

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  
DE Karn Lined Impoundment 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 257.90-98), apply to the Consumers Energy Company (Consumers Energy) Lined Impoundment at the DE Karn Power Plant Site. Pursuant to the CCR Rule, 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). On behalf of Consumers Energy, TRC has prepared this Annual Groundwater Monitoring Report for the Karn Lined Impoundment to cover the period of January 1, 2024 to December 31, 2024.

This 2024 Karn Lined Impoundment Annual Report was prepared in accordance with the requirements of §257.90(e) and presents the monitoring results and the statistical evaluation of the detection monitoring constituents (Appendix III to Part 257 of the CCR Rule) for the four quarterly groundwater monitoring events completed in 2024 for the lined impoundment. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify statistically significant increases (SSIs) in detection monitoring constituents to determine if concentrations in detection monitoring well samples exceed background levels. The KLI was in the detection monitoring program under §257.94 at the start and end of the 2024 reporting period.

After establishing the groundwater monitoring system and detection monitoring project pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) December 28, 2018 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. This alignment would ensure compliance with the CCR standards through a state-approved

permitting program that would be deemed to be “equivalent to” or “as protective as” through an administrative application that would be reviewed and authorized by U.S. EPA.

On November 6, 2020 Consumers Energy submitted the Karn Lined Impoundment Hydrogeological Monitoring Plan (November 2020 HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and the four quarterly events completed in 2024 were performed in accordance with the EGLE-approved HMP. This letter and four quarterly reports (Enclosures 2 through 5) 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).

In 2024, Consumers Energy asserted an Alternate Source Demonstration (ASD), for the following SSIs over background limits:

- Sulfate at DEK-MW-15003 (March 2024); and
- Total dissolved solids in monitoring well DEK-MW-18001 (July 2024).

As detailed in the ASD reports (Enclosures 6 and 7), a source other than the Karn Lined Impoundment CCR Unit caused the SSIs. As such, Consumers Energy will continue with the detection monitoring program at the Karn Lined Impoundment in conformance with §257.90 - §257.94.

Closure of the Karn Lined Impoundment was initiated in August 2024 and completed in September 2024 in accordance with the EGLE-approved *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan*<sup>1</sup> (Closure Plan). The Karn Lined Impoundment was dewatered and hydraulic structures were removed. The remaining CCR, the geosynthetic liner systems, and all areas within the limits of the Karn Lined Impoundment that were in contact with CCR were removed, as documented in the *D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report*<sup>2</sup> (Enclosure 8). Since closure by removal activities were completed in September 2024, the fourth quarter sampling event (October 2024) is the first post-excavation groundwater monitoring sampling event. In accordance with the Closure Plan and § 257.102(c)<sup>3</sup>: Closure by removal of CCR, groundwater monitoring will be conducted post-CCR removal to document that constituent concentrations throughout the CCR unit do not exceed the groundwater protection standards established per 40 CFR 257.95(h) for two consecutive groundwater monitoring events. The second post-excavation monitoring event is scheduled to occur in the first quarter of 2025. No corrective actions were performed in 2024. The next annual monitoring report will cover monitoring conducted in the 2025 calendar year and will be submitted no later than January 31, 2026.

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<sup>1</sup> Golder Associates Inc. 2018. *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan*. June.

<sup>2</sup> WSP USA Inc. 2024. *D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report*. October 30.

<sup>3</sup> The closure requirements of § 257.102(c) are equivalent to Section 11519(b)(9)(a) of Part 115.



Sincerely,



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Ms. Kristin Lowery, TRC  
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Enclosures: 1) CCR Annual Groundwater Report Requirements: § 257.90(e). Checklist for the Karn Lined Impoundment CCR Unit.  
2) First Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC, April 30, 2024)  
3) Second Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC, July 30, 2024)  
4) Third Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC, October 30, 2024)  
5) Fourth Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC, January 30, 2025)  
6) Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event, Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan. (TRC, July 30, 2024)  
7) Alternate Source Demonstration: July 2024 Detection Monitoring Sampling Event, Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan. (TRC; January 28, 2025)  
8) D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report, (WSP USA, Inc., October 30, 2024)

**Enclosure 1**

**CCR Annual Groundwater Report Requirements: § 257.90(e).  
Checklist for the Karn Lined Impoundment CCR Unit.**

**CCR Annual Groundwater Report Requirements: § 257.90(e)**  
**Checklist for the Karn Lined Impoundment 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 <sup>(2),(3),(4),(5)</sup>
(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;	Section 3.1 <sup>(5)</sup>
(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 3.2 <sup>(2),(3),(4),(5)</sup>
(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 <sup>(1)</sup> ; Section 1.2 Program Summary <sup>(2),(3),(4),(5)</sup>
(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.	Certified ASD <sup>(6),(7)</sup>
(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;	Section 1.2 Program Summary <sup>(2),(3),(4),(5)</sup>
(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;	Section 1.2 Program Summary <sup>(2),(3),(4),(5)</sup>
(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 4.1 Statistical Evaluation of Trends <sup>(2),(3),(4),(5)</sup> ; Certified ASD <sup>(6),(7)</sup>
(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Certified ASD <sup>(6),(7)</sup> ; remaining in Detection Monitoring
(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;	Not Applicable; Detection Monitoring
(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	Not Applicable; Detection Monitoring
(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	Not Applicable; Detection Monitoring
(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	Not Applicable; Detection Monitoring
(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	Not Applicable; Detection Monitoring
(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	Not Applicable; Detection Monitoring

**Notes:**

- (1) 2024 Annual Groundwater Monitoring and Corrective Action Report Karn Lined Impoundment Coal Combustion Residuals CCR Unit. Consumers Energy. January 30, 2025.
- (2) First Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. April 30, 2024.
- (3) Second Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. July 30, 2024.
- (4) Third Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. October 30, 2024.
- (5) Fourth Quarter 2024 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. January 30, 2025.
- (6) Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event, Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan. TRC. July 30, 2024.
- (7) Alternate Source Demonstration: July 2024 Detection Monitoring Sampling Event, Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan. TRC. January 28, 2025.

## **Enclosure 2**

**First Quarter 2024 Hydrogeological Monitoring Report, DE  
Karn Lined Impoundment CCR Unit, Essexville, Michigan.  
(TRC; April 30, 2024)**



# First Quarter 2024 Hydrogeological Monitoring Report

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

April 2024

A handwritten signature in blue ink that reads "Darby Litz".

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Darby Litz  
Project Manager/Hydrogeologist

**Prepared For:**

Consumers Energy  
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**Prepared By:**

TRC  
1540 Eisenhower Place  
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A handwritten signature in blue ink that reads "Andrew Whaley".

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Andrew Whaley  
Project Geologist



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## 1.0 Introduction

Pursuant to the Federal CCR Rule<sup>1</sup>, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018, 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 amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

### 1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This First Quarter 2024 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, *Format for Solid Waste Disposal Facility Monitoring Submittals*, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (NREPA), also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

### 1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the first quarter 2024 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

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<sup>1</sup> 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.

1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the first quarter 2024, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

### **1.3 Site Overview**

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former 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. Consumers Energy permanently ceased the operation of the coal-fired boilers (DE Karn Units 1&2) at the Site in May 2023 and has commenced decommissioning activities for those electrical generating units. 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 Site are the former Karn Bottom Ash Pond that was closed by removal and the Karn Landfill that was certified closed and now in post-closure care.

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit NO. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

### **1.4 Geology/Hydrogeology**

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. 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, was generally encountered at 80 to 90 ft bgs.

The Site is bound by several surface water features (Figures 1 and 2): 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 Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near OW-12, flowing outward toward the surrounding surface water bodies.



## 2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner (Consumers Energy, 2021a and 2021b). Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow of 25 gallons per acre per day (GPAD). The flow rate is calculated each time the secondary collection system is evacuated. During the previous quarter (January 2024 – March 2024), no single event exceeded the action flow rate of 5 GPAD, so additional temporal calculations or trends were not developed to demonstrate compliance with the action flow rate. Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS response action flow rate, samples were collected from the surface water of the primary collection system (KLI-PCS) and from the secondary leachate collection system sump (KLI-SCS) to compare leachate chemistry to groundwater chemistry. The samples were analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) - Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) - Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids, sulfate, and chloride. Consumers notes that as decommissioning of the Karn Units 1&2 proceeds, temporary changes to the mix of the miscellaneous low-volume waste may occur, causing changes in the concentrations of detected constituents in the primary collection system (KLI-PCS) as compared to historical. A few notable observations include:

- **Arsenic concentrations are higher in groundwater than the primary and secondary collection system:** Arsenic was detected in the primary collection system at a concentration of 1 ug/L and in the secondary collection system at a concentration of 2 ug/L in March 2024. As shown in Appendix E, the arsenic concentrations observed in the primary and secondary collections system have been consistently low. In contrast, the

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arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 58 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.

- **Secondary Collection System chemistry has not appreciably changed:** The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the secondary collection system, except for total dissolved solids (TDS), and sulfate in the secondary collection system. TDS concentrations in KLI-SCS increased between 2018 and 2021 and have since begun to stabilize. Sulfate concentrations are slightly increasing over time. The TDS and sulfate concentrations in the secondary collection system are more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.

### 3.0 Groundwater Monitoring

#### 3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

#### 3.2 March 2024 Detection Monitoring Event

In accordance with the HMP, TRC conducted the first quarter 2024 monitoring event for the Karn Lined Impoundment between March 4 and 5, 2024. In addition to the routine groundwater samples collected from the monitoring well network, a water sample was collected from a sump in the secondary collection system (KLI-SCS) and a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry.

Groundwater samples collected during the first quarter 2024 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents		
Boron	Antimony	Fluoride	Thallium
Calcium	Arsenic	Lead	Vanadium
Chloride	Barium	Lithium	Zinc
Fluoride	Beryllium	Mercury	
Iron	Cadmium	Molybdenum	
pH	Chromium, total	Nickel	
Sulfate	Cobalt	Selenium	
Total Dissolved Solids (TDS)	Copper	Silver	

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater

chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix B).

Monitoring wells 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. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater sample preparation and analyses were performed in accordance with SW-846 "Test Methods for Evaluation Solid Waste – Chemical / Physical Methods," USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of one field blank, one equipment blank, one field duplicate (DEK-MW-15003), and field matrix spike/matrix spike duplicate samples collected at DEK-MW-18001.

### **3.2.1 Data Quality Review**

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the HMP program.

The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

### **3.2.2 Groundwater Flow Rate and Direction**

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in March 2024 are generally within the range of 578 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 data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically 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 in the vicinity of the former Karn Bottom Ash Pond in March 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. 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. The conveyance ditch was observed to be dry in March 2024 as wastewater is not being generated due to the cessation of operations of Karn Units 1 & 2. The groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond has shifted to the southeast and is currently centered near OW-12. Porewater flow is generally radial, flowing outward towards the adjacent surface water features from this newly established potentiometric “high”, as illustrated in Figure 3.

The average hydraulic gradient observed on March 4, 2024, in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0043 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. 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 calculated to be 0.21 ft/day or 77 ft/year in March 2024 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.



## 4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the first quarter 2024 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017, and in accordance with the December 23, 2015, mixing zone determination.

### 4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using Sanitas™ Statistical Software (Sanitas™). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from May 2022 through March 2024 were analyzed using Mann-Kendall and Sen's Slope at a significance level ( $\alpha$ ) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.

Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exception:

- The new, unconfirmed increasing trend for sulfate observed in DEK-MW-15003 in fourth quarter 2023 was confirmed in first quarter 2024. Although there is a statistically significant increasing trend observed using the eight most recent quarterly sampling events, current sulfate concentrations at DEK-MW-15003 are within the range of concentrations observed following the Karn Bottom Ash Pond closure activities and are lower than concentrations observed while the Karn Bottom Ash Pond was operating (Appendix D: Chart 1).

## 4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although an increasing trend of one detection monitoring (Appendix III) constituent exists at one well, the groundwater conditions do not conclusively indicate a release from the unit. Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, intrawell trend tests, in conjunction with SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit, per the HMP.

As presented in Section 2.1, the SCS flow rates are below the action flow rate threshold, which continues to demonstrate the liner system is working effectively following the documented liner repairs. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Detection monitoring constituent concentrations at OW-12 and DEK-MW-18001 exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends noted in Section 4.1 will continue to be evaluated within context of changes in the site operational status.

## 4.3 Alternate Source Demonstration

At this time, Consumers Energy is not asserting an Alternate Source Demonstration (ASD) for any Statistically Significant Increases (SSI) from this reporting period. The groundwater conditions do not conclusively indicate a release from the unit and the average daily KLI-SCS flow rates remain below the action flow rate thresholds.

## 5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although an increasing trend of a detection monitoring (Appendix III) constituent exists at one monitoring well, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit as the average daily SCS flow rates remain below the response action flow rate thresholds and continue to demonstrate the liner system is working effectively. The second quarter monitoring event is scheduled for May 2024.

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## 6.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. October 30.
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- TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company. November.
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- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. 2015. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. 80 Federal Register 74 (April 17, 2015), pp. 21301-21501 (80 FR 21301). April.
- USEPA. 2018. 40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.

## Tables



**Table 1**  
 Summary of Groundwater Elevation Data  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	March 4, 2024	
				Depth to Water (ft BTOC)	Groundwater Elevation (ft)
<b>DEK Bottom Ash Pond</b>					
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	10.80	578.92
DEK-MW-15006	589.24	Sand	573.0 to 568.0	10.15	579.09
<b>DEK Bottom Ash Pond &amp; Karn Lined Impoundment</b>					
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.51	583.96
<b>Karn Lined Impoundment</b>					
DEK-MW-15003	602.74	Sand	578.8 to 574.8	18.78	583.96
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	7.85	583.73
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	24.00	583.90
OW-12	603.10	Silty Sand	584.2 to 579.2	18.11	584.99
<b>DEK Nature and Extent</b>					
DEK-MW-15004	611.04	Sand	576.6 to 571.6	29.00	582.04
MW-01	597.02	Sand	573.0 to 570.0	18.20	578.82
MW-03	597.30	Sand	569.8 to 566.8	18.51	578.79
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	10.25	579.19
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	17.89	580.89
MW-10	596.97	Sand	582.5 to 572.5	17.31	579.66
MW-12	598.60	Sand	583.9 to 573.9	19.28	579.32
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	15.05	579.32
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.90	578.90
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.21	581.78
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.78	580.79
<b>DEK Static Water Level</b>					
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	18.50	578.84
MW-04	598.01	NR	569.5 to 564.5	19.28	578.73
MW-17	597.91	Sand	577.0 to 574.0	14.20	583.71
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.73	582.49
MW-19	597.28	NR	572.1 to 567.1	17.97	579.31
MW-20	632.75	Sand	582.3 to 579.3	53.71	579.04
MW-21	632.91	Sand	587.1 to 584.1	51.80	581.11
OW-01	631.33	NR	572.5 to 567.5	52.23	579.10
OW-02	598.01	Fly Ash	579.4 to 576.4	16.15	581.86
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.75	580.19
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.88	579.33
OW-05	593.53	Sand	576.9 to 571.9	14.10	579.43
OW-06	603.95	NR	580.9 to 575.9	22.65	581.30
OW-07	596.41	Ash	583.3 to 580.3	15.71	580.70
OW-08	593.93	NR	581.0 to 576.0	11.14	582.79
OW-09	593.45	NR	585.5 to 580.5	10.56	582.89
OW-13	588.52	NR	579.5 to 574.5	4.21	584.31
OW-15	587.75	NR	572.8 to 567.8	4.50	583.25

**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 Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
<b>DE Karn Lined Impoundment</b>							
DEK-MW-15003	3/5/2024	0.36	-161.3	8.1	411	16.3	2.0
DEK-MW-18001	3/4/2024	1.59 <sup>(1)</sup>	-128.9	7.7	850	12.4	4.3
KLI-PCS	3/5/2024	10.79	19.7	8.3	511	10.2	32.6
KLI-SCS	3/5/2024	9.78	31.0	7.7	1,269	9.1	7.5
OW-10	3/5/2024	0.29	-124.4	7.2	718	10.5	20.8
OW-11	3/5/2024	2.38	-60.4	9.6	287	10.8	8.9
OW-12	3/5/2024	0.31	-99.3	7.2	863	10.7	7.8

**Notes:**

-- - Parameter was not analyzed

mg/L - milligram per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius.

NTU - Nephelometric Turbidity Unit.

(1) The water quality meter used at this well location was determined to have a bias towards elevated dissolved oxygen readings.

**Table 3**  
 Summary of Groundwater Sampling Results (Analytical)  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

		Sample Location: <b>DEK-MW-15003</b> <b>DEK-MW-18001</b> <b>OW-10</b> <b>OW-11</b> <b>OW-12</b> <b>KLI-PCS</b> <b>KLI-SCS</b>										
		Sample Date: 3/5/2024 3/4/2024 3/5/2024 3/5/2024 3/5/2024 3/5/2024 3/5/2024										
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Upgradient	Downgradient		Upgradient	Downgradient	Supplemental	
<b>Appendix III<sup>(1)</sup></b>												
Boron	ug/L	NC	<b>500</b>	<b>500</b>	4,000	<b>644</b>	<b>819</b>	<b>1,200</b>	<b>3,370</b>	<b>1,420</b>	<b>703</b>	<b>602</b>
Calcium	mg/L	NC	NC	NC	500 <sup>EE</sup>	41.6	54.1	128	10.7	165	77.7	107
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	<b>50</b>	<b>59.9</b>	<b>69</b>	<b>78.6</b>	<b>59.3</b>	39.1	40.5	<b>56.9</b>
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,440	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	<b>250**</b>	<b>250<sup>E</sup></b>	<b>250<sup>E</sup></b>	<b>500<sup>EE</sup></b>	51.1	201	< 1	20	234	<b>277</b>	<b>595</b>
Total Dissolved Solids	mg/L	<b>500**</b>	<b>500<sup>E</sup></b>	<b>500<sup>E</sup></b>	<b>500</b>	322	<b>598</b>	<b>682</b>	224	<b>1,010</b>	460	<b>1,410</b>
pH, Field	SU	<b>6.5 - 8.5**</b>	<b>6.5 - 8.5<sup>E</sup></b>	<b>6.5 - 8.5<sup>E</sup></b>	<b>6.5 - 9.0</b>	8.1	7.7	7.2	<b>9.6</b>	7.2	8.3	7.7
<b>Appendix IV<sup>(1)</sup></b>												
Antimony	ug/L	6.0	6.0	6.0	<b>2.0</b>	< 1	< 1	< 1	<b>4</b>	< 1	< 1	< 1
Arsenic	ug/L	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>350</b>	<b>512</b>	2	<b>1,080</b>	<b>58</b>	1	2
Barium	ug/L	2,000	2,000	2,000	1,200	56	153	164	31	212	101	49
Beryllium	ug/L	4.0	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2
Chromium	ug/L	100	100	100	11	1	< 1	2	1	1	1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,440	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	24	19	34	11	59	< 10	< 10
Mercury	ug/L	2.0	2.0	2.0	0.20 <sup>#</sup>	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	<b>73</b>	210	<b>120</b>	21	16	< 5	<b>151</b>	7	71	10
Radium-226	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--	--
Radium-228	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--	--
Radium-226/228	pCi/L	5.0	NC	NC	NC	--	--	--	--	--	--	--
Selenium	ug/L	50	50	50	<b>5.0</b>	1	1	2	<b>10</b>	2	1	5
Thallium	ug/L	2.0	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2
<b>Additional MI Part 115<sup>(2)</sup></b>												
Iron	ug/L	<b>300**</b>	<b>300<sup>E</sup></b>	<b>300<sup>E</sup></b>	500,000 <sup>EE</sup>	194	<b>688</b>	<b>3,130</b>	140	<b>6,250</b>	134	111
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	20	< 1	< 1	3	< 1	< 1	2	2
Nickel	ug/L	NC	100	100	120	< 2	< 2	4	2	6	3	4
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	<b>4.5</b>	<b>62</b>	<b>27</b>	< 2	2	3	<b>358</b>	2	<b>5</b>	<b>5</b>
Zinc	ug/L	5,000**	2,400	5,000 <sup>E</sup>	260	< 10	< 10	< 10	< 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 CaCO<sub>3</sub>/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 Statistical Exceedances  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
 SUMMARY OF STATISTICAL EXCEEDANCES

Data is in (X) ug/L or ( ) mg/L unless otherwise stated
---

Facility: Karn Lined Impoundment – WDS# 392503

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)	2 Qtr. 2023 (bold >201)
<b>No Exceedances</b>								

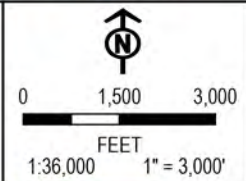
## Figures





COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH RIPS 3143 FEET MAP ROTATION: 0  
 - SAVED BY: ADAIR ON 4/25/2024 12:15:16 PM FILE PATH: C:\PROJECTS\CONSUMERS\_ENERGY\464095\_DEKARN\2-APR\364995\_DEKARN\APPX\_LAYOUT.NAME: 553814-TOPO-K01-2024.Q01

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.



PROJECT: **CONSUMERS ENERGY COMPANY  
DE KARN AND JC WEADOCK POWER PLANTS  
ESSEXVILLE, MICHIGAN**

TITLE: **SITE LOCATION MAP**

DRAWN BY: A. ADAIR  
 CHECKED BY: A. WHALEY  
 APPROVED BY: D. LITZ  
 DATE: APRIL 2024

PROJ. NO.: 553814.0001  
**FIGURE 1**



1540 EISENHOWER PLACE  
 ANN ARBOR, MI 48108-3284  
 PHONE: 734.971.7080

FILE: DEKARN

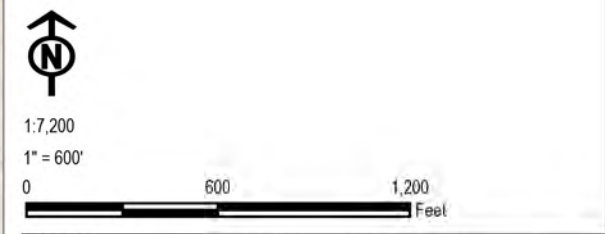


Coordinate System: NAD 1983 UTM Zone 10N; Map Rotation: 0  
 Saved By: AADalfr on 4/29/2024, 12:23:04 PM; File Path: T:\PROJECTS\Consumers\_Energy\464095\_DEKARN\5-APRX\464095\_DEKARN.aprx; Layout Name: 553814-LO-K02-202401



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - EXTENT OF GEOSYNTHETICS
  - PRIMARY CONTAINMENT SYSTEM SAMPLE (KLI-PCS)
  - SURFACE WATER SAMPLE (SW-DITCH)
  - SECONDARY CONTAINMENT SUMP

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT: <b>CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN</b>	
TITLE: <b>SITE LAYOUT MAP</b>	
DRAWN BY: A ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: A WHALEY	<b>FIGURE 2</b>
APPROVED BY: D LITZ	
DATE: APRIL 2024	
1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trccompanies.com	
FILE:	464095_DEKARN.aprx

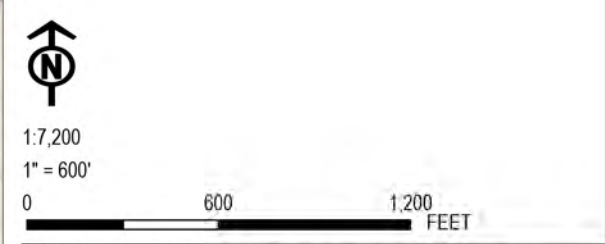


Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0  
 Saved By: AADaif on 4/29/2024 12:30:01 PM; File Path: T:\PROJECTS\Consumers\_Energy\464095\_DEKARN\A-APR-464095\_DEKARN.aprx; Layout Name: 553814-SGW-K03-202401



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - EXTENT OF GEOSYNTHETICS
  - SLURRY WALL (APPROXIMATE)
  - GROUNDWATER ELEVATION CONTOUR
  - (580.21) GROUNDWATER ELEVATION (FEET)
  - (NM) NOT MEASURED
  - (NU) NOT USED

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.
  5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



PROJECT: <b>CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN</b>	
TITLE: <b>SHALLOW GROUNDWATER CONTOUR MAP MARCH 2024</b>	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: J. KRENZ	<b>FIGURE 3</b>
APPROVED BY: D. LITZ	
DATE: APRIL 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx



# Appendix A

## Laboratory Analytical Reports

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

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**Chemistry Project: 24-0129**

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 03/04/2024 for the 1<sup>st</sup> 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 03/06/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials “Merit”; the original report is attached. Samples for Methane and TOC have been subcontracted to Brighton Analytical LLC and the results are listed under the analyst initials “BAL”; the original report is attached. 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 accreditation 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 in 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q1-2024 DEK Lined Impoundment  
**Date Received:** 3/6/2024  
**Chemistry Project:** 24-0129

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0129-01	DEK-MW-15003	Groundwater	03/05/2024 10:31	DEK Lined Impoundment
24-0129-02	OW-10	Groundwater	03/05/2024 09:10	DEK Lined Impoundment
24-0129-03	OW-11	Groundwater	03/05/2024 12:00	DEK Lined Impoundment
24-0129-04	OW-12	Groundwater	03/05/2024 14:50	DEK Lined Impoundment
24-0129-05	SW-DITCH	Not Collected		DEK Lined Impoundment
24-0129-06	DUP-KLI	Groundwater	03/05/2024 00:00	DEK Lined Impoundment
24-0129-07	EB-KLI	Water	03/05/2024 15:00	DEK Lined Impoundment
24-0129-08	FB-KLI	Water	03/05/2024 14:50	DEK Lined Impoundment
24-0129-09	KLI-SCS	Groundwater	03/05/2024 13:20	DEK Lined Impoundment
24-0129-10	KLI-PCS	Groundwater	03/05/2024 13:30	DEK Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0129-01  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 10:31 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	350		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	56		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	644		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	41600		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	194		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	24		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	7200		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	108		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	21		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	3640		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	51300		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59900		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0129-01  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 10:31 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	51100		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	4240		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-01-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2170		ug/L	25.0	03/06/2024	AB24-0306-09

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0129-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	322		mg/L	10.0	03/07/2024	AB24-0307-10

**Alkalinity by SM 2320B** Aliquot #: 24-0129-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	137000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	137000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	210		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-01-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	3800		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-01-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	770	K	ug/L	180.0	03/08/2024	AB24-0315-19

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0129-02  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 09:10 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	2		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	164		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	1200		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	128000		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	2		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	3		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	3130		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	34		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	23100		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	571		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	4		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	4910		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	2		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	71500		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	3		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-02-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	78600		ug/L	1000.0	03/12/2024	AB24-0307-02



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0129-02  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 09:10 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	ND		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	5460		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-02-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	5180		ug/L	25.0	03/06/2024	AB24-0306-09

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0129-02-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	682		mg/L	10.0	03/07/2024	AB24-0307-10

**Alkalinity by SM 2320B** Aliquot #: 24-0129-02-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	672000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	672000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	100		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-02-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	8400		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-02-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	18000	K	ug/L	180.0	03/08/2024	AB24-0315-19

**Mercury by EPA 7470A, Dissolved** Aliquot #: 24-0129-02-C11-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-09

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0129-02  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 09:10 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa

Aliquot #: 24-0129-02-C11-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-02
Arsenic	2		ug/L	1.0	03/07/2024	AB24-0310-02
Barium	146		ug/L	5.0	03/07/2024	AB24-0310-02
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-02
Boron	1200		ug/L	20.0	03/07/2024	AB24-0310-02
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-02
Calcium	128000		ug/L	1000.0	03/07/2024	AB24-0310-02
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-02
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-02
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-02
Iron	2950		ug/L	20.0	03/07/2024	AB24-0310-02
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-02
Lithium	35		ug/L	10.0	03/07/2024	AB24-0310-02
Magnesium	22400		ug/L	1000.0	03/07/2024	AB24-0310-02
Manganese	597		ug/L	5.0	03/07/2024	AB24-0310-02
Molybdenum	ND		ug/L	5.0	03/07/2024	AB24-0310-02
Nickel	4		ug/L	2.0	03/07/2024	AB24-0310-02
Potassium	4990		ug/L	100.0	03/07/2024	AB24-0310-02
Selenium	1		ug/L	1.0	03/07/2024	AB24-0310-02
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-02
Sodium	71400		ug/L	1000.0	03/07/2024	AB24-0310-02
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-02
Vanadium	ND		ug/L	2.0	03/07/2024	AB24-0310-02
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0129-03  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 12:00 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	4		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	1080		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	31		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	3370		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	10700		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	140		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	11		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	1290		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	151		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	2		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	3090		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	10		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	59000		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	358		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-03-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	538		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	127		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59300		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0129-03  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 12:00 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	3440		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	20000		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	4110		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-03-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	12500		ug/L	25.0	03/06/2024	AB24-0306-09

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0129-03-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	224		mg/L	10.0	03/07/2024	AB24-0307-10

**Alkalinity by SM 2320B** Aliquot #: 24-0129-03-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	92900		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	22800		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	70100		ug/L	10000.0	03/07/2024	AB24-0308-12

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-03-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-03-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	7000		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-03-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	2700	K	ug/L	180.0	03/08/2024	AB24-0315-19

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0129-04  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 02:50 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-04-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	58		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	212		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	1420		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	165000		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	6250		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	59		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	81200		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	427		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	7		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	6		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	7850		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	2		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	52200		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	2		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-04-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-04-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	39100		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0129-04  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 02:50 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-04-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	234000		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-04-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	356		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-04-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1520		ug/L	25.0	03/06/2024	AB24-0306-09

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0129-04-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1010		mg/L	10.0	03/07/2024	AB24-0307-10

**Alkalinity by SM 2320B** Aliquot #: 24-0129-04-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	617000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	617000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-04-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-04-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	3000		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-04-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	370	K	ug/L	180.0	03/08/2024	AB24-0315-19

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DUP-KLI**  
 Lab Sample ID: 24-0129-06  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 12:00 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-06-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	352		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	59		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	663		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	43400		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	202		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	26		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	7320		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	109		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	21		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	3360		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	53100		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	2		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-06-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-06-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-06-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	60300		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DUP-KLI**  
 Lab Sample ID: 24-0129-06  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 12:00 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-06-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	51300		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-06-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	4260		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-06-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2200		ug/L	25.0	03/06/2024	AB24-0306-09

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0129-06-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	312		mg/L	10.0	03/07/2024	AB24-0307-10

**Alkalinity by SM 2320B** Aliquot #: 24-0129-06-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	137000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	137000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-06-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	210		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-06-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	3600		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-06-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	600	K	ug/L	180.0	03/08/2024	AB24-0315-19



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **EB-KLI**  
 Lab Sample ID: 24-0129-07  
 Matrix: Water

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 03:00 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-07-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	ND		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	ND		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	ND		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	ND		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-07-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-07-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-07-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **EB-KLI**  
 Lab Sample ID: 24-0129-07  
 Matrix: Water

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 03:00 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-07-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	ND		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-07-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	ND		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-07-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	03/06/2024	AB24-0306-09

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-07-C04-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-07-C05-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	1500		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-07-C06-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	ND		ug/L	2.0	03/08/2024	AB24-0315-19

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **FB-KLI**  
 Lab Sample ID: 24-0129-08  
 Matrix: Water

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 02:50 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-08-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	ND		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	ND		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	ND		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Manganese	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Molybdenum	ND		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	ND		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	ND		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-08-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0129-08-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/06/2024	AB24-0306-07
Nitrite	ND		ug/L	100.0	03/06/2024	AB24-0306-07

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-08-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	03/12/2024	AB24-0307-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **FB-KLI**  
 Lab Sample ID: 24-0129-08  
 Matrix: Water

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 02:50 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0129-08-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/06/2024	AB24-0307-02
Sulfate	ND		ug/L	1000.0	03/12/2024	AB24-0307-02

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0129-08-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	ND		ug/L	10.0	03/06/2024	AB24-0306-08

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0129-08-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	03/06/2024	AB24-0306-09

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0129-08-C04-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/07/2024	AB24-0315-03

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0129-08-C05-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	ND		ug/L	1000.0	03/07/2024	AB24-0315-12

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0129-08-C06-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	ND		ug/L	2.0	03/08/2024	AB24-0315-19

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-SCS**  
 Lab Sample ID: 24-0129-09  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 01:20 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-09-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	2		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	49		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	602		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	107000		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	2		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	111		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	ND		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	36800		ug/L	1000.0	03/07/2024	AB24-0310-01
Molybdenum	10		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	4		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	2870		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	5		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	337000		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	5		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-09-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-09-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	56900		ug/L	1000.0	03/12/2024	AB24-0307-02
Fluoride	ND		ug/L	1000.0	03/12/2024	AB24-0307-02
Sulfate	595000		ug/L	1000.0	03/12/2024	AB24-0307-02

### Total Dissolved Solids by SM 2540C

Aliquot #: 24-0129-09-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1410		mg/L	10.0	03/07/2024	AB24-0307-10



# Analytical Report

Report Date: 03/20/24

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **KLI-SCS**  
Lab Sample ID: 24-0129-09  
Matrix: Groundwater

Laboratory Project: **24-0129**  
Collect Date: 03/05/2024  
Collect Time: 01:20 PM

### Alkalinity by SM 2320B

Aliquot #: 24-0129-09-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	565000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	565000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-PCS**  
 Lab Sample ID: 24-0129-10  
 Matrix: Groundwater

Laboratory Project: **24-0129**  
 Collect Date: 03/05/2024  
 Collect Time: 01:30 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0129-10-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Arsenic	1		ug/L	1.0	03/07/2024	AB24-0310-01
Barium	101		ug/L	5.0	03/07/2024	AB24-0310-01
Beryllium	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Boron	703		ug/L	20.0	03/07/2024	AB24-0310-01
Cadmium	0.3		ug/L	0.2	03/07/2024	AB24-0310-01
Calcium	77700		ug/L	1000.0	03/07/2024	AB24-0310-01
Chromium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Cobalt	ND		ug/L	6.0	03/07/2024	AB24-0310-01
Copper	2		ug/L	1.0	03/07/2024	AB24-0310-01
Iron	134		ug/L	20.0	03/07/2024	AB24-0310-01
Lead	ND		ug/L	1.0	03/07/2024	AB24-0310-01
Lithium	ND		ug/L	10.0	03/07/2024	AB24-0310-01
Magnesium	7510		ug/L	1000.0	03/07/2024	AB24-0310-01
Molybdenum	71		ug/L	5.0	03/07/2024	AB24-0310-01
Nickel	3		ug/L	2.0	03/07/2024	AB24-0310-01
Potassium	6800		ug/L	100.0	03/07/2024	AB24-0310-01
Selenium	1		ug/L	1.0	03/07/2024	AB24-0310-01
Silver	ND		ug/L	0.2	03/07/2024	AB24-0310-01
Sodium	58900		ug/L	1000.0	03/07/2024	AB24-0310-01
Thallium	ND		ug/L	2.0	03/07/2024	AB24-0310-01
Vanadium	5		ug/L	2.0	03/07/2024	AB24-0310-01
Zinc	ND		ug/L	10.0	03/07/2024	AB24-0310-01

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0129-10-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0307-08

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0129-10-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	40500		ug/L	1000.0	03/12/2024	AB24-0307-02
Fluoride	ND		ug/L	1000.0	03/12/2024	AB24-0307-02
Sulfate	277000		ug/L	1000.0	03/12/2024	AB24-0307-02

### Total Dissolved Solids by SM 2540C

Aliquot #: 24-0129-10-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	460		mg/L	10.0	03/07/2024	AB24-0307-10



# Analytical Report

Report Date: 03/20/24

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **KLI-PCS**  
Lab Sample ID: 24-0129-10  
Matrix: Groundwater

Laboratory Project: **24-0129**  
Collect Date: 03/05/2024  
Collect Time: 01:30 PM

### Alkalinity by SM 2320B

Aliquot #: 24-0129-10-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	60900		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	60900		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12



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<b>Data Qualifiers</b>	<b>Exception Summary</b>
K = RL increased due to sample matrix.	No other exceptions occurred.

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

Project Log-In Number: 24-0129

Inspection Date: 5.06.24 Inspection By: UMO

Sample Origin/Project Name: Q1-2024 DEK Used Impoundment

Shipment Delivered By: Enter the type of shipment carrier.

Pony \_\_\_\_\_ FedEx  UPS \_\_\_\_\_ USPS \_\_\_\_\_ Airborne \_\_\_\_\_

Other/Hand Carry (whom) \_\_\_\_\_

Tracking Number: 2717 8759 2725 Shipping Form Attached: Yes  No \_\_\_\_\_

Shipping Containers: Enter the type and number of shipping containers received.

Cooler  Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.6 - 2.6 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration 015402 5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>21 / 14</u> <u>40mL 40mL</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>33</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
500 mL (plastic)	_____	_____	_____	_____	_____
Other <u>250 mL plastic</u>	<u>7</u>	_____	_____	_____	_____

# 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: Q1-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0129</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)								QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																
SAMPLING TEAM: <i>A. Whaley</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																														
SEND REPORT TO: Joseph Firlit			email:			phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia, Phosphate</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th rowspan="2">TOC</th> <th rowspan="2">Methane</th> <th rowspan="2">Dissolved Metals</th> <th rowspan="2">REMARKS</th> </tr> <tr> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>								Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals	REMARKS	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals																			REMARKS						
																	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other										
COPY TO: Harold Register TRC			MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			CONTAINERS PRESERVATIVE																											
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals	REMARKS									
DATE	TIME																																
24-0129-01	<i>3/5/24</i>	<i>1031</i>	GW	DEK-MW-15003			10	4	1	1	1	3			x	x	x	x	x	x	x	x											
-02	<i>3/5/24</i>	<i>0910</i>	GW	OW-10			10	4	1	1	1	3			x	x	x	x	x	x	x	x		<i>Dissolved metals were field filtered</i>									
-03	<i>3/5/24</i>	<i>1200</i>	GW	OW-11			10	4	1	1	1	3			x	x	x	x	x	x	x	x											
-04	<i>3/5/24</i>	<i>1450</i>	GW	OW-12			10	4	1	1	1	3			x	x	x	x	x	x	x	x											
<del>-05</del>	<del>3/5/24</del>	<del>1450</del>	<del>SW</del>	<del>SW-DITCH</del>			<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<i>Dry</i>									
-06	<i>3/5/24</i>	<i>—</i>	GW	DUP-KLI			10	4	1	1	1	3			x	x	x	x	x	x	x	x											
-07	<i>3/5/24</i>	<i>1500</i>	W	EB-KLI			7	1	1	1	1	3			x	x	x			x	x	x											
-08	<i>3/5/24</i>	<i>1450</i>	W	FB-KLI			7	1	1	1	1	3			x	x	x			x	x	x											
-09	<i>3/5/24</i>	<i>1320</i>	W	KLI-SCS			5	4	1						x	x		x	x														
-10	<i>3/5/24</i>	<i>1330</i>	SW	KLI-PCS			5	4	1						x	x		x	x														

RELINQUISHED BY: <i>[Signature]</i>	DATE/TIME: <i>3/5/24 1600</i>	RECEIVED BY: <i>[Signature]</i> <i>EB050624</i> <i>Fed Ex</i>	COMMENTS:
RELINQUISHED BY: <i>Fed Ex</i>	DATE/TIME: <i>03/06/24 10:15</i>	RECEIVED BY: <i>[Signature]</i>	Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <i>015402</i> Temperature: <i>0.6-2.6</i> °C      Cal. Due Date: <i>05-23-24</i>

March 13, 2024

Consumers Energy Company  
135 W. Trail St.  
Jackson, MI 49201

Subject: Q1-2024 DEK Lined Impoundment  
24-0129

Dear : Mr. Blaj

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 03/06/2024 for the above mentioned project. NELAP/TNI Accredited Analysis and EGLE Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 95639 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely,  
Brighton Analytical, L.L.C.



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**  
 BA Sample ID: **CV02514** Project Number: **24-0129**

Sample ID: **24-0129-01 DEK-MW-15003**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	770	ug/L	180	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	3800	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Elevated methane dl due to sample matrix.

Released by *Cynthia Williams*  
 Date 3/13/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**

BA Sample ID: **CV02515** Project Number: **24-0129**

Sample ID: **24-0129-02 OW-10**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	<b>18000</b>	ug/L	180	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	<b>8400</b>	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Elevated methane dl due to sample matrix.

Released by *Cynthia Williams*  
 Date 3/13/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**

BA Sample ID: **CV02516** Project Number: **24-0129**

Sample ID: **24-0129-03 OW-11**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	2700	ug/L	180	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	7000	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Elevated methane dl due to sample matrix.

Released by *Cynthia Williams*  
 Date 3/13/2024





**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**  
 BA Sample ID: **CV02517** Project Number: **24-0129**

Sample ID: **24-0129-04 OW-12**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	<b>370</b>	ug/L	180	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	<b>3000</b>	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Elevated methane dl due to sample matrix.

Released by *Cynthia Williams*  
 Date 3/13/2024





**Brighton Analytical LLC**  
 2105 Pless Drive  
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 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**  
 BA Sample ID: **CV02518** Project Number: **24-0129**

Sample ID: **24-0129-06 DUP-KLI**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	<b>600</b>	ug/L	180	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	<b>3600</b>	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Elevated methane dl due to sample matrix.

