPLE: 🗌 MS	/MSD		DUP-		
DISPOSA	L METHOD	☑ GROU	ND 🗌 DRUI	VI ☐ OTHER	₹	COMME	NTS:	E	after	rech	~90
TIME	PURGE RATE	PH	CONDUCTIVIT	Y ORP		D.O.	TURBIDITY	TEMPE	RATURE	WATER	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	('	°C)	(FEET	
13 66	>101	8.3	388.38	202	4	1.16 /	1109.3	Z6.	28	25.0) INITIAL
	We	11 R	~^	Dry	S	4/20/2	- aft	e,	rech	rge	
				7		7	#	Managari vi ania si Managari Anias vi	Company of the Company		
			annual ter character and a second and a second and a second as a second as a second as a second as a second as	Linson	Sic	ient	volume	£01	~ au	اعلاد:	<-A-
WATERLAND FOR POST BANK BOOK WELL AND A TO VA	man na na kata a kata a kata a kata a kata a kata a kata a kata a kata a kata a kata a kata a kata a kata a ka		AP BESTELLE TENDEN VEGLANTE SELET FAN SELEN SELET SELET	7 11.00			r				
CONTRACTOR CONTRACTOR TO THE TAX TO SEE YOU AND	als transmitted with the control of the section of the			THE STATE OF STREET, A STATE OF STREET, AS S			menting and patron of the foliage of the color of the section of t	ententinalis objektoren	Marine in a few commences with		
***************************************						· · · · · · · · · · · · · · · · · · ·		man V retour 10 km reter increase	Travel of the second contribution and the second		
*			AND THE PERSON NAMED IN COLUMN						ternal for an interpretable for the U.S. specific plans of the U.S. specific plane of the U.S. specific plans of the U.S. specific plans of the U.S. specific plans of the U.S. specific plans of the U.S. specifi	to free the course to be some because in	
Name along the described by such the section of the	ad Address on the Charles of Column Selection Control	1						enderste Honde er stadensa	10 TEST - \$4 5 TEST - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	1	The Tartiet Called Constitution of the State World's and an office and about a summarized specific and an object of the State
			THE PARTICULAR PROPERTY WAS A CANADA AND A C	*******************************			mat for standard was down that or or managed a compa				
L	075 074		TEOT 10 001								
pH: +/-		COND.: +/-		P: +/- 10		+/- 0.3	TURB: +/-		or =</td <td></td> <td>WING LIMITS: TEMP.: +</td>		WING LIMITS: TEMP.: +
BOTTLE	S FILLED	PRESERV	ATIVE CODE	S A - NONE	В-	- HNO3	C - H2SO4	D -	NaOH	E -	HCL F
NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTI	ERED	NUMBE	R SIZE	TYP	E F	PRESERVA	ATIVE FILTERED
	250 mL	PLASTIC	А	□ Y	ПΝ		125 mL	PLAS	TIC	D	□ Y□ N
and the second s	125 mL	PLASTIC	А	□ Y	□ и		40 mL	۷O	A	E	□ Y□ N
	60 mL	VOA	А	ΠY	□ N		1 L	PLAS	TIC	В	□ Y□ N
	125 mL	PLASTIC	В	□ Y	□N					o mod night, met van a delevel met a personen ne	□ Y□ N
Tables as a market from the first of the same was	125 mL	PLASTIC	С	□ Y	□ N		Section Commission and Commission and		No. / (Amonto 1871) (A. 10)	and a first to be the annual debut of the feether and	□ Y□ N
SHIPPING	METHOD:	Done	OCC DL	DATE SHIPPE	ΞD: •		# # · ·	AIR	BILL NUN	ИBER:	-
COC NUM	COC NUMBER: SIGNATURE:						in	errore personale	TE SIGNE	 ED:	10-3-29