Released by *Cynthia Williams*  
 Date 3/13/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**  
 BA Sample ID: **CV02519** Project Number: **24-0129**

Sample ID: **24-0129-07 EB-KLI**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	Not detected	ug/L	2	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	1500	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by Cynthia Williams  
 Date 3/13/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/05/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/13/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95639** Project Name: **Q1-2024 DEK Lined Impoundment**  
 BA Sample ID: **CV02520** Project Number: **24-0129**

Sample ID: **24-0129-08 FB-KLI**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	Not detected	ug/L	2	RSKSOP-175	JT	03/08/2024
<b>Organic Analysis</b>						
Total Organic Carbon	980	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by Cynthia Williams  
 Date 3/13/2024

# CHAIN OF CUSTODY

95639



**CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**  
 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Lined Impoundment		PROJECT NUMBER: <b>24-0129</b>		SAP CC or WO#:		ANALYSIS REQUESTED (Attach List if More Space is Needed)		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER	
SAMPLING TEAM: SEND REPORT TO: Emil Blaj		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER		REQUESTER: Harold Register		Total Organic Carbon		REMARKS: 5.1 Temp	
SEND REPORT TO: Emil Blaj		email: Emil.Blaj@cmsenergy.com		phone:		Methane			
COPY TO:		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste		PRESERVATIVE			
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION		TOTAL #			
		DATE				None			
		TIME				HNO <sub>3</sub>			
						H <sub>2</sub> SO <sub>4</sub>			
						NaOH			
						HCl			
						MeOH			
						Other			
24-0129-01	03/05/2024	1031	GW	DEK-MW-15003	3	3		x	x
-02	03/05/2024	0910	GW	OW-10	3	3		x	x
-03	03/05/2024	1200	GW	OW-11	3	3		x	x
-04	03/05/2024	1450	GW	OW-12	3	3		x	x
-06	03/05/2024		GW	DUP-KLI	3	3		x	x
-07	03/05/2024	1500	W	EB-KLI	3	3		x	x
-08	03/05/2024	1450	W	FB-KLI	3	3		x	x
<del>09</del>	<del>03/05/2024</del>	<del>1330</del>	<del>W</del>	<del>KLI-SCS</del>	<del>3</del>	<del>3</del>		<del>x</del>	<del>x</del>
<del>10</del>	<del>03/05/2024</del>	<del>1330</del>	<del>SW</del>	<del>KLI-PCS</del>	<del>3</del>	<del>3</del>		<del>x</del>	<del>x</del>

RELINQUISHED BY: Deanna Glass DATE/TIME: 3/6/24 3:04 pm

RECEIVED BY: [Signature] DATE/TIME: \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_ DATE/TIME: \_\_\_\_\_

COMMENTS: **PR #23101291**

Received on Ice?  Yes  No M&TE #: \_\_\_\_\_

Temperature: \_\_\_\_\_ °C Cal. Due Date: \_\_\_\_\_



BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY  
CONTROL

## REPRESENTATIVE BATCH QUALITY CONTROL

### Accuracy & Precision

Analyst:           JT          

Parameter:           Methane          

Analysis Date:           3/8/2024          

Method Reference:           RSKSOP-175          

Matrix:           Water          

Inst./Detector :           HP-4/FID          

#### SPIKE - ACCURACY

Laboratory ID	Spike Conc. (µg/L)	Background (µg/L)	Percent Recoveries	Acceptable Range (%)	Method Blank Concentration
LCS's (Methane)	34.3	ND	114 / 110	85 - 115	< 2 µg/L

#### SPIKE - PRECISION

Laboratory ID	Observed A (µg/L)	Observed B (µg/L)	RPD	Acceptable Range
LCS's (Methane)	39.2	37.6	4.2	≤ 20%
CV02514	772	795	3.0	≤ 20%

#### MISCELLANEOUS

COMMENTS: \_\_\_\_\_



# REPRESENTATIVE BATCH QUALITY CONTROL

## Accuracy & Precision

Analyst: RG

Parameter: TOC

Analysis Date: 3/7/2024

Method Reference: EPA 415.1/SM5310B/9060

### SPIKE - ACCURACY

Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CV02511	TV=10000	4400	94/103	80 - 120	ND

Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)
CV02511	13900	14700	5.60	≤ 20

### MISCELLANEOUS

	Standard ID #	%Recoveries
Independent Secondary Reference Material:	#4621	105
Method Standard (Lab. Control Spike):	#3046.9	99

COMMENTS: \_\_\_\_\_



# Analytical Laboratory Report

Report ID: S59475.01(01)  
Generated on 03/12/2024

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 Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S59475.01-S59475.09  
Project: 24-0129 PR#24030331  
Collected Date(s): 03/05/2024  
Submitted Date/Time: 03/06/2024 16:35  
Sampled by: Unknown  
P.O. #: 4400121437

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
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- Glossary of Abbreviations (Page 3)
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- Sample Summary (Page 5)

Maya Murshak  
Technical Director





# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4450 S2 D 2011

---



# Analytical Laboratory Report

## Sample Summary (9 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S59475.01	DEK-MW-15003 (24-0129-01)	Groundwater	03/05/24 10:31
S59475.02	OW-10 (24-0129-02)	Groundwater	03/05/24 09:10
S59475.03	OW-11 (24-0129-03)	Groundwater	03/05/24 12:00
S59475.04	OW-12 (24-0129-04)	Groundwater	03/05/24 14:50
S59475.05	DUP-KLI (24-0129-05)	Groundwater	03/05/24 00:01
S59475.06	EB-KLI (24-0129-06)	Groundwater	03/05/24 15:00
S59475.07	FB-KLI (24-0129-07)	Groundwater	03/05/24 14:50
S59475.08	KLI-SCS (24-0129-08)	Groundwater	03/05/24 13:20
S59475.09	KLI-PCS (24-0129-09)	Groundwater	03/05/24 13:30



# Analytical Laboratory Report

Lab Sample ID: S59475.01

Sample Tag: DEK-MW-15003 (24-0129-01)

Collected Date/Time: 03/05/2024 10:31

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.21	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.02

Sample Tag: OW-10 (24-0129-02)

Collected Date/Time: 03/05/2024 09:10

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:29, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.10	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.03

Sample Tag: OW-11 (24-0129-03)

Collected Date/Time: 03/05/2024 12:00

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:31, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.04

Sample Tag: OW-12 (24-0129-04)

Collected Date/Time: 03/05/2024 14:50

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:33, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	





# Analytical Laboratory Report

Lab Sample ID: S59475.05

Sample Tag: DUP-KLI (24-0129-05)

Collected Date/Time: 03/05/2024 00:01

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:35, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.21	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.06

Sample Tag: EB-KLI (24-0129-06)

Collected Date/Time: 03/05/2024 15:00

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:37, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.07

Sample Tag: FB-KLI (24-0129-07)

Collected Date/Time: 03/05/2024 14:50

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.3	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 10:39, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59475.08

Sample Tag: KLI-SCS (24-0129-08)

Collected Date/Time: 03/05/2024 13:20

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	Yes	n/a	n/a

### Other / Misc.

Method: , Run Date: 03/12/24 17:30, Analyst: BJB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
No Analyses*	Completed				1		



# Analytical Laboratory Report

Lab Sample ID: S59475.09

Sample Tag: KLI-PCS (24-0129-09)

Collected Date/Time: 03/05/2024 13:30

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	Yes	n/a	n/a

### Other / Misc.

Method: , Run Date: 03/12/24 17:30, Analyst: BJB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
No Analyses*	Completed				1		

# Merit Laboratories Login Checklist

Lab Set ID:S59475

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0129 PR#24030331

Submitted:03/06/2024 16:35 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
-----------	-------------	------

**Sample Receiving**

- |     |  |  |        |
|-----|--|--|--------|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer #        | IR 5.3 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |        |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |        |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |        |

**Chain of Custody**

- |     |  |  |  |
|-----|--|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |  |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |  |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |  |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |  |

**Preservation**

- |     |  |   |  |
|-----|--|---|--|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |  |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |  |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |  |

**Bottle Conditions**

- |     |  |   |  |
|-----|--|---|--|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |  |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |  |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |  |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |  |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |  |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |  |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |  |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_



# Merit Laboratories Bottle Preservation Check

Lab Set ID: S59475      Submitted: 03/06/2024 16:35  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0129 PR#24030331

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 03/06/2024 16:51 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S59475.01	125mL Plastic NaOH/Zn Acetate	>12			
S59475.02	125mL Plastic NaOH/Zn Acetate	>12			
S59475.03	125mL Plastic NaOH/Zn Acetate	>12			
S59475.04	125mL Plastic NaOH/Zn Acetate	>12			
S59475.05	125mL Plastic NaOH/Zn Acetate	>12			
S59475.06	125mL Plastic NaOH/Zn Acetate	>12			
S59475.07	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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 4400121437  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME 24-0129 PR#24030331 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG. IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives							Total Sulfide	Special Instructions
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NI(OH)	MPOH	OTHER		
<u>5947501</u>	<u>03/05/24</u>	<u>1031</u>	<u>DEK-MW-15003 (24-0129-01)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>preserved with NaOH/ZnAcetate</u>
<u>.02</u>	<u>03/05/24</u>	<u>0910</u>	<u>OW-10 (24-0129-02)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.03</u>	<u>03/05/24</u>	<u>1200</u>	<u>OW-11 (24-0129-03)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.04</u>	<u>03/05/24</u>	<u>1450</u>	<u>OW-12 (24-0129-04)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.05</u>	<u>03/05/24</u>	<u>-</u>	<u>DUP-KLI (24-0129-06)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.06</u>	<u>03/05/24</u>	<u>1500</u>	<u>EB-KLI (24-0129-07)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.07</u>	<u>03/05/24</u>	<u>1450</u>	<u>FB-KLI (24-0129-08)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.08</u>	<u>03/05/24</u>	<u>1320</u>	<u>KLI-SCS (24-0129-09)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>
<u>.09</u>	<u>03/05/24</u>	<u>1330</u>	<u>KLI-PCS (24-0129-10)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>	<u>"</u>

RELINQUISHED BY: CONSUMERS ENERGY  Sampler DATE 03/06/24 TIME 1635  
 RECEIVED BY: Shanice Murray DATE 3/6/24 TIME 1635  
 RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME

RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 NOTES: TEMP. ON ARRIVAL 5.3

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

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**Chemistry Project: 24-0128**

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 03/04/2024, for the 1<sup>st</sup> 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 03/05/2024.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials “Merit”; the original report is attached. Samples for Methane and TOC have been subcontracted to Brighton Analytical LLC and the results are listed under the analyst initials “BAL”; the original report is attached. 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 accreditation 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, except as listed in the attached Sample Log-In Shipment Inspection Form and the note below; no other anomalies were noted 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.

NOTE: The following container was received broken: 24-0128-02-C04. However, there was sufficient sample volume in the 2<sup>nd</sup> back up container, and the analysis was not impacted.

### 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q1-2024 DEK Bottom Ash Pond & Lined Impoundment  
**Date Received:** 3/5/2024  
**Chemistry Project:** 24-0128

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0128-01	DEK-MW-18001	Groundwater	03/04/2024 15:05	DEK Bottom Ash Pond & Lined Impoundment
24-0128-02	DEK-MW-18001 MS	Groundwater	03/04/2024 15:05	DEK Bottom Ash Pond & Lined Impoundment
24-0128-03	DEK-MW-18001 MSD	Groundwater	03/04/2024 15:05	DEK Bottom Ash Pond & Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0128-01  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0128-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/06/2024	AB24-0306-16
Arsenic	512		ug/L	1.0	03/06/2024	AB24-0306-16
Barium	153		ug/L	5.0	03/06/2024	AB24-0306-16
Beryllium	ND		ug/L	1.0	03/06/2024	AB24-0306-16
Boron	819		ug/L	20.0	03/06/2024	AB24-0306-16
Cadmium	ND		ug/L	0.2	03/06/2024	AB24-0306-16
Calcium	54100		ug/L	1000.0	03/07/2024	AB24-0306-16
Chromium	ND		ug/L	1.0	03/06/2024	AB24-0306-16
Cobalt	ND		ug/L	6.0	03/06/2024	AB24-0306-16
Copper	ND		ug/L	1.0	03/06/2024	AB24-0306-16
Iron	688		ug/L	20.0	03/18/2024	AB24-0306-16
Lead	ND		ug/L	1.0	03/06/2024	AB24-0306-16
Lithium	19		ug/L	10.0	03/06/2024	AB24-0306-16
Magnesium	9970		ug/L	1000.0	03/07/2024	AB24-0306-16
Manganese	122		ug/L	5.0	03/06/2024	AB24-0306-16
Molybdenum	16		ug/L	5.0	03/06/2024	AB24-0306-16
Nickel	ND		ug/L	2.0	03/06/2024	AB24-0306-16
Potassium	4400		ug/L	100.0	03/07/2024	AB24-0306-16
Selenium	1		ug/L	1.0	03/06/2024	AB24-0306-16
Silver	ND		ug/L	0.2	03/06/2024	AB24-0306-16
Sodium	113000		ug/L	1000.0	03/07/2024	AB24-0306-16
Thallium	ND		ug/L	2.0	03/06/2024	AB24-0306-16
Vanadium	2		ug/L	2.0	03/06/2024	AB24-0306-16
Zinc	ND		ug/L	10.0	03/18/2024	AB24-0306-16

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0128-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/07/2024	AB24-0306-12

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0128-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2024	AB24-0305-08
Nitrite	ND		ug/L	100.0	03/05/2024	AB24-0305-08

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0128-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	69000		ug/L	1000.0	03/12/2024	AB24-0306-10



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0128-01  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0128-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2024	AB24-0306-10
Sulfate	201000		ug/L	1000.0	03/12/2024	AB24-0306-10

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0128-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1950		ug/L	25.0	03/06/2024	AB24-0305-15

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0128-01-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	1180		ug/L	10.0	03/06/2024	AB24-0306-06

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0128-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	598		mg/L	10.0	03/05/2024	AB24-0305-14

**Alkalinity by SM 2320B** Aliquot #: 24-0128-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	158000		ug/L	10000.0	03/06/2024	AB24-0306-11
Alkalinity Bicarbonate	158000		ug/L	10000.0	03/06/2024	AB24-0306-11
Alkalinity Carbonate	ND		ug/L	10000.0	03/06/2024	AB24-0306-11

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0128-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	110		ug/L	20.0	03/07/2024	AB24-0314-05

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0128-01-C08-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	4400		ug/L	1000.0	03/07/2024	AB24-0315-11

**Methane by RSKSOP-175 Dissolved Gas** Aliquot #: 24-0128-01-C09-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Methane	12		ug/L	2.0	03/07/2024	AB24-0315-18

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0128-02  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0128-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	105		%	1.0	03/06/2024	AB24-0306-16
Arsenic	104		%	1.0	03/06/2024	AB24-0306-16
Barium	106		%	5.0	03/06/2024	AB24-0306-16
Beryllium	100		%	1.0	03/06/2024	AB24-0306-16
Boron	114		%	20.0	03/06/2024	AB24-0306-16
Cadmium	106		%	0.2	03/06/2024	AB24-0306-16
Calcium	110		%	1000.0	03/07/2024	AB24-0306-16
Chromium	99		%	1.0	03/06/2024	AB24-0306-16
Cobalt	97		%	6.0	03/06/2024	AB24-0306-16
Copper	92		%	1.0	03/06/2024	AB24-0306-16
Iron	90		%	20.0	03/18/2024	AB24-0306-16
Lead	101		%	1.0	03/06/2024	AB24-0306-16
Lithium	98		%	10.0	03/06/2024	AB24-0306-16
Magnesium	108		%	1000.0	03/07/2024	AB24-0306-16
Manganese	101		%	5.0	03/06/2024	AB24-0306-16
Molybdenum	109		%	5.0	03/06/2024	AB24-0306-16
Nickel	94		%	2.0	03/06/2024	AB24-0306-16
Potassium	108		%	100.0	03/07/2024	AB24-0306-16
Selenium	110		%	1.0	03/06/2024	AB24-0306-16
Silver	99.4		%	0.2	03/06/2024	AB24-0306-16
Sodium	111		%	1000.0	03/07/2024	AB24-0306-16
Thallium	96		%	2.0	03/06/2024	AB24-0306-16
Vanadium	101		%	2.0	03/06/2024	AB24-0306-16
Zinc	101		%	10.0	03/18/2024	AB24-0306-16

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0128-02-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	96.0		%	0.2	03/07/2024	AB24-0306-12

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0128-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	93		%	100.0	03/05/2024	AB24-0305-08
Nitrite	104		%	100.0	03/05/2024	AB24-0305-08

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0128-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	105		%	1000.0	03/12/2024	AB24-0306-10

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0128-02  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0128-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	97		%	1000.0	03/05/2024	AB24-0306-10
Sulfate	104		%	1000.0	03/12/2024	AB24-0306-10

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0128-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	92		%	25.0	03/06/2024	AB24-0305-15

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0128-02-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	110		%	10.0	03/06/2024	AB24-0306-06

**Alkalinity by SM 2320B** Aliquot #: 24-0128-02-C04-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	98.4		%	10000.0	03/06/2024	AB24-0306-11

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0128-02-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	86		%	20.0	03/07/2024	AB24-0314-05

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0128-02-C07-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	94		%	1000.0	03/07/2024	AB24-0315-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0128-03  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0128-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	103		%	1.0	03/06/2024	AB24-0306-16
Arsenic	94		%	1.0	03/06/2024	AB24-0306-16
Barium	104		%	5.0	03/06/2024	AB24-0306-16
Beryllium	99		%	1.0	03/06/2024	AB24-0306-16
Boron	103		%	20.0	03/06/2024	AB24-0306-16
Cadmium	106		%	0.2	03/06/2024	AB24-0306-16
Calcium	113		%	1000.0	03/07/2024	AB24-0306-16
Chromium	98		%	1.0	03/06/2024	AB24-0306-16
Cobalt	98		%	6.0	03/06/2024	AB24-0306-16
Copper	93		%	1.0	03/06/2024	AB24-0306-16
Iron	92		%	20.0	03/18/2024	AB24-0306-16
Lead	98		%	1.0	03/06/2024	AB24-0306-16
Lithium	98		%	10.0	03/06/2024	AB24-0306-16
Magnesium	110		%	1000.0	03/07/2024	AB24-0306-16
Manganese	100		%	5.0	03/06/2024	AB24-0306-16
Molybdenum	107		%	5.0	03/06/2024	AB24-0306-16
Nickel	96		%	2.0	03/06/2024	AB24-0306-16
Potassium	111		%	100.0	03/07/2024	AB24-0306-16
Selenium	105		%	1.0	03/06/2024	AB24-0306-16
Silver	97.4		%	0.2	03/06/2024	AB24-0306-16
Sodium	114		%	1000.0	03/07/2024	AB24-0306-16
Thallium	95		%	2.0	03/06/2024	AB24-0306-16
Vanadium	99		%	2.0	03/06/2024	AB24-0306-16
Zinc	100		%	10.0	03/18/2024	AB24-0306-16

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0128-03-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	03/07/2024	AB24-0306-12

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0128-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	94		%	100.0	03/05/2024	AB24-0305-08
Nitrite	105		%	100.0	03/05/2024	AB24-0305-08

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0128-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	108		%	1000.0	03/12/2024	AB24-0306-10

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0128-03  
 Matrix: Groundwater

Laboratory Project: **24-0128**  
 Collect Date: 03/04/2024  
 Collect Time: 03:05 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0128-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	97		%	1000.0	03/05/2024	AB24-0306-10
Sulfate	103		%	1000.0	03/12/2024	AB24-0306-10

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0128-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	93		%	25.0	03/06/2024	AB24-0305-15

**Phosphate calculated from Total P by SM4500-P B5-E** Aliquot #: 24-0128-03-C03-A02 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Phosphate	110		%	10.0	03/06/2024	AB24-0306-06

**Alkalinity by SM 2320B** Aliquot #: 24-0128-03-C04-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	96.4		%	10000.0	03/06/2024	AB24-0306-11

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0128-03-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	90		%	20.0	03/07/2024	AB24-0314-05

**Total Organic Carbon by SM 5310B, Aqueous** Aliquot #: 24-0128-03-C07-A01 Analyst: BAL

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	103		%	1000.0	03/07/2024	AB24-0315-11



# Analytical Report

Report Date: 03/20/24

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

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

Project Log-In Number: 24-0128

Inspection Date: 03/05/24 Inspection By: CIE

Sample Origin/Project Name: Q1-2024 BAP + LI

Shipment Delivered By: Enter the type of shipment carrier.

Pony \_\_\_\_\_ FedEx  UPS \_\_\_\_\_ USPS \_\_\_\_\_ Airborne \_\_\_\_\_

Other/Hand Carry (whom) \_\_\_\_\_

Tracking Number: 271734447211 Shipping Form Attached: Yes  No \_\_\_\_\_

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers  Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other (1) broken 60ml vial

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 1.2-4.9°C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration 015402

5-23-24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>40=5</u> <u>60=5</u>	_____	_____	<u>60=1</u>	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>12</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
<del>250</del> 500 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

pH paper Lot # 205522 exp. 2.15.25



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

Container Damage List or Exception Report (required if leaking, damaged or exception containers are found)

Project Log-In Number: 24-0128

Inspection Date: 03/05/24

Inspection By: CELMO

Sample Container Damage Listing: List all sample containers that were found to be broken, leaking, missing sample labels or are not accounted for on the CoC.

<u>Sample/Container ID</u>	<u>Damage/Exception Report</u>
<u>24-0128-02-004</u>	<u>Received Broken 160ml vial</u>

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Pond & Lined Impound			PROJECT NUMBER: <b>24-0128</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)								QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____														
SAMPLING TEAM: <i>E. Rinehart</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																												
SEND REPORT TO: Joseph Firlit		email:			phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia, Phosphate</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th rowspan="2">TOC</th> <th rowspan="2">Methane</th> </tr> <tr> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>								Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	REMARKS
Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane																								
																None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other									
COPY TO: Harold Register		MATRIX CODES:			CONTAINERS																										
TRC		GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			PRESERVATIVE																										
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX		FIELD SAMPLE ID / LOCATION			TOTAL #																						
		DATE      TIME																													
24-0128-01		<i>3/4/24</i> <i>1305</i>		GW		DEK-MW-18001			10		<table style="width: 100%; text-align: center;"> <tr> <td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td> </tr> </table>						x	x	x	x	x	x	x	x							
x	x	x	x	x	x	x	x																								
↓ -02		↓		GW		DEK-MW-18001 MS			7		<table style="width: 100%; text-align: center;"> <tr> <td>x</td><td>x</td><td>x</td><td></td><td>x</td><td>x</td><td>x</td><td></td> </tr> </table>						x	x	x		x	x	x								
x	x	x		x	x	x																									
↓ -03		↓		GW		DEK-MW-18001 MSD			7		<table style="width: 100%; text-align: center;"> <tr> <td>x</td><td>x</td><td>x</td><td></td><td>x</td><td>x</td><td>x</td><td></td> </tr> </table>						x	x	x		x	x	x								
x	x	x		x	x	x																									

RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: <i>3/4/24 1600</i>		RECEIVED BY: <i>Fed Ex</i>		COMMENTS:  Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>015402</u> Temperature: <u>1.2 - 4.9</u> °C      Cal. Due Date: <u>05-23-24</u>			
RELINQUISHED BY: <i>Fed Ex</i>		DATE/TIME: <i>03/05/24 1005</i>		RECEIVED BY: <i>[Signature]</i>					

March 12, 2024

Consumers Energy Company  
135 W. Trail St.  
Jackson, MI 49201

Subject: Q1-2024 DEK Bottom Ash Pond & Lined Impound  
24-0128

Dear : Mr. Blaj

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 03/06/2024 for the above mentioned project. NELAP/TNI Accredited Analysis and EGLE Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 95638 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely,  
Brighton Analytical, L.L.C.



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/04/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/12/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95638** Project Name: **Q1-2024 DEK Bottom Ash Pond & Lined Impound**  
 BA Sample ID: **CV02511** Project Number: **24-0128**

Sample ID: **24-0128-01 DEK-MW-18001**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
<b>Methane Analysis</b>						
Methane	12	ug/L	2	RSKSOP-175	JT	03/07/2024
<b>Organic Analysis</b>						
Total Organic Carbon	4400	ug/L	1000	SM5310B	RG	03/07/2024

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by Cynthia Williams  
 Date 3/12/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/04/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/12/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95638** Project Name: **Q1-2024 DEK Bottom Ash Pond & Lined Impound**  
 BA Sample ID: **CV02512** Project Number: **24-0128**

Sample ID: **24-0128-02 DEK-MW-18001 MS**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
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**Organic Analysis**

Total Organic Carbon	94%	ug/L	1000	SM5310B	RG	03/07/2024
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DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by *Cynthia Williams*  
 Date 3/12/2024



**Brighton Analytical LLC**  
 2105 Pless Drive  
 Brighton, Michigan 48114  
 Phone: (810)229-7575 (810)229-8650  
 e-mail: bai-brighton@sbcglobal.net  
 EGLE Certified #9404  
 NELAC Accredited #176507

Sample Date: 03/04/2024  
 Submit Date: 03/06/2024  
 Report Date: 03/12/2024

To: Consumers Energy Company  
 135 W. Trail St.  
 Jackson, MI 49201

BA Report Number: **95638** Project Name: **Q1-2024 DEK Bottom Ash Pond & Lined Impound**  
 BA Sample ID: **CV02513** Project Number: **24-0128**

Sample ID: **24-0128-03 DEK-MW-18001 MSD**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
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**Organic Analysis**

Total Organic Carbon	<b>103%</b>	ug/L	1000	SM5310B	RG	03/07/2024
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DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by *Cynthia Williams*  
 Date 3/12/2024



# CHAIN OF CUSTODY

95638

## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page 1 of 1



SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Pond & Lined Impoundment		PROJECT NUMBER: <b>24-0128</b>		SAP CC or WO#: _____ REQUESTER: Harold Register		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____	
SAMPLING TEAM: SEND REPORT TO: Emil Blaj		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: Emil.Blaj@cmsenergy.com phone: _____		ANALYSIS REQUESTED (Attach List if More Space is Needed)	
SEND REPORT TO: Emil Blaj		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		CONTAINERS PRESERVATIVE None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCl MeOH Other		REMARKS 5.1 Temp	
LAB SAMPLE ID 24-0128-01 ↓ -02 ↓ -03	SAMPLE COLLECTION DATE 03/04/2024 03/04/2024 03/04/2024	TIME 1505 1505 1505	MATRIX GW GW GW	FIELD SAMPLE ID / LOCATION DEK-MW-18001 DEK-MW-18001 MS DEK-MW-18001 MSD	TOTAL # 3 1 1	Total Organic Carbon x x x	Methane x x x

RELINQUISHED BY: *Peena Chopra* DATE/TIME: *3/6/24 Apm*

RECEIVED BY: *[Signature]* DATE/TIME: \_\_\_\_\_

COMMENTS:  
**PR #23101291**  
 Received on Ice?  Yes  No M&TE #: \_\_\_\_\_  
 Temperature: \_\_\_\_\_ °C Cal. Due Date: \_\_\_\_\_





BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY  
CONTROL

# REPRESENTATIVE BATCH QUALITY CONTROL

## Accuracy & Precision

Analyst:           RG          

Parameter:           TOC          

Analysis Date:           3/7/2024          

Method Reference:           EPA 415.1/SM5310B/9060          

### SPIKE - ACCURACY

Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CV02511	TV=10000	4400	94/103	80 - 120	ND

Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)
CV02511	13900	14700	5.60	≤ 20

### MISCELLANEOUS

	Standard ID #	%Recoveries
Independent Secondary Reference Material:	#4621	105
Method Standard (Lab. Control Spike):	#3046.9	99

COMMENTS: \_\_\_\_\_

**REPRESENTATIVE BATCH QUALITY CONTROL**  
**Accuracy & Precision**

**Analyst:**           JT          

**Parameter:**           Methane          

**Analysis Date:**           3/7/2024          

**Method Reference:**           RSKSOP-175          

**Matrix:**           Water          

**Inst./Detector :**           HP-4/FID          

<b>SPIKE - ACCURACY</b>					
<b>Laboratory ID</b>	<b>Spike Conc. (µg/L)</b>	<b>Background (µg/L)</b>	<b>Percent Recoveries</b>	<b>Acceptable Range (%)</b>	<b>Method Blank Concentration</b>
LCS's (Methane)	34.3	ND	112 / 110	85 - 115	< 2 µg/L
<b>SPIKE - PRECISION</b>					
<b>Laboratory ID</b>	<b>Observed A (µg/L)</b>	<b>Observed B (µg/L)</b>	<b>RPD</b>	<b>Acceptable Range</b>	
LCS's (Methane)	38.5	37.7	2.1	≤ 20%	
CV00290	20700	16900	19.9	≤ 20%	
<b>MISCELLANEOUS</b>					

**COMMENTS:** \_\_\_\_\_



# Analytical Laboratory Report

Report ID: S59419.01(01)  
Generated on 03/07/2024

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 Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S59419.01-S59419.03  
Project: 24-0128 PR#24030331  
Collected Date(s): 03/04/2024  
Submitted Date/Time: 03/05/2024 16:50  
Sampled by: Unknown  
P.O. #: 4400114090

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- Laboratory Accreditations (Page 3)
- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)

Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4450 S2 D 2011

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# Analytical Laboratory Report

## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S59419.01	DEK-MW-18001 (24-0128-01)	Groundwater	03/04/24 15:05
S59419.02	DEK-MW-18001 Field MS (24-0128-02)	Groundwater	03/04/24 15:05
S59419.03	DEK-MW-18001 Field MSD (24-0128-03)	Groundwater	03/04/24 15:05



# Analytical Laboratory Report

Lab Sample ID: S59419.01

Sample Tag: DEK-MW-18001 (24-0128-01)

Collected Date/Time: 03/04/2024 15:05

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 09:06, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.11	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S59419.02

Sample Tag: DEK-MW-18001 Field MS (24-0128-02)

Collected Date/Time: 03/04/2024 15:05

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 09:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.283	0.02	0.005	mg/L	1	18496-25-8	1

1-\* Sample spike @ 0.200 mg/L level



# Analytical Laboratory Report

Lab Sample ID: S59419.03

Sample Tag: DEK-MW-18001 Field MSD (24-0128-03)

Collected Date/Time: 03/04/2024 15:05

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 03/07/24 09:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.289	0.02	0.005	mg/L	1	18496-25-8	1

1-\* Sample spike @ 0.200 mg/L level

# Merit Laboratories Login Checklist

Lab Set ID:S59419

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0128 PR#24030331

Submitted:03/05/2024 16:50 Login User: MMC

Phone: D:517-788-5888 FAX:  
Email:emil.blaj@cmsenergy.com

Selection	Description	Note
-----------	-------------	------

### Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.4 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

### Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

### Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

### Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S59419      Submitted: 03/05/2024 16:50  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0128 PR#24030331

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 03/06/2024 10:03 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S59419.01	125mL Plastic NaOH/Zn Acetate	>12			
S59419.02	125mL Plastic NaOH/Zn Acetate	>12			
S59419.03	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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 4400114090  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME 24-0128 PR#24030331 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Total Sulfide	Certifications	Project Locations	Special Instructions
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NiOH	MeOH	OTHER					
<u>59419.01</u>	<u>03/04/24</u>	<u>1505</u>	<u>DEK-MW-18001 (24-0128-01)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>			<u>preserved with NaOH/ZnAcetate</u>	
<u>.02</u>	<u>03/04/24</u>	<u>1505</u>	<u>DEK-MW-18001 Field MS (24-0128-02)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>			<u>"</u>	
<u>.03</u>	<u>03/04/24</u>	<u>1505</u>	<u>DEK-MW-18001 Field MSD (24-0128-03)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>			<u>"</u>	
																<u>Please spike MS/MSD and report spike concentration and/or recovery</u>	

RELINQUISHED BY: J. JOHNSON ENERGY  Sampler DATE 03/05/24 TIME 16:50  
 RECEIVED BY: Johanna Murray DATE 3/5/24 TIME 16:50

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME  
 RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 NOTES: TEMP. ON ARRIVAL on ice 5.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

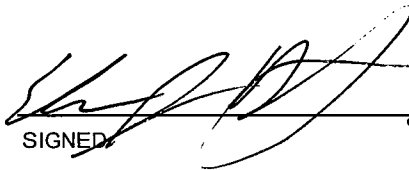


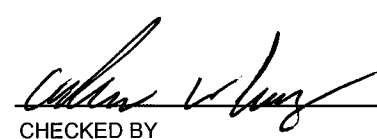
# Appendix B

## Field Notes



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:	3/4/2024 TO 3/13/2024
PURPOSE OF FIELDWORK:	First Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Whaley, E. Rinehart

 3/4/24  
SIGNED \_\_\_\_\_ DATE

 3/21/24  
CHECKED BY \_\_\_\_\_ DATE



### GENERAL NOTES

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: 3/5/2024	TIME ARRIVED: 0720
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK (AW)	TIME LEFT: 1630

WEATHER		
TEMPERATURE: <u>40-46</u> °F	WIND: <u>10-20</u> MPH	VISIBILITY: <u>Overcast, Rain, fog</u>
WORK / SAMPLING PERFORMED		
<p>Check in at Guard Shack, notify site contact                      Calibrate water quality meter                      Sample Karn Lined Impoundment wells, OW-10, OW-11,                      OW-12, DEK-MW-1500, PCS, SCS,                      SW-Ditch is dry - no sample</p>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
<u>None</u>	

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

Cameron W. Huley 3/20/24  
 SIGNED DATE

[Signature] 3/21/24  
 CHECKED BY DATE



**GENERAL NOTES**

*Weedoc's Background wells*

PROJECT NAME: CEC Kern LE-2024 GW Compliance	DATE: <u>3/5/24</u>	TIME ARRIVED: <u>730</u>
PROJECT NUMBER: <u>55380000.0000</u>	AUTHOR: AW JK JJ <u>ER</u>	TIME LEFT: <u>1600</u>

WEATHER		
TEMPERATURE: <u>40</u> °F	WIND: <u>12</u> MPH	VISIBILITY: <u>Cloudy/Rain</u>

WORK / SAMPLING PERFORMED
<i>Samples wells : MW-15008, MW-15019, MW-15002</i>
<i>MW-15016, MW-18</i>
<i>Calibrate in-situ</i>

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

*[Signature]* 3/5/24  
 SIGNED \_\_\_\_\_ DATE

*[Signature]* 3/21/24  
 CHECKED BY \_\_\_\_\_ DATE



### GENERAL NOTES

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: 3/6/2024	TIME ARRIVED: 0720
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK <u>AW</u>	TIME LEFT: 1620

WEATHER		
TEMPERATURE: <u>36-44</u> °F	WIND: <u>20-32</u> MPH	VISIBILITY: <u>Overcast - Clear</u>

WORK / SAMPLING PERFORMED
Sign in with security / site contact
Calibrate YSI
DEK-MW-22004, DEK-MW-22006, DEK-MW-22003, Dup-DEK-BAP-02
Sample additional Geochem wells TW-21-001, TW-21-003
Ship samples via Fed-Ex

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
DEK-MW-15004 water level too deep for peristaltic capability ≈ 29.10' below TOC	Jacob Hrenz to return w/ bladder pump to low flow sample

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

*Adam White*                      3/20/24  
 SIGNED                                      DATE

*[Signature]*                      3/21/24  
 CHECKED BY                      DATE



**GENERAL NOTES**

*BAP/LI*

PROJECT NAME: CEC Kern <del>LF</del> 2024 GW Compliance	DATE: <i>3/6/24</i>	TIME ARRIVED: <i>730</i>
PROJECT NUMBER: 553814.0000.0000	AUTHOR: AW JK JJ <i>EB</i>	TIME LEFT: <i>1615</i>

WEATHER		
TEMPERATURE: <i>37</i> °F	WIND: <i>13-16</i> MPH	VISIBILITY: <i>Cloudy</i>

WORK / SAMPLING PERFORMED
<i>Calibrate In Situ</i>
<i>Site wide Sampling - Kern BAP Supplemental</i>

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

*[Signature]* *[Signature]* *3/6/24*  
 SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

*[Signature]* *[Signature]* *3/21/24*  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_



### EQUIPMENT SUMMARY

PROJECT NAME: CEC Kam BAP/LI: 2024 GW	SAMPLER NAME: J. Jasso, J. Krenz, A. Whaley, E. Rinehart
PROJECT NO.: 553814.0001.0000	

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED 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 FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND   
  DRUM   
  POTW   
  POLYTANK   
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
 _____ SIGNED	 _____ CHECKED BY
_____ DATE	_____ DATE






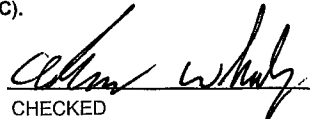
**WATER LEVEL DATA**

PROJECT NAME: GEC Karn/Weadock: 2024 GW Compliance	DATE: 3/14/24
PROJECT NUMBER: 553814.001	AUTHOR: JJ

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW-01	1131	TOC	18.20	24.20	NA	NM
MW-02	1130	TOC	18.70	30.80	NA	NM
MW-03	1145	TOC	18.91	30.75	NA	NM
MW-04	1147	TOC	19.20	33.80	NA	NM
MW-06	1224	TOC	10.25	24.35	NA	NM
MW-08	1249	TOC	17.89	—	NA	NM
MW-10	1310	TOC	17.31	—	NA	NM
MW-12	1340	TOC	19.20	—	NA	NM
MW-14	1426	TOC	15.05	19.23	NA	NM
MW-16	1449	TOC	14.94	—	NA	NM
MW-17	1520	TOC	14.20	24.34	NA	NM
MW-18	1039	TOC	24.73	39.65	NA	NM
MW-19	1045	TOC	17.97	30.00	NA	NM
MW-20	1100	TOC	53.71	72.00	NA	NM
MW-21	1053	TOC	51.80	60.50	NA	NM
MW-22	1243	TOC	17.21	29.59	NA	NM
MW-23	<del>1331</del>	TOC	14.70	15.10	NA	NM
OW-01	1105	TOC	52.23	64.00	NA	NM
OW-02	1244	TOC	16.15	21.95	NA	NM
OW-03	1300	TOC	17.75	28.70	NA	NM
OW-04	1423	TOC	10.80	16.20	NA	NM
OW-05	1440	TOC	14.10	19.00	NA	NM
OW-06	1520	TOC	22.65	24.80	NA	NM
OW-07	1335	TOC	15.71	23.91	NA	NM
OW-08	1513	TOC	11.14	17.90	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  3/14/24 DATE

CHECKED  3/12/24 DATE



### WATER LEVEL DATA

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 3/14/24
PROJECT NUMBER: 553814.0001	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	1510	TOC	10.56	12.77	NA	NM
OW-10	1530	TOC	7.85	17.95	NA	NM
OW-11	1015	TOC	24.00	24.47	NA	NM
OW-12	1500	TOC	18.11	23.41	NA	NM
OW-13	1507	TOC	4.21	14.17	NA	NM
OW-15	1004	TOC	4.60	15.75	NA	NM
EW-01	1303	TOC	14.28	DUM	NA	NM
EW-02	1320	TOC	15.90	↑	NA	NM
EW-03	1338	TOC	15.45	↑	NA	NM
EW-04	1354	TOC	15.40	↑	NA	NM
EW-05	1414	TOC	14.75	↑	NA	NM
EW-06	1432	TOC	10.95	↓	NA	NM
PZ-01	12.54	TOC	13.50	14.10	NA	NM
PZ-02	12.58	TOC	15.48	23.10	NA	NM
PZ-03	1317	TOC	15.68	19.80	NA	NM
PZ-04	1325	TOC	15.10	20.95	NA	NM
PZ-05	1405	TOC	15.35	21.18	NA	NM
PZ-06	1348	TOC	15.94	20.35	NA	NM
PZ-07	1352	TOC	15.60	21.00	NA	NM
PZ-08	1411	TOC	15.30	20.54	NA	NM
PZ-09	1420	TOC	15.81	21.61	NA	NM
PZ-10	1436	TOC	11.02	17.74	NA	NM
PZ-11	1439	TOC	14.24	18.10	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 3/14/24 DATE

CHECKED [Signature] 3/21/24 DATE



**WATER LEVEL DATA**

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 3/14/24
PROJECT NUMBER: 553814.0001	AUTHOR: J. Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	1011	TOL	9.91	23.75	NP	NM
DEK-MW-15002	1501		7.00	15.71		
DEK-MW-15003	1018		18.78	27.67		
DEK-MW-15004	1011		29.00	41.78		
DEK-MW-15005	1034		10.83	25.73		
DEK-MW-15006	1511		10.15	21.50		
DEK-MW-22001	1031		10.53	24.00		
DEK-MW-22002	1037		11.83	26.87		
DEK-MW-22003	1025		11.65	24.40		
DEK-MW-22004	1027		10.30	22.44		
DEK-MW-22005	1029		8.94	20.30		
DEK-MW-22006	1025		8.89	21.53		
MW-15002						
MW-15008						
MW-15016						
MW-15019						
TW-21-001	1120		13.65	17.59		
TW-21-002	1116		13.84	20.91		
TW-21-003	1114		18.90	24.00		
TW-21-004	1507		13.60	16.64		
TW-21-005	1505		10.95	14.80		
TW-21-006	1500		10.53	13.12		
TW-21-007	1456		13.30	18.80		
TW-21-008	1453		14.60	19.80		
TW-21-009	1233		20.63	27.91		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  3/14/24 DATE

CHECKED  3/21/24 DATE



**WATER LEVEL DATA**

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 3/4/24
PROJECT NUMBER: 553714.0001	AUTHOR: J. Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
TW-21-010	1224	TOC	21.20	28.00	NA	NM
TW-21-011D	1214		22.50	52.35		
TW-21-011I	1213		22.04	35.30		
TW-21-011S	1212		22.28	27.00		
TW-21-012D	1207		21.05	54.70		
TW-21-012I	1205		21.10	36.60		
TW-21-012S	1204		20.82	27.83		
TW-21-013	1140		23.89	36.50	<del>34.00</del>	

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 3/14/24  
DATE

CHECKED [Signature] 3/21/24  
DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: AW, JK, JJ, ER
PROJECT NO.: 553814.0001.0000	SERIAL #: Rental	DATE: 3/5/24

PH CALIBRATION CHECK

pH 7		pH 10		CAL. RANGE	TIME
(LOT #): 3610918	(EXP. DATE): 08/25	(LOT #): 3610991	(EXP. DATE): 08/25		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
7.04	12.04	4.00	14.00	<input checked="" type="checkbox"/> WITHIN RANGE	0755
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 3650603	(°CELSIUS)		
(EXP. DATE): 04/24			
POST-CAL. READING / STANDARD			
1355	14.6	<input checked="" type="checkbox"/> WITHIN RANGE	0820
1167		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 235102812	(°CELSIUS)		
(EXP. DATE): 9/28			
POST-CAL. READING / STANDARD			
245.3	9.8	<input checked="" type="checkbox"/> WITHIN RANGE	0804
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
	(°CELSIUS)		
POST-CAL. READING / SATURATED AIR			
10.8	10.6	<input checked="" type="checkbox"/> WITHIN RANGE	0807
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): DI	(LOT #): A320		
(EXP. DATE): DI	(EXP. DATE): 08/25		
POST-CAL. READING / STANDARD			
0.0	124	<input checked="" type="checkbox"/> WITHIN RANGE	0810
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES


PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS



SIGNED: [Signature] DATE: 3/20/24

CHECKED BY: [Signature] DATE: 3/21/24



WATER QUALITY METER CALIBRATION LOG

*Wendover Soccer Field*

PROJECT NAME: CEC Karn <i>LF-2024 CW Compliance</i>	MODEL: <i>1a Sitar Aqua Trill</i>	SAMPLER: AW, JJ, JK <b>(ER)</b>
PROJECT NO.: 5538 <del>0000</del> 0000	SERIAL #:	DATE: <i>3/5/24</i>

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #): <i>3GJ0918</i>	(EXP. DATE): <i>Oct/25</i>	(LOT #): <i>3G10691</i>	(EXP. DATE): <i>Sep/25</i>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD				
<i>7.04 / 7.04</i>	<i>4.0 / 4.0</i>	<input checked="" type="checkbox"/>	WITHIN RANGE	<i>800</i>	
/	/	<input type="checkbox"/>	WITHIN RANGE		
/	/	<input type="checkbox"/>	WITHIN RANGE		
/	/	<input type="checkbox"/>	WITHIN RANGE		

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): <i>3GK0901</i>	(°CELSIUS)		
(EXP. DATE): <i>Nov 24</i>			
POST-CAL. READING / STANDARD			
<i>1147 / 1147</i>	<i>14</i>	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): <i>22H100376</i>	(°CELSIUS)		
(EXP. DATE): <i>27-08-23</i>			
POST-CAL. READING / STANDARD			
<i>228 / 228</i>	<i>14</i>	<input checked="" type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
	(°CELSIUS)		
POST-CAL. READING / SATURATED AIR			
<i>10.6 / 10.6</i>	<i>11.5</i>	<input checked="" type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <i>A3097</i>	(LOT #):		
(EXP. DATE): <i>Apr 25</i>	(EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<i>100 / 100</i>	/	<input checked="" type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE
/	/	<input type="checkbox"/>	WITHIN RANGE

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES


PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS


*[Signature]*  
SIGNED \_\_\_\_\_ DATE *3/5/24*

*[Signature]*  
CHECKED BY \_\_\_\_\_ DATE *3/21/24*



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI ProDSS	SAMPLER: AW JK, JJ, ER
PROJECT NO.: 553814.0001.0000	SERIAL #: Rental	DATE: 5/16/24

PH CALIBRATION CHECK

LOT #:	EXP. DATE:	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
3650918	04/25	7.00 / 7.00	<input checked="" type="checkbox"/> WITHIN RANGE	0745
/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

LOT #:	EXP. DATE:	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
365003	04/24	1001 / 1001	6.9	<input checked="" type="checkbox"/> WITHIN RANGE	0750
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

LOT #:	EXP. DATE:	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
1A900128	7/14/28	250.9 / 250.9	6.0	<input checked="" type="checkbox"/> WITHIN RANGE	0753
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

LOT #:	EXP. DATE:	POST-CAL. READING / SATURATED AIR	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
		11.20 / 11.20	9.0	<input checked="" type="checkbox"/> WITHIN RANGE	0757
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	
/	/	/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

LOT #:	EXP. DATE:	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
D1		0.0 / 0.0	<input checked="" type="checkbox"/> WITHIN RANGE	0750
/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER	

NOTES


PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS



SIGNED: *[Signature]* DATE: 5/20/24

CHECKED BY: *[Signature]* DATE: 5/21/24



**WATER QUALITY METER CALIBRATION LOG**

*WAPLI*

PROJECT NAME: CEC Karn <del>LF</del> 2024 GW Compliance	MODEL: <i>EnSite Acquatroll</i>	SAMPLER: AW, JJ, JK, ER
PROJECT NO.: 553814.0000.0000	SERIAL #: <i>AA office</i>	DATE: <i>3/6/24</i>

**PH CALIBRATION CHECK**

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
<i>36-50914</i>	<i>Oct/25</i>	<i>7.06 / 7.06</i>	<i>36-K0901</i>	<i>Sep 25</i>	<i>9.0 / 4.0</i>	<input type="checkbox"/> WITHIN RANGE	<i>745</i>
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**SPECIFIC CONDUCTIVITY CALIBRATION CHECK**

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
<i>36-K0901</i>	<i>Nov 24</i>	<i>964 / 964</i>	<i>6</i>	<input type="checkbox"/> WITHIN RANGE	<i>755</i>
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**ORP CALIBRATION CHECK**

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
<i>224100376</i>	<i>27-04-23</i>	<i>232 / 232</i>	<i>5.72</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>750</i>
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**D.O. CALIBRATION CHECK**

LOT #	EXP. DATE	POST-CAL. READING / SATURATED AIR	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
		<i>12.06 / 12.06</i>	<i>5.7</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>805</i>
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**TURBIDITY CALIBRATION CHECK**

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
<i>A3047</i>	<i>Apr 25</i>	<i>100 / 100</i>	<del>X</del>	<del>X</del>	<i>0 / 0</i>	<input type="checkbox"/> WITHIN RANGE	<i>800</i>
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**COMMENTS**

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

**NOTES**


**PROBLEMS ENCOUNTERED**

**CORRECTIVE ACTIONS**


SIGNED *[Signature]* DATE *3/6/24*

CHECKED BY *[Signature]* DATE *3/21/24*





DAP/LL

**WATER SAMPLE LOG**

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: AW, JJ, JK, <i>JD</i> DATE: 3/4/24	BY: AW DATE: 3/21/24

SAMPLE ID: DEK-MW-18001	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VVW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1450	DATE: 3/4/24	SAMPLE	TIME: 1505	DATE: n
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.71 SU	CONDUCTIVITY: 849.52 umhos/cm	ORP: -128.9 mV	DO: 1.59 mg/L	
DEPTH TO WATER: 9.46 T/ PVC	TURBIDITY: 4.31 NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: 19.7 T/ PVC	TEMPERATURE: 12.43 °C	FERROUS Fe: 0.5 mg/L	COLOR: Clear	ODOR: No	
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
VOLUME REMOVED: 3 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE COLOR:	FILTRATE ODOR:	QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: Clear	ODOR: No	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			
COMMENTS:					

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)
1450	200	7.82	847.55	-46.7	2.3	54.27	12.94	9.46	INITIAL
1452		7.78	854.86	-86.1	1.72	14.76	12.41		0.6
1456		7.74	862.51	-109.6	1.65	11.88	12.5		1.2
1459		7.73	851.49	-121.1	1.61	5.97	12.48		1.8
1502		7.72	849.8	-126.3	1.59	3.61	12.5		2.4
1505		7.71	849.52	-128.9	1.59	4.31	12.43		3.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
3	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	9	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
6	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
3	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Courier	DATE SHIPPED: 3/4/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/4/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW</u> JK, JJ, ER DATE: <u>3/5/24</u>	BY: <u>EK</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>OW-10</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0835</u>	DATE: <u>3/5/24</u>	SAMPLE	TIME: <u>0910</u>	DATE: <u>3/5/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.19</u> SU	CONDUCTIVITY: <u>718</u> umhos/cm	ORP: <u>-124.4</u> mV	DO: <u>0.29</u> mg/L	
DEPTH TO WATER: <u>7.81</u> T/ PVC	TURBIDITY: <u>20.84</u> NTU	<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>17.90</u> T/ PVC	TEMPERATURE: <u>12.6</u> °C	FERROUS Fe <u>2.25</u> mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>Slight</u>			
VOLUME REMOVED: <u>4.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	FILTRATE COLOR: <u>Clear</u> FILTRATE ODOR: <u>None</u>			
COLOR: <u>Slight grey</u> ODOR: <u>Slight</u>	TURBIDITY <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP.			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>Sediment in bottom of well</u>				

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)
0835	200	7.12	772	40.9	2.48	20.10	10.6	8.60	INITIAL
0840	200	7.23	766	-63.0	0.60	20.71	10.4	9.00	1.0
0845	100	7.23	750	-100.0	0.51	29.62	10.1	8.80	<u>2.0</u>
0850	100	7.22	737	-112.6	0.48	41.20	10.1	8.68	<u>3.0</u>
0855	100	7.21	726	-124.7	0.39	28.60	10.2	8.68	<u>2.5</u>
0900	100	7.17	720	-122.5	0.39	21.00	10.3	8.68	<u>3.0</u>
0905	100	7.19	718	-123.6	0.31	22.58	10.5	8.68	<u>3.5</u>
0910	100	7.19	718	-124.4	0.29	20.84	10.5	8.68	<u>4.0</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125	Plastic	B	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. W. King</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ, ER	DATE: 3/5/24	BY: ER	DATE: 3/21/24
SAMPLE ID: <u>DEK-MW-15003</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>0951</u>	DATE: <u>3/5/24</u>	SAMPLE	TIME: <u>1031</u>	DATE: <u>3/5/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: <u>8.13</u> SU		CONDUCTIVITY: <u>410.5</u> umhos/cm	
		ORP: <u>-161.3</u> mV		DO: <u>0.36</u> mg/L	
DEPTH TO WATER: <u>18.72</u> T/ PVC		TURBIDITY: <u>1.96</u> NTU			
DEPTH TO BOTTOM: <u>NM</u> T/ PVC <u>Transducer</u>		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>16.3</u> °C		FERROUS Fe <u>0.0</u> mg/L	
VOLUME REMOVED: <u>8.08</u> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>Clear</u>		ODOR: <u>NONE</u>	
COLOR: <u>Clear</u>		ODOR: <u>NONE</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>KLI</u>		COMMENTS:	

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)
0951	200	8.52	343.9	-143.0	0.70	2.20	16.5	19.10	INITIAL
0956		8.48	344.9	-161.5	0.43	2.18	16.4		1.0
1001		8.29	346.9	-142.2	0.98	2.11	16.4		2.0
1006		8.22	352.4	-140.3	1.29	2.07	16.4		3.0
1011		8.22	359.7	-143.7	1.00	1.93	16.0		4.0
1016		8.22	378.4	-147.7	0.80	1.87	16.1		5.0
1021		8.18	401.0	-156.8	0.49	1.73	16.4		6.0
1026		8.15	406.8	-160.3	0.42	1.66	16.4		7.0
1031		8.13	410.5	-161.3	0.36	1.96	16.3		8.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	6	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
4	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER: _____
COC NUMBER: <u>-</u>	SIGNATURE: <u>A. Willey</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW JK, JJ, ER DATE: 3/15/24	BY: EIL DATE: 3/21/24

SAMPLE ID: <u>OW-11</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1125</u>	DATE: <u>3/15/24</u>	SAMPLE	TIME: <u>1200</u>	DATE: <u>3/15/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>9.63</u> SU	CONDUCTIVITY: <u>287.1</u> umhos/cm	ORP: <u>-604</u> mV	DO: <u>2.32</u> mg/L	
DEPTH TO WATER: <u>2398</u> T/ PVC	TURBIDITY: <u>8.94</u> NTU				
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>10.8</u> °C	FERROUS Fe <u>0.0</u> mg/L			
VOLUME REMOVED: <u>2.5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>Slight</u>			
COLOR: <u>Clear</u>	ODOR: <u>None</u>	FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: <u>Clear</u> <sup>AW</sup>	FILTRATE ODOR: <u>None</u> <sup>AW</sup>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				
COMMENTS:					

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)
1125	100	9.02	354.8	-41.2	6.08	21.10	11.2	25.10	INITIAL
<p><i>4 min purge for ~3 min before connecting water quality meter</i></p> <p><i>* Adjust tubing causes very turbid GW</i></p>									
1135	100	9.12	352.4	-50.4	4.30	26.10	11.1	25.15	1.0
1140									
1145		9.60	287.6	-40.1	5.28	105.40	10.6		1.5
1150									
1155		9.64	283.0	-53.7	3.40	14.65	10.3	24.60	2.0
1200		9.63	287.1	-60.4	2.32	8.94	10.8	25.10	2.5
1202									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:  
 pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<del>1 125 plastic B</del>					
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/15/24</u>	AIRBILL NUMBER: <u>-</u>
COC NUMBER: <u>-</u>	SIGNATURE: <u>Aw Jk</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <i>AW, JK, JJ, ER</i> DATE: <i>3/15/24</i>	BY: <i>ERL</i> DATE: <i>3/21/24</i>

SAMPLE ID: <i>KLI-SCS</i>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input checked="" type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <i>1320</i>	DATE: <i>3/15/24</i>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <i>7.68</i> SU	CONDUCTIVITY: <i>1269</i> umhos/cm	
			ORP: <i>31.0</i> mV	DO: <i>9.78</i> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <i>7.53</i> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <i>NA</i> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <i>9.1</i> °C	FERROUS Fe <i>NA</i> mg/L	
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <i>Clear</i>	ODOR: <i>None</i>	
COLOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

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)
<i>1315</i>	<i>NA</i>	<i>7.68</i>	<i>1260</i>	<i>38.5</i>	<i>9.65</i>	<i>20.11</i>	<i>9.4</i>	<i>NA</i>	INITIAL
<i>1320</i>	<i>NA</i>	<i>7.68</i>	<i>1269</i>	<i>31.0</i>	<i>9.78</i>	<i>7.53</i>	<i>9.1</i>	<i>NA</i>	<i>NA</i>

**NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:**

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<i>1</i>	<i>250 mL</i>	<i>PLASTIC</i>	<i>A</i>	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<i>125 mL</i>	<i>PLASTIC</i>	<i>D</i>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<i>1</i>	<i>125 mL</i>	<i>PLASTIC</i>	<i>A</i>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<i>40 mL</i>	<i>VOA</i>	<i>E</i>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<i>2</i>	<i>60 mL</i>	<i>VOA</i>	<i>A</i>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
<i>1</i>	<i>125 mL</i>	<i>PLASTIC</i>	<i>B</i>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<i>125 mL</i>	<i>PLASTIC</i>	<i>C</i>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <i>Fed Ex</i>	DATE SHIPPED: <i>3/15/24</i>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>A. whaley</i>	DATE SIGNED: <i>3/20/24</i>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW</u> , JK, JJ, ER DATE:	BY: <u>EL</u> DATE: <u>5/21/24</u>

SAMPLE ID: <u>KLI PCS</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input checked="" type="checkbox"/> OTHER <u>SW</u>
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input checked="" type="checkbox"/> OTHER <u>PCS Pond</u>	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input checked="" type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>1330</u>	DATE: <u>5/21/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>8.33</u> SU	CONDUCTIVITY: <u>511</u> umhos/cm	ORP: <u>19.7</u> mV	DO: <u>10.79</u> mg/L	
DEPTH TO WATER: _____ T/ PVC	TURBIDITY: <u>32.61</u> NTU	<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: _____ T/ PVC	TEMPERATURE: <u>10.2</u> °C	FERROUS Fe <u>NA</u> mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: _____ ODOR: _____	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

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)
<u>1330</u>	<u>NA</u>	<u>8.33</u>	<u>511</u>	<u>19.7</u>	<u>10.79</u>	<u>32.61</u>	<u>10.2</u>	<u>-</u>	<u>INITIAL</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>5/15/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. Wilson</u>	DATE SIGNED: <u>5/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AWJ, JJ, ER DATE: 3/5/24	BY: ER DATE: 3/21/24

SAMPLE ID: <u>BW-12</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1405</u>	DATE: <u>3/5/24</u>	SAMPLE	TIME: <u>1450</u>	DATE: <u>3/5/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.19</u> SU	CONDUCTIVITY: <u>863</u> umhos/cm	ORP: <u>-99.3</u> mV	DO: <u>0.31</u> mg/L	
DEPTH TO WATER: <u>18.14</u> T/ PVC	TURBIDITY: <u>7.81</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>NM</u> T/ PVC	TEMPERATURE: <u>10.7</u> °C	FERROUS Fe: <u>5.0</u> mg/L	COLOR: <u>Clear</u> ODOR: <u>None</u>		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	VOLUME REMOVED: <u>90</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____		
COLOR: <u>Very dark orange</u> ODOR: <u>None</u>	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>(FB-KLI) Purged until visually clear</u>				

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 $\varnothing$ )
1415	200	7.33	864	-8.9	3.45	129.37	11.9	18.20	INITIAL 2.0
1420	↓	7.19	899	-84.1	0.51	52.08	11.5	↓	3.0
1425		7.18	896	-93.2	0.37	31.20	11.2		4.0
1430		7.19	891	-94.9	0.36	17.08	11.1		5.0
1435		7.19	884	-98.1	0.32	13.97	11.0		6.0
1440		7.19	875	-99.0	0.33	9.12	10.8		7.0
1445		7.19	867	-99.2	0.32	8.56	10.9		8.0
1450		7.19	863	-99.3	0.31	7.81	10.7		9.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:  
 pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	6	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. White</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ, ER DATE: 3/15/24	BY: ER DATE: 3/21/24

SAMPLE ID: EB-K21	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: _____	DATE: _____	SAMPLE	TIME: 1500	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: _____ SU		CONDUCTIVITY: _____ umhos/cm		
DEPTH TO WATER: _____ T/ PVC		ORP: _____ mV		DO: _____ mg/L	
DEPTH TO BOTTOM: _____ T/ PVC		TURBIDITY: _____ NTU		TEMPERATURE: _____ °C	
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: _____		ODOR: _____	
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		FILTRATE COLOR: _____	
COLOR: _____		ODOR: _____		FILTRATE ODOR: _____	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS: _____			

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)
<p><del>EQUIPMENT BLANK</del></p>									
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES							
		A - NONE	B - HNO3	C - H2SO4	D - NaOH	E - HCL	F - _____		
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/15/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. Walsh</u>	DATE SIGNED: <u>3/20/24</u>





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ, ER	DATE: 3/5/24	BY: AW	DATE: 3/21/24
SAMPLE ID: DEK MW-15002		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING		TIME: 1357	DATE: "	SAMPLE	
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER				TIME: 1439	DATE: 3/5/24
PH: 7.43 SU		CONDUCTIVITY: 900.68 umhos/cm			
ORP: -165.2 mV		DO: 1.52 mg/L			
DEPTH TO WATER: 6.93 T/ PVC		TURBIDITY: 1.57 NTU			
DEPTH TO BOTTOM: 15.71 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 9.45 °C		FERROUS Fe: 0.5 mg/L	
VOLUME REMOVED: 8.4 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: clear		ODOR: No	
COLOR: clearish		ODOR: slight		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS: A lot of air in the line	

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)
1357	200	7.62	827.60	-122.7	4.46	13.46	10.33	6.93	INITIAL
1400	↓	7.56	923.51	-134.1	1.82	3.49	9.23	7.14	0.6
1403		7.54	927.4	-139.7	1.69	11.02	9.34	—	1.2
1406		7.53	919.8	-143.3	1.65	12.88	9.13		1.8
1409		7.51	940.73	-146.6	1.61	18.23	9.13		2.4
1412		7.49	945.18	-150.0	1.6	20.8	9.43		3.0
1415		7.48	940.98	-152.9	1.59	31.33	9.46		3.6
1418		7.47	920.87	-155.4	1.59	44.05	9.47		4.2
1421		7.47	909.33	-156.9	1.59	53.15	9.47		4.8
1424	7.46	905.77	-157.4	1.69	116.87	9.44		5.4	

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Courier	DATE SHIPPED: 3/5/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Co	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: W, JK, JJ, E DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: DEK - MW - 15002

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)
1427	200	7.45	877.11	-159.9	1.58	70.61	9.44	7.14	6.0
1430		7.45	897.05	-161.6	1.56	47.6	9.45	—	6.6
1433		7.44	894.1	-162.5	1.57	42.94	9.49	—	7.2
1436		7.43	901.99	-164.5	1.57	69.15	9.49		7.5
1439		7.43	900.68	-165.2	1.57	79.98	9.45		8.4
	Supplementary test with Collette					1.57	J. Kline		

SIGNATURE:

DATE SIGNED: 3/5/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ, ER	DATE: 3/5/24	BY: Aw	DATE: 3/21/24
SAMPLE ID: <u>DOK - MW - 15006</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>1506</u>	DATE: <u>4</u>	SAMPLE	TIME: <u>1521</u>	DATE: <u>4</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.63</u> SU		CONDUCTIVITY: <u>1158.5</u> umhos/cm		
		ORP: <u>-151.2</u> mV		DO: <u>1.58</u> mg/L	
DEPTH TO WATER: <u>9.91</u> T/ PVC		TURBIDITY: <u>0.0</u> NTU			
DEPTH TO BOTTOM: <u>21.5</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>10.61</u> °C		FERROUS Fe: <u>1.5</u> mg/L	
VOLUME REMOVED: <u>3.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clearish</u>		ODOR: <u>slight</u>	
COLOR: <u>clearish</u>		ODOR: <u>slight</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

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)
1506	200	7.65	1134.5	-110.9	2.43	6.11	9.92	9.91	INITIAL
1509	↓	7.61	1137.1	-109.8	1.77	3.38	10.35	↓	0.6
1512	↓	7.6	1140.9	-132.3	1.65	0.39	10.41	↓	1.2
1515	↓	7.61	1151.4	-142.1	1.6	1.06	10.57	↓	1.8
1518	↓	7.62	1155.0	-145.4	1.59	4.17	10.59	↓	2.4
1521	↓	7.63	1158.5	-151.2	1.54	0.0	10.61	↓	3.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Carrier</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3/5/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ, EP DATE: 3/6/24	BY: Aw DATE: 3/21/24

SAMPLE ID: DEK MW-15005	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 832	DATE: u	SAMPLE	TIME: 856	DATE: n
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.57	SU	CONDUCTIVITY: 989.5	umhos/cm	
	ORP: -149.9	mV	DO: 1.55	mg/L	
DEPTH TO WATER: 10.11	T/ PVC	TURBIDITY: 0.7	NTU		
DEPTH TO BOTTOM: 23.3	T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 10.17	°C	FERROUS Fe: 1.0	mg/L	
VOLUME REMOVED: 4.8 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clearish	ODOR: Slight			
COLOR: Clearish	ODOR: Slight	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO			
<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR:	FILTRATE ODOR:			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- DEK-BAP-01	COMMENTS:			

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)
832	200	7.5	861.44	-12.6	2.68	21.92	8.4	10.11	INITIAL
835	↓	7.46	910.81	-54.1	1.74	0.55	9.68	-	0.6
838		7.49	945.77	-95.8	1.66	0.62	9.92	-	1.2
841		7.52	949.98	-114.2	1.62	0.47	10.07	-	1.8
844		7.54	936.37	-126.5	1.6	0.31	10.06	-	2.4
847		7.55	953.25	-136.1	1.58	0.5	10.09	-	3.0
850		7.55	940.29	-142.0	1.57	0.78	10.14	-	3.6
853		7.56	934.96	-146.1	1.56	0.31	10.18	-	4.2
856		7.57	989.5	-149.9	1.55	0.7	10.17	-	4.8

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N	6	40 mL	VOA	E	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N
4	60 mL	VOA	A	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Courier	DATE SHIPPED: 3/6/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/6/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ, ER DATE: 3/6/24	BY: AW DATE: 3/6/24

SAMPLE ID: DEK - MW - 22001	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1027	DATE: H	SAMPLE	TIME: 1124	DATE: H
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.37	SU	CONDUCTIVITY: 1084.5	umhos/cm	
DEPTH TO WATER: 10.3 T/ PVC	ORP: -141.6	mV	DO: 1.54	mg/L	
DEPTH TO BOTTOM: N/A T/ PVC	TURBIDITY: 56.35	NTU	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 10.84	°C	FERROUS Fe: 1.5	mg/L	
VOLUME REMOVED: 11.4 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Orange		ODOR: slight		
COLOR: Orange	ODOR: slight		FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: Clear		FILTRATE ODOR: No		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS:		

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)
1027	200	7.35	1087.1	-57.0	8.28	5394.9	8.29	10.3	INITIAL
1030	↓	7.2	1086.2	-89.1	1.74	1039.1	10.32	↓	0.6
1033		7.2	1097.9	-102.4	1.68	903.36	10.58		1.2
1036		7.22	1097.1	-118.0	1.63	542.03	10.71		1.8
1039		7.24	1103.2	-126.4	1.60	456.52	10.69		2.4
1042		7.25	1109.8	-130.3	1.57	292.59	10.76		3.0
1045		7.26	1115.9	-132.0	1.56	196.67	10.73		3.6
1048		7.27	1117.4	-133.7	1.55	180.04	10.71		4.2
1051		7.28	1111.2	-134.9	1.55	145.14	10.75		4.8
1054		7.28	1117.2	-136.1	1.55	160.95	10.88		5.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Carrier	DATE SHIPPED: 3/6/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/6/24



**WATER SAMPLE LOG**

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Co	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: W, JK, JJ, E DATE: 3/6/24	BY: AW DATE: 3/21/24

SAMPLE ID: DEK MW -22001

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)
10 57	200	7.22	1116.1	-136.2	1.55	112.43	10.91	10.3	6.0
11 00		7.28	1117.5	-138.0	1.56	105.6	10.9		6.6
11 03		7.33	1129.1	-118.7	6.27	182.34	10.08		7.2
11 06		7.31	1116.1	-132.5	1.6	60.58	10.83		7.8
11 09		7.31	1101.8	-131.5	1.57	69.84	10.83		8.4
11 12		7.31	1107.3	-138.0	1.56	58.55	10.86		9.0
11 15		7.31	1096.5	-139.1	1.56	49.31	10.86		9.6
11 17		7.32	1086.7	-140.3	1.55	57.49	10.84		10.2
11 20		7.32	1088.6	-140.9	1.54	54.52	10.82		10.8
11 24		7.32	1084.5	-141.6	1.54	56.55	10.84		11.0

SIGNATURE:

DATE SIGNED:

3/6/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ, ER DATE: 3/6/24		DATE: 3/6/24	
SAMPLE ID: <u>DEK MW-22005</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VVW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>1249</u>	DATE: <u>3/6/24</u>	SAMPLE	TIME: <u>1258</u>	DATE: <u>3/6/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.95</u> SU		CONDUCTIVITY <u>680.34</u> umhos/cm		
DEPTH TO WATER: <u>8.11</u> T/ PVC		ORP: <u>-180.2</u> mV		DO: <u>1.62</u> mg/L	
DEPTH TO BOTTOM: <u>20.25</u> T/ PVC		TURBIDITY: <u>0.24</u> NTU			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>9.77</u> °C		FERROUS Fe <u>0.5</u> mg/L	
VOLUME REMOVED: <u>1.8</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>Clear</u>		ODOR: <u>No</u>	
COLOR: <u>Clear</u> ODOR: <u>No</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		TURBIDITY: <input checked="" type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE ODOR: _____	
		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS:	

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)
1249	200	7.85	672.34	-147.2	1.84	0.47	15/2	8.11	INITIAL
1252	↓	7.97	662.42	-172.2	1.72	0.98	9.87	↓	0.6
1255	↓	7.94	673.59	-176.9	1.65	0.44	9.77	↓	1.2
1258	↓	7.95	680.34	-180.2	1.62	0.24	9.77	↓	1.8

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Covered</u>	DATE SHIPPED: <u>3/6/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3/6/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AWJK, JJ, ER</u> DATE: <u>3/16/24</u>	BY: <u>ER</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>MW-DEK-15004</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0810</u>	DATE: <u>3/16/24</u>	SAMPLE	TIME:	DATE: <u>3/16/24</u>
PURGE <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP METHOD: <input type="checkbox"/> BAILER			PH: _____ SU CONDUCTIVITY: _____ umhos/cm ORP: _____ mV DO: _____ mg/L		
DEPTH TO WATER: <u>290'</u> T/ PVC			TURBIDITY: _____ NTU		
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>			<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: _____ °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: _____ ODOR: _____		
COLOR: <u>NA</u> ODOR: <u>NA</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

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)
									INITIAL
Depth to water exceeds capabilities of peristaltic pump, will need to return with bladder pump									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:  
 pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>f</u>	DATE SHIPPED: _____	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. Wilson</u>	DATE SIGNED: <u>3/20/24</u>





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn <sup>NAPI</sup> 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: AW JJ, JK, ER DATE: 3/16/24	BY: ER DATE: 3/20/24

SAMPLE ID: DEK-MW-22002	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0845	DATE: 3/16/24	SAMPLE	TIME: 0925	DATE: 3/16/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.43	SU	CONDUCTIVITY: 1019	umhos/cm	
	ORP: -125.7	mV	DO: 0.28	mg/L	
DEPTH TO WATER: 11.90	T/ PVC		TURBIDITY: 19.69	NTU	
DEPTH TO BOTTOM: NA	T/ PVC Transducer		<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 10.0	°C	FERROUS Fe: 3.75	mg/L
VOLUME REMOVED: 8.0	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: None		
COLOR: Orange	ODOR: None	FILTRATE (0.45 um): <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: Clear	FILTRATE ODOR: None			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: Purged until visually clear - 5 min				

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)
0850	200	6.20	1015	141.1	4.99	396.74	9.8	12.30	-INITIAL 1.0
855		7.15	1014	-80.7	1.80	223.06	10.3	12.40	2.0
900		7.30	1040	-109.7	0.50	87.50	10.1		3.0
905		7.34	1030	-120.1	0.32	40.79	10.1		4.0
910		7.38	1010	-123.2	0.35	31.33	9.8		5.0
915		7.38	1014	-122.7	0.34	20.57	9.8		6.0
920		7.41	1012	-123.0	0.34	21.23	9.8		7.0
0925		7.43	1019	-125.7	0.28	19.69	10.0		8.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	B	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: -
COC NUMBER: -	SIGNATURE: A. W. [Signature]	DATE SIGNED: 3/20/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn <sup>BAP/LI</sup> 2024 GW Comp		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0000.0000		BY: AW JJ, JK, ER	DATE: 3/6/24	BY: ER	DATE: 3/21/24
SAMPLE ID: DEK-MW-22004		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1000	DATE: 3/6/24	SAMPLE	TIME: 1030	DATE: 3/6/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.79 SU		CONDUCTIVITY: 553 umhos/cm	
		ORP: -120.2 mV		DO: 0.16 mg/L	
DEPTH TO WATER: 10.84 T/ PVC		TURBIDITY: 7.48 NTU			
DEPTH TO BOTTOM: NM T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 9.5 °C		FERROUS Fe 0.25 mg/L	
VOLUME REMOVED: 60 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: 1000		ODOR: NONE	
COLOR: light orange		ODOR: NONE		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP-		DEK-BAP-02	
COMMENTS:					

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)
1000	200	7.76	608	-17.2	2.86	56.90	9.1	10.84	INITIAL
1005		7.74	583	-64.2	0.56	47.95	9.3	10.42	1.0
1010		7.75	567	-81.7	0.45	36.40	9.0		2.0
1015		7.76	563	-98.7	0.34	19.60	9.4		3.0
1020		7.77	557	-111.6	0.24	9.43	9.3		4.0
1025		7.77	563	-116.0	0.19	8.62	9.5		5.0
1030		7.79	553	-120.2	0.16	7.48	9.5		6.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	6	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
4	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/6/24	AIRBILL NUMBER: -
COC NUMBER: -	SIGNATURE: A. Why	DATE SIGNED: 3/20/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: <u>AW, JJ, JK, ER</u> DATE: <u>3/6/24</u>	BY: <u>ER</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>DEK-MW-22006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1113</u>	DATE: <u>3/6/24</u>	SAMPLE	TIME: <u>1138</u>	DATE: <u>3/6/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.48</u> SU	CONDUCTIVITY: <u>1126</u> umhos/cm	ORP: <u>-121.6</u> mV	DO: <u>0.20</u> mg/L	
DEPTH TO WATER: <u>8.97</u> T/ PVC	TURBIDITY: <u>58.71</u> NTU				
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>6.7</u> °C	FERROUS Fe: <u>6.0</u> mg/L			
VOLUME REMOVED: <u>5.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear orange</u>	ODOR: <u>None</u>			
COLOR: <u>Clear-gray</u> ODOR: <u>None</u>	FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: <u>None</u>	FILTRATE ODOR: <u>None</u>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

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)
1113	200	7.51	1247	-100.0	2.90	52.20	7.1	8.97	INITIAL
1118	↓	7.49	1190	-111.7	2.20	12.97	6.9	9.20	1.0
1123		7.45	1124	-117.5	0.35	80.71	6.7	9.32	2.0
1128		7.46	1122	-115.0	0.32	60.45	6.6	9.32	3.0
1133		7.47	1122	-118.3	0.30	62.29	6.6	9.32	4.0
1138		7.48	1126	-121.6	0.20	58.71	6.7	9.32	5.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125	Plastic	B	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/6/24</u>	AIRBILL NUMBER: <u>-</u>
COC NUMBER: <u>-</u>	SIGNATURE: <u>A. Whelan</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW</u> JK, JJ, ER DATE: <u>3/6/24</u>	BY: <u>ER</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>DEK-MW-22003</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1215</u>	DATE: <u>3/6/24</u>	SAMPLE	TIME: <u>1235</u>	DATE: <u>3/6/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.41</u> SU	CONDUCTIVITY: <u>1525</u> umhos/cm	
			ORP: <u>-128.1</u> mV	DO: <u>0.33</u> mg/L	
DEPTH TO WATER: <u>11.70</u> TI PVC			TURBIDITY: <u>8.52</u> NTU		
DEPTH TO BOTTOM: <u>NA</u> TI PVC <u>Transducer</u>			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>9.8</u> °C FERROUS Fe <u>5.0</u> mg/L		
VOLUME REMOVED: <u>4.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u> ODOR: <u>None</u>		
COLOR: <u>Clear</u> ODOR: <u>None</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

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)
1215	200	7.30	1382	-80.6	3.80	16.00	8.9	11.75	INITIAL
1220	↓	7.37	1542	-112.4	1.06	8.91	9.5	↓	1.0
1225	↓	7.39	1562	-124.8	0.44	9.15	9.4	↓	2.0
1230	↓	7.40	1546	-126.5	0.40	9.60	9.8	↓	3.0
1235	↓	7.41	1525	-128.1	0.33	8.52	9.8	↓	4.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/6/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>A. W. [Signature]</u>	DATE SIGNED: <u>3/20/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ, ER DATE: 3/11/24	BY: AW DATE: 3/21/24

SAMPLE ID: DEK-mu1500	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1430	DATE: 3/11/24	SAMPLE	TIME: 1450	DATE: 3/11/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.60 SU	CONDUCTIVITY: 899 umhos/cm	ORP: -106.6 mV	DO: 0.99 mg/L	
DEPTH TO WATER: 29.0 T/ PVC	TURBIDITY: 9.7 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: 41.78 T/ PVC	TEMPERATURE: 13.5 °C	FERROUS Fe: 5.5 mg/L	COLOR: 160	ODOR: none	
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
VOLUME REMOVED: 4 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: Blackish	ODOR: slight	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			
COMMENTS: IRON = 5.5					

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)
1430	29	8.03	918	-89.5	9.75	120	13.4	2915	INITIAL
1435		7.65	901	-109.5	1.7	10.5	13.4	2915	1
1440		7.60	897	-106.0	1.0	9.5	13.5	2915	2
1445		7.60	894	-106.3	1.0	9.4	13.5	2915	3
1450		7.60	894	-106.5	0.99	9.7	13.5	2915	4

**NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:**

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/11/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: <del>553814.0000.0000</del> 553828	BY: AW, JJ, JK, ER DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: MW-15008	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 843	DATE: 11	SAMPLE	TIME: 919	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.7	SU	CONDUCTIVITY: 1505.7	umhos/cm	
	ORP: -115.1	mV	DO: 1.51	mg/L	
DEPTH TO WATER: 4.25	T/ PVC		TURBIDITY: 0.0	NTU	
DEPTH TO BOTTOM: 17.42	T/ PVC		<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 6.48	°C	FERROUS Fe: 7.0	mg/L	
VOLUME REMOVED: 7.2 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: yellowish		ODOR: No		
COLOR: yellowish	ODOR: No		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR:		FILTRATE ODOR:		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- Background	COMMENTS:			

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)
843	200	6.61	1931.1	-80.4	1.72	1.18	8.84	4.25	INITIAL
846	↓	6.64	1791.0	-97.9	1.57	0.0	8.93	—	0.6
849		6.67	1670.6	-104.6	1.54	8.92	8.67	—	1.2
852		6.7	1547.5	-110.4	1.53	2.14	8.56	—	1.8
855		6.71	1495.3	-112.9	1.53	88.41	8.43	—	2.4
858		6.71	1484.3	-113.4	1.57	0.0	8.48	—	3.0
901		6.71	1496.9	-112.7	1.60	22.44	8.49	—	3.6
904		6.71	1488.9	-113.4	1.57	0.0	8.48	—	4.2
907		6.7	1485.7	-113.3	1.57	3.29	8.46	—	4.8
910		6.7	1492.3	-113.6	1.58	16.23	8.52	—	5.4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
42	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
42	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
42	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Coastal	DATE SHIPPED: 3/5/24	AIRBILL NUMBER:
COC NUMBER: —	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



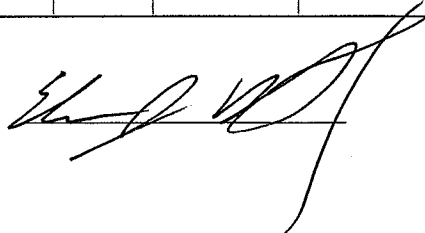
**WATER SAMPLE LOG**

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn LF: 2024 GW Compli	PREPARED		CHECKED	
PROJECT NUMBER: <del>553844.0000.0000</del> 553844	BY: W, JJ, JK	DATE: 3/5/24	BY: AW	DATE: 3/21/24

SAMPLE ID: MW - 18008

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)
913	200	6.7	1463.2	-113.0	1.59	0.0	8.52	4.25	6.0
916	↓	6.7	1494.9	-113.1	1.52	0.0	8.49	↓	6.6
919	↓	6.7	1505.7	-115.1	1.51	0.0	8.48	↓	7.2

SIGNATURE:  DATE SIGNED: 3/5/24

REVISED 04/2019



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: <del>553814.0000.0000</del> 553228	BY: AW, JJ, JK, ER DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: MW - 15049	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 951	DATE: u	SAMPLE	TIME: 1000	DATE: u
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.72 SU	CONDUCTIVITY: 1765.1 umhos/cm	ORP: -87.9 mV	DO: 1.63 mg/L	
DEPTH TO WATER: 5.33 T/ PVC	TURBIDITY: 0.0 NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: 16.85 T/ PVC	TEMPERATURE: 7.27 °C	FERROUS Fe: 6.0 mg/L	COLOR: yellowish	ODOR: slight	
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	VOLUME REMOVED: 1.8 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		
COLOR: yellowish	ODOR: slight	FILTRATE COLOR:	FILTRATE ODOR:	COMMENTS:	
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			

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)
951	200	6.75	1763.1	-75.1	2.38	0.0	7.51	5.37	INITIAL
954	↓	6.72	1765.3	-82.2	1.76	3.65	7.46	5.43	0.6
957	↓	6.72	1765.4	-86.5	1.65	0.0	7.35	—	1.2
1000	↓	6.72	1765.1	-87.9	1.63	0.0	7.27	—	1.8
									<del>2.4</del>
									<del>3.0</del>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Cosair</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: <u>3/5/24</u>





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: <del>553814.0000.0000</del> 553828	BY: AW, JJ, JK, EP DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: MW - 15002	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1025	DATE: 11	SAMPLE	TIME: 1052	DATE: "
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.71	SU	CONDUCTIVITY: 4227.6	umhos/cm	
	ORP: -69.2	mV	DO: 1.76	mg/L	
DEPTH TO WATER: 661	T/ PVC		TURBIDITY: 0.0	NTU	
DEPTH TO BOTTOM: 16.88	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 8.25	°C	FERROUS Fe: 6.0	mg/L
VOLUME REMOVED: 5.2	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Orange	ODOR: slight		
COLOR: Orange	ODOR: slight	FILTRATE (0.45 um): <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

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)
1025	200	7.46	576.4	-85.9	2.52	7.64	8.18	6.61	INITIAL
1028	↓	6.72	3062.1	-61.4	1.73	511.66	8.22	6.81	0.6
1031		6.76	3747.5	-63.2	1.65	273.06	8.14	6.85	1.2
1034		6.74	4010.2	-64.5	1.61	177.1	8.07	6.86	1.8
1037		6.73	4231.1	-65.9	1.61	0.0	8.2	—	2.4
1040		6.72	4367.6	-67.6	1.6	0.0	8.22	—	3.0
1043		6.72	4461.0	-68.5	1.63	13.61	8.14	—	3.6
1046		6.71	4591.4	-69.2	1.65	0.0	8.26	—	4.2
1049		6.71	4648.9	-69.3	1.72	0.23	8.2	6.86	4.8
1052		6.71	4227.6	-69.2	1.76	0.0	8.25	"	5.2

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Carrier</u>	DATE SHIPPED: <u>3/5/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3/5/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: AW, JJ, JK, ED DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: MW-15016	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1116	DATE: 3/5/24	SAMPLE	TIME: 1140	DATE: "
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.98	SU	CONDUCTIVITY: 1317.8	umhos/cm	
	ORP: -102.4	mV	DO: 1.53	mg/L	
DEPTH TO WATER: 3.12 T/ PVC	TURBIDITY: 0.0	NTU			
DEPTH TO BOTTOM: 7.76 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 5.84	°C	FERROUS Fe: 3.0	mg/L	
VOLUME REMOVED: 4.8 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clearish	ODOR: No			
COLOR: Clearish	ODOR: No	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR:	FILTRATE ODOR:			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