PROJECT NAME: CEC N	(arn BAP/LI: 20	024 GW C	PR	EPARED		CHEC	KED	
PROJECT NUMBER: 55381	4.0001.0000	BY:	: JK, JJ, 🗲	DATE: 10-	324 BY: (Laber Hoat	DATE: 1016/24	
SAMPLE ID: DEK-M	W-1500;							
WELL MATERIAL: PVC	□ ss □	IRON 🗌 GA	LVANIZED S	STEEL	□ от⊦	IER		
SAMPLE TYPE: ☑ GW	□ ww □	SW 🗆 DI		LEACHATE	□ от⊦	IER		
PURGING TIME: /	125 DA	TE: 10-3-2	y S	AMPLE	TIME: /5	O (D	ATE: 10/3/24	
,	PERISTALTIC I	PUMP	***************************************			CTIVITY: 358	9(umhos/cm	
METHOD: BAILER			ORP:	<u>-143.1</u> m	V DO:	<u>1.12</u> m	g/L	
DEPTH TO WATER: 19.78		<u>.</u>		DITY: O.O	_			
DEPTH TO BOTTOM Z.S. O					N. T. office and the second section of the State Control of the second	MODERATE	tina serimenti in trattimenti interesti sinteresti in , sepula pase interes a ancia	
		GALLONS		RATURE: 1		FERROUS Fe _		
		GALLONS		? Clur			N.	
COLOR: Light about	7	OR: <u>// / / / / / / / / / / / / / / / / / </u>		TE (0.45 um)	∐ YES	☑ NO		
TUR	BIDITY			TE COLOR:	(NACD	FILTRATE ODO	R:	
DISPOSAL METHOD GROU		☐ VERY		MPLE: MS		DUP-		
	AD [] DKOW	U OTHER	COMIN	ENIS: Keco	lle cited		le stubilization	
TIME PURGE PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	JRE WATER LEVEL	CUMULATIVE PURGE VOLUME	
	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)	
1425 200 8.15	328.74	114.3	2.81	90.76	21.55	11.78	INITIAL	
1428 100 8.42	303.76	~21.4	1.67	0.0	14.39	21.65	0.6	
1431 8.47	328.17	-97.4	1.33	0.0	18.75	21.83		
1434 8.33	324.6	-121.5	1.28	0.0	18.72	21.91	\$1.2	
1427 8.14	332.11	-108.7	1.49	13.02	19.56	21.53	1.5	
1440 8.02	342.65	-81.3	4.86	21.9	20.5	1 21.49	2.8	
1443 8.0	344.18	-101.3	1. 2	0.6	19.09	21.52	2.1	
14 46 7.99	344.22	-105.8	1.2	0.0	11.07	21.65	2.4	
14 49 \ 1 8.01	347.22	-114.0	1.16	0.0	11.0		2.7	
1452 8.04	349.41	-124.1	1.15	0.0	18.94	21.72	3. 0	
NOTE: STABILIZATION	TEST IS COMP	LETE WHEN 3	SUCCESSI			THE FOLLOWI		
pH: +/- 0.1 COND.: +/-	3 % ORP:	+/- 10 D	0.O.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +</td>	TEMP.: +	
BOTTLES FILLED PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOl	H E- H	CL F	
NUMBER SIZE TYPE	PRESERVATI	/E FILTERE	D NUMB	ER SIZE	TYPE	PRESERVATI	VE FILTERED	
250 mL PLASTIC	А		N I	125 mL	PLASTIC	D	D Y Z N	
l 125 mL PLASTIC	A		N	40 mL	VOA	Е	□ Y□ N	
2 60 mL VOA	А		N 2	1 L	PLASTIC	В	D YO N	
, 125 mL PLASTIC	В		N		Martine Control of th	The first the state of the stat	□ Y□ N	
1 125 mL PLASTIC	С		N		e de la completa del completa de la completa del completa de la completa del la completa del la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la completa de la	AND MATERIAL TO MICHAEL THE PROPERTY OF THE PARTY OF THE	□ Y□ N	
SHIPPING METHOD: Dead =0	fr DA	TE SHIPPED:	10-4-	2 0)	AIRBILL	NUMBER:		
SHIPPING METHOD: Deap - of t DATE SHIPPED: 10-4-24 AIRBILL NUMBER: COC NUMBER: SIGNATURE: 5/1/24								



TRC WATER SAMPLE LOG (CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Co		PREPARED	CHECKED
PROJECT NUMBER:	553814.0001.0000	BY:	JK, J. ER DATE10 - 3 - 24	BY: OWN WAST DATE: 10/6/24