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)
1116	200	6.99	936.92	-70.3	2.99	215.9	7.12	3.12	INITIAL
1119	"	7.03	1076.3	-86.2	1.75	98.16	6.07	—	0.6
1122	↓	7.0	1209.0	-91.4	1.61	45.75	5.95	—	1.2
1125	↓	6.99	1246.2	-94.5	1.58	21.33	5.91	—	1.8
1128	↓	6.99	1264.8	-96.6	1.56	8.3	5.88	↓	2.4
1131	↓	6.99	1266.7	-98.3	1.59	5.35	5.83	↓	3.0
1134	↓	6.98	1307.7	-100.3	1.54	0.09	5.79	↓	3.6
1137	↓	6.98	1312.9	-101.3	1.53	0.0	5.84	↓	4.2
1140	↓	6.98	1317.8	-102.4	1.53	0.0	5.84	↓	4.8

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Caslow	DATE SHIPPED: 3/5/24	AIRBILL NUMBER:
COC NUMBER: —	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



# WELL INSPECTION REPORT

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance

PROJECT NO.: 553814.0001.0000

SAMPLER NAME: J. Jasso, J. Krenz, A. Whaley, E. Rinehart

DATE: 3/5/24, 3/6/24

WELL ID	PROTECTIVE CASING	SURFACE SEAL	DEGREE OF IMMOBILITY OF PROTECTIVE CASING	PERMANENT LEGIBLE LABELS	LOCK	WELL CAP	EASE OF INSERTING / REMOVING BAILER + tubing	SEDIMENT IN WELL	COMMENT
OW-10	✓	✓	Immobile	✓	✓	NO	Good	Med. dark grey	Sediment in well screen
DEK-MW-15003	✓	✓	" ✓	✓	✓	NO	Good	NA	Transducer in well; no well cap
OW-11	✓	✓	"	✓	✓	NO	Good	Med. dark grey	Transducer in well, when stirred, very turbid, orange oxidized ve
OW-12	✓	✓	"	✓	✓	✓	Good	NA	Slug made difficult
DEK-MW-15004	✓	✓	"	✓	✓	NO	Good	NA	GW lower than peristaltic capabili
DEK-MW-22002	✓	✓	"	✓	NO	NO	Good	Low	Heavy oxidized porewater at Sta
DEK-MW-22003	✓	✓	"	✓	NO	NO	Good	Low	Heavily oxidized porewater at sample
DEK-MW-22004	✓	✓	"	✓	NO	NO	Good	Low	
DEK-MW-22006	✓	✓	"	✓	NO	NO	Good	Low	

*Austin Whaley*  
 SIGNED \_\_\_\_\_ DATE 3/20/24

*[Signature]*  
 CHECKED BY \_\_\_\_\_ DATE 3/21/24

Pg # 41 of 48

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: <b>Q1-2024 DEK Bottom Ash Pond &amp; Lined Impound</b>		PROJECT NUMBER: <b>24-0128</b>		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)								QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____						
SAMPLING TEAM: <b>E. Rivchart</b>		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: _____ phone: _____																
SEND REPORT TO: Joseph Firlit	COPY TO: Harold Register	MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste		CONTAINERS PRESERVATIVE								REMARKS								
LAB SAMPLE ID	TRC												TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
	SAMPLE COLLECTION	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION															
24-0128-01		3/4/24	1605	GW	DEK-MW-18001	10	4	1	1	1	3									
↓ -02		↓	↓	GW	DEK-MW-18001 MS	7	3	1	1	1	1									
↓ -03		↓	↓	GW	DEK-MW-18001 MSD	7	3	1	1	1	1									

RELINQUISHED BY:		DATE/TIME: <b>3/4/24 1600</b>		RECEIVED BY: <b>Fed Ex</b>		COMMENTS:  Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>015702</u> Temperature: <u>1.2 - 4.9</u> °C      Cal. Due Date: <u>05-23-24</u>			
RELINQUISHED BY: <b>Fed Ex</b>		DATE/TIME: <b>03/05/24 1005</b>		RECEIVED BY:					

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0129</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)							QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																		
SAMPLING TEAM: <i>A. Whaley</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			email: _____ phone: _____																												
SEND REPORT TO: Joseph Firlit		COPY TO: Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			CONTAINERS PRESERVATIVE			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th>Total Metals</th> <th>Anions</th> <th>Ammonia, Phosphate</th> <th>TDS</th> <th>Alkalinity</th> <th>Sulfide</th> <th>TOC</th> <th>Methane</th> <th>Dissolved Metals</th> </tr> </table>							TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals	REMARKS
TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>														NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals					
LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION																														
24-0129-01	3/5/24	1031	GW	DEK-MW-15003	10	4	1	1	1	3			x	x	x	x	x	x																
-02	3/5/24	0910	GW	OW-10	10	4	1	1	1	3			x	x	x	x	x	x	X Dissolved metals were field filtered															
-03	3/5/24	1200	GW	OW-11	10	4	1	1	1	3			x	x	x	x	x	x																
-04	3/5/24	1450	GW	OW-12	10	4	1	1	1	3			x	x	x	x	x	x																
<del>-05</del>	<del>_____</del>	<del>_____</del>	<del>SW</del>	<del>SW-DITCH</del>	<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>2</del>	<del>_____</del>	<del>_____</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>_____</del> Dry															
-06	3/5/24	—	GW	DUP-KLI	10	4	1	1	1	3			x	x	x	x	x	x																
-07	3/5/24	1500	W	EB-KLI	7	1	1	1	1	3			x	x	x		x	x																
-08	3/5/24	1450	W	FB-KLI	7	1	1	1	1	3			x	x	x		x	x																
-09	3/5/24	1320	W	KLI-SCS	5	4	1						x	x																				
-10	3/5/24	1330	SW	KLI-PCS	5	4	1						x	x																				

RELINQUISHED BY: <i>[Signature]</i>	DATE/TIME: 3/5/24 1600	RECEIVED BY: <i>[Signature]</i> EB050624 Fed Ex	COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temperature: <u>0.6-2.6</u> °C M&TE #: <u>018402</u> Cal. Due Date: <u>05-23-24</u>
RELINQUISHED BY: Fed Ex	DATE/TIME: 03/06/24 10:15	RECEIVED BY: <i>[Signature]</i>	

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page 6 of 1

SAMPLING SITE / CUSTOMER: Q1-2024 JCW-DEK Background Wells				PROJECT NUMBER: <b>24-0131</b>				SAP CC or WO#: REQUESTER: Harold Register				ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
SAMPLING TEAM: <b>TRC</b>				TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																			
SEND REPORT TO: Joseph Firlit				email:				phone:															
COPY TO:		Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid    A = Air S = Soil / General Solid    WP = Wipe O = Oil                      WT = General Waste				CONTAINERS															
TRC								TOTAL #		PRESERVATIVE													
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION						None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS				REMARKS
	DATE	TIME																					
24-0131-01	<b>3/5/24</b>	<b>1052</b>	GW	MW-15002				3	2	1					x	x	x						
-02	<b>3/5/24</b>	<b>919</b>	GW	MW-15008				3	2	1					x	x	x						
-03	<b>3/5/24</b>	<b>1140</b>	GW	MW-15016				3	2	1					x	x	x						
-04	<b>3/5/24</b>	<b>1000</b>	GW	MW-15019				3	2	1					x	x	x						
-05	<b>3/5/24</b>	—	GW	DUP-Background				3	2	1					x	x	x						
-06	<b>3/5/24</b>	—	W	FB- Background				1							x								

RELINQUISHED BY: <i>[Signature]</i>	DATE/TIME: <b>3/6/24 11:00</b>	RECEIVED BY: <b>Fedex</b>
RELINQUISHED BY: <b>Fed EX</b>	DATE/TIME: <b>03/07/24 09:45</b>	RECEIVED BY: <i>[Signature]</i>

COMMENTS:

Received on Ice?  Yes  No      M&TE #: 015402

Temperature: 0.4-1.4 °C      Cal. Due Date: 05-23-24

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Pond Wells			PROJECT NUMBER: <b>24-0127</b>		SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)							QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____															
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____					<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia, Phosphate</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th rowspan="2">TOC</th> <th rowspan="2">Methane</th> </tr> <tr> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>							Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	REMARKS
Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane																							
															None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other									
SEND REPORT TO: Joseph Firlit		email:		phone:																										
COPY TO: Harold Register TRC		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			CONTAINERS			PRESERVATIVE																						
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #																							
	DATE	TIME																												
24-0127-01	3/5/24	1439	GW	DEK-MW-15002			10	4	1	1	1	3			x	x	x	x	x	x	x									
<del>02</del>			GW	<del>DEK-MW-15005</del>			<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>									
-03	3/5/24	1521	GW	DEK-MW-15006			10	4	1	1	1	3			x	x	x	x	x	x	x									
<del>04</del>			GW	<del>DUJ-DEK-BAP-01</del>			<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>									
<del>05</del>			W	<del>EB-DEK-BAP</del>			<del>7</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>		<del>x</del>	<del>x</del>	<del>x</del>									
<del>06</del>			W	<del>EB-DEK-BAP</del>			<del>7</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>		<del>x</del>	<del>x</del>	<del>x</del>									

RELINQUISHED BY:		DATE/TIME: 3/5/24		RECEIVED BY:		COMMENTS:	
RELINQUISHED BY: Fed Ex		DATE/TIME: 03/06/24		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>01502</u> Temperature: <u>0.6-2.6</u> °C      Cal. Due Date: <u>05-23-24</u>	

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page \_\_\_\_ of \_\_\_\_

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Pond Wells			PROJECT NUMBER: <b>24-0127</b>		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)										QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																			
SEND REPORT TO: Joseph Firlit		email:		phone:																		
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste		CONTAINERS																		
TRC				TOTAL #	PRESERVATIVE																	
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX		FIELD SAMPLE ID / LOCATION		None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	REMARKS
	DATE	TIME		Total Metals																		
24-0127-01			GW	DEK-MW-15002		10	4	1	1	1	3		x	x	x	x	x	x	x	x		
-02	3/6/24	856	GW	DEK-MW-15005		10	4	1	1	1	3		x	x	x	x	x	x	x	x		
-03			GW	DEK-MW-15006		10	4	1	1	1	3		x	x	x	x	x	x	x	x		
-04	3/6/24	—	GW	DUP-DEK-BAP-01		10	4	1	1	1	3		x	x	x	x	x	x	x	x		
-05	3/6/24	—	W	FB-DEK-BAP		7	1	1	1	1	3		x	x	x			x	x	x		
-06	3/6/24	—	W	EB-DEK-BAP		7	1	1	1	1	3		x	x	x			x	x	x		

RELINQUISHED BY:		DATE/TIME: 3/6/24/1600		RECEIVED BY: Fed Ex		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: 015402 Temperature: 0.2-2.4 °C      Cal. Due Date: 05-25-24			
RELINQUISHED BY: Fed Ex		DATE/TIME: 03/07/24 09:45		RECEIVED BY:					



# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Supplemental			PROJECT NUMBER: <b>24-0130</b>		SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)								QA REQUIREMENT:										
SAMPLING TEAM: <i>A. Whaley</i> <i>E. Rinehart</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																		<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SEND REPORT TO: Joseph Firlit		email:		phone:																						
COPY TO: Harold Register		MATRIX CODES:			CONTAINERS																					
TRC		GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			PRESERVATIVE																					
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION				TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	Dissolved Metals *	REMARKS
24-0130-01				GW	DEK-MW-15004				10	4	1	1	1	3			x	x	x	x	x	x	x	x		*Dissolved Metals samples were field filtered
-02		3/6/24 1124		GW	DEK-MW-22001				10	4	1	1	1	3			x	x	x	x	x	x	x			
-03		3/6/24 0925		GW	DEK-MW-22002				10	4	2	1	1	3			x	x	x	x	x	x	x	x	X	
-04		3/6/24 1235		GW	DEK-MW-22003				10	4	1	1	1	3			x	x	x	x	x	x	x	x		
-05		3/6/24 1030		GW	DEK-MW-22004				10	4	1	1	1	3			x	x	x	x	x	x	x	x		
-06		3/6/24 1258		GW	DEK-MW-22005				10	4	1	1	1	3			x	x	x	x	x	x	x	x		
-07		3/6/24 1138		GW	DEK-MW-22006				10	4	2	1	1	3			x	x	x	x	x	x	x	x	X	
-08		3/6/24 -		GW	DUP-DEK-BAP-02				10	4	1	1	1	3			x	x	x	x	x	x	x	x		

RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: 3/6/24/1600		RECEIVED BY: Fed Ex		COMMENTS:					
RELINQUISHED BY: Fed Ex		DATE/TIME: 03/07/24 09:45		RECEIVED BY: <i>[Signature]</i>		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>0152402</u> Temperature: <u>0.4-0.9</u> °C      Cal. Due Date: <u>05-23-24</u>					

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q1-2024 DEK Bottom Ash Supplemental			PROJECT NUMBER: <b>24-0130</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)							QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																		
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			SEND REPORT TO: Joseph Firlit email: _____ phone: _____																												
COPY TO:		Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater        SL = Sludge W = Water / Aqueous Liquid    A = Air S = Soil / General Solid      WP = Wipe O = Oil                              WT = General Waste				CONTAINERS					<table style="width: 100%; text-align: center; font-size: small;"> <tr> <td rowspan="2">Total Metals</td> <td rowspan="2">Anions</td> <td rowspan="2">Ammonia, Phosphate</td> <td rowspan="2">TDS</td> <td rowspan="2">Alkalinity</td> <td rowspan="2">Sulfide</td> <td rowspan="2">TOC</td> <td rowspan="2">Methane</td> </tr> <tr> <td>None</td> <td>HNO<sub>3</sub></td> <td>H<sub>2</sub>SO<sub>4</sub></td> <td>NaOH</td> <td>HCl</td> <td>MeOH</td> <td>Other</td> </tr> </table>							Total Metals	Anions	Ammonia, Phosphate	TDS	Alkalinity	Sulfide	TOC	Methane	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
Total Metals	Anions	Ammonia, Phosphate	TDS					Alkalinity	Sulfide	TOC	Methane																							
				None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH					HCl	MeOH	Other																				
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION				PRESERVATIVE					REMARKS																					
		DATE	TIME					MATRIX	TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>								NaOH	HCl	MeOH	Other											
24-0130-01		3/11/24	1452	GW	DEK-MW-15004				10	4	1	1	1	3			x	x	x	x	x	x	x											
<del>24-0130-02</del>				GW	<del>DEK-MW-22001</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-03</del>				GW	<del>DEK-MW-22002</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-04</del>				GW	<del>DEK-MW-22003</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-05</del>				GW	<del>DEK-MW-22004</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-06</del>				GW	<del>DEK-MW-22005</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-07</del>				GW	<del>DEK-MW-22006</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										
<del>24-0130-08</del>				GW	<del>DUP-DEK-BAP-02</del>				<del>10</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>3</del>			<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>										

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	COMMENTS:
	3/11/24 1600	Fed Ex	Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>015402</u> Temperature: <u>3.8-9.2</u> °C      Cal. Due Date: <u>05-25-24</u>
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	
	05/12/24 10:02		

# Appendix C

## Data Quality Reviews

## Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event March 2024 DE Karn Lined Impoundment

Groundwater, water, and surface water samples were collected by TRC for the March 2024 sampling event. Samples were analyzed for total and/or dissolved metals, anions, total dissolved solids, ammonia, phosphate, 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 total organic carbon and methane analyses were subcontracted to Brighton Analytical LLC (BAL) in Brighton, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0129, S59475.01(01), and 95639.

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

- OW-10
- OW-11
- OW-12
- DEK-MW-15003

During the March 2024 sampling event, the following water/surface water samples were collected:

- KLI-PCS
- KLI-SCS

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total and/or Dissolved Metals	SW-846 6020B
Total and/or Dissolved Mercury	SW-846 7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D
Phosphate	SM4500-P B5-E
Methane	RSK SOP-175
Total Organic Carbon (TOC)	SM 5310B

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 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 and dissolved metals, total and dissolved mercury, anions, alkalinity, TDS, ammonia, phosphate, 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 detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

### **QA/QC Sample Summary**

- Methane and TOC were not detected in the method blanks reported by BAL.
- One field blank (FB-KLI) and one equipment blank (EB-KLI) were collected with this data set. Target analytes were not detected above the RL in these blank samples with the following exceptions.
  - TOC was detected in EB-KLI at 1,500 µg/L and total chromium was detected in FB-KLI at 1 µg/L. Potential false positive exists for the positive results for total and/or dissolved chromium in select samples, as summarized in attachment A. There is no impact on data usability for TOC in the field samples due to the blank detection due to the nature of TOC.
- The LCS and/or LCSD recoveries and relative percent differences, as applicable, reported by BAL were within the laboratory's acceptance criteria for methane and TOC.
- Samples DUP-KLI and DEK-MW-15003 were submitted as the field duplicate pair with this data set; all criteria were met.
- Laboratory duplicate analysis was performed on sample DEK-MW-15003 for methane. All criteria were met.
- MS/MSD analyses were not performed on a sample from this data set.

**Attachment A**

Summary of Data Non-Conformances for Groundwater Analytical Data  
DE Karn Lined Impoundment Wells – CCR Monitoring Program  
Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-15003	3/5/2024	Total Chromium	Field blank contamination; potential false positive.
OW-10	3/5/2024		
OW-11	3/5/2024		
OW-12	3/5/2024		
KLI-PCS	3/5/2024		
OW-10	3/5/2024	Dissolved Chromium	

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

A groundwater sample was collected by TRC for the March 2024 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, phosphate, 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 total organic carbon and methane analyses were subcontracted to Brighton Analytical LLC (BAL) in Brighton, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 24-0128, S59419.01(01), and 95638.

During the March 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
Phosphate	SM4500-P B5-E
Methane	RSK SOP-175
Total Organic Carbon (TOC)	SM 5310B

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, phosphate, 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**

- Methane and TOC were not detected in the method blanks reported by BAL.
- 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, phosphate, sulfide, and TOC. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters except TOC and therefore were not evaluated; further, with the exception of sulfide and TOC, 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.
- The LCS and/or LCSD recoveries and RPDs, as applicable, reported by BAL were within the laboratory's acceptance criteria for methane and TOC.
- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample from this data set.

# Appendix D

## Statistical Analysis

**Appendix D**  
 Statistical Summary for DE Karn Lined Impoundment  
 First Quarter 2024  
 Data from May 2022 to March 2024

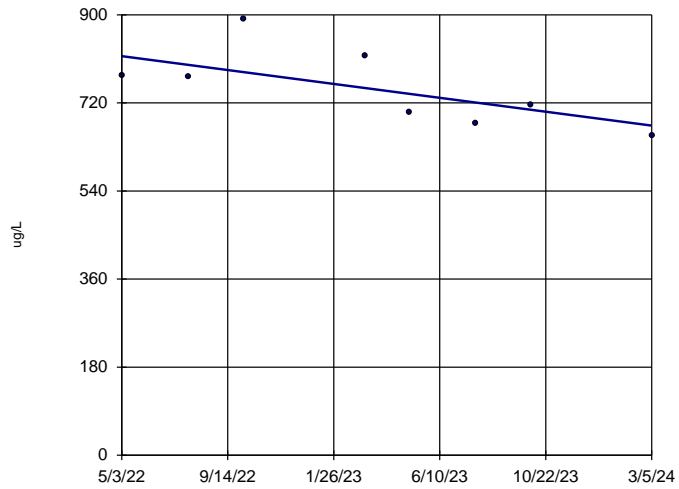
Karn Lined Impoundment Wells						
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	○	○	○	○	○
Calcium	Trend	○	↓	○	○	○
Chloride	Trend	○	○	○	○	↓*
Fluoride	Trend	○*	○*	○*	○	○*
Iron	Trend	○	↓	○	○	○
pH	Trend	○	○	○	○	○
Sulfate	Trend	↑	○	○	○	○
Total Dissolved Solids	Trend	○	○	○	○	○

**Notes:**

- \* = Non-detect
- = No trend
- ↑ = Upward trend, continuous
- ↑\* = Upward trend, new
- ↑ (with red arrow) = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓\* = Downward trend, new

### Boron, Total

DEK-MW-15003

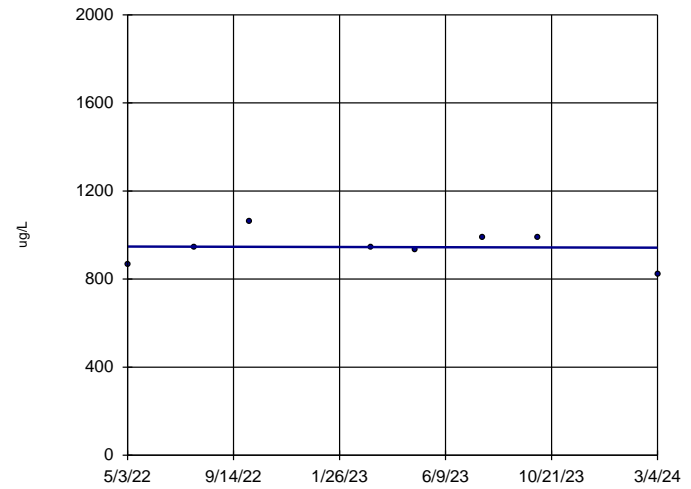


n = 8  
 Slope = -76.98  
 units per year.  
 Mann-Kendall  
 statistic = -16  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Boron, Total

DEK-MW-18001

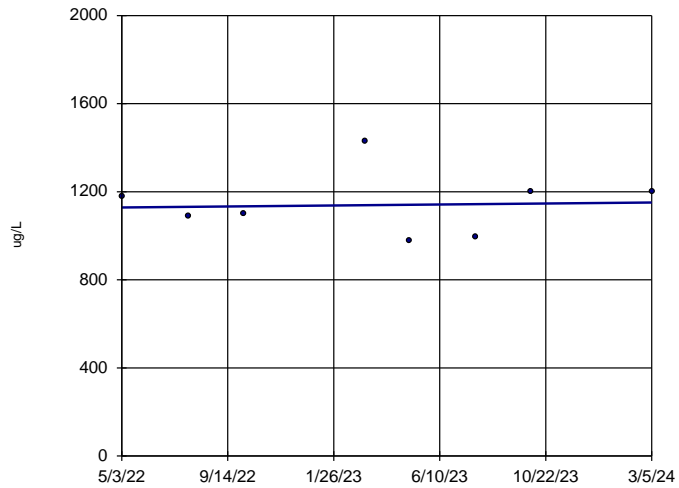


n = 8  
 Slope = -2.607  
 units per year.  
 Mann-Kendall  
 statistic = -1  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Boron, Total

OW-10

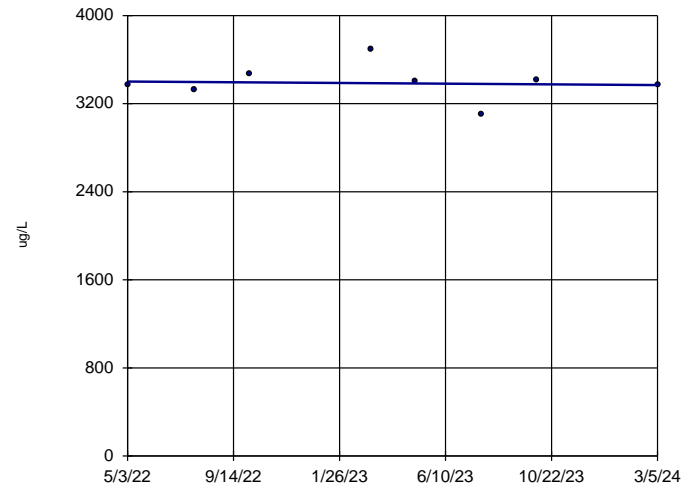


n = 8  
 Slope = 12.46  
 units per year.  
 Mann-Kendall  
 statistic = 3  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Boron, Total

OW-11

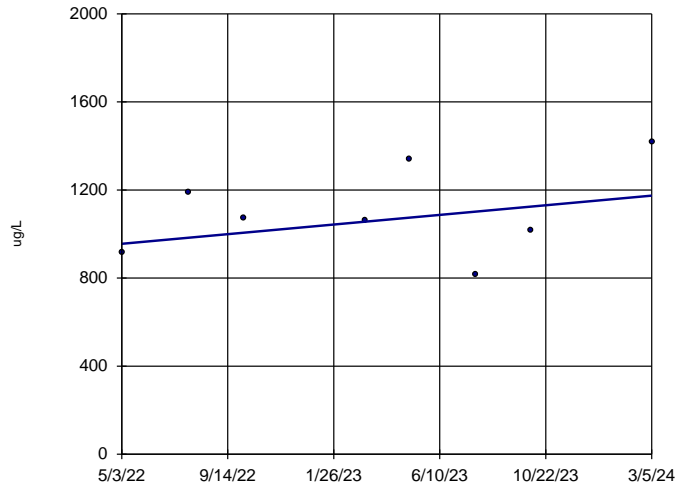


n = 8  
 Slope = -17.78  
 units per year.  
 Mann-Kendall  
 statistic = -1  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Boron, Total

OW-12

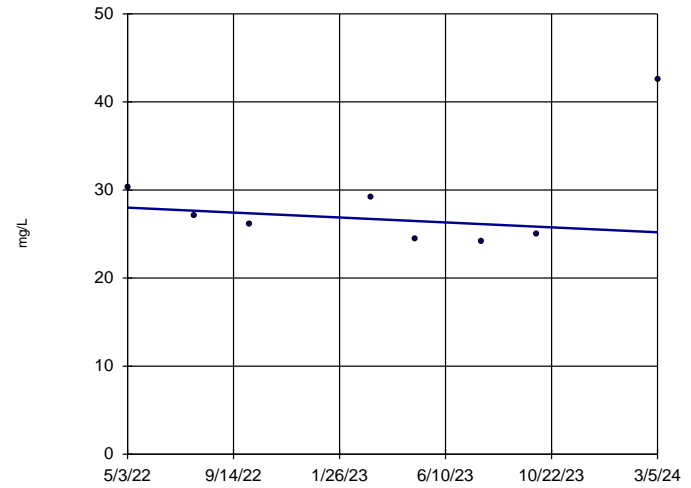


n = 8  
 Slope = 118.8  
 units per year.  
 Mann-Kendall  
 statistic = 4  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Calcium, Total

DEK-MW-15003

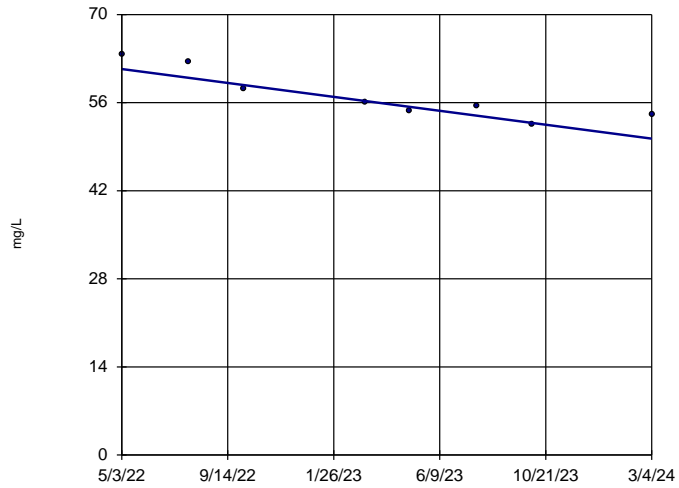


n = 8  
 Slope = -1.525  
 units per year.  
 Mann-Kendall  
 statistic = -6  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Calcium, Total

DEK-MW-18001

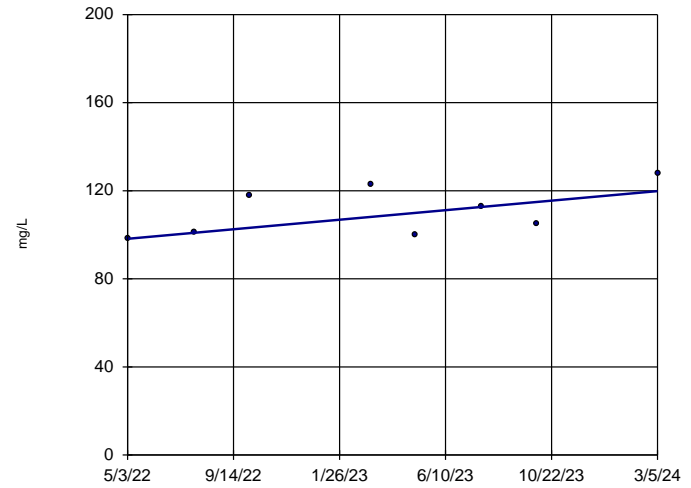


n = 8  
 Slope = -6.014  
 units per year.  
 Mann-Kendall  
 statistic = -24  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Calcium, Total

OW-10

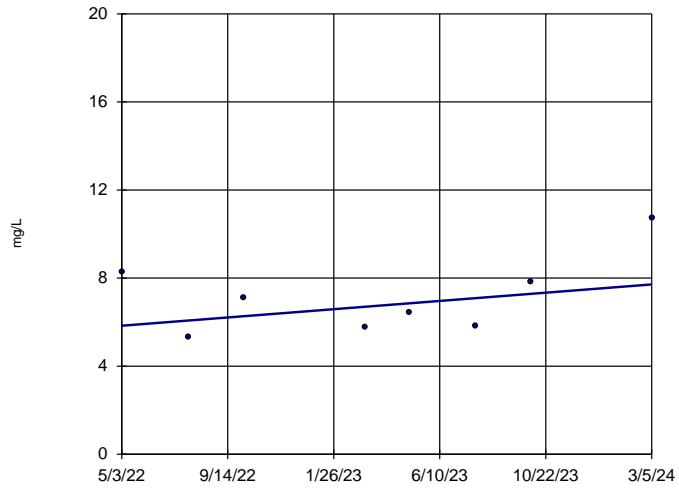


n = 8  
 Slope = 11.75  
 units per year.  
 Mann-Kendall  
 statistic = 12  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Calcium, Total

OW-11

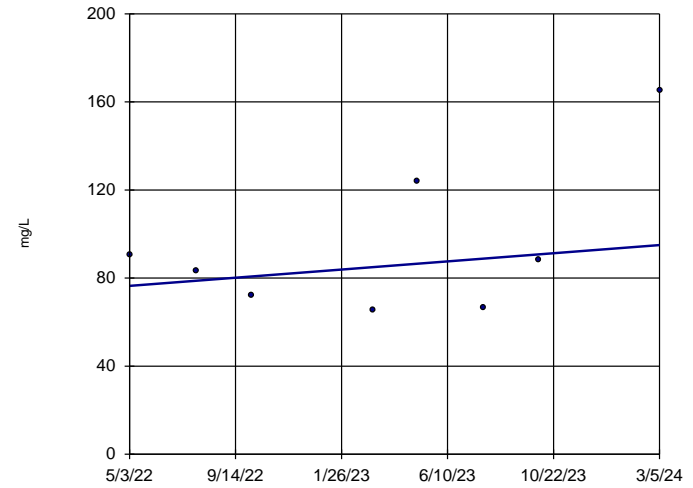


n = 8  
 Slope = 1.02  
 units per year.  
 Mann-Kendall  
 statistic = 8  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Calcium, Total

OW-12

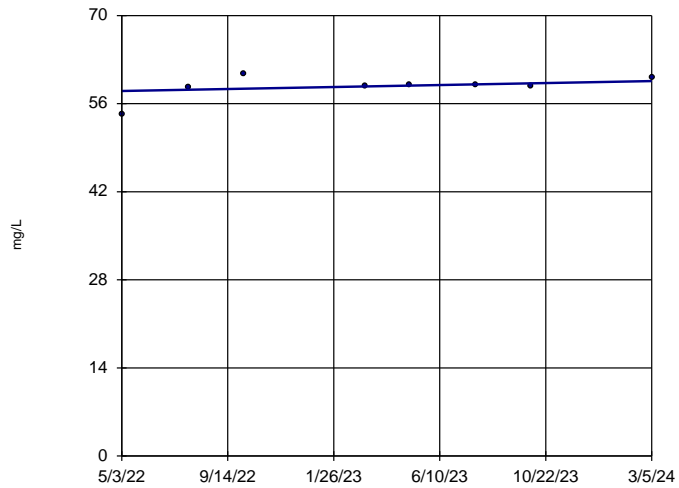


n = 8  
 Slope = 10.08  
 units per year.  
 Mann-Kendall  
 statistic = 4  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Chloride

DEK-MW-15003

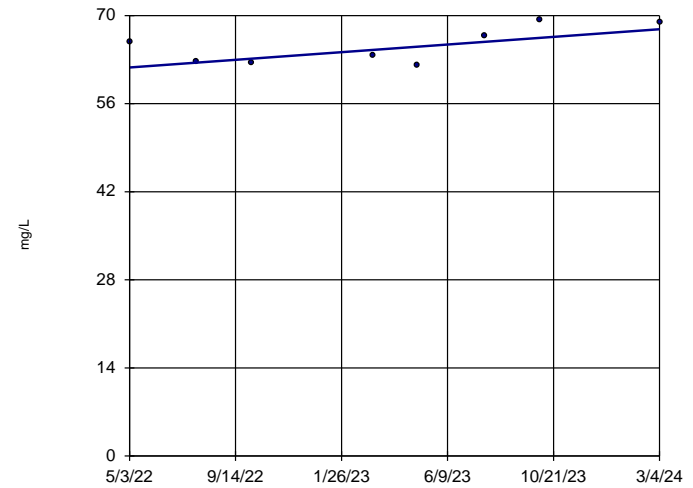


n = 8  
 Slope = 0.8566  
 units per year.  
 Mann-Kendall  
 statistic = 13  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Chloride

DEK-MW-18001

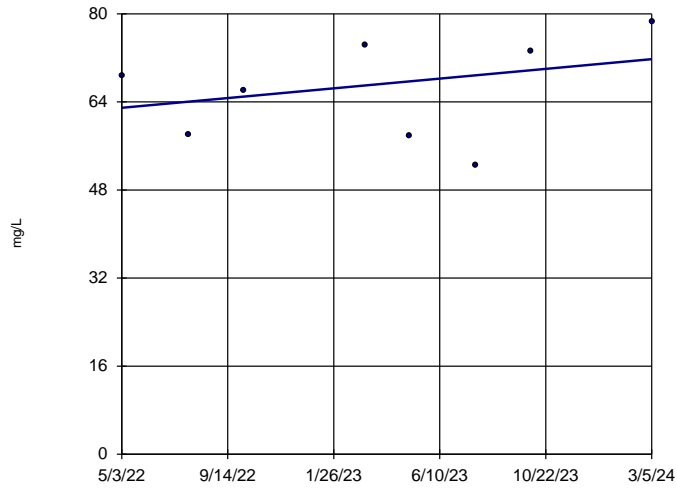


n = 8  
 Slope = 3.313  
 units per year.  
 Mann-Kendall  
 statistic = 10  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Chloride

OW-10

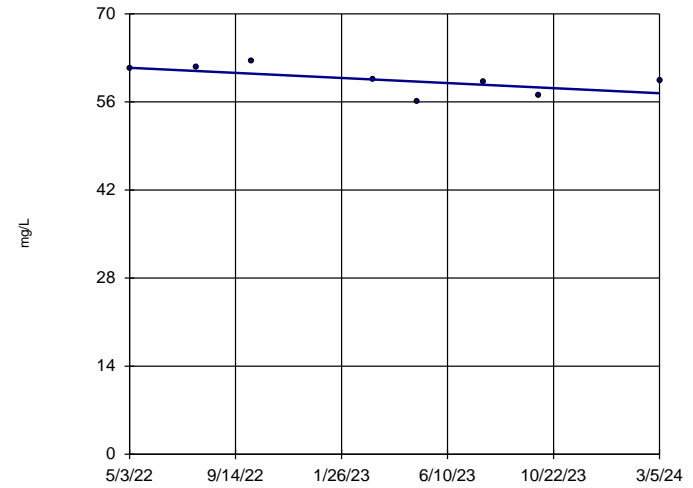


n = 8  
 Slope = 4.8 units per year.  
 Mann-Kendall statistic = 4  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Chloride

OW-11

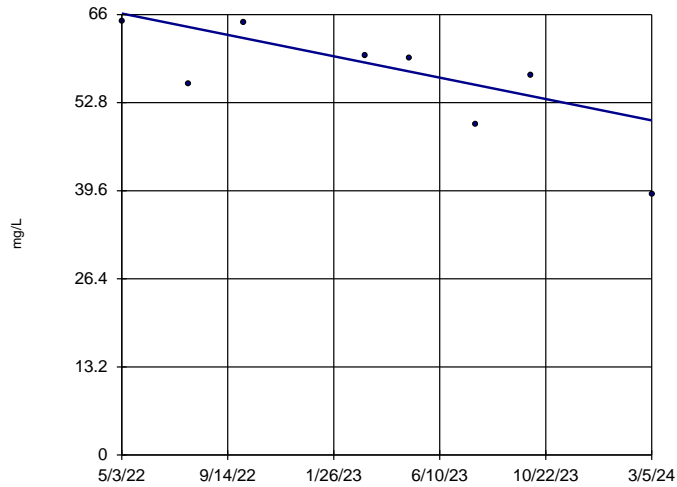


n = 8  
 Slope = -2.191 units per year.  
 Mann-Kendall statistic = -12  
 critical = -17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Chloride

OW-12

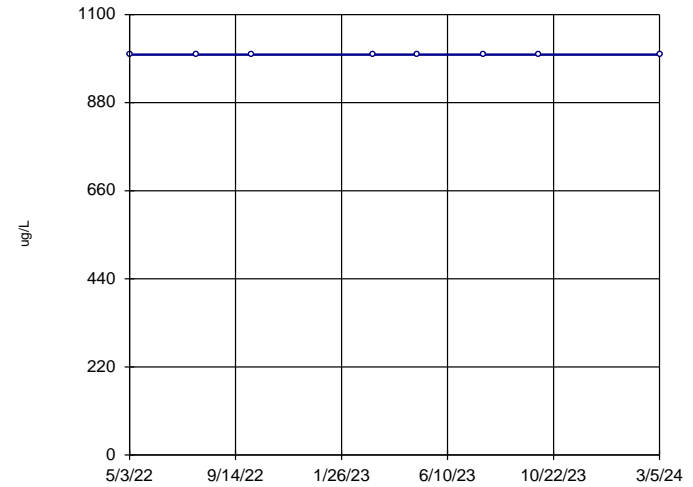


n = 8  
 Slope = -8.711 units per year.  
 Mann-Kendall statistic = -18  
 critical = -17  
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Fluoride

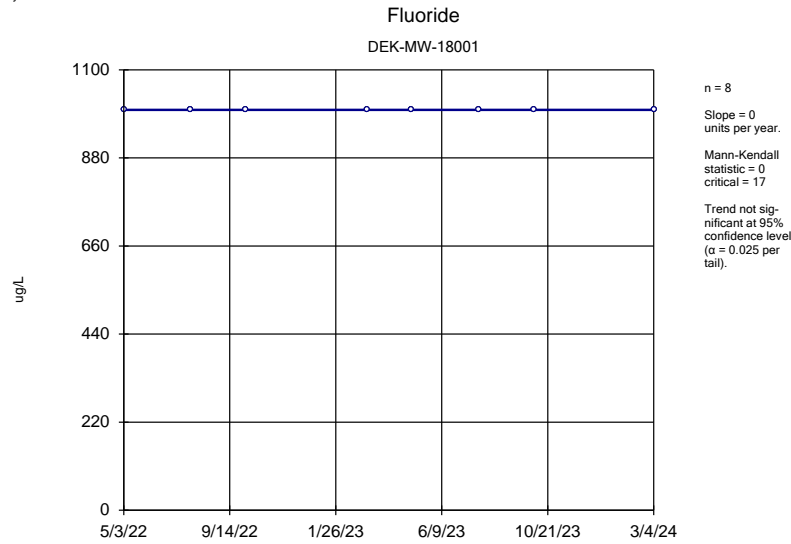
DEK-MW-15003



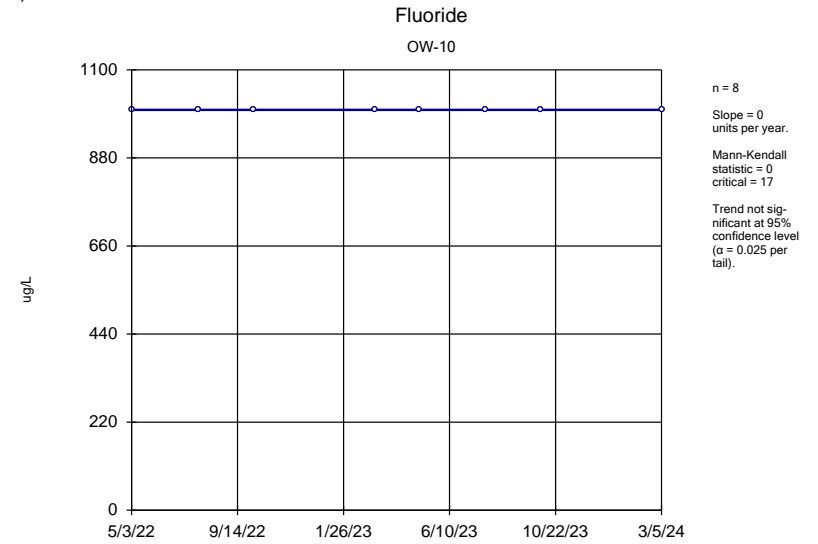
n = 8  
 Slope = 0 units per year.  
 Mann-Kendall statistic = 0  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

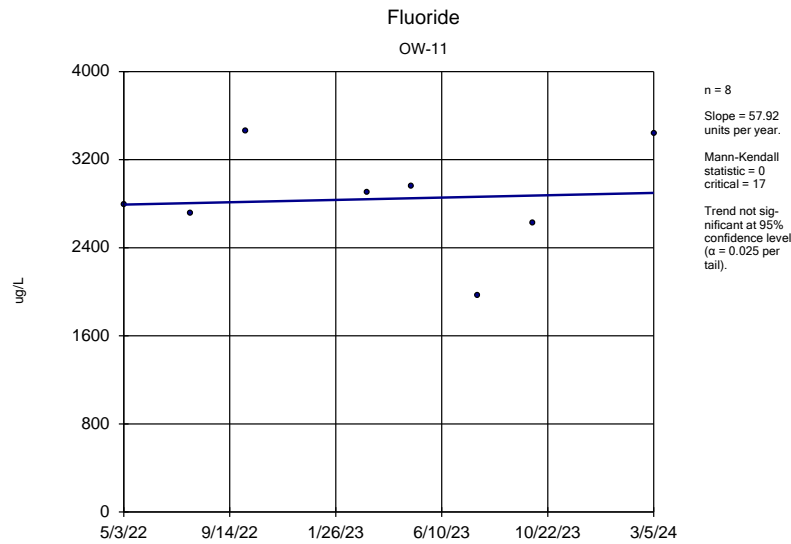




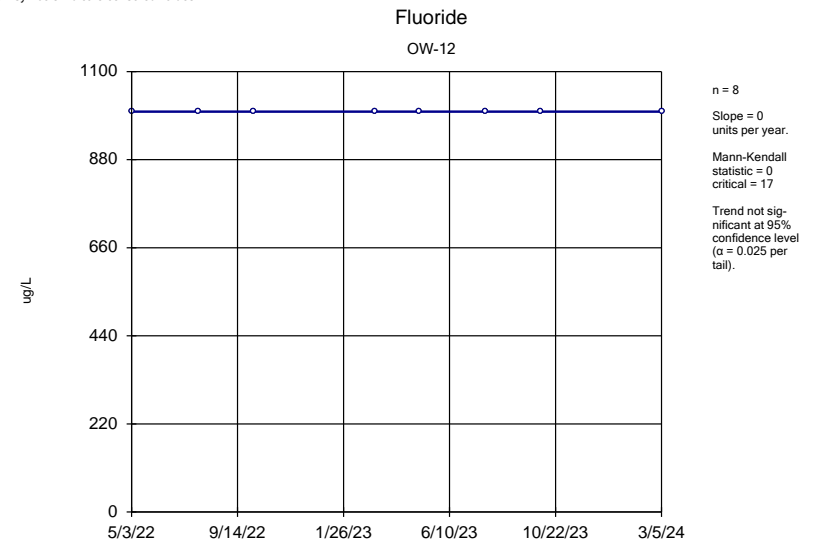
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Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

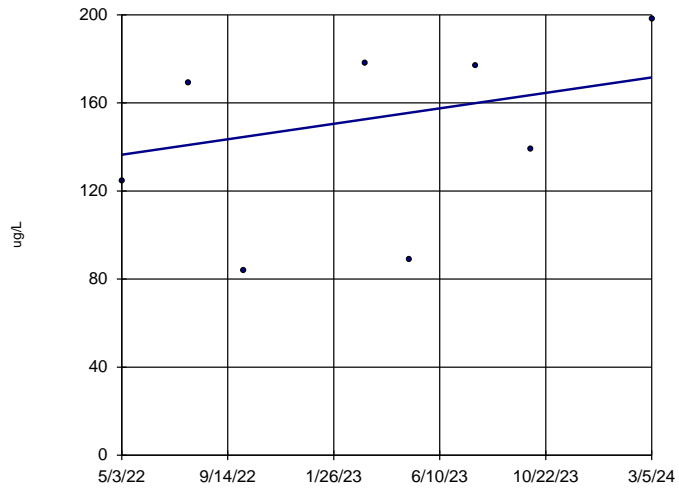


Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

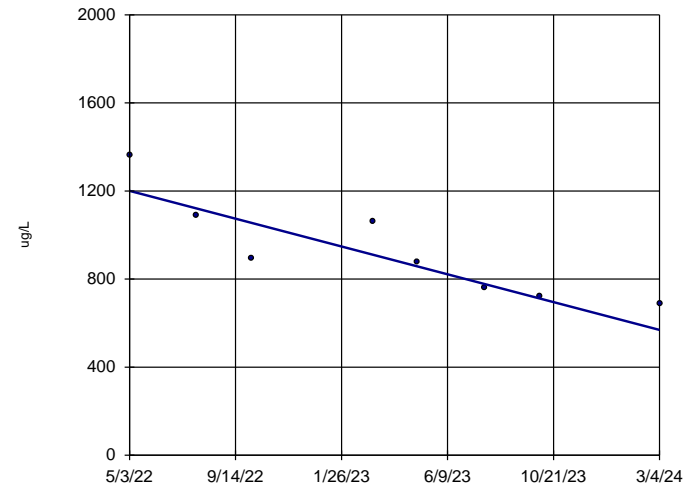
### Iron, Total DEK-MW-15003



n = 8  
 Slope = 19.06  
 units per year.  
 Mann-Kendall  
 statistic = 10  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 (α = 0.025 per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

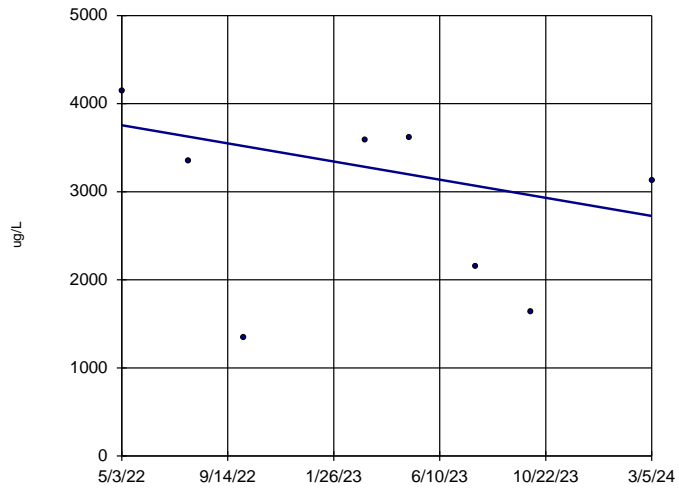
### Iron, Total DEK-MW-18001



n = 8  
 Slope = -343.3  
 units per year.  
 Mann-Kendall  
 statistic = -26  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 (α = 0.025 per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

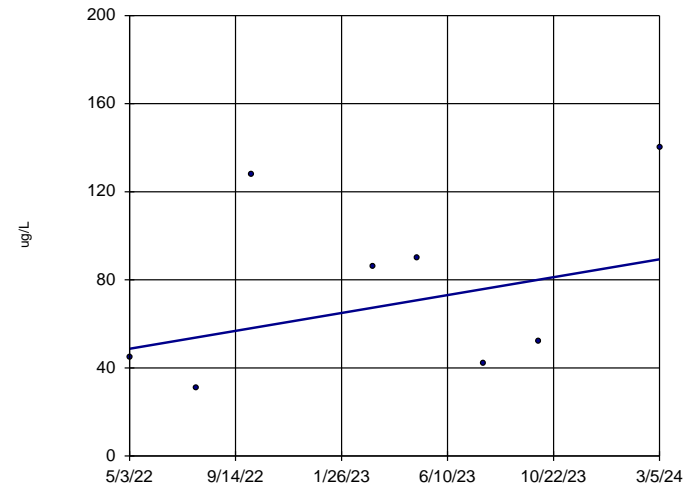
### Iron, Total OW-10



n = 8  
 Slope = -558.7  
 units per year.  
 Mann-Kendall  
 statistic = -8  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 (α = 0.025 per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

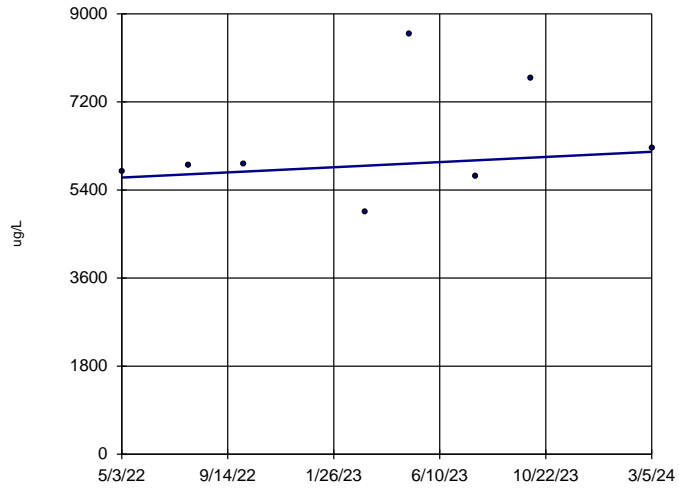
### Iron, Total OW-11



n = 8  
 Slope = 22.08  
 units per year.  
 Mann-Kendall  
 statistic = 8  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 (α = 0.025 per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

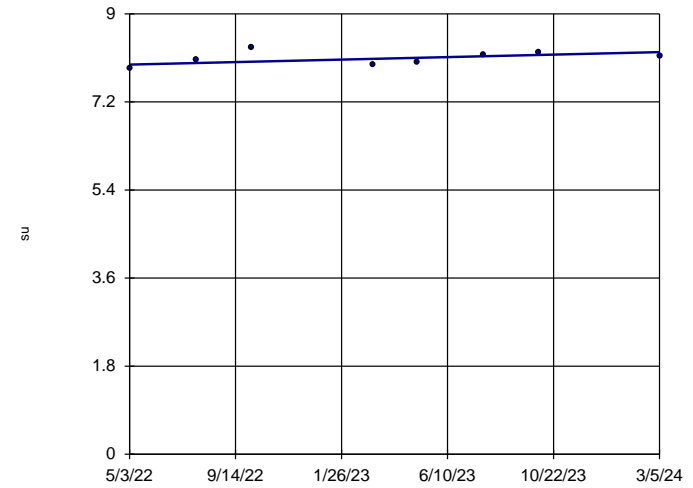
### Iron, Total OW-12



n = 8  
 Slope = 284.9 units per year.  
 Mann-Kendall statistic = 8  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

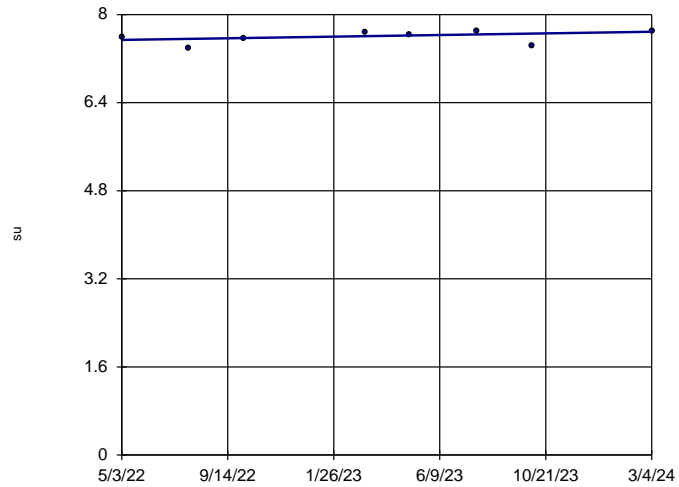
### pH, Field DEK-MW-15003



n = 8  
 Slope = 0.139 units per year.  
 Mann-Kendall statistic = 10  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

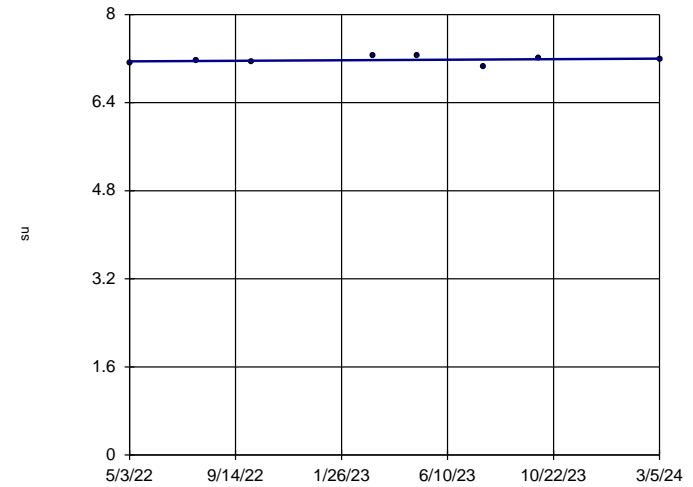
### pH, Field DEK-MW-18001



n = 8  
 Slope = 0.08058 units per year.  
 Mann-Kendall statistic = 12  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:01 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### pH, Field OW-10

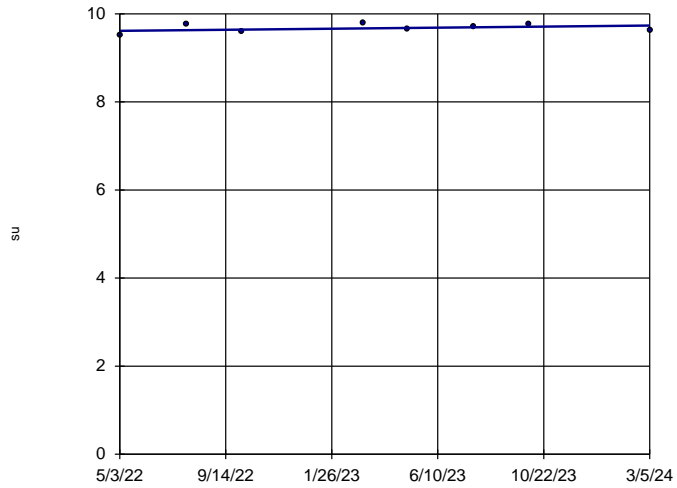


n = 8  
 Slope = 0.02815 units per year.  
 Mann-Kendall statistic = 5  
 critical = 17  
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### pH, Field

OW-11

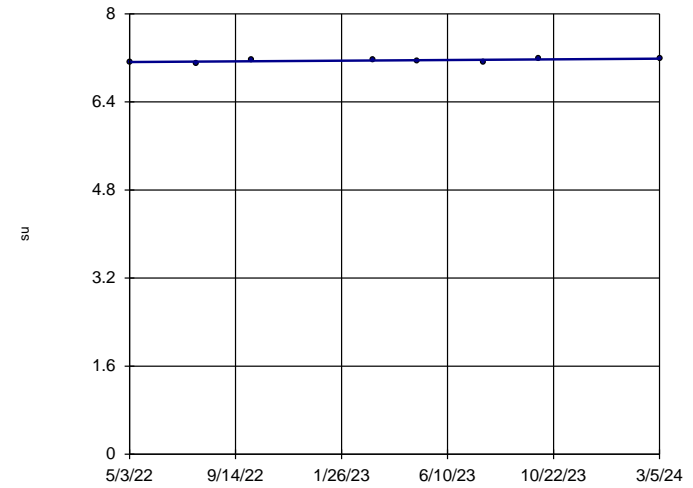


n = 8  
 Slope = 0.06503  
 units per year.  
 Mann-Kendall  
 statistic = 5  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### pH, Field

OW-12

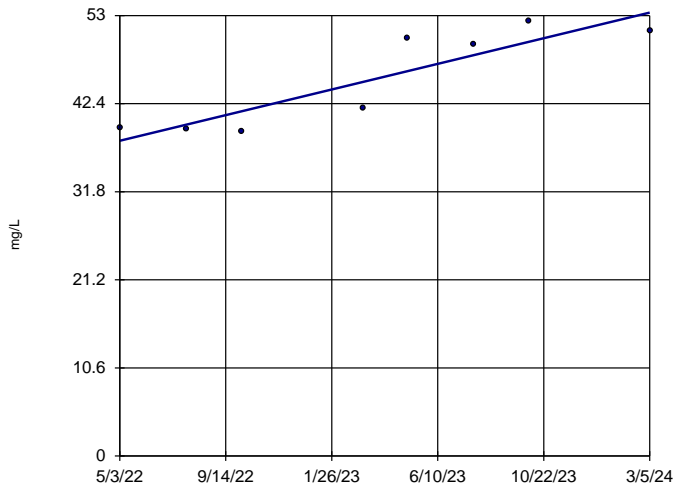


n = 8  
 Slope = 0.03238  
 units per year.  
 Mann-Kendall  
 statistic = 13  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Sulfate

DEK-MW-15003

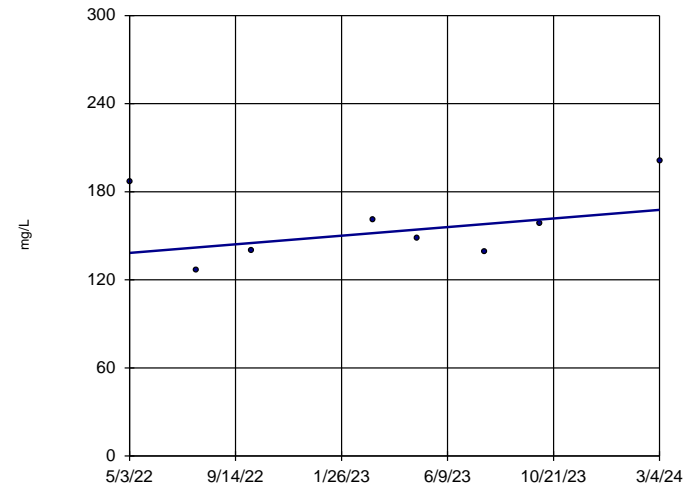


n = 8  
 Slope = 8.383  
 units per year.  
 Mann-Kendall  
 statistic = 18  
 critical = 17  
 Increasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

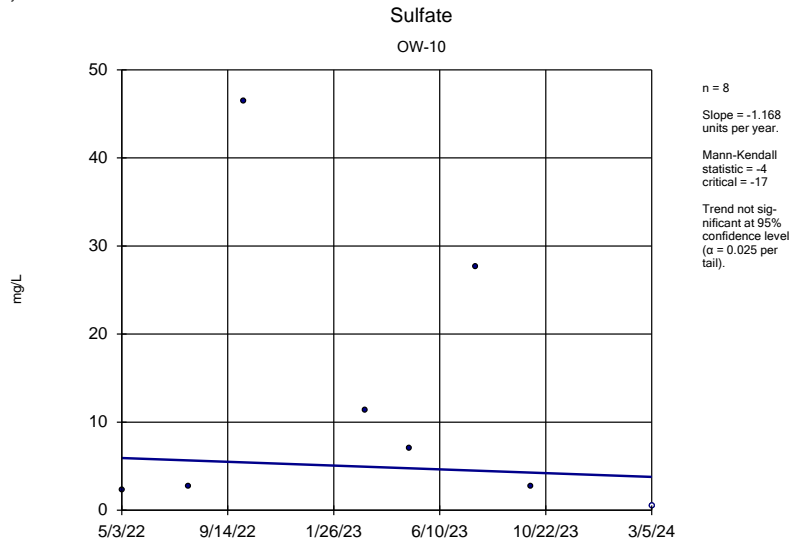
### Sulfate

DEK-MW-18001

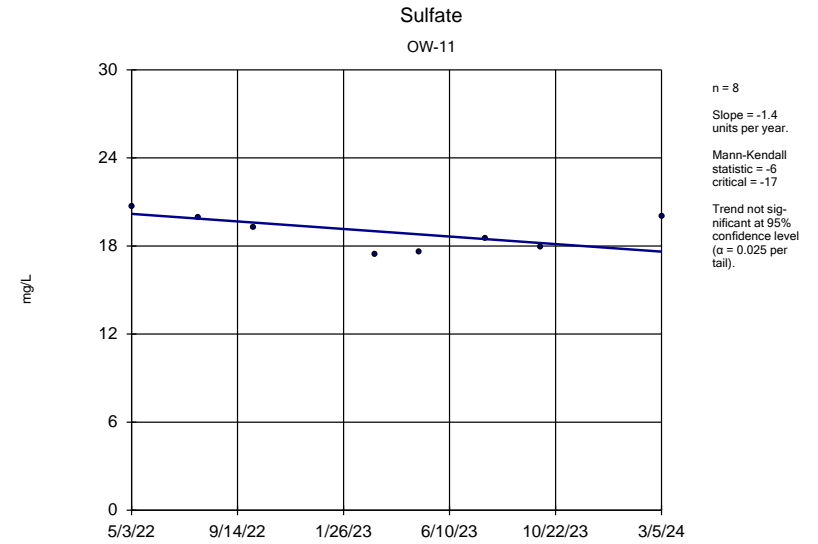


n = 8  
 Slope = 15.92  
 units per year.  
 Mann-Kendall  
 statistic = 6  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

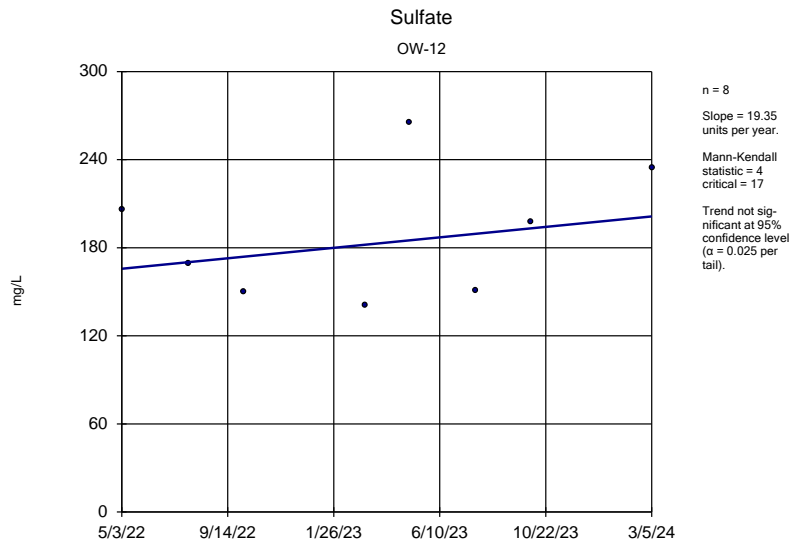
Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



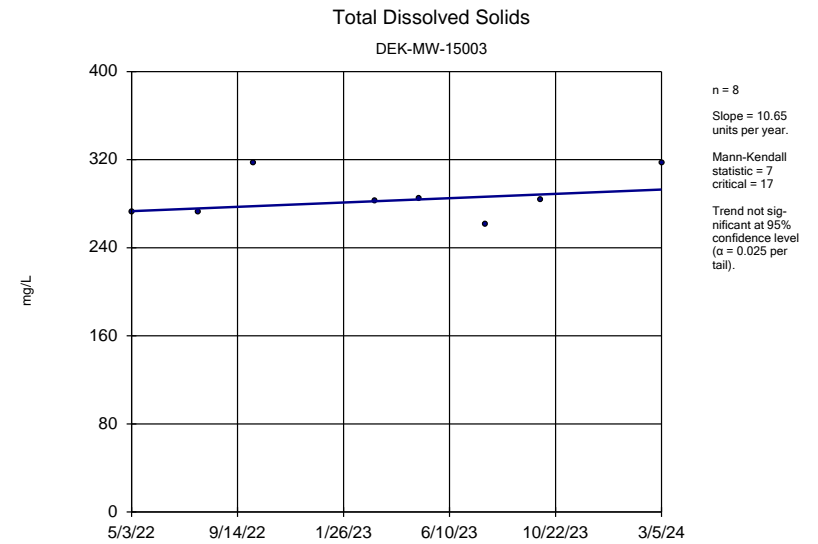
Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



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Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



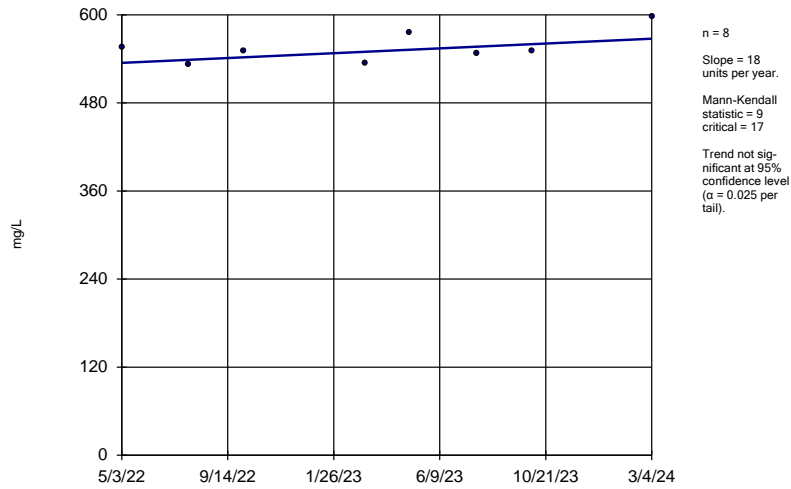
Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1



Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Total Dissolved Solids

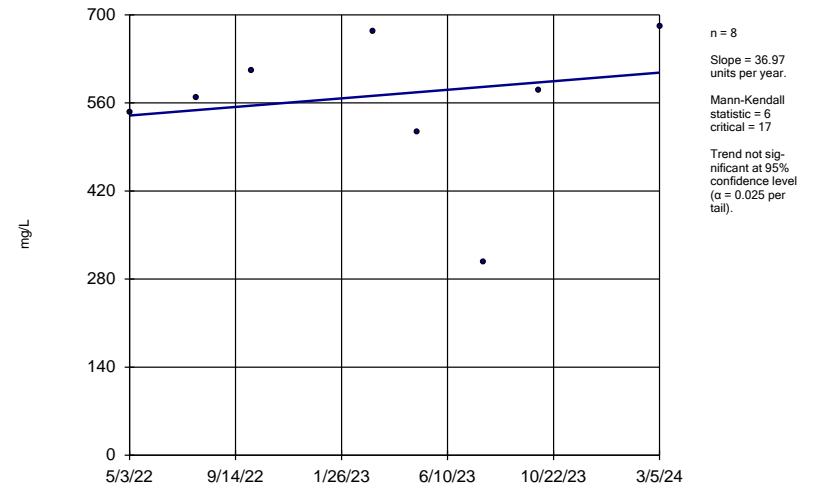
DEK-MW-18001



Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Total Dissolved Solids

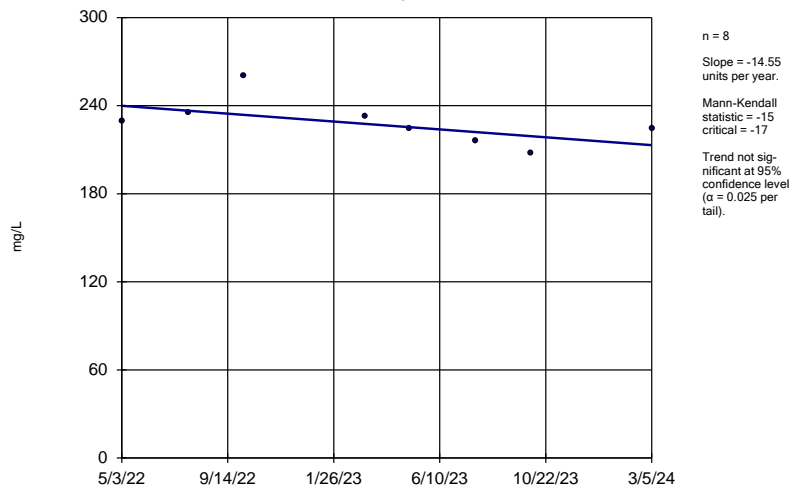
OW-10



Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

### Total Dissolved Solids

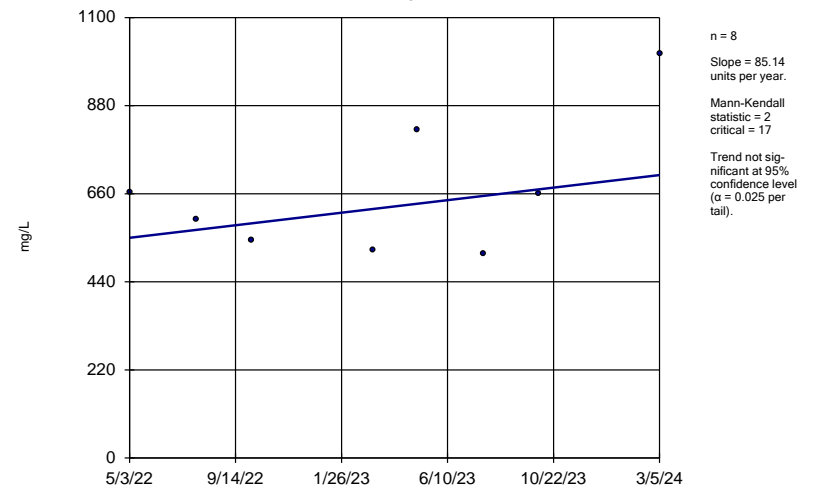
OW-11



Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
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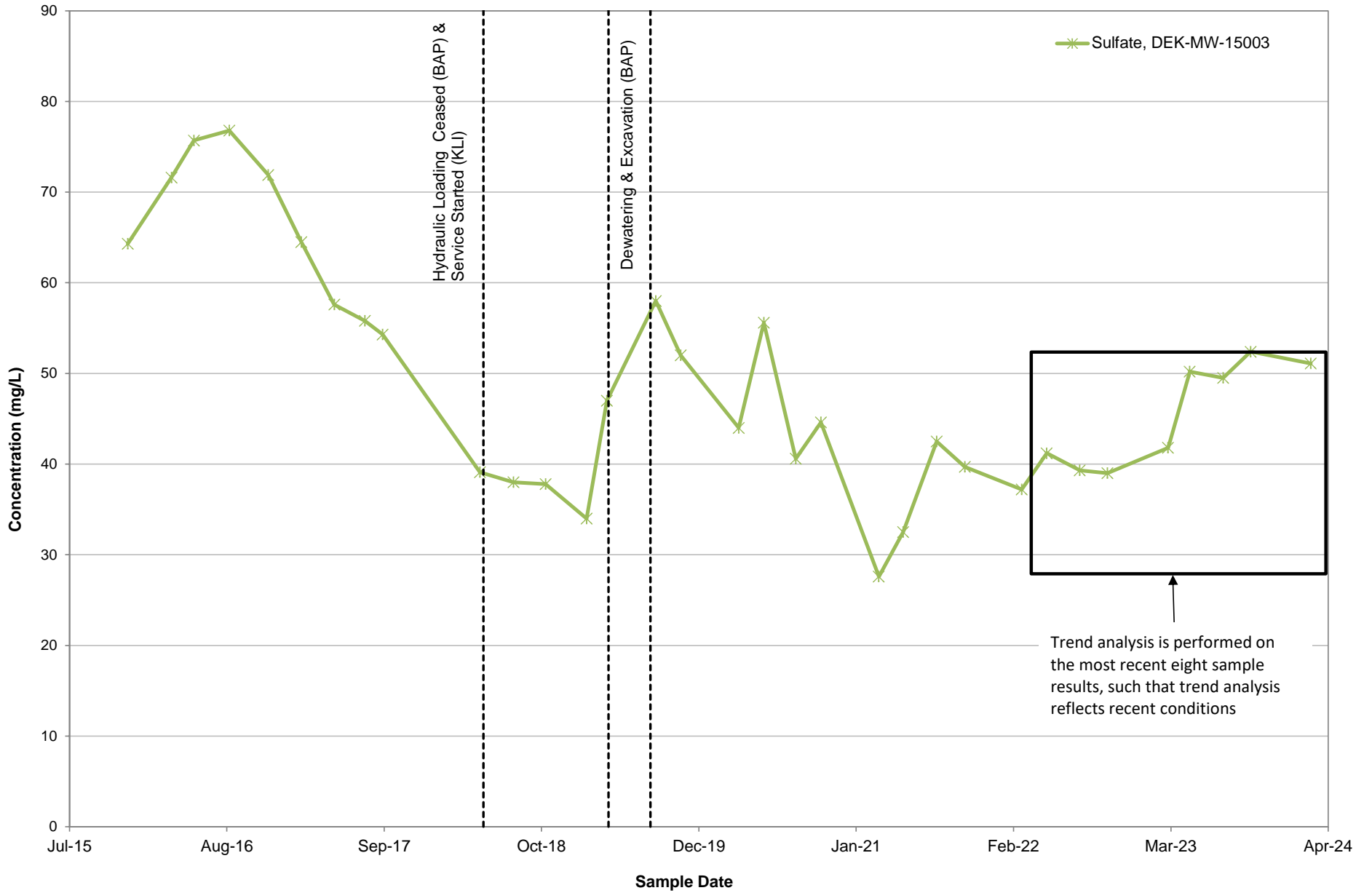
### Total Dissolved Solids

OW-12



Sen's Slope Estimator Analysis Run 4/10/2024 12:02 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q1

Chart 1: Sulfate at DEK-MW-15003



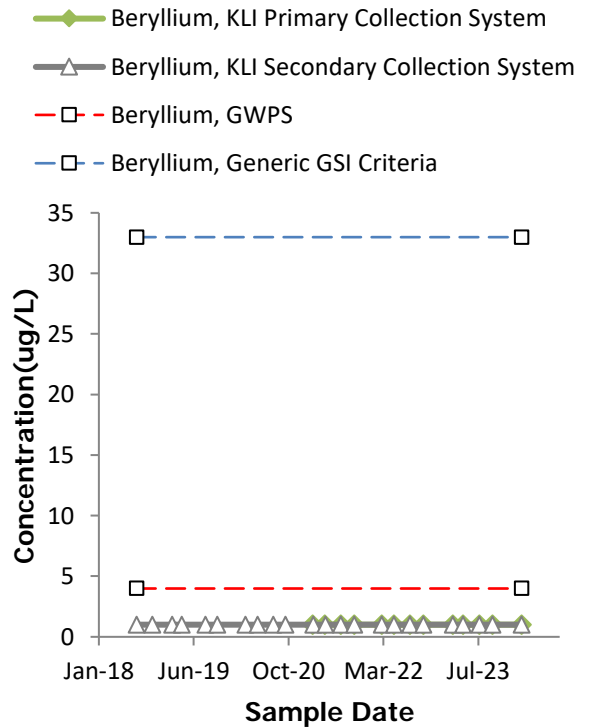
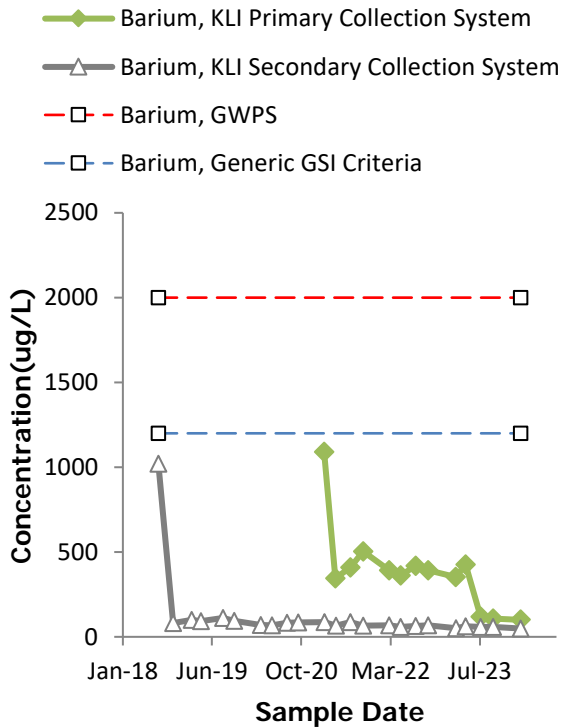
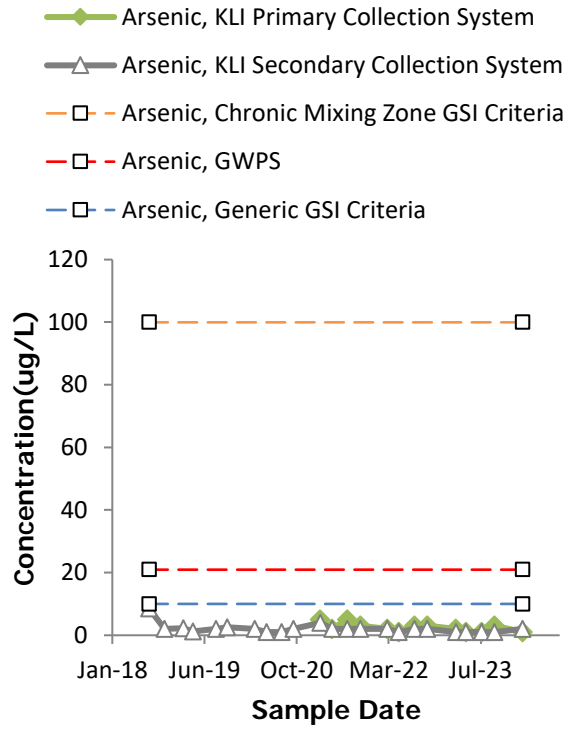
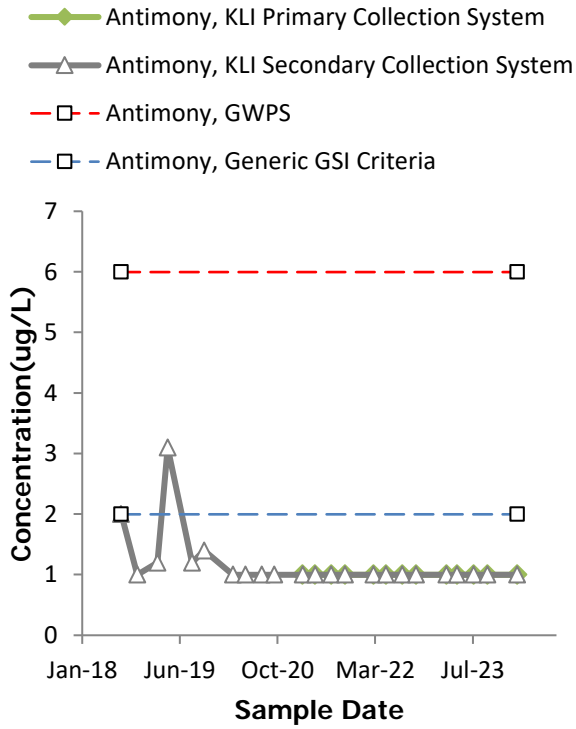
Notes:  
BAP = Bottom Ash Pond; KLI = Karn Lined Impoundment

# **Appendix E**

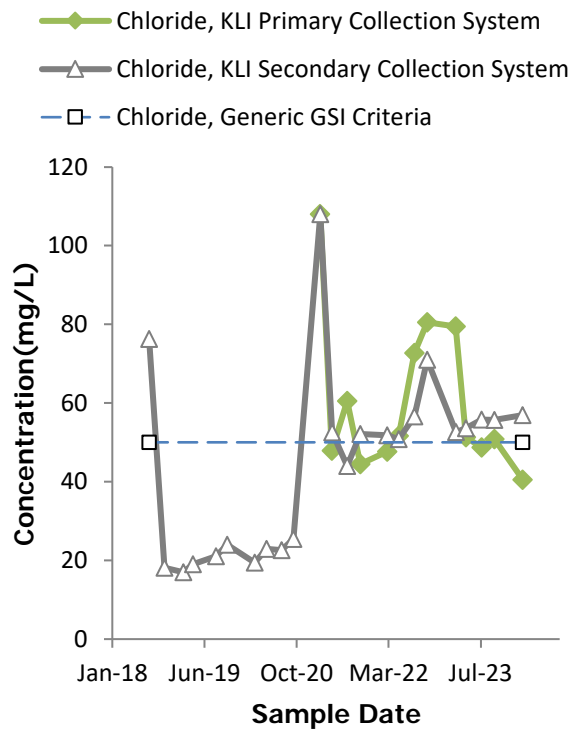
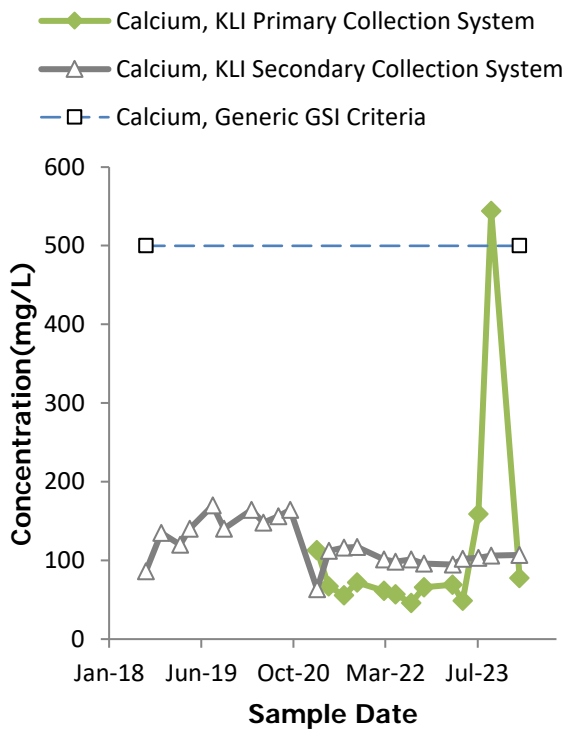
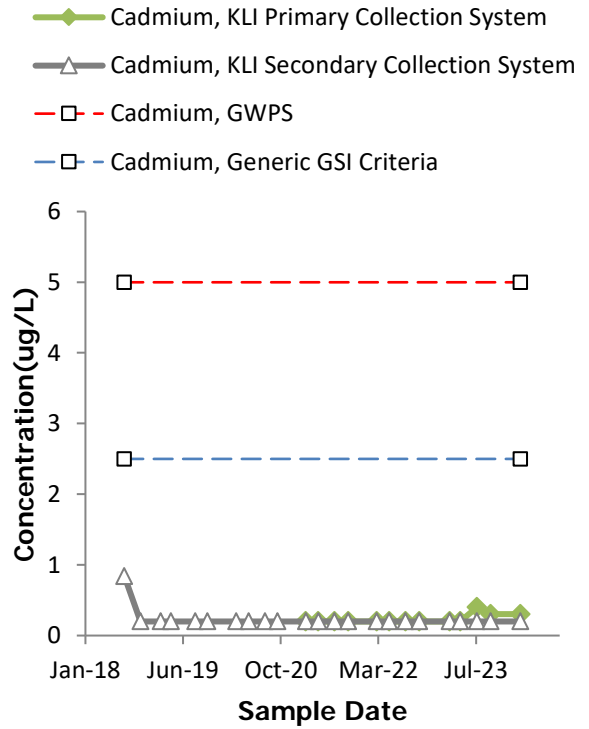
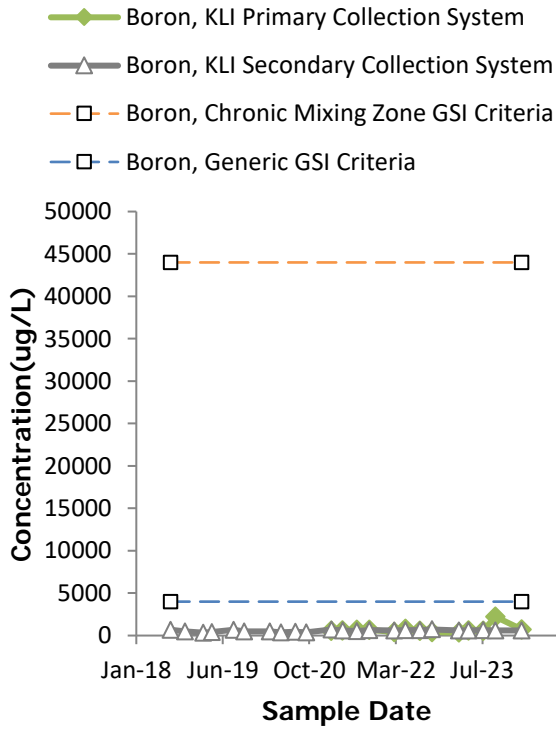
## **Secondary Leachate Collection System Monitoring**