SAMPLEID: DEK-14W-15003

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1455	100	\$.06	352.21	-174.8	1.14	0.0	18.95	-	3.3
1458		8.06	355.21	-139.4	1.13	0.0	18.93		3.6
1501		8.07	358.92	- 143. (1.12	0.0	18.71		3.9
The state of the s									
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			Commence of the second	The second of the second section is the second seco		and the section of the control of th	and an artist and standard as the property and all all artists are all all and all artists are all artists and a	Pin hally offer derived and passing a debate	
and the contract of the contra							Market Barrer and a first branch town Committee and a second second		s s s mare, agust a mar gharannann à straigh à r dha guidh an thrainigh dha dhàthair phò, a
AL A COMMENT OF THE PERSON NAMED IN		and the state of t		CONTRACTOR OF THE CONTRACTOR O					A LA COMPANY OF THE PARTY OF TH
Second Control of the Control				And the state of the conduction and confidence and the state of the st		e en en en en en en en en en en en en en	a gamaga natung, paga yani dengangan dang sapat yani baga ga ada dalam ada da ma dabama	yn afagligiai at alla a hall at an 1 pag	and the second s
V JUNE 1 N. P. J. CHARLES SERVICES IN CONTROL THE AM A			and the second terror and the second terror and the second terror and the second terror and the second terror and the second terror and the second terror and the second terror and the second terror and terror			and balance has safe to make the safe to the safe as	AND THE RESERVE OF THE PARTY OF	***************************************	
			e gan rymaga nagrau na wrodd narron yfnenn i sweir e				A CHARLES AND AND AND AND AND AND AND AND AND AND	ar an angular salahan an color an	and the second s
					a la como esta de la como esta de estado en la como estado en la c		g and the figure of the property of the contract of the contra		
					entral and a survivor consideration and		- Martingale accumus, error and direkt comment for a children's discover on the con-		en en en en en en en en en en en en en e
	<u> </u>		And an arranged to the control of th		<u> </u>		A COMPANY OF THE PARTY OF THE P		and the second of the second o
			and the state of t		1		TO SECURE THE PROPERTY OF SECURITION OF SECU	A ACTION OF THE PERSON OF THE	CONTRACT STATE STA
way and a district of the state							and according to the contract of several specifics of the con-		an programa analysis of the first special problem and an extra section of the sec
and the second s			a y mere lamin er produktekan ya rupa Palakun (Palakun) A rupa leminda da Palakun (Palakun)				AND AND ADDRESS OF A STREET OF		
to the state of th							OPPORTUGE TO SERVICE AND ADDRESS OF THE SERVICE	NO METERS OF SERVICE AND SERVICE SERVICES	And the control of the state of
The State of the S				To make the control of the control o			name - reministrativamentorium, maistro ca 17 (access tables). At	4) - Marie / Against (18 1707) - Marie (17077)	and and the control of the control o
		ļ	and and the design of the first state of the	- Managang ang sang sang sandang na mangangan sang an	a upan dengan sa pinan maana sahar sa ma	Procedure Andrew Commission (1997)			. The control and half is control and the first definition of the Perfection Pro
Variable Services (Control of the Control			And the second control of the second control	- Parker Andready and a service of state of the	and the state of t	and the commonweal and are considered as a construction of the con			
and a large of the first of the state of the	go fin de de el mendo en en el electro del del el mendo el mendo de el mendo d		TO A STANDARD TO A RESIDENCE STANDARD S				gala pergala mendendeka Peraka sahan Allah Allah Saha - Sahak sah		
to a security assessment of the original of					-10.00 - 10.00 - 1000 - 1000		_		The state of the s
						and a parameter of the state of			A - A - A - A - A - A - A - A - A - A -
		-							
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L		<u> </u>			1			1	