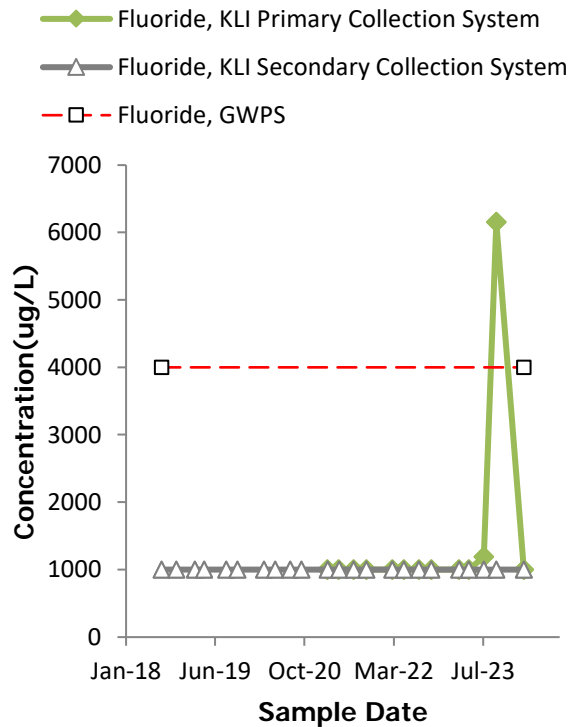
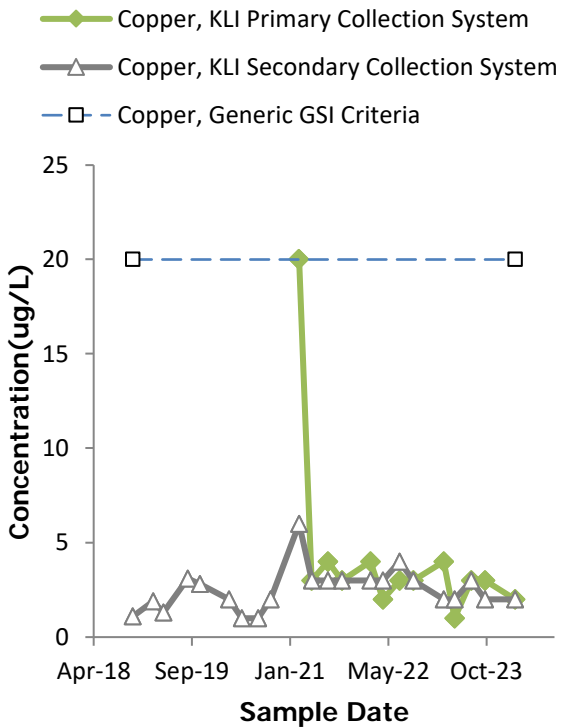
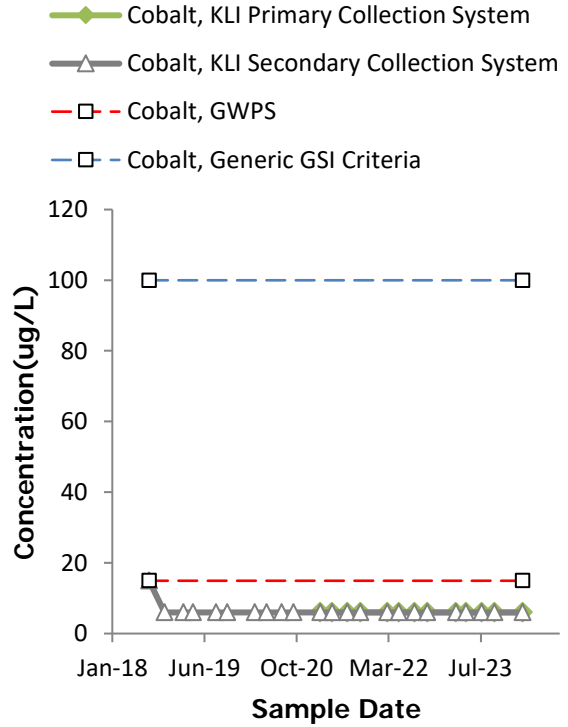
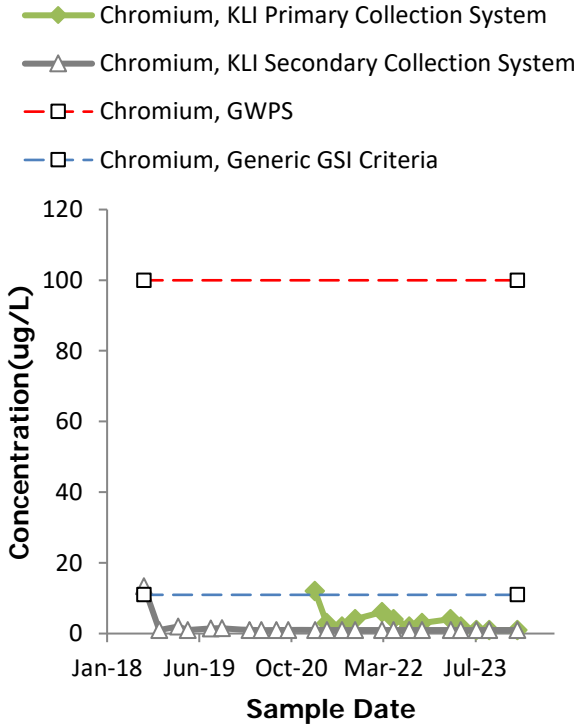
## Water Quality Time Series



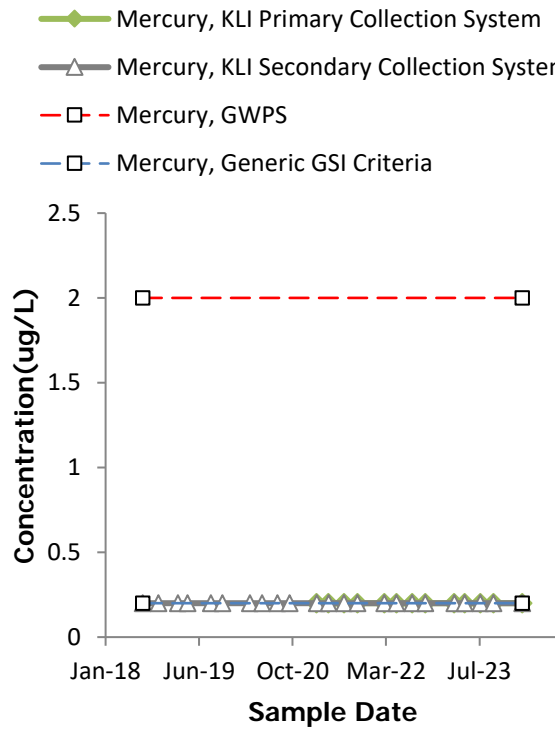
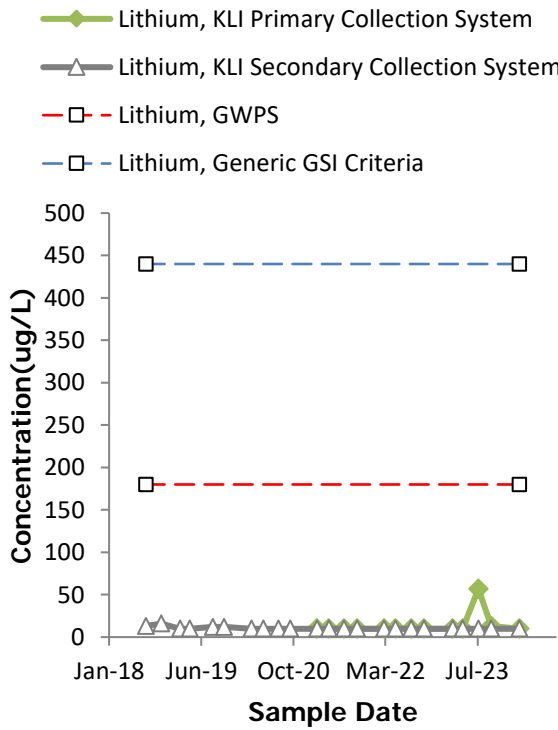
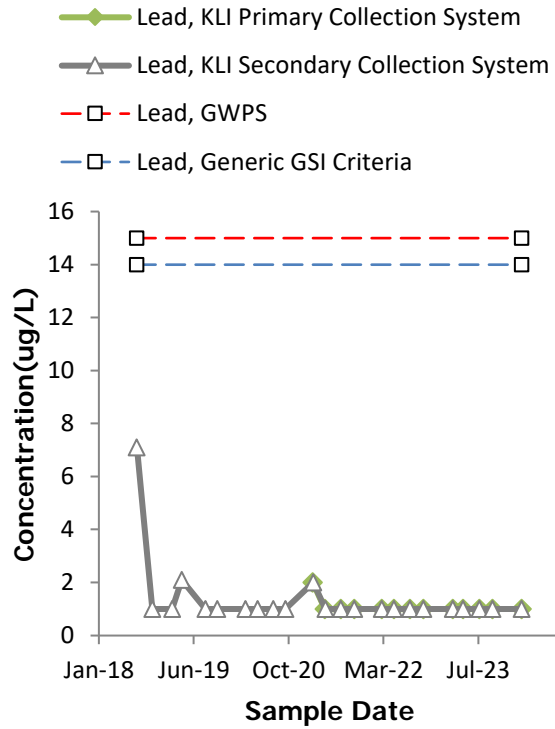
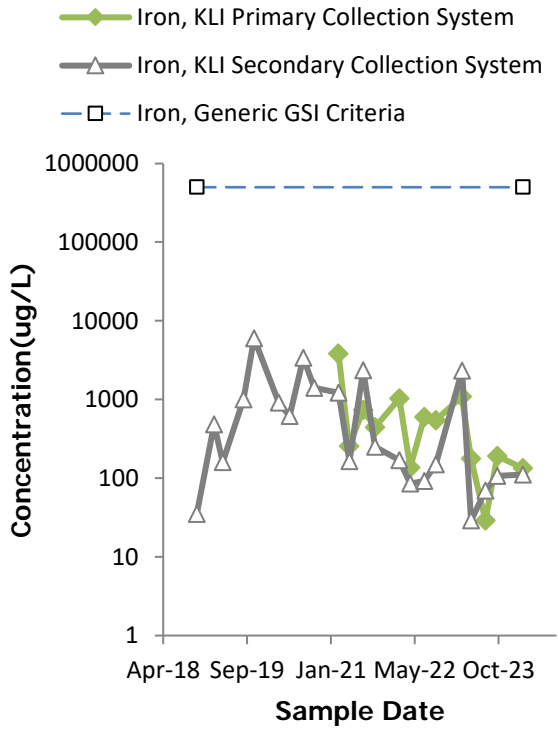
## Water Quality Time Series



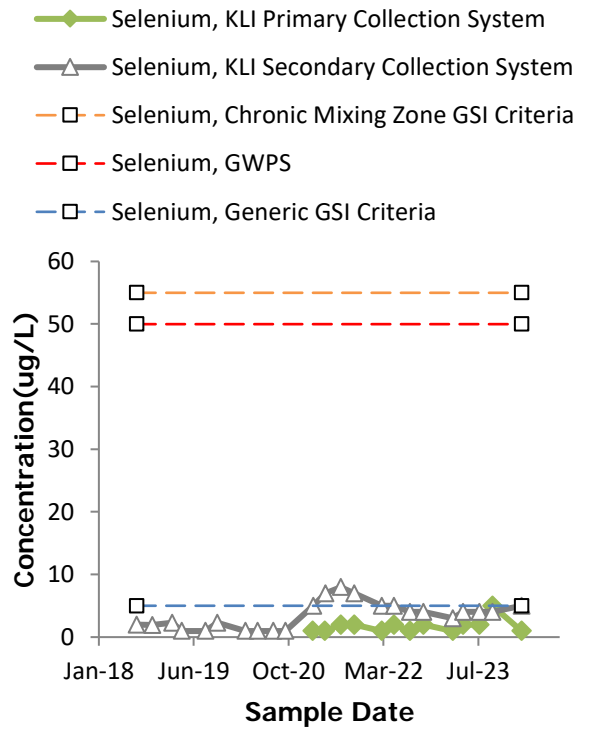
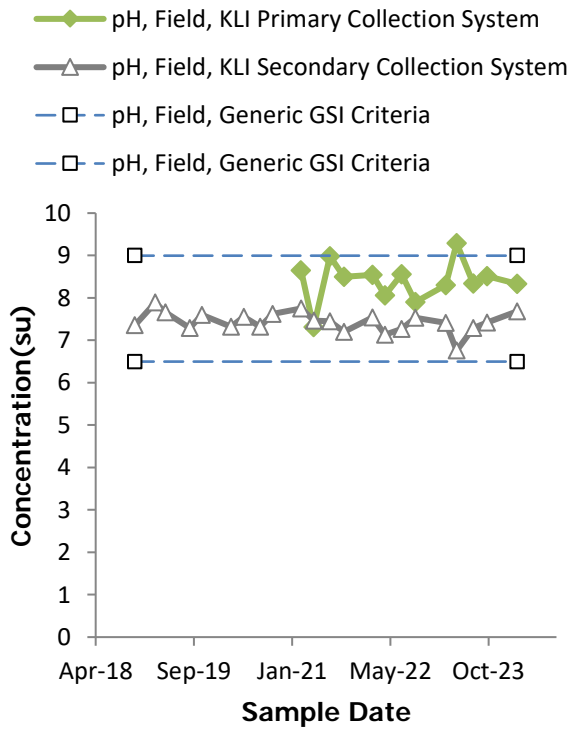
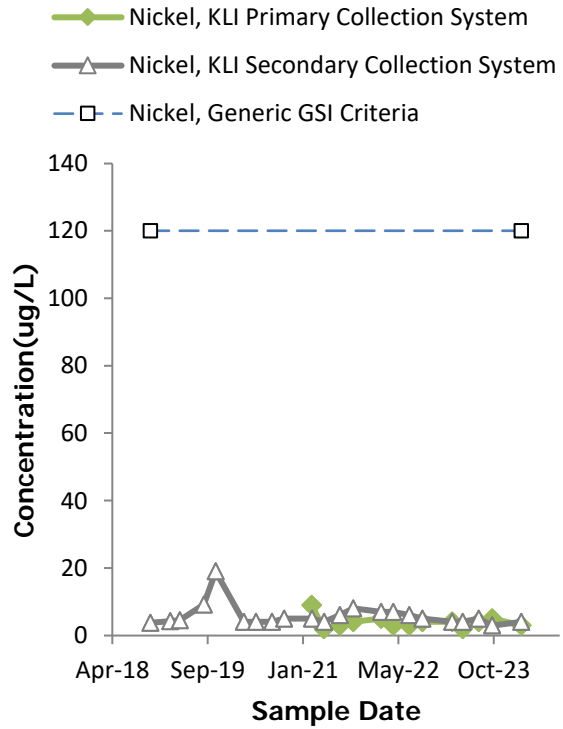
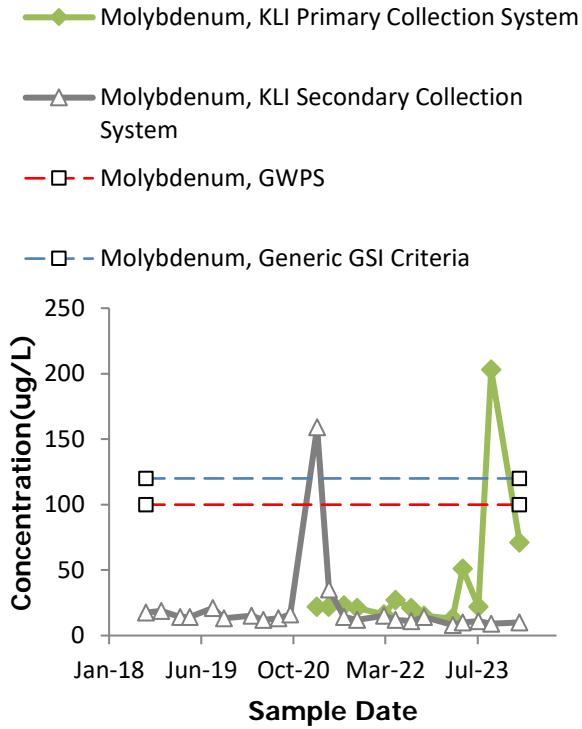
# Water Quality Time Series



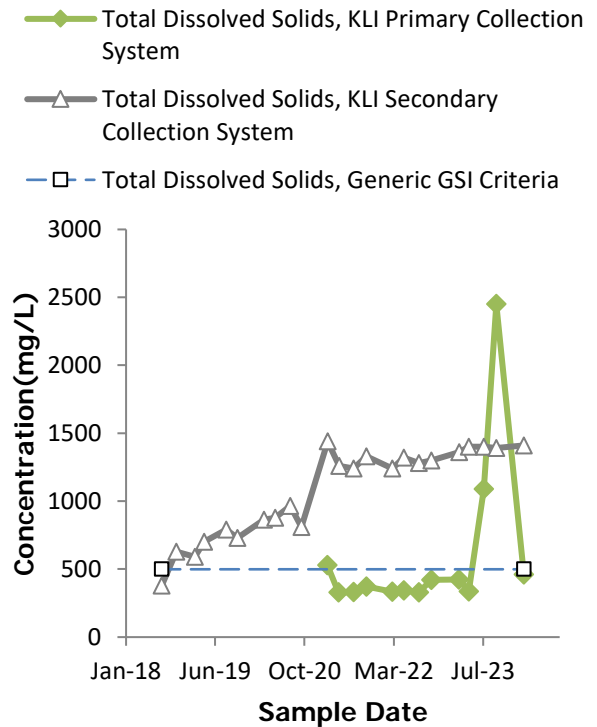
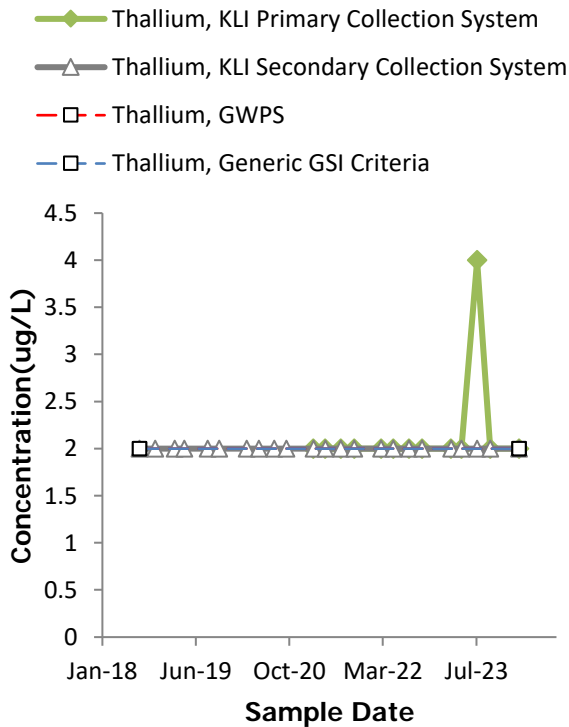
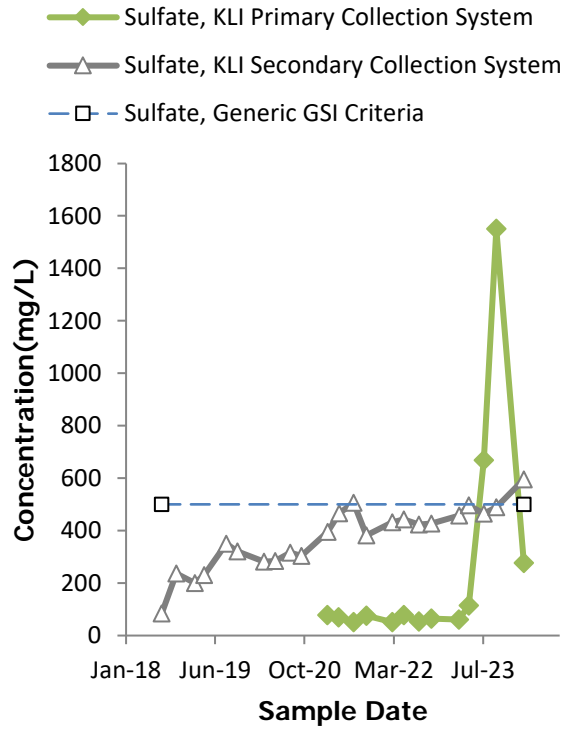
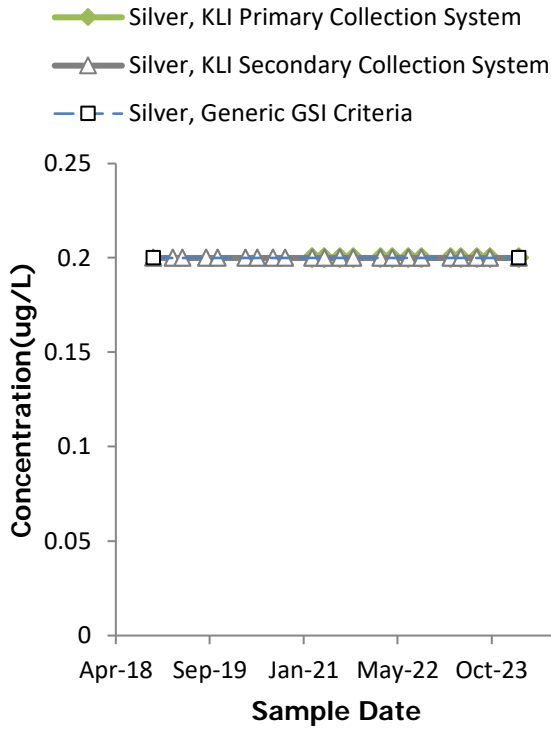
# Water Quality Time Series



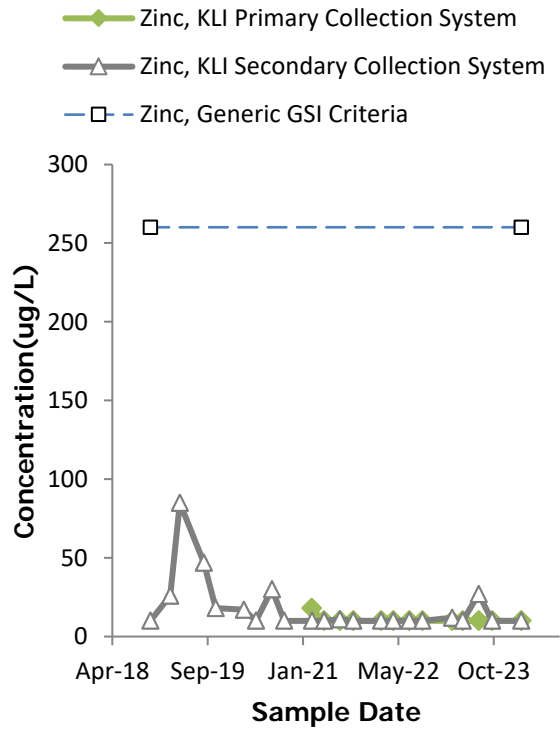
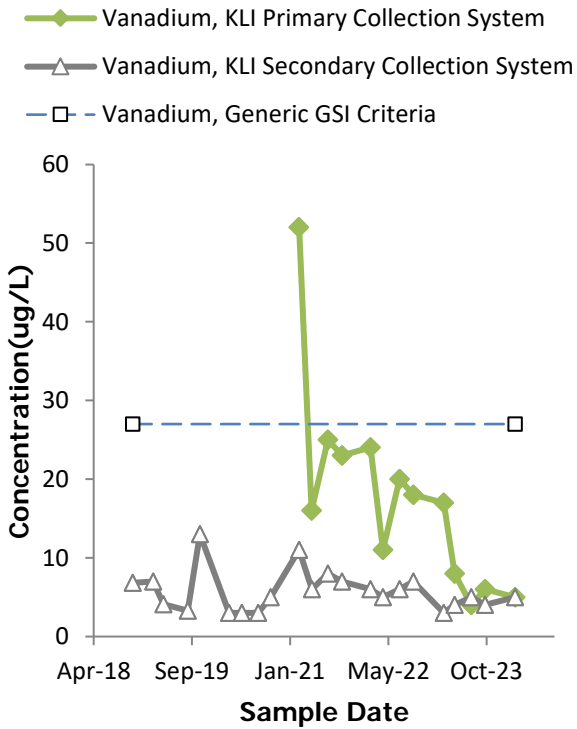
# Water Quality Time Series



## Water Quality Time Series



# Water Quality Time Series



**Enclosure 3**

**Second Quarter 2024 Hydrogeological Monitoring Report, DE  
Karn Lined Impoundment CCR Unit, Essexville, Michigan.  
(TRC, July 30, 2024)**





# Second Quarter 2024 Hydrogeological Monitoring Report

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

July 2024

A handwritten signature in blue ink that reads "Darby Litz".

---

Darby Litz  
Project Manager/Hydrogeologist

**Prepared For:**

Consumers Energy  
1945 W. Parnall Road  
Jackson, MI 49201

**Prepared By:**

TRC  
1540 Eisenhower Place  
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Andrew Whaley".

---

Andrew Whaley  
Project Geologist

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## 1.0 Introduction

Pursuant to the Federal CCR Rule<sup>1</sup>, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018, 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 amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

### 1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Second Quarter 2024 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, *Format for Solid Waste Disposal Facility Monitoring Submittals*, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (NREPA), also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

### 1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the second quarter 2024 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

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<sup>1</sup> 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.

1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the second quarter 2024, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

### **1.3 Site Overview**

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former 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. Consumers Energy permanently ceased the operation Karn Units 1 & 2 at the Site in May 2023 and has commenced decommissioning activities for both coal-fired generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled and will continue to operate. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal under the CCR Rule and the Karn Landfill that was certified closed by constructing a final cover system and is currently in post-closure care under P115..

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit N0. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

### **1.4 Geology/Hydrogeology**

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. 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 Site is bound by several surface water features (Figures 1 and 2): 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 Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near OW-12, flowing outward toward the surrounding surface water bodies.

## 2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner (Consumers Energy, 2021a and 2021b). Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow of 25 gallons per acre per day (GPAD). The flow rate is calculated each time the secondary collection system is evacuated. During second quarter 2024 (April 2024 – June 2024), no single event exceeded the action flow rate of 5 GPAD, so additional temporal calculations or trends were not developed to demonstrate compliance with the action flow rate. Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS response action flow rate, a sample was collected from the surface water of the primary collection system (KLI-PCS). The secondary leachate collection system sump (KLI-SCS) was dry during the second quarter 2024 sampling event; therefore, a sample was not collected. The leachate collection system data are used to compare leachate chemistry to groundwater chemistry. The sample was analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) - Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) - Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and previously collected KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids, sulfate, and chloride. Consumers notes that as decommissioning of the Karn Units 1&2 proceeds, temporary changes to the mix of the miscellaneous low-volume waste may occur, causing changes in the concentrations of detected constituents in the primary collection system (KLI-PCS) as compared to historical. A few notable observations include:

- **Arsenic concentrations are higher in groundwater than the primary and secondary collection system:** As shown in Appendix E, the arsenic concentrations observed in the primary and secondary collections system have been consistently low. Arsenic was not

detected above the laboratory's reporting limit (1.0 ug/L) in the primary collection system in May 2024 and the secondary collection system has historically been detected at concentrations between 1 and 4 ug/L. In contrast, the arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 33 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.

- **Secondary Collection System chemistry has not appreciably changed:** The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the secondary collection system, except for chloride, total dissolved solids (TDS) and sulfate in the secondary collection system. Chloride concentrations increased in the first quarter of 2021 and have since stabilized near 60 mg/L. TDS concentrations in KLI-SCS increased between 2018 and 2021 and have since began to stabilize. Sulfate concentrations are slightly increasing over time. The chloride, TDS and sulfate concentrations in the secondary collection system are more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.



### 3.0 Groundwater Monitoring

#### 3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

#### 3.2 May 2024 Detection Monitoring Event

In accordance with the HMP, TRC conducted the second quarter 2024 monitoring event for the Karn Lined Impoundment between May 8 and 9, 2024. In addition to the routine groundwater samples collected from the monitoring well network, a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry. A water sample was not collected from the sump in the secondary collection system (KLI-SCS) during the second quarter 2024 monitoring event due to the system being dry.

Groundwater samples collected during the second quarter 2024 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents		
Boron	Antimony	Fluoride	Thallium
Calcium	Arsenic	Lead	Vanadium
Chloride	Barium	Lithium	Zinc
Fluoride	Beryllium	Mercury	Radium 226/228
Iron	Cadmium	Molybdenum	
pH	Chromium, total	Nickel	
Sulfate	Cobalt	Selenium	
Total Dissolved Solids (TDS)	Copper	Silver	

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix B).

Monitoring wells 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. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater sample preparation and analyses were performed in accordance with SW-846 "Test Methods for Evaluation Solid Waste – Chemical / Physical Methods," USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of one field blank, one equipment blank, one field duplicate (DEK-MW-15003), and field matrix spike/matrix spike duplicate samples collected at DEK-MW-18001.

### **3.2.1 Data Quality Review**

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the HMP program.

The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

### **3.2.2 Groundwater Flow Rate and Direction**

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The 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 data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically 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 in the vicinity of the former Karn Bottom Ash Pond in May 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. 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. The conveyance ditch was observed to be dry in May 2024 as wastewater is not being generated due to the cessation of operations of Karn Units 1 & 2. The groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond has shifted to the southeast and is currently centered near OW-12. Porewater flow is generally radial, flowing outward towards the adjacent surface water features from this potentiometric “high”, as illustrated in Figure 3.

The average hydraulic gradient observed on May 6, 2024, in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0034 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. 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 calculated to be 0.17 ft/day or 62 ft/year in May 2024 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.

## 4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the second quarter 2024 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017, and in accordance with the December 23, 2015, mixing zone determination.

### 4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using Sanitas™ Statistical Software (Sanitas™). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from July 2022 through May 2024 were analyzed using Mann-Kendall and Sen's Slope at a significance level ( $\alpha$ ) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.

Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:

- The increasing trend for sulfate observed in DEK-MW-15003 in fourth quarter 2023 and confirmed in first quarter 2024 did not continue in second quarter 2024.
- A new, unconfirmed increasing trend for calcium was observed in OW-11 in second quarter 2024.
- New, unconfirmed increasing trends for sulfate and total dissolved solids were observed in DEK-MW-18001 in second quarter 2024.

## 4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, these trends have not been confirmed and the groundwater conditions do not conclusively indicate a release from the unit. Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, intrawell trend tests, in conjunction with SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit, per the HMP.

As presented in Section 2.0, the SCS flow rates are below the action flow rate threshold, which continues to demonstrate the liner system is working effectively following the documented liner repairs. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Detection monitoring constituent concentrations at OW-12 and DEK-MW-18001 exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends noted in Section 4.1 will continue to be evaluated within context of changes in the site operational status.

## 4.3 Alternate Source Demonstration

At this time, Consumers Energy is not asserting an Alternate Source Demonstration (ASD) for any Statistically Significant Increases (SSI) from this reporting period. The groundwater conditions do not conclusively indicate a release from the unit and the average daily KLI-SCS flow rates remain below the action flow rate thresholds.

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## 5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although increasing trends of detection monitoring (Appendix III) constituents exist, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit as the average daily SCS flow rates remain below the response action flow rate thresholds and continue to demonstrate the liner system is working effectively. The third quarter monitoring event is scheduled for July 2024.

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## Tables



**Table 1**  
 Summary of Groundwater Elevation Data  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	May 6, 2024	
				Depth to Water (ft BTOC)	Groundwater Elevation (ft)
<b>DEK Bottom Ash Pond</b>					
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
<b>DEK Bottom Ash Pond &amp; Karn Lined Impoundment</b>					
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.48	583.99
<b>Karn Lined Impoundment</b>					
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	7.80	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
<b>DEK Nature and Extent</b>					
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
<b>DEK Static Water Level</b>					
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 Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
<b>DE Karn Lined Impoundment</b>							
DEK-MW-15003	5/9/2024	0.56	-48.0	8.1	393	18.9	3.0
DEK-MW-18001	5/8/2024	0.12	-94.1	7.4	747	12.3	3.0
KLI-PCS	5/8/2024	9.90	101.0	8.7	612	14.6	9.2
OW-10	5/8/2024	0.33	-73.4	7.3	908	12.4	18.0
OW-11	5/8/2024	2.10	64.1	9.5	354	15.8	6.1
OW-12	5/9/2024	0.25	-80.9	7.1	1,199	12.5	5.3

**Notes:**

- - Parameter was not analyzed
- mg/L - milligram 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 Lined Impoundment - Hydrogeological Monitoring Program  
 Essexville, Michigan

		Sample Location:				DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS
		Sample Date:				5/8/2024	5/8/2024	5/8/2024	5/8/2024	5/9/2024	5/8/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Upgradient	Downgradient		Upgradient	Downgradient	Supplemental
<b>Appendix III<sup>(1)</sup></b>											
Boron	ug/L	NC	500	500	4,000	652	917	1,270	3,340	1,410	649
Calcium	mg/L	NC	NC	NC	500 <sup>EE</sup>	34.6	52.5	141	10.3	179	72.5
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	50	57.3	66.1	82.6	55.4	33.7	29.3
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,390	< 1,000	< 1,000
Sulfate	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	500 <sup>EE</sup>	34.1	226	< 1	19.4	308	247
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	312	670	832	312	1,290	578
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	8.1	7.4	7.3	9.5	7.1	8.7
<b>Appendix IV<sup>(1)</sup></b>											
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	3	< 1	< 1
Arsenic	ug/L	10	10	10	10	298	484	2	948	33	< 1
Barium	ug/L	2,000	2,000	2,000	1,200	47	147	160	27	216	81
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Chromium	ug/L	100	100	100	11	< 1	< 1	2	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,390	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	NC	170	350	440	21	19	37	12	63	11
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	23	17	< 5	146	7	53
Radium-226	pCi/L	NC	NC	NC	NC	< 0.0996	0.238	0.338	< 0.102	0.326	--
Radium-228	pCi/L	NC	NC	NC	NC	< 0.619	< 0.623	1.16	< 0.521	0.836	--
Radium-226/228	pCi/L	5	NC	NC	NC	< 0.619	< 0.623	1.5	< 0.521	1.16	--
Selenium	ug/L	50	50	50	5.0	< 1	< 1	2	7	1	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
<b>Additional MI Part 115<sup>(2)</sup></b>											
Iron	ug/L	300**	300 <sup>E</sup>	300 <sup>E</sup>	500,000 <sup>EE</sup>	160	458	3,380	21	5,200	41
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	20	< 1	< 1	2	< 1	1	3
Nickel	ug/L	NC	100	100	120	< 2	2	4	< 2	3	< 2
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	3	169	< 2	2
Zinc	ug/L	5,000**	2,400	5,000 <sup>E</sup>	260	< 10	19	< 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 CaCO<sub>3</sub>/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.

<sup>E</sup> - Criterion is the aesthetic drinking water value per footnote (E).