TRC

PROJECT	ΓNAME:	CEC V	Veadock LF	: 2024 GW C		PR	EPARED			CHEC	KED
PROJEC1	г иимве	R: 55382	8.000.000	0	BY:	ψA	K DATE: 10/	3/24 BY:	ER		DATE: 10-8-29
SAMPLE	ID: OW-	-10		WELL (DIAMET		2"				
WELL MAT	ERIAL:	☑ PVC	□ ss [□ IRON □	GALVA	NIZED S	STEEL	□ от	HER	The state of the s	The state of the s
SAMPLE T	YPE:	☑ GW	□ ww [∃ sw □	DI		LEACHATE	ОТ	HER		
PURC	GING	TIME: 15	41	DATE: 10/3	124			TIME: 16		D	ATE: FO/3/22
PURGË METHOE	_		PERISTALT	IC PUMP			<u>7.3)</u> s				umhos/cm
	<u>_</u>	BAILER					<u>-136.8</u> m		O.	2 7 m	g/L
		9.59 17.40	T/ PVC			TURBI	DITY: <u>/2.5</u> NE 🛭 SLI		MOD	ERATE	□ VERY
WELL VOL				☐ GALLO	NS		RATURE: 15				Const. The set Address of the Const.
VOLUME I				☐ GALLO			R: <u>(U. 2)</u>				mg/L
COLOR:				ODOR: <u>51'0</u>			TE (0.45 um)		000		,,,,,,
002011	<u></u>		BIDITY		7		TE COLOR:			RATE ODOF	2.
□ NONE	☐ SLI		MODERATE	: UEF	₹Y		MPLE: MS	/MSD			<u> </u>
DISPOSAL				M ☐ OTHER		į.	IENTS: SSUN				ler-
TIME	PURGE	PH	CONDUCTIVI	TY ORP		D.O.	TURBIDITY	TEMPERAT		WATER	CUMULATIVE
	RATE (ML/MIN)	(SU)	(umhos/cm		- 1	mg/L)	(NTU)	(°C)		LEVEL (FEET)	PURGE VOLUME (GAL OR L)
1541	150	7.32	853			.83				8,59	
1544	1	7,33	831	-137.1		16,	668(40)			8.29	- Artificiation instruments of the recommendation of the second section of the sect
1547		7.32	828	-136.3	> 8	.75			Contract of the Contract of th	8.29	0.90
1550		7,32	829	-135,	જ છે	. 67	28.9			8-9.3	1.35
1553		7.3\	831	-134	.6	0.54	25.8		7	9.39	
1556	*	7.30	8/9	-134	3 (2.45	17.9	15.	3	9.43	2.25
1659		7.30		-134						9,50	2.70
1605	ľ	7.31	813	-136.	2 0	134	13,5	15.	2	9.51	3.\5
1605		7.32	8 09	-136.	7 (0.28	11.6		2	¥,55	3.60
1608	PROPERTY OF THE PROPERTY OF TH	7.31	8 08	-136.5	C	,27		15	. Z.	9,56	4.05
N	OTE: STAI	BILIZATION	TEST IS CO	MPLETE WHE	EN 3 SL	ICCESS	IVE READINGS	S ARE WITH	N THE	FOLLOWI	NG LIMITS:
pH: +/-	0.1	COND.: +/-	3 % OR	RP: +/- 10	D.O.:	+/- 0.3	TURB: +/-	10 % or	= '</td <td>10</td> <td>TEMP.: +/-</td>	10	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODE	S A - NONE	В-	HNO3	C - H2SO4	D - NaO	Н	E - H(CL F
NUMBER	SIZE	TYPE	PRESERVA	ATIVE FILTE	RED	NUMB	ER SIZE	TYPE	PR	ESERVATI	VE FILTERED
l l	250 mL	PLASTIC	Α	_ Y	Z N	1	125 mL	PLASTIC		D	□ Y Ø N
l	125 mL	PLASTIC	Α	□ Y	ZΝ		40 mL	VOA		Е	□ Y □ N
2	60 mL	VOA	Α	□ Y)	Z Ν	2	1 L	PLASTIC		В	
(125 mL	PLASTIC	В	□ Y	N					TO THE REAL PROPERTY AND ADDRESS AND ADDRE	□ Y □ N
(125 mL	PLASTIC	С	□ Y	N					4.4	D Y D N
SHIPPING	METHOD:	Deopo	220 bs	DATE SHIPPE	:D: \(3/4/	24	AIRBILL	NUMB	ER:	
COC NUME	BER:		-	SIGNATURE:	<u>0</u>	will	y Harby	DATE S	IGNED	<u>'</u>	0/7/24

PROJECT	NAME:	CEC K	arn BAP/LI: 2	024 GW C		PRE	PARED			CHEC	KED		
PROJECT	NUMBEI	R: 553814	4.0001.0000	E	3Y: , J	K, JJ, ER	DATE: /C	/3	BY: ()()	un bast	DATE:	1016	JW
SAMPLE	ID: 101	E/K -1	14W-15	OO WELL D	IAMET	ER: 🗹 2	"						
WELL MAT	ERIAL:	☑ PVC	□ ss □	IRON 🗌 (GALVA	NIZED ST	EEL		OTHER		proprement in the sold of the second	to his same easy ray a to vice passey.	
SAMPLE T	YPE:	☑ GW	□ ww □	sw □ t	DI .	□ Li	EACHATE		OTHER		are a succession of the succes		_
PURG	SING	TIME: 16	07 D	ATE: 16/3	/24	SA	MPLE	TIME:	1631		ATE:/)/3/:	zy
PURGE METHOD	y		PERISTALTIC	PUMP .	•					ITY: <u>/3/6</u>	. 4	umhos	
		BAILER						nV DO		.97 m	g/L	****	
DEPTH TO						TURBID NONI	ITY: <u>1.3°</u>			DEDATE		VEDV	
DEPTH TO			T/ PVC							DERATE		VERY	
WELL VOL				☐ GALLON			ATURE: /		- 	RROUS Fe		r	mg/L
VOLUME F				OOR: 10		COLOR:					U _o		
COLOR:	<u>C/</u> .			OOR: 10 3			E (0.45 um)	∐ YE		NO		*****	****
NONE			BIDITY MODERATE		w.		E COLOR:	2/MOD		TRATE ODO	R:		
			ND DRUM				IPLE: M	2/W2D	U	DUP			
DISPUSAL		☑ GROUI	אטאט [_] או	U OTHER		COMME	IN 1 5:						
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMP	ERATURE	WATER LEVEL		MULATI\ GE VOLU	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)		mg/L)	(NTU)		(°C)	(FEET)		AL OR L	
1607	200	7.74	1230.6	35.5	7	2.75	12.86	16	83	9.53		INITIAL	M/A1 (# 5V, A5 #8/
1610		7.68	1381.9	-14.0	1	.01	11.48	14.	.92	9.69	0	. 6	
1613		7.65	1371.5	-113.6	0	.96	14.85	14.	84	9.69	1.	2	
1616		7.61	1372.5	-119.5	O	94	35.92	14.	85	9.69	1:	8	
1619	· ·	7.57	1404.3	-122.5	0	.94	49.75	14.	85	9.69	7.	4	/
16 22		7.51	1358.3	-114.9	l.	05	0.0	15.	02	9.64		0	**************************************
1825		7.6	1370.3	-124.3	0	.94	o. 0	14.	18	9.60	9.	6	~~~
1828		7.63	1369.9	-129.4	O	.93	0.0	15	.0		#	. Z	
1631		7.64	1366.4	-132.9	_ (7.92	1.37	14	.44		4.	۶	/ - = 1
1634	- 4										-5	4	_
		BILIZATION	TEST IS COM	PLETE WHE	N 3 SU	CCESSIV	E READING	S ARE V	VITHIN TH	IE FOLLOWI			
pH: +/-	0.1	COND.: +/-	3 % ORP	: +/- 10	D.O.:	+/- 0.3	TURB: +/	- 10 %	or =</td <td>: 10</td> <td>TEMP.</td> <td>: +</td> <td></td>	: 10	TEMP.	: +	
BOTTLES	SFILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO	4 D-	NaOH	E- H	ICL F		_
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTE	RED	NUMBE	R SIZE	TY	PE F	PRESERVAT	IVE	FILTER	.ED
1	250 mL	PLASTIC	A		Z N	1	125 mL	PLA	STIC	D		YZ	N
(125 mL	PLASTIC	Α	□ Y A	ZÍ N	and the state of t	40 mL	VC	DA	E		Υ□	N
2	60 mL	VOA	A	ΠY	ΖN	Z	1 L	PLA	STIC	В		ΥZ	N
1	125 mL	PLASTIC	В	□ Y J	ŹΝ			-	***************************************	- Markeyerijek - 12. olektrolekko alikekista Ali er vo		Υ□	N
1	125 mL	PLASTIC	С		ZΝ	Benediction of Participal State of		1	*******************************			Y□	N
SHIPPING	METHOD:	Drop -	088 D	ATE SHIPPE	:D: //	2-4-2	d	AIF	RBILL NUN	MBER:			
. 1919-20-11-11-11-11-11-11-11-11-11-11-11-11-11		V.00		IGNATURE:	<u></u>	10	10	-	TE SIGNE				*******
COC NUMI	ULIX.			IONATURE:	<u> </u>	my/	T	_	VI L OIGINE	_U	10-3	-24	