<sup>EE</sup> - 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 Statistical Exceedances  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
 SUMMARY OF STATISTICAL EXCEEDANCES

<b>Data is in (X) ug/L or          ( ) mg/L          unless otherwise stated</b>
--

Facility: Karn Lined Impoundment – WDS# 392503


Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	2 Qtr. 2024 (bold >201)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)
<b>No Exceedances</b>								

## Figures



C:\Users\jwhaley\OneDrive\Documents\PROJECTS\CONSUMERS ENERGY\464995\_DEKARN\2-APR-2024\APR-2024\DEKARN\_APPX\_LAYOUT.MXD MICHIGAN SOUTH RIPS 2113 FEET MAP ROTATION: 0  
 PROJECT: CONSUMERS ENERGY\464995\_DEKARN\2-APR-2024\APR-2024\DEKARN\_APPX\_LAYOUT.MXD FILE PATH: T:\PROJECTS\CONSUMERS ENERGY\464995\_DEKARN\2-APR-2024\APR-2024\DEKARN\_APPX\_LAYOUT.MXD LAYOUT NAME: 553814-TOPO-K01-202402



PROJECT: CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE: SITE LOCATION MAP	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: A. WHALEY	FIGURE 1
APPROVED BY: D. LITZ	
DATE: JULY 2024	
 1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	DEKARN

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

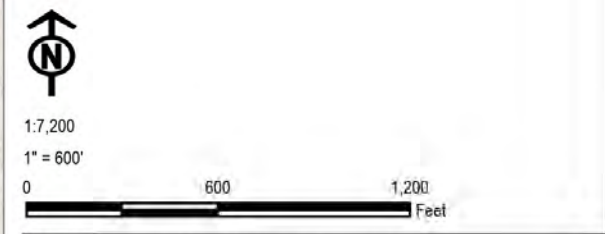


Coordinate System: NAD 1983 UTM Zone 10N, Map Rotation: 0  
 Saved By: AAD/afcm 7/10/2024, 09:55:11 AM, File Path: T:\PROJECTS\Consumers\_Energy\64095\_DEKARN.aprx, Layer Name: 553814\_LO\_K02\_202402



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - EXTENT OF GEOSYNTHETICS
  - PRIMARY CONTAINMENT SYSTEM SAMPLE (KLI-PCS)
  - SURFACE WATER SAMPLE (SW-DITCH)
  - SECONDARY CONTAINMENT SUMP

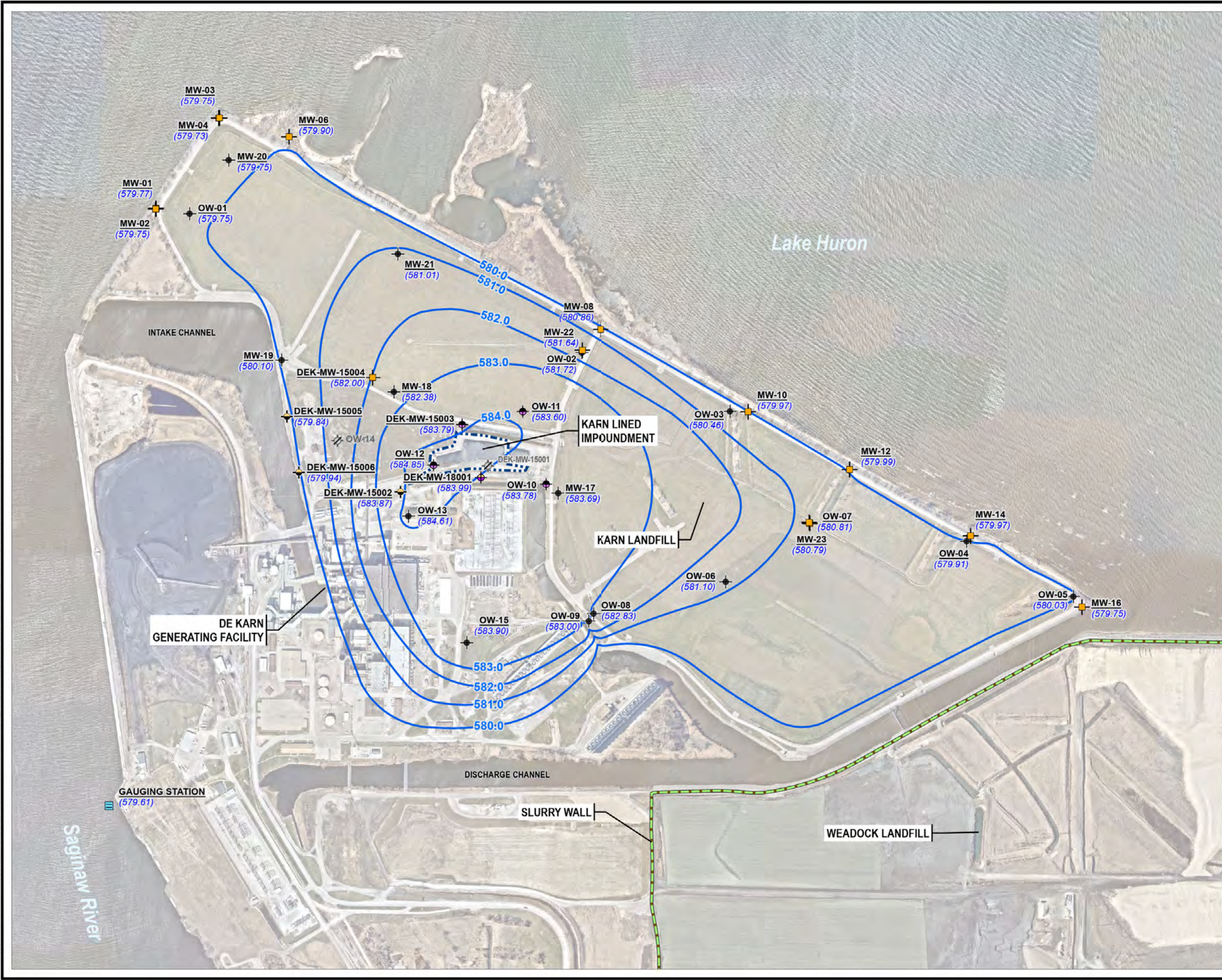
- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LAYOUT MAP	
DRAWN BY:	A ADAIR	PROJ. NO.:	553814 0001
CHECKED BY:	A WHALEY	<b>FIGURE 2</b>	
APPROVED BY:	D. LITZ		
DATE:	JULY 2024		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trccompanies.com	
FILE:	464095_DEKARN.aprx		

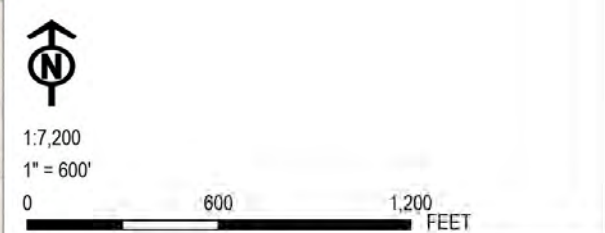


Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0  
 Saved By: AAD/afm on 7/10/2024, 09:55:11 AM; File Path: T:\L\PROJ\ECIS\Consumers\_Energy\64095\_DEKARN.aprx; Layer Name: 553814\_SGW-K03-2024-02



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - EXTENT OF GEOSYNTHETICS
  - SLURRY WALL (APPROXIMATE)
  - GROUNDWATER ELEVATION CONTOUR (1' INTERVAL, DASHED WHERE INFERRED)
  - (580.21) GROUNDWATER ELEVATION (FEET)
  - (NM) NOT MEASURED
  - (NU) NOT USED

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.
  5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH-AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SHALLOW GROUNDWATER CONTOUR MAP MAY 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: J. KRENZ	<b>FIGURE 3</b>
APPROVED BY: D. LITZ	
DATE: JULY 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx



# Appendix A

## Laboratory Analytical Reports

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2024 Q2

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

---

**Chemistry Project: 24-0341R**

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 05/06/2024 for the 2<sup>nd</sup> 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 and 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 accreditation 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 in 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q2-2024 DEK Lined Impoundment  
**Date Received:** 5/9/2024 and 5/10/2024  
**Chemistry Project:** 24-0341

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0341-01	DEK-MW-15003	Groundwater	05/08/2024 14:44	DEK Lined Impoundment
24-0341-02	OW-10	Groundwater	05/08/2024 11:08	DEK Lined Impoundment
24-0341-03	OW-11	Groundwater	05/08/2024 12:46	DEK Lined Impoundment
24-0341-04	OW-12	Groundwater	05/09/2024 12:45	DEK Lined Impoundment
24-0341-05	KLI-SCS	Not Collected		DEK Lined Impoundment
24-0341-06	KLI-PCS	Groundwater	05/08/2024 15:50	DEK Lined Impoundment
24-0341-07	SW-DITCH	Not Collected		DEK Lined Impoundment
24-0341-08	DUP-KLI	Groundwater	05/08/2024 00:00	DEK Lined Impoundment
24-0341-09	EB-KLI	Water	05/09/2024 13:00	DEK Lined Impoundment
24-0341-10	FB-KLI	Water	05/08/2024 12:46	DEK Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0341-01  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 02:44 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-01-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	298		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	47		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	652		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	34600		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	160		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	21		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	5530		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	75		ug/L	5.0	05/14/2024	AB24-0515-01
Molybdenum	23		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	4400		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	53000		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, Total, Aqueous

Aliquot #: 24-0341-01-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 #: 24-0341-01-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, Cl, F, SO4, Aqueous

Aliquot #: 24-0341-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	57300		ug/L	1000.0	05/14/2024	AB24-0513-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0341-01  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 02:44 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0341-01-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	34100		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0341-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1800		ug/L	25.0	05/14/2024	AB24-0514-02

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0341-01-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	312		mg/L	10.0	05/09/2024	AB24-0509-17

**Alkalinity by SM 2320B** Aliquot #: 24-0341-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	105000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	105000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0341-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	230		ug/L	20.0	05/10/2024	AB24-0510-05

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0341-02  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 11:08 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-02-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	2		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	160		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	1270		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	141000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	2		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	3380		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	37		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	29100		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	774		ug/L	5.0	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	7420		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	2		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	76800		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, Aqueous

Aliquot #: 24-0341-02-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 #: 24-0341-02-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, Cl, F, SO4, Aqueous

Aliquot #: 24-0341-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	82600		ug/L	1000.0	05/14/2024	AB24-0513-11



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0341-02  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 11:08 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0341-02-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	ND		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0341-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	4810		ug/L	25.0	05/14/2024	AB24-0514-02

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0341-02-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	832		mg/L	10.0	05/09/2024	AB24-0509-17

**Alkalinity by SM 2320B** Aliquot #: 24-0341-02-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	558000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	558000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0341-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	90		ug/L	20.0	05/10/2024	AB24-0510-05

**Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa** Aliquot #: 24-0341-02-C08-A01 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/20/2024	AB24-0520-08
Arsenic	1		ug/L	1.0	05/20/2024	AB24-0520-08
Barium	148		ug/L	5.0	05/20/2024	AB24-0520-08
Beryllium	ND		ug/L	1.0	05/20/2024	AB24-0520-08
Boron	1170		ug/L	20.0	05/20/2024	AB24-0520-08
Cadmium	ND		ug/L	0.2	05/20/2024	AB24-0520-08
Calcium	135000		ug/L	1000.0	05/20/2024	AB24-0520-08
Chromium	1		ug/L	1.0	05/20/2024	AB24-0520-08
Cobalt	ND		ug/L	6.0	05/20/2024	AB24-0520-08
Copper	1		ug/L	1.0	05/20/2024	AB24-0520-08
Iron	3420		ug/L	20.0	05/20/2024	AB24-0520-08
Lead	ND		ug/L	1.0	05/20/2024	AB24-0520-08
Lithium	35		ug/L	10.0	05/20/2024	AB24-0520-08
Magnesium	28900		ug/L	1000.0	05/20/2024	AB24-0520-08

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0341-02  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 11:08 AM

**Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa**

Aliquot #: 24-0341-02-C08-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Manganese	802		ug/L	5.0	05/20/2024	AB24-0520-08
Molybdenum	ND		ug/L	5.0	05/20/2024	AB24-0520-08
Nickel	ND		ug/L	2.0	05/20/2024	AB24-0520-08
Potassium	5780		ug/L	100.0	05/20/2024	AB24-0520-08
Selenium	1		ug/L	1.0	05/20/2024	AB24-0520-08
Silver	ND		ug/L	0.2	05/20/2024	AB24-0520-08
Sodium	76600		ug/L	1000.0	05/20/2024	AB24-0520-08
Thallium	ND		ug/L	2.0	05/20/2024	AB24-0520-08
Vanadium	3		ug/L	2.0	05/20/2024	AB24-0520-08
Zinc	ND		ug/L	10.0	05/20/2024	AB24-0520-08

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0341-03  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 12:46 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	3		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	948		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	27		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	3340		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	10300		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	21		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	12		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	1340		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Molybdenum	146		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	4400		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	7		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	60400		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	169		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, Aqueous

Aliquot #: 24-0341-03-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, NO2, NO3

Aliquot #: 24-0341-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	469		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, Cl, F, SO4, Aqueous

Aliquot #: 24-0341-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	55400		ug/L	1000.0	05/14/2024	AB24-0513-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0341-03  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 12:46 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0341-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	3390		ug/L	1000.0	05/09/2024	AB24-0513-11
Sulfate	19400		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0341-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	12200		ug/L	25.0	05/14/2024	AB24-0514-02

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0341-03-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	312		mg/L	10.0	05/09/2024	AB24-0509-17

**Alkalinity by SM 2320B** Aliquot #: 24-0341-03-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	92500		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	25800		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	66700		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0341-03-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/10/2024	AB24-0510-05R

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0341-04  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/09/2024  
 Collect Time: 12:45 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-04-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	33		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	216		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	1410		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	179000		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	1		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	5200		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	63		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	101000		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	609		ug/L	5.0	05/14/2024	AB24-0515-01
Molybdenum	7		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	3		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	8910		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	55200		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, Total, Aqueous

Aliquot #: 24-0341-04-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-03

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0341-04-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, Aqueous

Aliquot #: 24-0341-04-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	33700		ug/L	1000.0	05/14/2024	AB24-0513-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0341-04  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/09/2024  
 Collect Time: 12:45 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0341-04-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	308000		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0341-04-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1660		ug/L	25.0	05/14/2024	AB24-0514-02

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0341-04-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1290		mg/L	10.0	05/10/2024	AB24-0510-10

**Alkalinity by SM 2320B** Aliquot #: 24-0341-04-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	662000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	662000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0341-04-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/13/2024	AB24-0513-15

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-PCS**  
 Lab Sample ID: 24-0341-06  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 03:50 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-06-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	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	81		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	649		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	0.3		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	72500		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	3		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	41		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	1		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	11		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	9220		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Molybdenum	53		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	7130		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	51000		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, Aqueous

Aliquot #: 24-0341-06-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 Aqueous, NO2, NO3

Aliquot #: 24-0341-06-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, Cl, F, SO4, Aqueous

Aliquot #: 24-0341-06-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	29300		ug/L	1000.0	05/14/2024	AB24-0513-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-PCS**  
 Lab Sample ID: 24-0341-06  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 03:50 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0341-06-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	247000		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0341-06-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

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0341-06-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	578		mg/L	10.0	05/09/2024	AB24-0509-17

**Alkalinity by SM 2320B** Aliquot #: 24-0341-06-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	56100		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	56100		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0341-06-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/10/2024	AB24-0510-05R



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DUP-KLI**  
 Lab Sample ID: 24-0341-08  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 12:00 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-08-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	297		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	47		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	701		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	33800		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	150		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	24		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	5520		ug/L	1000.0	05/14/2024	AB24-0515-01
Manganese	77		ug/L	5.0	05/14/2024	AB24-0515-01
Molybdenum	24		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	4450		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	52900		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, Total, Aqueous

Aliquot #: 24-0341-08-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 #: 24-0341-08-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, Cl, F, SO4, Aqueous

Aliquot #: 24-0341-08-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61500		ug/L	1000.0	05/14/2024	AB24-0513-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DUP-KLI**  
 Lab Sample ID: 24-0341-08  
 Matrix: Groundwater

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 12:00 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0341-08-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	35100		ug/L	1000.0	05/14/2024	AB24-0513-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0341-08-C03-A01 Analyst: CLE**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2200		ug/L	25.0	05/15/2024	AB24-0514-03

**Total Dissolved Solids by SM 2540C Aliquot #: 24-0341-08-C04-A01 Analyst: LMO**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	293		mg/L	10.0	05/15/2024	AB24-0516-05

**Alkalinity by SM 2320B Aliquot #: 24-0341-08-C05-A01 Analyst: DLS**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	106000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	106000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

**Sulfide, Total by SM 4500 S2D Aliquot #: 24-0341-08-C07-A01 Analyst: Merit**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	210		ug/L	20.0	05/10/2024	AB24-0510-05

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **EB-KLI**  
 Lab Sample ID: 24-0341-09  
 Matrix: Water

Laboratory Project: **24-0341**  
 Collect Date: 05/09/2024  
 Collect Time: 01:00 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-09-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	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
Manganese	ND		ug/L	5.0	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, Total, Aqueous

Aliquot #: 24-0341-09-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 #: 24-0341-09-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), Groundwater HL

Aliquot #: 24-0341-09-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

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **EB-KLI**  
Lab Sample ID: 24-0341-09  
Matrix: Water

Laboratory Project: **24-0341**  
Collect Date: 05/09/2024  
Collect Time: 01:00 PM

**Sulfide, Total by SM 4500 S2D** **Aliquot #: 24-0341-09-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

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **FB-KLI**  
 Lab Sample ID: 24-0341-10  
 Matrix: Water

Laboratory Project: **24-0341**  
 Collect Date: 05/08/2024  
 Collect Time: 12:46 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0341-10-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	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
Manganese	ND		ug/L	5.0	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, Total, Aqueous

Aliquot #: 24-0341-10-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 #: 24-0341-10-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

### Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL

Aliquot #: 24-0341-10-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

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **FB-KLI**  
Lab Sample ID: 24-0341-10  
Matrix: Water

Laboratory Project: **24-0341**  
Collect Date: 05/08/2024  
Collect Time: 12:46 PM

### Sulfide, Total by SM 4500 S2D

Aliquot #: 24-0341-10-C04-A01

Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/10/2024	AB24-0510-05

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

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

Project Log-In Number: 24-0341

Inspection Date: 05-09-24 Inspection By: CLC

Sample Origin/Project Name: DEK LI

Shipment Delivered By: Enter the type of shipment carrier.

Pony \_\_\_\_\_ FedEx  UPS \_\_\_\_\_ USPS \_\_\_\_\_ Airborne \_\_\_\_\_

Other/Hand Carry (whom) \_\_\_\_\_

Tracking Number: 274431774866 Shipping Form Attached: Yes  No \_\_\_\_\_

Shipping Containers: Enter the type and number of shipping containers received.

Cooler  Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.2-1.8 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration 015402

5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>14</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>25</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>75</u>	_____	_____	_____	_____
Other	<u>EB 050924</u>	_____	_____	_____	_____

FSP 0-14  
13-640-508  
lot: 205522  
exp: 2-15-25



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

Project Log-In Number: 24-0341

Inspection Date: 05/10/24 Inspection By: UE

Sample Origin/Project Name: DEK LI

Shipment Delivered By: Enter the type of shipment carrier.

Pony \_\_\_\_\_ FedEx \_\_\_\_\_ UPS \_\_\_\_\_ USPS \_\_\_\_\_ Airborne \_\_\_\_\_

Other/Hand Carry (whom) TRC

Tracking Number: \_\_\_\_\_ Shipping Form Attached: Yes \_\_\_\_\_ No \_\_\_\_\_

Shipping Containers: Enter the type and number of shipping containers received.

Cooler  \_\_\_\_\_ Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  \_\_\_\_\_ Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed  \_\_\_\_\_

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  \_\_\_\_\_ Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.3 - 2.9°C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration 015402

5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>8</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250/500 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

FSP 0-14 pH  
# 13-440-508  
lot 205522  
exp: 2-15-25

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page 1 of     

SAMPLING SITE / CUSTOMER: Q2-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0341</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																						
SAMPLING TEAM: <i>A. Whaley</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Antons</th> <th rowspan="2">Ammonia</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th rowspan="2">Dissolved Metals</th> <th colspan="8">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>						Total Metals	Antons	Ammonia	TDS	Alkalinity	Sulfide	Dissolved Metals	PRESERVATIVE								TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
Total Metals	Antons	Ammonia	TDS	Alkalinity	Sulfide	Dissolved Metals	PRESERVATIVE																														
							TOTAL #	None							HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other																	
SEND REPORT TO: Joseph Firlit		email:			phone:																																
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater    OX = Other WW = Wastewater    SL = Sludge W = Water / Aqueous Liquid    A = Air S = Soil / General Solid    WP = Wipe O = Oil    WT = General Waste																																			
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION																																	
	DATE	TIME																																			
24-0341-01	5/18/24	1444	GW	DEK-MW-15003		7	4	1	1	1							x	x	x	x	x	x															
-02	5/18/24	1108	GW	OW-10		4	4	1	1	1							x	x	x	x	x	x	x														
-03	5/18/24	1246	GW	OW-11		7	4	1	1	1							x	x	x	x	x	x															
-04			GW	OW-12		7	4	1	1	1							x	x	x	x	x	x															
-05			W	KLI-SCS		7	4	1	1	1							x	x	x	x	x	x															
-06	5/18/24	1550	SW	KLI-PCS		7	4	1	1	1							x	x	x	x	x	x															
<del>-07</del>	<del>5/18/24</del>	<del>1246</del>	<del>SW</del>	<del>SW-DITCH</del>		<del>7</del>	<del>4</del>	<del>1</del>	<del>1</del>	<del>1</del>							<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>x</del>	<del>Dry</del>													
-08	5/18/24	—	GW	DUP-KLI		7	4	1	1	1							x	x	x	x	x	x															
-09			W	EB-KLI		4	1	1	1	1							x	x	x			x															
-10	5/18/24	1246	W	FB-KLI		4	1	1	1	1							x	x	x			x															

RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: 5/18/24 1700		RECEIVED BY: Fed-Ex		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    M&TE #: 015402 Temperature: 0.2-1.8 °C    Cal. Due Date: 5-23-24					
RELINQUISHED BY: Fed-Ex		DATE/TIME: 5-9-24 1130		RECEIVED BY: <i>[Signature]</i>							



# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page \_\_\_\_ of \_\_\_\_

SAMPLING SITE / CUSTOMER: Q2-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0341</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																	
SEND REPORT TO: Joseph Firlit		email:		phone:																
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			CONTAINERS															
TRC		FIELD SAMPLE ID / LOCATION			PRESERVATIVE															
LAB SAMPLE ID					SAMPLE COLLECTION		MATRIX		TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other	Total Metals	Anions	Ammonia	TDS
	DATE	TIME																		
<del>24-0341-01</del>			GW	<del>DEK-MW-15003</del>		7	4	1	1	1				x	x	x	x	x	x	
<del>-02</del>			GW	<del>OW-10</del>		7	4	1	1	1				x	x	x	x	x	x	
<del>-03</del>			GW	<del>OW-11</del>		7	4	1	1	1				x	x	x	x	x	x	
-04	5-9-24	1245	GW	OW-12		7	4	1	1	1				x	x	x	x	x	x	
<del>-05</del>			W	<del>KLI-SCS</del>		7	4	1	1	1				x	x	x	x	x	x	
<del>-06</del>			SW	<del>KLI-PCS</del>		7	4	1	1	1				x	x	x	x	x	x	
<del>-07</del>			SW	<del>SW-DITCH</del>		7	4	1	1	1				x	x	x	x	x	x	
<del>-08</del>			GW	<del>DUP-KLI</del>		7	4	1	1	1				x	x	x	x	x	x	
-09	5-9-24	1300	W	EB-KLI		4	1	1	1	1				x	x	x			x	
<del>-10</del>			W	<del>FB-KLI</del>		4	1	1	1	1				x	x	x			x	

RELINQUISHED BY:		DATE/TIME: 5-10-24 / 0759		RECEIVED BY:		COMMENTS:	
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: 015402	
						Temperature: 0.3-2.9 °C      Cal. Due Date: 5-23-24	



# Analytical Laboratory Report

Report ID: S61915.01(01)  
Generated on 05/10/2024

## 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](mailto: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 Lavery ([johnlavery@meritlabs.com](mailto:johnlavery@meritlabs.com))  
Barbara Ball ([bball@meritlabs.com](mailto:bball@meritlabs.com))

## Report Summary

---

Lab Sample ID(s): S61915.01-S61915.06  
Project: 24-0341 PR#24050623  
Collected Date(s): 05/08/2024  
Submitted Date/Time: 05/09/2024 15:57  
Sampled by: Unknown  
P.O. #: 44001140900

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Glossary of Abbreviations (Page 3)  
Method Summary (Page 4)  
Sample Summary (Page 5)

Maya Murshak  
Technical Director



# Analytical Laboratory Report

## 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



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4450 S2 D 2011

---



# Analytical Laboratory Report

## Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S61915.01	DEK-MW-15003 (24-0341-01)	Groundwater	05/08/24 14:44
S61915.02	OW-10 (24-0341-02)	Groundwater	05/08/24 11:08
S61915.03	OW-11 (24-0341-03)	Groundwater	05/08/24 12:46
S61915.04	KLI-PCS (24-0341-06)	Groundwater	05/08/24 15:50
S61915.05	DUP-KLI (24-0341-08)	Groundwater	05/08/24 00:01
S61915.06	FB-KLI (24-0341-10)	Groundwater	05/08/24 12:46





# Analytical Laboratory Report

Lab Sample ID: S61915.01

Sample Tag: DEK-MW-15003 (24-0341-01)

Collected Date/Time: 05/08/2024 14:44

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 06:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.23	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61915.02

Sample Tag: OW-10 (24-0341-02)

Collected Date/Time: 05/08/2024 11:08

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 07:01, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.09	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61915.03

Sample Tag: OW-11 (24-0341-03)

Collected Date/Time: 05/08/2024 12:46

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 07:03, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61915.04

Sample Tag: KLI-PCS (24-0341-06)

Collected Date/Time: 05/08/2024 15:50

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 07:05, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61915.05

Sample Tag: DUP-KLI (24-0341-08)

Collected Date/Time: 05/08/2024 00:01

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 07:07, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.21	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61915.06

Sample Tag: FB-KLI (24-0341-10)

Collected Date/Time: 05/08/2024 12:46

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	6.0	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/10/24 07:09, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	

# Merit Laboratories Login Checklist

Lab Set ID:S61915

Attention: Emil Blaj  
 Address: Consumers Energy Company  
 135 West Trail Street  
 Jackson, MI 49201

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0341 PR#24050623

Submitted: 05/09/2024 15:57 Login User: MAM

Phone: D:517-788-5888 FAX:  
 Email: emil.blaj@cmsenergy.com

Selection	Description	Note
-----------	-------------	------

**Sample Receiving**

- |     |  |  |        |
|-----|--|--|--------|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer #        | 6.0 IR |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |        |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |        |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |        |

**Chain of Custody**

- |     |  |  |  |
|-----|--|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |  |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |  |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |  |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |  |

**Preservation**

- |     |  |   |  |
|-----|--|---|--|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |  |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |  |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |  |

**Bottle Conditions**

- |     |  |   |  |
|-----|--|---|--|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |  |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |  |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |  |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |  |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |  |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |  |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |  |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S61915      Submitted: 05/09/2024 15:57  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0341 PR#24050623

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 05/09/2024 16:33 MAM  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S61915.01	125mL Plastic NaOH/Zn Acetate	>12			
S61915.02	125mL Plastic NaOH/Zn Acetate	>12			
S61915.03	125mL Plastic NaOH/Zn Acetate	>12			
S61915.04	125mL Plastic NaOH/Zn Acetate	>12			
S61915.05	125mL Plastic NaOH/Zn Acetate	>12			
S61915.06	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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 44001140900  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME 24-0341 PR#24050623 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER	Total Sulfide	Certifications		Project Locations		Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
<u>61915.01</u>	<u>05/08/24</u>	<u>1444</u>	<u>DEK-MW-15003 (24-0341-01)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>preserved with NaOH/ZnAcetate</u>
<u>102</u>	<u>05/08/24</u>	<u>1108</u>	<u>OW-10 (24-0341-02)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>"</u>
<u>103</u>	<u>05/08/24</u>	<u>1246</u>	<u>OW-11 (24-0341-03)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>"</u>
<u>104</u>	<u>05/08/24</u>	<u>1550</u>	<u>KLI-PCS (24-0341-06)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>"</u>
<u>105</u>	<u>05/08/24</u>	<u>-</u>	<u>DUP-KLI (24-0341-08)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>"</u>
<u>106</u>	<u>05/08/24</u>	<u>1246</u>	<u>FB-KLI (24-0341-10)</u>	<u>GW</u>	<u>1</u>					<u>1</u>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<u>"</u>

RELINQUISHED BY: Consumers Energy  Sampler DATE 05-09-24 TIME 1557  
 RECEIVED BY: [Signature] DATE 5/19/24 TIME 1527  
 RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME

RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 NOTES: TEMP. ON ARRIVAL 6.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



# Analytical Laboratory Report

Report ID: S61971.01(01)  
Generated on 05/13/2024

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 Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S61971.01-S61971.02  
Project: 24-0341 PR#24050623  
Collected Date(s): 05/09/2024  
Submitted Date/Time: 05/10/2024 15:29  
Sampled by: Unknown  
P.O. #: 4400114090

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Maya Murshak  
Technical Director



# Analytical Laboratory Report

## 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.  
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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



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4450 S2 D 2011

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# Analytical Laboratory Report

## Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S61971.01	OW-12 (24-0341-04)	Groundwater	05/09/24 12:45
S61971.02	EB-KLI (24-0341-09)	Groundwater	05/09/24 13:00



# Analytical Laboratory Report

Lab Sample ID: S61971.01

Sample Tag: OW-12 (24-0341-04)

Collected Date/Time: 05/09/2024 12:45

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.9	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/13/24 08:09, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S61971.02

Sample Tag: EB-KLI (24-0341-09)

Collected Date/Time: 05/09/2024 13:00

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.9	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 05/13/24 08:11, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



# Merit Laboratories Login Checklist

Lab Set ID: S61971

Attention: Emil Blaj  
 Address: Consumers Energy Company  
 135 West Trail Street  
 Jackson, MI 49201

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0341 PR#24050623

Submitted: 05/10/2024 15:29 Login User: MMC

Phone: D:517-788-5888 FAX:  
 Email: emil.blaj@cmsenergy.com

Selection	Description	Note
-----------	-------------	------

**Sample Receiving**

- |     |  |  |        |
|-----|--|--|--------|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer #        | IR 5.9 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |        |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |        |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |        |

**Chain of Custody**

- |     |  |  |  |
|-----|--|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |  |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |  |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |  |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |  |

**Preservation**

- |     |  |   |  |
|-----|--|---|--|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |  |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |  |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |  |

**Bottle Conditions**

- |     |  |   |  |
|-----|--|---|--|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                            |  |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used       |  |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                            |  |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received             |  |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration         |  |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time         |  |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |  |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S61971      Submitted: 05/10/2024 15:29  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0341 PR#24050623

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 05/10/2024 16:31 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S61971.01	125mL Plastic NaOH/Zn Acetate	>12			
S61971.02	125mL Plastic NaOH/Zn Acetate	>12			



To: JFirlit, 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

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**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 2<sup>nd</sup> 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 accreditation 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**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

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<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

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0340-01  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0340-01-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	484		ug/L	1.0	05/13/2024	AB24-0513-12
Barium	147		ug/L	5.0	05/13/2024	AB24-0513-12
Beryllium	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Boron	917		ug/L	20.0	05/13/2024	AB24-0513-12
Cadmium	ND		ug/L	0.2	05/13/2024	AB24-0513-12
Calcium	52500		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	458		ug/L	20.0	05/13/2024	AB24-0513-12
Lead	ND		ug/L	1.0	05/13/2024	AB24-0513-12
Lithium	19		ug/L	10.0	05/13/2024	AB24-0513-12
Magnesium	11200		ug/L	1000.0	05/13/2024	AB24-0513-12
Manganese	133		ug/L	5.0	05/13/2024	AB24-0513-12
Molybdenum	17		ug/L	5.0	05/13/2024	AB24-0513-12
Nickel	2		ug/L	2.0	05/13/2024	AB24-0513-12
Potassium	5460		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	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 #: 24-0340-01-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 #: 24-0340-01-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, Cl, F, SO4, Aqueous

Aliquot #: 24-0340-01-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



**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0340-01  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0340-01-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), Groundwater HL Aliquot #: 24-0340-01-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 2540C Aliquot #: 24-0340-01-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 #: 24-0340-01-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 #: 24-0340-01-C07-A01 Analyst: Merit**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	78		ug/L	20.0	05/10/2024	AB24-0510-05

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0340-02  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0340-02-C01-A01

Analyst: EB

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, Total, Aqueous

Aliquot #: 24-0340-02-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 Aqueous, NO2, NO3

Aliquot #: 24-0340-02-C02-A01

Analyst: KDR

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, Aqueous

Aliquot #: 24-0340-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	105		%	1000.0	05/14/2024	AB24-0513-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0340-02  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0340-02-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), Groundwater HL** Aliquot #: 24-0340-02-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 #: 24-0340-02-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 #: 24-0340-02-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	05/10/2024	AB24-0510-05

## Laboratory 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  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0340-03-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, Total, Aqueous

Aliquot #: 24-0340-03-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 Aqueous, NO2, NO3

Aliquot #: 24-0340-03-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, Aqueous

Aliquot #: 24-0340-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	103		%	1000.0	05/14/2024	AB24-0513-11

**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  
 Matrix: Groundwater

Laboratory Project: **24-0340**  
 Collect Date: 05/08/2024  
 Collect Time: 01:03 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0340-03-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(h), Groundwater HL** Aliquot #: 24-0340-03-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 #: 24-0340-03-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 #: 24-0340-03-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	05/10/2024	AB24-0510-05

---

Data Qualifiers	Exception Summary
-----------------	-------------------

---

No exceptions occurred.

---

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

Project Log-In Number: 24-0340

Inspection Date: 5.9.24 Inspection By: CIE

Sample Origin/Project Name: DEK BAP + KI

Shipment Delivered By: Enter the type of shipment carrier.

Pony \_\_\_\_\_ FedEx  UPS \_\_\_\_\_ USPS \_\_\_\_\_ Airborne \_\_\_\_\_

Other/Hand Carry (whom) \_\_\_\_\_

Tracking Number: 27443174855 Shipping Form Attached: Yes  No \_\_\_\_\_

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.2 - 2.0 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration 015402  
5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>6</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>12</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
<del>250</del> 100 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

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



# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q2-2024 DEK Bottom Ash Pond & Lined Impound.			PROJECT NUMBER: <b>24-0340</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																																																																																																
SAMPLING TEAM: <b>J. Krenz</b>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																																																																																												
SEND REPORT TO: Joseph Firlit			email:			phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th colspan="8">CONTAINERS</th> </tr> <tr> <th colspan="8">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>7</td> <td>4</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>3</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>3</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	CONTAINERS								PRESERVATIVE								TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other											7	4	1	1	1															6	3	1	1	1															6	3	1	1	1														
Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	CONTAINERS																																																																																																									
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6	3	1	1	1																																																																																																											
COPY TO: Harold Register TRC			MATRIX CODES: GW = Groundwater    OX = Other WW = Wastewater    SL = Sludge W = Water / Aqueous Liquid    A = Air S = Soil / General Solid    WP = Wipe O = Oil    WT = General Waste			FIELD SAMPLE ID / LOCATION			REMARKS																																																																																																						
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX																																																																																																											
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24-0340-01	5-8-24	1303	GW	DEK-MW-18001	7	4	1	1							1																																																																																																
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↓ -03	↓	↓	GW	DEK-MW-18001 MSD	6	3	1	1	1																																																																																																						

RELINQUISHED BY:		DATE/TIME: 5/8/24 1700		RECEIVED BY: Fed-Ex		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    M&TE #: 015402 Temperature: 0.2-2.0 °C    Cal. Due Date: 5-23-24	
RELINQUISHED BY: Fed-Ex		DATE/TIME: 5.9.24 1130		RECEIVED BY:			





# ANALYTICAL REPORT

## PREPARED FOR

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

Generated 6/13/2024 1:08:56 PM

## JOB DESCRIPTION

Karn/Weadock CCR Lined Impoundment

## JOB NUMBER

240-204355-1

# 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](mailto:Kris.Brooks@et.eurofinsus.com)  
(330)966-9790



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# Definitions/Glossary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

## 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.
α	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

# Case Narrative

Client: TRC Environmental Corporation.  
Project: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Job ID: 240-204355-1**

**Eurofins Cleveland**

## Job Narrative 240-204355-1

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 Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The COC did not indicate any tests for sample 6. Sample 6 was logged for the tests indicated on the bottles received.

### 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

# Method Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

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



# Sample Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204355-1	DEK-MW-15003	Water	05/08/24 14:44	05/11/24 08:00
240-204355-2	OW-10	Water	05/08/24 11:08	05/11/24 08:00
240-204355-3	OW-11	Water	05/08/24 12:46	05/11/24 08:00
240-204355-4	OW-12	Water	05/09/24 12:45	05/11/24 08:00
240-204355-5	DUP-KLI	Water	05/08/24 00:00	05/11/24 08:00
240-204355-6	EB-KLI	Water	05/09/24 13:00	05/11/24 08:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: DEK-MW-15003**

**Lab Sample ID: 240-204355-1**

Date Collected: 05/08/24 14:44

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0384	U	0.0580	0.0581	1.00	0.0996	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		30 - 110					05/16/24 09:22	06/12/24 10:06	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.289	U	0.372	0.373	1.00	0.619	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		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 Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.327	U	0.376	0.377	5.00	0.619	pCi/L		06/13/24 11:27	1



# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: OW-10**

**Lab Sample ID: 240-204355-2**

Date Collected: 05/08/24 11:08

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.338		0.141	0.144	1.00	0.155	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.4		30 - 110					05/16/24 09:22	06/12/24 10:06	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.16		0.655	0.664	1.00	0.932	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.4		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 Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.50		0.670	0.679	5.00	0.932	pCi/L		06/13/24 11:27	1

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: OW-11**

**Lab Sample ID: 240-204355-3**

Date Collected: 05/08/24 12:46

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-226	0.0642	U	0.0647	0.0650	1.00	0.102	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.8		30 - 110					05/16/24 09:22	06/12/24 10:06	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.120	U	0.296	0.296	1.00	0.521	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.8		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	86.4		30 - 110					05/16/24 09:27	05/22/24 16:39	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Combined Radium 226 + 228	0.184	U	0.303	0.303	5.00	0.521	pCi/L		06/13/24 11:27	1

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: OW-12**

**Lab Sample ID: 240-204355-4**

Date Collected: 05/09/24 12:45

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.326		0.0998	0.104	1.00	0.0914	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		30 - 110					05/16/24 09:22	06/12/24 10:06	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.836		0.355	0.363	1.00	0.463	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.8		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	87.5		30 - 110					05/16/24 09:27	05/22/24 16:39	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.16		0.369	0.378	5.00	0.463	pCi/L		06/13/24 11:27	1

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: DUP-KLI**

**Lab Sample ID: 240-204355-5**

Date Collected: 05/08/24 00:00

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0216	U	0.0523	0.0524	1.00	0.0966	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.8		30 - 110					05/16/24 09:22	06/12/24 10:06	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.942		0.431	0.439	1.00	0.580	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.8		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	83.7		30 - 110					05/16/24 09:27	05/22/24 16:39	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.964		0.434	0.442	5.00	0.580	pCi/L		06/13/24 11:50	1

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: EB-KLI**  
 Date Collected: 05/09/24 13:00  
 Date Received: 05/11/24 08:00

**Lab Sample ID: 240-204355-6**  
 Matrix: Water

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0162	U	0.0495	0.0495	1.00	0.109	pCi/L	05/16/24 09:22	06/12/24 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.1		30 - 110					05/16/24 09:22	06/12/24 11:51	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.427	U	0.373	0.375	1.00	0.587	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.1		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	85.2		30 - 110					05/16/24 09:27	05/22/24 16:39	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.410	U	0.376	0.378	5.00	0.587	pCi/L		06/13/24 11:50	1

# Tracer/Carrier Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
240-204355-1	DEK-MW-15003	86.8	
240-204355-2	OW-10	69.4	
240-204355-3	OW-11	94.8	
240-204355-4	OW-12	98.8	
240-204355-5	DUP-KLI	85.8	
240-204355-6	EB-KLI	82.1	
LCS 160-662015/2-A	Lab Control Sample	89.6	
MB 160-662015/1-A	Method Blank	94.3	
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
240-204355-1	DEK-MW-15003	86.8	83.0
240-204355-2	OW-10	69.4	83.0
240-204355-3	OW-11	94.8	86.4
240-204355-4	OW-12	98.8	87.5
240-204355-5	DUP-KLI	85.8	83.7
240-204355-6	EB-KLI	82.1	85.2
LCS 160-662016/2-A	Lab Control Sample	89.6	81.5
MB 160-662016/1-A	Method Blank	94.3	81.9
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			
Y = Y Carrier			

# QC Sample Results

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-662015/1-A**  
**Matrix: Water**  
**Analysis Batch: 665824**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 662015**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	94.3		30 - 110		05/16/24 09:22	06/12/24 09:56	1			

**Lab Sample ID: LCS 160-662015/2-A**  
**Matrix: Water**  
**Analysis Batch: 665824**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 662015**

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

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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
Carrier	MB %Yield	MB 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			

**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**

Analyte	Spike Added	LCS	LCS	Total	RL	MDC	Unit	%Rec	%Rec Limits
		Result	Qual	Uncert. (2σ+/-)					
Radium-228	8.92	10.45		1.39	1.00	0.473	pCi/L	117	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	89.6		30 - 110						
Y Carrier	81.5		30 - 110						

# QC Association Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

## Rad

### Prep Batch: 662015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204355-1	DEK-MW-15003	Total/NA	Water	PrecSep STD	
240-204355-2	OW-10	Total/NA	Water	PrecSep STD	
240-204355-3	OW-11	Total/NA	Water	PrecSep STD	
240-204355-4	OW-12	Total/NA	Water	PrecSep STD	
240-204355-5	DUP-KLI	Total/NA	Water	PrecSep STD	
240-204355-6	EB-KLI	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
240-204355-1	DEK-MW-15003	Total/NA	Water	PrecSep_0	
240-204355-2	OW-10	Total/NA	Water	PrecSep_0	
240-204355-3	OW-11	Total/NA	Water	PrecSep_0	
240-204355-4	OW-12	Total/NA	Water	PrecSep_0	
240-204355-5	DUP-KLI	Total/NA	Water	PrecSep_0	
240-204355-6	EB-KLI	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	



# Lab Chronicle

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: DEK-MW-15003**

**Lab Sample ID: 240-204355-1**

Date Collected: 05/08/24 14:44

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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 11:27

**Client Sample ID: OW-10**

**Lab Sample ID: 240-204355-2**

Date Collected: 05/08/24 11:08

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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 11:27

**Client Sample ID: OW-11**

**Lab Sample ID: 240-204355-3**

Date Collected: 05/08/24 12:46

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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 11:27

**Client Sample ID: OW-12**

**Lab Sample ID: 240-204355-4**

Date Collected: 05/09/24 12:45

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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 11:27

# Lab Chronicle

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

**Client Sample ID: DUP-KLI**

**Lab Sample ID: 240-204355-5**

Date Collected: 05/08/24 00:00

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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: EB-KLI**

**Lab Sample ID: 240-204355-6**

Date Collected: 05/09/24 13:00

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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 11:51
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



# Accreditation/Certification Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR Lined Impoundment

Job ID: 240-204355-1

## 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
Illinois	NELAP	200023	11-30-24
Iowa	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

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Eurofins - Cleveland Sample Receipt Form/Narrative Login # : \_\_\_\_\_  
 Barberton Facility Cooler unpacked by: me

Client RCE Site Name \_\_\_\_\_  
 Cooler Received on 5-11-24 Opened on 5-11-24  
 FedEx, 1<sup>st</sup> Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other \_\_\_\_\_  
 Receipt After-hours Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_

Eurofins Cooler # EC 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 See Multiple Cooler Form  
 IR GUN # 18 (CF 0.0 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp. \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1  
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA  
 Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No  
 Were tamper/custody seals intact and uncompromised? Yes No NA  
 3 Shippers' packing slip attached to the cooler(s)? Yes No  
 4 Did custody papers accompany the sample(s)? Yes No  
 5 Were the custody papers relinquished & signed in the appropriate place? Yes No  
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No  
 7 Did all bottles arrive in good condition (Unbroken)? Yes No  
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No  
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No  
 10 Were correct bottle(s) used for the test(s) indicated? Yes No  
 11 Sufficient quantity received to perform indicated analyses? Yes No  
 12 Are these work share samples and all listed on the COC? Yes No

Tests that are not checked for pH by Receiving:  
 VOAs  
 Oil and Grease  
 TOC

If yes, Questions 13-17 have been checked at the originating laboratory  
 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC439975  
 14 Were VOAs on the COC? Yes No  
 15 Were air bubbles >6 mm in any VOA vials? Yes No NA Larger than this  
 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

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
 Concerning \_\_\_\_\_

18 CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_  
Sample EB-RLI does not have any tests indicated on the COC. Logged per bottles received. On 5-11-24

19 SAMPLE CONDITION  
 Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired  
 Sample(s) \_\_\_\_\_ were received in a broken container  
 Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION  
 Sample(s) \_\_\_\_\_ were further preserved in the laboratory  
 Time preserved \_\_\_\_\_ Preservative(s) added/Lot number(s) \_\_\_\_\_  
 VOA Sample Preservation Date/Time VOAs Frozen \_\_\_\_\_







Temperature readings

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Container Temp</u>	<u>Preservation Added</u>	<u>Preservation Lot Number</u>
DEK-MW-15003	240-204355-A-1	Plastic 1 liter - Nitric Acid	<2			
DEK-MW-15003	240-204355-B-1	Plastic 1 liter - Nitric Acid	<2			
OW-10	240-204355-A-2	Plastic 1 liter - Nitric Acid	<2			
OW-10	240-204355-B-2	Plastic 1 liter - Nitric Acid	<2			
OW-11	240-204355-A-3	Plastic 1 liter - Nitric Acid	<2			
OW-11	240-204355-B-3	Plastic 1 liter - Nitric Acid	<2			
OW-12	240-204355-A-4	Plastic 1 liter - Nitric Acid	<2			
OW-12	240-204355-B-4	Plastic 1 liter - Nitric Acid	<2			
DUP-KLI	240-204355-A-5	Plastic 1 liter - Nitric Acid	<2			
DUP-KLI	240-204355-B-5	Plastic 1 liter - Nitric Acid	<2			
EB-KLI	240-204355-A-6	Plastic 1 liter - Nitric Acid	<2			
EB-KLI	240-204355-B-6	Plastic 1 liter - Nitric Acid	<2			

## Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204355-1

**Login Number: 204355**

**List Number: 2**

**Creator: Thornley, Richard W**

**List Source: Eurofins St. Louis**

**List Creation: 05/14/24 05:18 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	





## Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204355-1

**Login Number: 204355**

**List Number: 3**

**Creator: Pinette, Meadow L**

**List Source: Eurofins St. Louis**

**List Creation: 05/15/24 01:28 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	





# 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

## 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  
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# Definitions/Glossary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