PROJECT	NAME:	CEC K	arn BAP/LI:	2024 GW	d	PR	EPARED		CHEC	KED
PROJECT	NUMBER	R: 553814	4.0001.0000		BY:	JK, JJ, E	R DATE:/0/	3/24 BY: ()	While hat	DATE: 10/8/24
SAMPLE	ID: DE	EK-M	W-1500	2 WELI	L DIAME	ER: 🗹	2"	-{	- 10	
WELL MAT			□ ss □					□ отн		
SAMPLE T	YPE:	☑ GW	□ ww □	lsw 🗆] DI		LEACHATE	□ отн	ER	
PURC	SING	TIME: 17	144	DATE: /2/	1/24		SAMPLE	TIME: / 8	02	DATE: 10/3/24
PURGE METHOD		PUMP BAILER	PERISTALTIC	PUMP'	_				0.99 m	umhos/cm
DEPTH TO	WATER:	8.66	T/ PVC			_	IDITY: 6.63			
DEPTH TO	воттом	15.76	T/ PVC			□ ио	NE 🖊 SLI	IGHT 🗆	MODERATE	☐ VERY
WELL VOL			LITERS	☐ GALL	ONS	TEMP	ERATURE: /	<i>5.6</i> 9_℃	FERROUS Fe_	mg/L
VOLUME F			☑ LITERS	☐ GALL		COLO	R: <u>(12-</u> -		ODOR: 3	logho
COLOR:	Clu			DOR: <u>///</u>	•	FILTRA	ATE (0.45 um)	☐ YES	□ NO	
			BIDITY			FILTRA	TE COLOR:		FILTRATE ODC	
NONE			MODERATE	□ v			AMPLE: MS	<u>r</u>	DUP- DE	
DISPOSAL	METHOD	☑ GROU	ND DRUM	u □ OTHI	ER	COM	MENTS: *D.	uplicate f	or radium	n only Ob
TIME	PURGE RATE	PH	CONDUCTIVIT	Y ORI	P	D.O.	TURBIDITY	TEMPERATU	RE WATER	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
1744	2003	7.64	695.32	-16.	1	1.45	0.0	17.8z	8.66	INITIAL
1747	1	7.63	696.43	-78.	3	1.09	0.0	16.89	8.68	0.6
1750		7.59	793.54	-110.	1	1.03	0.0	16.13	8.70	1.2
1753		7.52	800.43	1	1 .	.01	0.6	15.82		1.8
17 56		7.47	801.44	-125.	-	00	0.35	15.82		2.4
1759	\ /	7.45	711.46			. 0	5.27	15.75		7.6
1862		7.43	822.23			,99	6.63	15.69		3.6
7,000		7,3	• 26.03				0.03			
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								ng balanda an man haart, and hadapader manibushioning o		
										1
N- pH: +/-		BILIZATION COND.: +/-		VIPLETE WI P: +/- 10		JCCESS : +/- 0.3			THE FOLLOW = 10</td <td>TEMP.: +</td>	TEMP.: +
·		1				. +/- 0.3				·
BOTTLES	S FILLED	PRESERV	ATIVE CODE:	<u>S</u> A - NON	IE B	- HNO3		1 D - NaOl	E- F	HCL F
NUMBER	SIZE	TYPE	PRESERVA	TIVE FIL	TERED	NUME	BER SIZE	TYPE	PRESERVAT	IVE FILTERED
	250 mL	PLASTIC	Α			1	125 mL	PLASTIC	D	□ Y□ N
	125 mL	PLASTIC	Α	<u> </u>	/ 🔲 N		40 mL	VOA	E	□ Y □ N
Z	60 mL	VOA	Α		/ 🗆 N	4	1 L	PLASTIC	В	□ Y□ N
1	125 mL	PLASTIC	В		/ 🗀 N					□ Y□ N
1	125 mL	PLASTIC	С		/ 🗆 N	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				□ Y□ N
SHIPPING	METHOD:	Desp-0	er	DATE SHIP	PPED:	10-11-	- 2 d	AIRBILL	NUMBER:	
COC NUM	BER:	Visp - C	NATIONAL MATERIAL PROPERTY AND ADDRESS OF A CONTRACT OF A	SIGNATUR	WELLEN TO BE SHOULD BE A SHOULD BE		1116	DATE SIG	GNED:	11/3/2.1
					- 6		r ver f	- 1		1-124

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CHAIN OF CUSTODY

QA REQUIREMENT: ☐ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS $_{\text{of}}$ ☐ ISO 17025 □ OTHER □ NPDES INI. Cal. Due Date: M&TE#: (Attach List if More Space is Needed) ANALYSIS REQUESTED Received on Ice?

No ပွ Sulfide × × × × × × Alkalinity × × CONSUMERS ENERGY COMPANY - LABORATORY SERVICES × × LDS × × × × COMMENTS: sinommA Temperature: × × × × × × **snoinA** × × × × × × Total Metals × × × × × × 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 Other. PRESERVATIVE MeOH CONTAINERS HCI NaOH REQUESTER: Harold Register ^bOS²H _ HMO³ Ţ None 4 4 4 4 1 # TVLOT ~ 7 4 4 SAP CC or WO#: RECEIVED BY: RECEIVED BY: ☐ STANDARD FIELD SAMPLE ID / LOCATION phone: A = Air WP = Wipe WT = General Waste SL = Sludge OX = OtherTURNAROUND TIME REQUIRED ☐ 48 HR ☐ 3 DAYS W = Water / Aqueous Liquid S = Soil / General Solid O = Oil DUP-DEK-BAP-01 DEK-MW-15002 **DEK-MW-15005** DEK-MW-15006 080 GW = Groundwater WW = Wastewater FB-DEK-BAP EB-DEK-BAP PROJECT NUMBER: MATRIX CODES: he/h/01 ☐ 24 HR email: DATE/TIME: DATE/TIME: ĞW GW ĞΨ ĞΨ **MATRIX** ≥ ≽ 78/ 1807 1607 TIME SAMPLE COLLECTION 95/1 9))) Q4-2024 DEK Bottom Ash Pond Wells SAMPLING TEAM: AL ER, TH Harold Register)17/E/01 Joseph Firlit 2/2/01 12/E/01 12/2/01 DATE h2/c/p/ SAMPLING SITE / CUSTOMER: HAY WHALD Consumers Energy TRC SEND REPORT TO: RELINQUISHED BY: RELINQUISHED BY: 9 -05 90-9 SAMPLE ID 24-0801-01 -03 COPY TO:

416	7	U 124
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Cal. Due Date:

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Temperature:

M&TE#:

Received on Ice? \square Yes \square No

DATE/TIME:

CHAIN OF CUSTODY

Consumers Energy

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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(517) 788-1251	┢	<u> </u>	<u> </u>	1			i i		Other											
788-						RS	PRESERVATIVE	Н	M ^C O											 (
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0.1		rold				Ö		# <i>"</i> TVJ	Иоле	7 4	6 3	6 3								
, JACKSON, MI 49	SAP CC or WO#:	REQUESTER: Harold Register		☐ STANDARD 図 OTHER	phone:	i	dge	WP = Wipe WT = General Waste	OCATION										·	RECHARD BY:
135 WEST TRAIL ST., JACKSON, MI 49201	PROJECT NUMBER:	24-0802	TURNAROUND TIME REQUIRED:	□ 24 HR □ 48 HR □ 3 DAYS □ S	email:	MATRIX CODES: GW = Groundwater OX = Othe	WW = Wastewater SL = Sludge W = Water / Agueous Liquid A = Air	S = Soil / General Solid WP = Wi O = Oil WT = Ge	FIELD SAMPLE ID / LOCATION	DEK-MW-18001	DEK-MW-18001 MS	DEK-MW-18001 MSD								DATE/TIME:
: •		und.						RIX	TAM	ВW	GW	GW								ATE/I
		ined Impo				er		ECTION	TIME	CE30	LEGO	०४३७								A .
Count on Us®	STOMER:	n Ash Pond & I			Joseph Firlit	Harold Register	TRC	SAMPLE COLLECTION	DATE	(ज्येत्रिय	נל 11	11 11								
2	SAMPLING SITE / CUSTOMER.	Q4-2024 DEK Bottom Ash Pond & Lined Impound	SAMPLING TEAM:		SEND REPORT TO:	COPY TO:		LAB	SAMPLEID	24-0802-01	-02	-03								RELINQUISHED BY:

CHAIN OF CUSTODY

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CONSUMERS ENERGY COMPANY – LABORATORY SERVICES 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

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2425 QA REQUIREMENT: □ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS □ ISO 17025 □ OTHER □ NPDES INI 🛭 (Attach List if More Space is Needed) ANALYSIS REQUESTED Sulfide × × × × × × × × × × Alkalinity × × × × × × LDS × × × × × × × × COMMENTS: Ammonia × × × × × × × × × × **enoinA** × × × × × × × × × × Total Metals × × × × × × × × × × MeOH Other PRESERVATIVE CONTAINERS HCI NaOH -REQUESTER: Harold Register [†]OS^zH _ -Н -- \vdash НИО³ ---Уоле 4 -4 4 4 4 4 4 # TATOT _ / _ ~ 4 SAP CC or WO#: RECEIVED BY: FIELD SAMPLE ID / LOCATION ☐ STANDARD phone: A = Air WP = Wipe WT = General WasteSL = Sludge DX = Other TURNAROUND TIME REQUIRED ☐ 3 DAYS W = Water / Aqueous Liquid S = Soil / General Solid O = Oil 24-0803 0180 46/11/01 DEK-MW-15003 GW = Groundwater WW = Wastewater □ 48 HR PROJECT NUMBER: SW-DITCH DUP-KLI MATRIX CODES: KLI-SCS KLI-PCS 11180 OW-10 OW-12 EB-KLI FB-KLI □ 24 HR email: DATE/TIME: ĞΨ ĞΨ GW ĞΨ SW SW ĞΜ MATRIX ≽ ≽ ≥ 4556 1608 150 SAMPLE COLLECTION SAMPLING TEAM: AN, ER, JV Harold Register 10/2/24 Q4-2024 DEK Lined Impoundment Joseph Firlit 45/8/98 10/3/24 DATE SAMPLING SITE / CUSTOMER: TRC SEND REPORT TO: RELINQUISHED BY: WANTED OF -00 9 -05 SAMPLE ID 9 80 60--10 9 24-0803-01 COPY TO:

Cal. Due Date:

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Temperature:

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Received on Ice? \Box In No

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DATE/TIME:

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Eurofins Cleveland

180 S. Van Buren Avenue

Chain of Custody Record

Environment Testing 🕏 eurofins

שע CEETA Special Instructions/Note: Ver: 05/06/2024 Months Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont Special Instructions/QC Requirements: COC No: 240-124392-29052.1 Page: Page 1 of 1 Job #: Preservation Codes: D - HNO3 62% Total Number of containers Date/Time: (C)/8/24 Date/Time: Date/Time: Method of Shipment: 4 State of Origin: **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: Received by. My The Win-E-Mail: Kris. Brooks@et.eurofinsus.com Received by: Lab PM: Brooks, Kris M Company Water Matrix (w-water, S-solid, O-waste/oli, Water Water Water Water Water Company Company Radiological Sample
Type
(C=comp,
G=grab) Stanlala Date/Time: 10/4/24 1547 Ð D 9 9 P PWSID: 1 magga 10/3/24 1802 Sample 2091 10/3/24 1602 94)1 Date: Unknown Sampler: TAT Requested (days): Due Date Requested: Sample Date 10/3/54 WO #: 553814.0001 h2 (-/01 10/2/24 Project #: 24024154 SSOW#: Date/Time: Date/Time: Po#: 215951 Poison B Skin Irritant Plammable Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No.: Project Name: Karn/Weadock CCR DEK Bottom Ash Pond Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772 734-971-7080(Tel) 734-971-9022(Fax) Company: TRC Environmental Corporation. Possible Hazard Identification Relinquished by: (LLMM) Krenz@trccompanies.com Empty Kit Relinquished by: Custody Seals Intact:

Δ Yes Δ No 1540 Eisenhower Place Client Information Sample Identification DUP-DEK-BAP-01 DEK-MW-15005 DEK-MW-15006 DEK-MW-15002 State, Zip: MI, 48108-7080 EB-DEK-BAP elinquished by: Relinquished by: lacob Krenz Client Contact: Ann Arbor

Chain of Custody Record

Eurofins Cleveland

180 S. Van Buren Avenue

Environment Testing

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Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Month COC No: 240-124393-29053.1 Preservation Codes: D - HNO3 Page: Page 1 of 1 Job #: Other: Carrier Tracking No(s): State of Origin: **Analysis Requested** Lab PM:
Brooks, Kris M
E-Mait:
Kris. Brooks@et.eurofinsus.com Matrix (W=water, S=solid, O=wasts/oll, Water Water Sample
Type
(C=comp,
G=grab) Radiological JAU: 4 1 14550 و 336 PWSID: Compliance Project: A Yes A No Sample Time 1013/12 CEFT Poison B Huknown 2002 2502 FAT Requested (days): Due Date Requested: Sample Date WO #: 553814.0001 Project #: 24024154 SSOW#: Po#: 215951 Skin Irritant Project Name: Kam/Weadock CCR DEK Bottom Ash Pond & I Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772 734-971-7080(Tel) 734-971-9022(Fax) Possible Hazard Identification Sompany: TRC Environmental Corporation. JKrenz@trccompanies.com 1540 Eisenhower Place Client Information Sample Identification Ann Arbor State, Zip: MI, 48108-7080 DEK-MW-18001 Jacob Krenz

43 124 Dr Ver: 05/06/2024 Company Date/Lime: Date/Time: Cooler Temperature(s) °C and Other Remarks: Received by: Received by: Received by: Time: Company Company Company 357 Date/Time; jo/56/4 Date/Time: Date/Time: Custody Seal No.: Empty Kit Relinquished by: Custody Seals Intact: Δ Yes Δ No pershed by: elinquished by:

Aethod of Shipment:

Special Instructions/QC Requirements:

Deliverable Requested: I, II, III, IV, Other (specify)

Eurofins Cleveland
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

& eurofins | Environment Testing

Client Information	Sampler: ER, AK	Lab PM: Brooks, Kris M		Carrier Tracking No(s):	240-124394-29054.1
Client Contact: Jacob Krenz	Phone:	E-Mail: Kris.Brooks	E-Mail: Kris. Brooks@et.eurofinsus.com	State of Origin: \mathcal{M}	Page: Page 1 of 1
Company. TRC Environmental Comoration	PWSID:		Analysis Requested	uested	Job #:
Address: 1540 Fisenhrwer Place	Due Date Requested:				Preservation Codes: D - HNO3
City. Ann Arbor	TAT Requested (days):				
State, Zip: MI, 48108-7080	Compliance Project: A Yes A No				
il) 734-971-9022(Fax)		- (o			element to the
	WO#: 553814.0001			Sie	**************************************
ned Impoundment	Project #: 24024154)dd:		
	SSOW#:		'558 ⁻ C	00101	Other:
	Sample Type Sample (C=comp,	Matrix 60 M (Wayater, 60 M Seaold, 60 October 60 M	3,0, Ra226Ra	egwnN (eta	
Sample Identification	1202	BT=Tissue, A=Air)	06 6		Special Instructions/Note:
DEK-MW-15003	S	water Ν/V	£		
OW-10	15/24 1608	Water N N	.×		
OW-11-	10/3/24 1356 (3				
OW-12		Water			
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v, Other (specify)	UNKHOWII		Requirem		
7	Date:	Time:		Method of Shipment:	
1/m +	Date/Time: 10/4/24 1547	Company TRC	Received by: Mat Ju	Pate/Time; 124/	63
	Date/Time:	Сотрапу	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Сотрапу
Custody Seals Intact: Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:	narks:	
Δ Yes Δ NO					Ver: 05/06/2024