## 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.
α	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

# Case Narrative

Client: TRC Environmental Corporation.  
Project: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

**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.

Eurofins Cleveland

# Method Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

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



# Sample Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

---

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

1

2

3

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# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

**Client Sample ID: DEK-MW-18001**

**Lab Sample ID: 240-204354-1**

Date Collected: 05/08/24 13:03

Matrix: Water

Date Received: 05/11/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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 Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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

Job ID: 240-204354-1

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (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 Legend

Ba = Ba Carrier

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

Matrix: Water

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (30-110)	Y (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 Legend

Ba = Ba Carrier

Y = Y Carrier

# QC Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-662015/1-A**  
**Matrix: Water**  
**Analysis Batch: 665824**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 662015**

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	94.3		30 - 110		05/16/24 09:22	06/12/24 09:56	1			

**Lab Sample ID: LCS 160-662015/2-A**  
**Matrix: Water**  
**Analysis Batch: 665824**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 662015**

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

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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
Carrier	MB %Yield	MB 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			

**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**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.92	10.45		1.39	1.00	0.473	pCi/L	117	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	89.6		30 - 110						
Y Carrier	81.5		30 - 110						

# 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	

- 1
- 2
- 3
- 4
- 5
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- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Lab Chronicle

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

**Client Sample ID: DEK-MW-18001**

**Lab Sample ID: 240-204354-1**

**Date Collected: 05/08/24 13:03**

**Matrix: Water**

**Date Received: 05/11/24 08:00**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
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



# Accreditation/Certification Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-204354-1

## 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
Illinois	NELAP	200023	11-30-24
Iowa	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

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Eurofins - Cleveland Sample Receipt Form/Narrative  
 Barberton Facility

Client RC Site Name \_\_\_\_\_ Login # 204354  
 Cooler unpacked by: RC

Cooler Received on 5-11-24 Opened on 5-11-24  
 FedEx 1<sup>st</sup> Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other \_\_\_\_\_

Receipt After-hours Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_  
 Eurofins Cooler # EC 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 # 18 (CF 0.0 °C) Observed Cooler Temp \_\_\_\_\_ °C Corrected Cooler Temp \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1  
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA  
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA  
 -Were tamper/custody seals intact and uncompromised? Yes No NA  
 3 Shippers' packing slip attached to the cooler(s)? Yes No NA  
 4 Did custody papers accompany the sample(s)? Yes No NA  
 5 Were the custody papers relinquished & signed in the appropriate place? Yes No NA  
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No NA  
 7 Did all bottles arrive in good condition (Unbroken)? Yes No NA  
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No NA  
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Y/N  
 10 Were correct bottle(s) used for the test(s) indicated? Yes No NA  
 11 Sufficient quantity received to perform indicated analyses? Yes No NA  
 12 Are these work share samples and all listed on the COC? Yes No NA

Tests that are not checked for pH by Receiving  
 VOAs  
 Oil and Grease  
 TOC

If Yes, Questions 13-17 have been checked at the originating laboratory  
 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HCA39975  
 14. Were VOAs on the COC? Yes No NA  
 15 Were air bubbles >6 mm in any VOA vials? Yes No NA  
 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_  
 17 Was a LL Hg or Me Hg trip blank present? Yes No NA

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
 Concerning \_\_\_\_\_

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_

19. SAMPLE CONDITION  
 Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired  
 Sample(s) \_\_\_\_\_ were received in a broken container  
 Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION  
 Sample(s) \_\_\_\_\_ were further preserved in the laboratory  
 Time preserved \_\_\_\_\_ Preservative(s) added/Lot number(s) \_\_\_\_\_  
 VOA Sample Preservation Date/Time VOAs Frozen \_\_\_\_\_







# Login Container Summary Report

240-204354

6/13/2024

## Temperature readings

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Container Temp</u>	<u>Preservation Added</u>	<u>Preservation Lot Number</u>
DEK-MW-18001	240-204354-A-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
DEK-MW 18001	240-204354-B-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____

# Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204354-1

**Login Number: 204354**

**List Number: 2**

**Creator: Thornley, Richard W**

**List Source: Eurofins St. Louis**

**List Creation: 05/14/24 05:18 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	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 <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

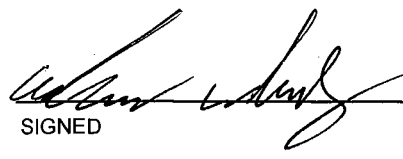


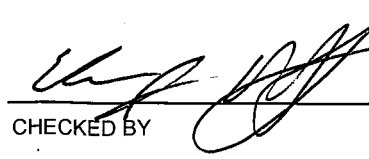
# Appendix B

## Field Notes



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
	Second Quarter 2024 Groundwater Sampling
PURPOSE OF FIELDWORK:	
	J. Jasso, J. Krenz, A. Whaley
WORK PERFORMED BY:	

 5/10/24  
SIGNED DATE

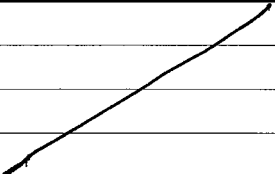
 5/15/24  
CHECKED BY DATE



**GENERAL NOTES**

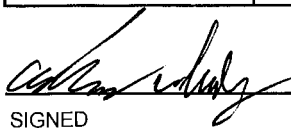
PROJECT NAME: CEC Kern BAP/LI: 2024 GW Comp	DATE: <u>5/18/2024</u>	TIME ARRIVED: <u>0700</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK <u>AW</u>	TIME LEFT: <u>1645</u>

WEATHER		
TEMPERATURE: <u>55-70</u> °F	WIND: <u>15-30</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
<u>Check in with site contact</u>		
<u>Calibrate YSI</u>		
<u>Sample from lined Impoundment wells; OW-10, OW-11, DEE-MW-15003 (DUP-KLI), surface water at KLI-PCS</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
<u>None</u>	

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
<u>Darby Litz</u>	<u>TRC</u>	<u>PM - Updates</u>
<u>Jon Gaeth</u>	<u>Consumers</u>	<u>Site Contact</u>

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
<u>Groundwater</u>	<u>NM</u>	<u>Purge to Ground</u>

 5/18/24  
 SIGNED DATE

 5/18/24  
 CHECKED BY DATE



**GENERAL NOTES**

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: <u>5-8-24</u>	TIME ARRIVED: <u>0700</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ (JK) AW	TIME LEFT: <u>1600</u>

WEATHER		
TEMPERATURE: <u>72</u> °F	WIND: <u>15-20</u> MPH	VISIBILITY: <u>clear</u>
WORK / SAMPLING PERFORMED		
<u>Sampled DEK-MW-18001</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

[Signature] 5-15-24  
 SIGNED DATE

[Signature] 5/15/24  
 CHECKED BY DATE



**GENERAL NOTES**

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: <u>5/8/20</u>	TIME ARRIVED: <u>1230</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK AW	TIME LEFT: <u>1620</u>

WEATHER		
TEMPERATURE: <u>62</u> °F	WIND: <u>30</u> MPH	VISIBILITY: <u>one cond</u>
WORK / SAMPLING PERFORMED		
<u>MW-15008, Dup #01, MW-15019, MW-15002</u>		
<u>MW-15016, EB#01, FB#01</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

SIGNED [Signature] 5/13/20 DATE

CHECKED BY [Signature] 5/15/20 DATE





**GENERAL NOTES**


PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: <u>5-9-24</u>	TIME ARRIVED: <u>0700</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK AW	TIME LEFT: <u>1600</u>

WEATHER		
TEMPERATURE: <u>70</u> °F	WIND: <u>10-20</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
<u>Sampled DEK BAP wells / OW-12</u>		
<u>unable to collect sample from KLE-SCS</u>		
<u>as it was dry</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
<u>SCS was dry</u>	<u>no sample collected</u>

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
<u>Darby Litz</u>	<u>TRC</u>	<u>PM - Updates</u>
<u>Jon Gaeth</u>	<u>Consumers</u>	<u>Site Contact</u>

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
<u>Groundwater</u>	<u>NM</u>	<u>Purge to Ground</u>


5-15-24
\_\_\_\_\_

SIGNED \_\_\_\_\_ DATE \_\_\_\_\_ CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_



### EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	SAMPLER NAME:	J. Jasso, J. Krenz, A. Whaley
PROJECT NO.:	553814.0001.0000		

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED 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 FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND  
  DRUM  
  POTW  
  POLYTANK  
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
SIGNED <u>[Signature]</u> <u>5/13/24</u> DATE	CHECKED BY <u>[Signature]</u> <u>5/15/24</u> DATE



### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: AW, JK, JJ
PROJECT NO.:	553814.0001.0000	SERIAL #:	DATE: <u>5/18/24</u>

#### PH CALIBRATION CHECK

(LOT #): <u>pH 7</u> <u>3650918</u> (EXP. DATE): <u>10/25</u>	(LOT #): <u>pH 4 / 10</u> <u>3650800</u> (EXP. DATE): <u>10/25</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>700 / 700</u>	<u>400 / 400</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>1235</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <u>3610103</u> (EXP. DATE): <u>11/24</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>13600 / 13600</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0239</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>236100046</u> (EXP. DATE): <u>7/28</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>223 / 223</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>1235</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<u>8.35 / 8.35</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>1235</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>A13097</u> (EXP. DATE): <u>4/25</u>	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>0 / 0</u>	/	<input checked="" type="checkbox"/> WITHIN RANGE	<u>1235</u>
<u>100 / 100</u>	/	<input checked="" type="checkbox"/> WITHIN RANGE	<u>1235</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #): (EXP. DATE):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER	

#### NOTES


#### PROBLEMS ENCOUNTERED

#### CORRECTIVE ACTIONS


SIGNED [Signature] 5/13/24 DATE

CHECKED BY [Signature] 5/14/24 DATE



**WATER QUALITY METER CALIBRATION LOG**

PROJECT NAME:	CEC Kam BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: AW, JK, JJ
PROJECT NO.:	553814.0001.0000	SERIAL #: <i>Rental</i>	DATE: <i>5-8-24</i>

**PH CALIBRATION CHECK**

pH 7 (LOT #): <i>4GA0629</i> (EXP. DATE): <i>Jan/26</i>		pH 4 / 10 (LOT #): <i>4GA0631</i> (EXP. DATE): <i>Jan/26</i>		CAL. RANGE	TIME
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
<i>7.02</i>	<i>7.02</i>	<i>4.00</i>	<i>4.00</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>1206</i>
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

**SPECIFIC CONDUCTIVITY CALIBRATION CHECK**

CAL. READING (LOT #): <i>4GC1196</i> (EXP. DATE): <i>Mar/25</i>		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD				
<i>1213</i>	<i>1213</i>	<i>17.4</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>1201</i>
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	

**ORP CALIBRATION CHECK**

CAL. READING (LOT #): <i>23L100156</i> (EXP. DATE): <i>11-7-2028</i>		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD				
<i>230.2</i>	<i>270.2</i>	<i>20.1</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>1212</i>
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	

**D.O. CALIBRATION CHECK**

CAL. READING		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR				
<i>8.91</i>	<i>8.91</i>	<i>19.3</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>1215</i>
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	
/	/		<input type="checkbox"/> WITHIN RANGE	

**TURBIDITY CALIBRATION CHECK**

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <i>DI water</i> (EXP. DATE):	(LOT #): <i>A3097</i> (EXP. DATE): <i>APR-25</i>		
POST-CAL. READING / STANDARD			
<i>0.00</i>	<i>100.0</i>	<i>0.00</i>	<i>100.0</i>
/	/	<input checked="" type="checkbox"/> WITHIN RANGE	<i>1221</i>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

**COMMENTS**

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

**NOTES**


**PROBLEMS ENCOUNTERED**

**CORRECTIVE ACTIONS**


SIGNED *JL Ky* DATE *5-15-24*

CHECKED BY *[Signature]* DATE *5/15/24*



### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: <u>AW</u> JK, JJ
PROJECT NO.:	553814.0001.0000	SERIAL #: <u>Rental</u>	DATE: <u>5/14/24</u>

#### PH CALIBRATION CHECK

pH 7 (LOT #): <u>46B1040</u> (EXP. DATE): <u>Feb/26</u>	pH 4 / 10 (LOT #): <u>46A0631</u> (EXP. DATE): <u>Jan/26</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>7.05 / 7.05</u>	<u>4.00 / 4.00</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0712</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <u>96C1196</u> (EXP. DATE): <u>Mar/25</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>1100 / 1100</u>	<u>12.2</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0714</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>23L10056</u> (EXP. DATE): <u>Nov/28</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>246.5 / 240.5</u>	<u>13.0</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0721</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### D.O. CALIBRATION CHECK

CAL. READING (LOT #):	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<u>10.33 / 10.33</u>	<u>12.4</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0724</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>D1</u> (EXP. DATE): <u>D1</u>	(LOT #): <u>A8097</u> (EXP. DATE): <u>Sept/24</u>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>0 / 0</u>	<u>100 / 100</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0728</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

#### NOTES

Meter rented from Geotech

#### PROBLEMS ENCOUNTERED

None

#### CORRECTIVE ACTIONS

/

[Signature]      5/10/24  
SIGNED      DATE

[Signature]      5/15/24  
CHECKED BY      DATE



### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: AW, <u>JK</u> JJ
PROJECT NO.:	553814.0001.0000	SERIAL #: <u>Rental</u>	DATE: <u>5-8-24</u>

#### PH CALIBRATION CHECK

pH 7 (LOT #): <u>46A0629</u> (EXP. DATE): <u>Jun/26</u>	pH 4 / 10 (LOT #): <u>46A0631</u> (EXP. DATE): <u>Jun/26</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>7.00 / 7.00</u>	<u>4.00 / 4.00</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0627</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <u>46C1196</u> (EXP. DATE): <u>Mar/25</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>1413 / 1413</u>	<u>19.3</u>	<input type="checkbox"/> WITHIN RANGE	<u>0625</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>23L100156</u> (EXP. DATE): <u>11-7-28</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>230.7 / 230.7</u>	<u>20.7</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0629</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<u>8.95 / 8.95</u>	<u>19.6</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0633</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>DR water</u> (EXP. DATE):	(LOT #): <u>A7097</u> (EXP. DATE): <u>APR-25</u>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>0.0 / 0.0</u>	<u>100.0 / 100.0</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0630</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

#### NOTES


#### PROBLEMS ENCOUNTERED

#### CORRECTIVE ACTIONS


SIGNED

*[Signature]*

DATE

5-17-24

CHECKED BY

DATE



**WATER LEVEL DATA** *Kern*

PROJECT NAME: CEC Kern <del>Woodcock</del> 2024 GW Compliance	DATE: 5/14/24
PROJECT NUMBER: 553814.0000/553814.0001/553828.0000	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	TOC	17.25	24.20	NA	NM
MW-02	1021	TOC	17.59	30.34	NA	NM
MW-03	1024	TOC	17.55	30.20	NA	NM
MW-04	1027	TOC	18.20	30.85	NA	NM
MW-06	1039	TOC	9.54	24.30	NA	NM
MW-08	1050	TOC	17.92	27.45	NA	NM
MW-10	1116	TOC	17.00	24.85	NA	NM
MW-12	1152	TOC	18.61		NA	NM
MW-14	1213	TOC	14.40	19.20	NA	NM
MW-16	1230	TOC	16.05	21.28	NA	NM
MW-17	1310	TOC	14.22	24.30	NA	NM
MW-18	0914	TOC	26.64	39.64	NA	NM
MW-19	0920	TOC	17.18	29.94	NA	NM
MW-20	0953	TOC	53.00	72.00	NA	NM
MW-21	0945	TOC	51.90	60.55	NA	NM
MW-22	1100	TOC	17.35	29.53	NA	NM
MW-23	1148	TOC	14.78	15.05	NA	NM
OW-01	0957	TOC	24.50	24.40	NA	NM
OW-02	1101	TOC	16.29	21.95	NA	NM
OW-03	1111	TOC	17.48	28.25	NA	NM
OW-04	1216	TOC	10.30	16.22	NA	NM
OW-05	1228	TOC	13.50	18.00	NA	NM
OW-06	1258	TOC	22.85	25.70	NA	NM
OW-07	1150	TOC	19.60	23.92	NA	NM
OW-08	1252	TOC	16.10	17.90	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED *[Signature]* DATE 5-15-24

CHECKED *[Signature]* DATE 5/15/24



**WATER LEVEL DATA**

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 5/10/24
PROJECT NUMBER: 553814.0000/553814.0001/553828.0000	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	1251	TOC	10.45	17.78	NA	NM
OW-10	1300	TOC	7.80	17.90	NA	NM
OW-11	0907	TOC	24.30	25.45	NA	NM
OW-12	1406	TOC	18.25	23.41	NA	NM
OW-13	1400	TOC	3.91	14.38	NA	NM
OW-15	0900	TOC	3.85	19.70	NA	NM
EW-01	1114	TOC	13.90	DNM	NA	NM
EW-02	1120	TOC	15.32	↓	NA	NM
EW-03	1141	TOC	14.05		NA	NM
EW-04	1200	TOC	14.62		NA	NM
EW-05	1208	TOC	14.00		NA	NM
EW-06	1220	TOC	10.65		NA	NM
PZ-01	1105	TOC	13.48		14.14	NA
PZ-02	1107	TOC	19.50	23.00	NA	NM
PZ-03	1124	TOC	15.28	20.50	NA	NM
PZ-04	1120	TOC	15.00	20.95	NA	NM
PZ-05	1131	TOC	14.72	21.45	NA	NM
PZ-06	1157	TOC	15.60	20.35	NA	NM
PZ-07	1208	TOC	14.90	21.00	NA	NM
PZ-08	1206	TOC	14.60	20.60	NA	NM
PZ-09	1214	TOC	15.38	21.55	NA	NM
PZ-10	1222	TOC	10.90	17.77	NA	NM
PZ-11	1224	TOC	13.90	18.00	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED JL R DATE 5-15-24

CHECKED [Signature] DATE 5/15/24





### WATER LEVEL DATA

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 5/16/24
PROJECT NUMBER: 557814.0000/557814.0001/557814.0000	AUTHOR: J. Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	0903		9.48	19.68		
DEK-MW-15002						
DEK-MW-15003	0910		18.95	27.95		
DEK-MW-15004	0916		29.04	41.80		
DEK-MW-15005	0923		9.88	22.30		
DEK-MW-15006						
DEK-MW-22001	0926		10.25	24.20		
DEK-MW-22002	0932		11.81	26.85		
DEK-MW-22003	0937		11.71	24.40		
DEK-MW-22004	0930		10.25	22.40		
DEK-MW-22005	0928		8.60	20.25		
DEK-MW-22006	0935		8.89	17.05		
MW-15002						
MW-15008						
MW-15016						
MW-15019						
Tw-21-003	1010		18.20	26.15		
Tw-21-002	1013		12.82	20.56		
Tw-21-001	1017		12.80	17.58		
Tw-21-013	1030		22.81	36.90		
Tw-21-0125	1034		20.30	27.80		
Tw-21-0122	1035		20.49	36.62		
Tw-21-0120	1036		20.42	54.78		
Tw-21-0415	1044		21.75	27.55		
Tw-21-0412	1046		21.92	39.30		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED JL Jasso 5-15-24  
DATE

CHECKED [Signature] 5/15/24  
DATE





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: <u>mw.15002</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1431</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>1451</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.68</u> SU		CONDUCTIVITY: <u>495</u> umhos/cm		
DEPTH TO WATER: <u>6.64</u> T/ PVC		TURBIDITY: <u>8.5</u> NTU			
DEPTH TO BOTTOM: <u>16.89</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>12.7</u> °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>4</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clear</u>		ODOR: <u>none</u>	
COLOR: <u>Orange</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

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)
1431	200	7.70	824	-103.5	8.3	113.0	15.2	6.66	INITIAL
1436		7.74	521	-111.0	1.50	8.6	12.8	6.85	1
1441		7.69	511	-111.1	1.23	8.5	12.8	6.85	2
1446		7.68	500	-111.3	1.25	8.5	12.8	6.85	3
1451		7.68	495	-111.5	1.25	8.5	12.7	6.85	4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: _____	DATE SIGNED: <u>5/13/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ	DATE: <u>5/13/24</u>	BY: JK	DATE: <u>5-13-24</u>
SAMPLE ID: <u>MW-15008</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>1245</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>1315</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: <u>6.95</u> SU	CONDUCTIVITY: <u>1760</u> umhos/cm		
		ORP: <u>-125.5</u> mV	DO: <u>0.70</u> mg/L		
DEPTH TO WATER: <u>4.25</u> T/ PVC		TURBIDITY: <u>9.95</u> NTU			
DEPTH TO BOTTOM: <u>17.42</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>11.5</u> °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>6</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clear</u>		ODOR: <u>none</u>	
COLOR: <u>Brownish</u> ODOR: <u>none</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>Background</u>		COMMENTS:	

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)
<u>1245</u>	<u>200</u>	<u>4.00</u>	<u>2014</u>	<u>223</u>	<u>8.37</u>	<u>215</u>	<u>17.7</u>	<u>4.25</u>	INITIAL
<u>1250</u>		<u>6.96</u>	<u>2341</u>	<u>-107.5</u>	<u>1.26</u>	<u>9.5</u>	<u>11.9</u>	<u>4.31</u>	<u>4.31</u>
<u>1255</u>		<u>6.90</u>	<u>2113</u>	<u>-107.0</u>	<u>0.94</u>	<u>10.8</u>	<u>11.7</u>	<u>4.35</u>	<u>2</u>
<u>1300</u>		<u>6.95</u>	<u>1855</u>	<u>-114.5</u>	<u>0.81</u>	<u>10.0</u>	<u>11.5</u>	<u>4.35</u>	<u>3</u>
<u>1305</u>		<u>6.95</u>	<u>1757</u>	<u>-125.0</u>	<u>0.77</u>	<u>10.0</u>	<u>11.5</u>	<u>4.35</u>	<u>4</u>
<u>1310</u>		<u>6.95</u>	<u>1755</u>	<u>-125.3</u>	<u>0.71</u>	<u>10.0</u>	<u>11.5</u>	<u>4.35</u>	<u>5</u>
<u>1315</u>		<u>6.95</u>	<u>1760</u>	<u>-125.5</u>	<u>0.70</u>	<u>9.95</u>	<u>11.5</u>	<u>4.36</u>	<u>6</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
<u>2</u>	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>2</u>	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<u>4</u>	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
<u>2</u>	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5/13/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ DATE: <u>5/13/24</u>	BY: <u>JK</u> DATE: <u>5-13-24</u>

SAMPLE ID: <u>MU-15016</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1512</u> DATE: <u>5/13/24</u>	SAMPLE	TIME: <u>1547</u> DATE: <u>5/13/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.10</u> SU	CONDUCTIVITY: <u>1762</u> umhos/cm	
	ORP: <u>-117.5</u> mV	DO: <u>0.69</u> mg/L	
DEPTH TO WATER: <u>8.40</u> T/ PVC	TURBIDITY: <u>9.9</u> NTU		
DEPTH TO BOTTOM: <u>7.75</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>12.5</u> °C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>7</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>	
COLOR: <u>Brown</u> ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:	

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)
1515	200	7.07	1722	-90.1	0.7	260	15.5	3.40	INITIAL
1517		7.00	1814	-93.0	1.85	83	12.8	3.70	1
1522		7.08	1723	-107.5	1.00	35	12.9	3.70	2
1527		7.10	1715	-110.5	0.85	23	12.7	3.70	3
1532		7.10	1736	-114.8	0.78	17	12.6	3.70	4
1537		7.10	1748	-117.5	0.73	10	12.6	3.70	5
1542		7.10	1757	-117.5	0.70	10	12.5	3.80	6
1547		7.10	1763	-117.5	0.69	9.9	12.5	3.85	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N		
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N		
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ DATE: 5/17/24	BY: JK DATE: 5-13-24

SAMPLE ID: <u>mw-15019</u> <u>mw-15009</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VVW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING TIME: <u>3:40</u> DATE: <u>5/8/24</u>	SAMPLE TIME: <u>1413</u> DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.95</u> SU CONDUCTIVITY: <u>2044</u> umhos/cm
	ORP: <u>-104.5</u> mV DO: <u>0.77</u> mg/L
DEPTH TO WATER: <u>5.30</u> T/ PVC	TURBIDITY: <u>5.8</u> NTU
DEPTH TO BOTTOM: <u>16.87</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>10.0</u> °C FERROUS Fe _____ mg/L
VOLUME REMOVED: <u>5</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u> ODOR: <u>non</u>
COLOR: <u>clear</u> ODOR: <u>non</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: _____ FILTRATE ODOR: _____
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____
COMMENTS:	

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)
1348	200	707	2037	-106.8	8.2	10	16.0	5.30	INITIAL
1353		6.96	2039	-94.5	1.40	5.8	11.5	5.35	1
1358		6.95	2041	-97.5	0.90	5.8	11.4	5.35	2
1403		6.95	2046	-104.0	0.86	5.8	10.0	5.35	3
1408		6.95	2046	-104.3	0.80	5.9	10.0	5.35	4
1413		6.95	2044	-104.5	0.77	5.8	10.0	5.35	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	Y	N	NUMBER	SIZE	TYPE	PRESERVATIVE	Y	N
1	250 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		125 mL	PLASTIC	D	<input type="checkbox"/>	<input type="checkbox"/>
1	125 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		40 mL	VOA	E	<input type="checkbox"/>	<input type="checkbox"/>
	60 mL	VOA	A	<input type="checkbox"/>	<input type="checkbox"/>	2	1 L	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	125 mL	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>
	125 mL	PLASTIC	C	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



# WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ	DATE: 5/13/24

SAMPLE ID: <del>EB #01</del> + EB #01	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: 1005	DATE: 5/13/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP			PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	
<input type="checkbox"/> BAILER			ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: _____ °C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: _____	ODOR: _____	
COLOR: _____	ODOR: _____		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS: EQ - Background		

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)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, <u>JK</u> JJ	DATE: <u>5-8-24</u>
	BY: <u>ER</u>	DATE: <u>5/15/24</u>

SAMPLE ID: <u>DEK-MW-18001</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1226</u>	DATE: <u>5-8-24</u>	SAMPLE	TIME: <u>1303</u>	DATE: <u>5-8-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.36</u> SU	CONDUCTIVITY: <u>747</u> umhos/cm	ORP: <u>-94.1</u> mV	DO: <u>0.12</u> mg/L	
DEPTH TO WATER: <u>9.50</u> T/ PVC	TURBIDITY: <u>3.03</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>19.70</u> T/ PVC	TEMPERATURE: <u>12.3</u> °C	FERROUS Fe: _____ mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>7</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>clear</u> ODOR: <u>none</u>	TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

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)
1228	200	7.19	783	16.8	1.74	18.16	13.3	9.63	INITIAL
1233	200	7.28	759	-24.7	0.46	7.15	12.4	9.63	1
1238	200	7.32	762	-59.6	0.21	5.11	12.7	9.63	2
<sup>1243</sup> <del>1238</del>	200	7.34	760	-75.5	0.11	5.50	12.7	9.63	3
1248	200	7.34	751	-80.3	0.02	3.98	12.4	9.63	4
1253	200	7.36	749	-90.6	0.12	2.94	12.4	9.63	5
1258	200	7.37	747	-93.6	0.11	3.21	12.2	9.63	6
1303	200	7.36	747	-94.1	0.12	3.03	12.3	9.63	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	3	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>40 mL VOA</del>		<del>E</del>		<input type="checkbox"/> Y <input type="checkbox"/> N
6	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
3	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>5-8-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5-15-24</u>





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, <u>JK</u> JJ	DATE: <u>5-9-24</u> BY: <u>EL</u> DATE: <u>5/15/24</u>

SAMPLE ID: <u>DEK-MW-15002</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0954</u>	DATE: <u>5-9-24</u>	SAMPLE	TIME: <u>1031</u>	DATE: <u>5-9-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.39</u> SU	CONDUCTIVITY: <u>780</u> umhos/cm	
DEPTH TO WATER: <u>7.00</u> T/ PVC			ORP: <u>-193.3</u> mV	DO: <u>0.18</u> mg/L	
DEPTH TO BOTTOM: _____ T/ PVC			TURBIDITY: <u>5.36</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>11.1</u> °C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>7</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>	ODOR: <u>none</u>	
COLOR: <u>Clear</u> ODOR: <u>none</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>DEK-BAP</u>		
COMMENTS:					

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)
0956	200	7.47	818	-128.8	1.72	5.53	11.3	7.16	INITIAL
1001	200	7.44	812	-149.6	0.69	5.19	11.1	7.16	1
1006	200	7.43	810	-162.0	0.18	5.72	11.0	7.16	2
1011	200	7.41	801	-171.1	0.18	5.43	10.8	7.16	3
1016	200	7.40	799	-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	7.16	6
1031	200	7.39	780	-193.3	0.18	5.36	11.1	7.16	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>40 mL VOA E <input type="checkbox"/> Y <input type="checkbox"/> N</del>					
4	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	4	1L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Sub Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>Je Ky</u>	DATE SIGNED: <u>5-15-24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, <u>QJ</u> JJ	DATE: <u>5-9-24</u>
	BY: <u>ER</u>	DATE: <u>5/15/24</u>

SAMPLE ID: <u>DEK-MW-15005</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0801</u>	DATE: <u>5-9-24</u>	SAMPLE	TIME: <u>0837</u>	DATE: <u>5-9-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.44</u> SU	CONDUCTIVITY: <u>1166</u> umhos/cm	ORP: <u>-87.4</u> mV	DO: <u>0.58</u> mg/L	
DEPTH TO WATER: <u>9.80</u> T/ PVC	TURBIDITY: <u>4.80</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: _____ T/ PVC	TEMPERATURE: <u>10.7</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>7</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>clear</u> ODOR: <u>none</u>	TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

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)
0802	200	6.76	1014	74.1	3.02	4.51	10.5	10.02	INITIAL
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
0822	200	7.43	1115	-74.7	0.68	4.27	10.7	10.02	4
0827	200	7.44	1139	-79.8	0.65	5.83	10.9	10.02	5
0832	200	7.44	1143	-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

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	Y	N	NUMBER	SIZE	TYPE	PRESERVATIVE	Y	N
1	250 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	125 mL	PLASTIC	D	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	125 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		40 mL	VOA	E	<input type="checkbox"/>	<input type="checkbox"/>
2	60 mL	VOA	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		1 L	PLASTIC	B	<input type="checkbox"/>	<input type="checkbox"/>
1	125 mL	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>
1	125 mL	PLASTIC	C	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>

SHIPPING METHOD: <u>lab drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5-15-24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, <u>JK</u> JJ	DATE: <u>5-9-24</u> BY: <u>ER</u> DATE: <u>5/13/24</u>

SAMPLE ID: <u>DEK-MW-15006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1111</u>	DATE: <u>5-9-24</u>	SAMPLE	TIME: <u>1138</u>	DATE: <u>5-9-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.65</u> SU	CONDUCTIVITY: <u>1095</u> umhos/cm	ORP: <u>-107.0</u> mV	DO: <u>0.13</u> mg/L	
DEPTH TO WATER: <u>9.30</u> T/ PVC	TURBIDITY: <u>3.15</u> NTU	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>NM</u> T/ PVC	TEMPERATURE: <u>11.8</u> °C	FERROUS Fe: _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>clear</u> ODOR: <u>none</u>	TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

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)
1113	200	7.65	1090	-71.5	3.77	14.25	12.2	9.41	INITIAL
1118	200	7.66	1079	-62.5	0.71	10.64	11.8	9.41	1
1123	200	7.67	1091	-93.5	0.13	4.68	11.8	9.41	2
1128	200	7.66	1092	-100.8	0.14	3.65	11.8	9.41	3
1133	200	7.65	1092	-104.5	0.13	3.24	11.8	9.41	4
1138	200	7.65	1095	-107.0	0.13	3.15	11.8	9.41	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>40 mL VOA E</del>					
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: _____	DATE SHIPPED: _____	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: _____	DATE SIGNED: _____



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AWJ</u> JK, JJ	DATE: <u>5/8/24</u>
	BY: <u>E/L</u>	DATE: <u>5/15/24</u>

SAMPLE ID: <u>OW-10</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1028</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>1108</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.32</u> SU	CONDUCTIVITY: <u>908</u> umhos/cm	ORP: <u>-73.4</u> mV	DO: <u>0.33</u> mg/L	
DEPTH TO WATER: <u>7.83</u> T/ PVC	TURBIDITY: <u>17.98</u> NTU	<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>1745</u> T/ PVC	TEMPERATURE: <u>12.4</u> °C	FERROUS Fe <u>—</u> mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear-cloudy</u>	ODOR: <u>None</u>			
VOLUME REMOVED: <u>8.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>None</u>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	FILTRATE COLOR: <u>Clear</u>	FILTRATE ODOR: <u>None</u>		
	TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS: <u>Dissolved metals collected</u>		

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)
1028	200	7.51	1005	89.5	3.09	39.67	12.6	7.83	INITIAL
1033		7.46	1012	61.2	1.16	52.11	12.7	8.30	1.0
1038		7.43	979	20.9	0.72	54.75	12.3	8.42	2.0
1043		7.38	950	-18.3	0.51	25.78	12.5	8.50	3.0
1048		7.36	937	-45.6	0.45	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	0.35	17.04	12.5	8.70	7.0
1108		7.32	908	-73.4	0.33	17.98	12.4	8.70	8.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125	Plastic	B	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed-EX</u>	DATE SHIPPED: <u>5/8/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>A. Whaley</u>	DATE SIGNED: <u>5/10/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AVJ, JK, JJ</u> DATE: <u>5/18/24</u>	BY: <u>EK</u> DATE: <u>5/15/24</u>

SAMPLE ID: <u>Dw-11</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1216</u>	DATE: <u>5/18/24</u>	SAMPLE	TIME: <u>1246</u>	DATE: <u>5/18/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>9.53</u> SU	CONDUCTIVITY: <u>384.0</u> umhos/cm	ORP: <u>64.1</u> mV	DO: <u>2.10</u> mg/L	
DEPTH TO WATER: <u>24.25</u> T/ PVC	TURBIDITY: <u>6.10</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>15.8</u> °C	FERROUS Fe <u>—</u> mg/L		
VOLUME REMOVED: <u>2.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>None</u>			
COLOR: <u>Gray-Cloudy</u>	ODOR: <u>None</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: <u>—</u>	FILTRATE ODOR: <u>—</u>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS: <u>FB-tcl1</u>			

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)
1216	<del>200</del> <sup>100</sup>	<del>8.80</del>	448.2	69.4	2.87	240.22	15.1	24.25	INITIAL
1221		9.18	399.9	66.4	2.19	658.20	15.8	25.30	+0.005
1226	- Dry	adjust tubing and wait for recharge							2.0
1231		9.54	357.9	75.3	2.60	38.46	15.4	25.30	+0.020
1236	- Dry	wait for recharge							1.0
1241		9.53	354.0	64.1	2.10	6.10	15.8	24.70	1.5
1246	- Dry	collect sample after recharge						25.30	2.0
Sample collection finished @ 1350 due to well going dry									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed-Ex</u>	DATE SHIPPED: <u>5/18/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>A. Whitley</u>	DATE SIGNED: <u>5/16/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW <u>(JK)</u> JJ	DATE: <u>5-9-24</u>
	BY: <u>ER</u>	DATE: <u>5/15/24</u>

SAMPLE ID: <u>0W-12</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1208</u>	DATE: <u>5-9-24</u>	SAMPLE	TIME: <u>1245</u>	DATE: <u>5-9-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.14</u> SU	CONDUCTIVITY: <u>1199</u> umhos/cm	ORP: <u>-80.9</u> mV	DO: <u>0.25</u> mg/L	
DEPTH TO WATER: <u>18.25</u> T/ PVC	TURBIDITY: <u>5.34</u> NTU				
DEPTH TO BOTTOM: <u>NM</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>12.5</u> °C	FERRICIS Fe _____ mg/L			
VOLUME REMOVED: <u>7</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>orange</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

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)
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	1
1220	200	7.19	1069	-58.4	0.28	47.34	12.7	18.32	2
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	200	7.15	1180	-76.5	0.26	10.93	12.6	18.32	5
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

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>1</del>	<del>40 mL</del>	<del>VOA</del>	<del>E</del>	<del><input type="checkbox"/> Y <input checked="" type="checkbox"/> N</del>	
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: _____	DATE SHIPPED: _____	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: _____	DATE SIGNED: _____



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW</u> JK, JJ	DATE: <u>5/18/24</u>
	BY: <u>ER</u>	DATE: <u>5/15/24</u>

SAMPLE ID: <u>DEH-MW-15003</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1404</u>	DATE: <u>5/18/24</u>	SAMPLE	TIME: <u>1444</u>	DATE: <u>5/18/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>8.09</u> SU	CONDUCTIVITY: <u>393.0</u> umhos/cm	ORP: <u>-48.0</u> mV	DO: <u>0.56</u> mg/L	
DEPTH TO WATER: <u>18.95</u> T/ PVC	TURBIDITY: <u>3.00</u> NTU				
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>18.9</u> °C	FERROUS Fe <u>—</u> mg/L			
VOLUME REMOVED: <u>8.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>None</u>			
COLOR: <u>Clear</u>	ODOR: <u>None</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: <u>—</u>		FILTRATE ODOR: <u>—</u>	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>KLI</u>			
COMMENTS: <u>Radium Dup also collected</u>					

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 OF)
1404	200	8.10	388.8	86.4	2.60	6.08	18.6	18.95	INITIAL
1409	↓	7.73	377.0	82.0	1.74	5.98	18.6	20.40	1.0
1414	↓	7.72	380.5	71.1	1.41	4.97	19.2	20.48	2.0
1419	↓	7.77	381.6	38.4	1.02	4.58	19.3	20.54	3.0
1424	↓	7.99	387.7	3.1	0.76	3.64	18.9	20.70	4.0
1429	↓	8.03	394.4	-10.7	0.74	3.38	19.1	20.76	5.0
1434	↓	8.05	397.6	-98.4	0.67	3.41	19.4	↓	6.0
1439	↓	8.06	399.6	-42.7	0.62	3.11	19.3	↓	7.0
1444	↓	8.09	393.0	-48.0	0.56	3.00	18.9	↓	8.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
4	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	4	1L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed. Ex</u>	DATE SHIPPED: <u>5/18/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>A. White</u>	DATE SIGNED: <u>5/18/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW, JK, JJ</u> DATE: <u>5/8/24</u>	BY: <u>ERL</u> DATE: <u>5/15/24</u>

SAMPLE ID: <u>KLI-PCS</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input checked="" type="checkbox"/> OTHER <u>Surface water</u>	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input checked="" type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING TIME: <u>1545</u> DATE: <u>5/8/24</u>	SAMPLE TIME: <u>1550</u> DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP <del>PERISTALTIC PUMP</del> <input type="checkbox"/> BAILER <u>Sample Cup</u>	PH: <u>8.71</u> SU CONDUCTIVITY: <u>612</u> umhos/cm ORP: <u>101.0</u> mV DO: <u>9.90</u> mg/L
DEPTH TO WATER: <u>NA</u> T/ PVC	TURBIDITY: <u>9.23</u> NTU
DEPTH TO BOTTOM: <u>NA</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>19.6</u> °C FERROUS Fe: <u>—</u> mg/L
VOLUME REMOVED: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u> ODOR: <u>None</u>
COLOR: <u>Clear</u> ODOR: <u>None</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: <u>—</u> FILTRATE ODOR: <u>—</u>
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- <u>—</u>
COMMENTS:	

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)
1545	NA	8.71	614	99.6	9.89	16.11	19.6	NA	INITIAL
1550	NA	8.71	612	101.0	9.90	9.23	19.6	NA	—

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed-EX</u>	DATE SHIPPED: <u>5/8/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>A. Whang</u>	DATE SIGNED: <u>5/10/24</u>



# CHAIN OF CUSTODY



**CONSUMERS ENERGY COMPANY - LABORATORY SERVICES**  
 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: 22-2024 JCW-DEK Background Wells

PROJECT NUMBER: **24-0343**  
 SAP CC or WO#: \_\_\_\_\_  
 REQUESTER: Harold Register

ANALYSIS REQUESTED  
 (Attach List if More Space is Needed)

QA REQUIREMENT:  
 NPDES  
 TNI  
 ISO 17025  
 10 CFR 50 APP. B  
 INTERNAL INFO  
 OTHER \_\_\_\_\_

SAMPLING TEAM:

TURNAROUND TIME REQUIRED:  
 24 HR  48 HR  3 DAYS  STANDARD  OTHER \_\_\_\_\_

SEND REPORT TO: Joseph Firitt

email: \_\_\_\_\_ phone: \_\_\_\_\_

COPY TO: Harold Register

MATRIX CODES:  
 GW = Groundwater  
 WW = Wastewater  
 W = Water / Aqueous Liquid  
 S = Soil / General Solid  
 O = Oil  
 OX = Other  
 SL = Sludge  
 A = Air  
 WP = Wipe  
 WT = General Waste

LAB SAMPLE ID

FIELD SAMPLE ID / LOCATION

DATE

TOTAL #

TIME

CONTAINERS

MATRIX

None

MW-15002

HNO<sub>3</sub>

MW-15008

H<sub>2</sub>SO<sub>4</sub>

MW-15016

NaOH

MW-15019

HCl

DUP-Background

MeOH

FB-Background

Other

W

Total Metals

GW

Anions

GW

TDS

GW

REMARKS

RELINQUISHED BY: \_\_\_\_\_

DATE/TIME: 5/10/24 0726

RECEIVED BY: \_\_\_\_\_

COMMENTS: Received on Ice?  Yes  No  
 Temperature: \_\_\_\_\_ °C M&TE #: \_\_\_\_\_  
 Cal. Due Date: \_\_\_\_\_

Pg # 29 of 37

**Eurofins Cleveland**

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

**Chain of Custody Record**

**MICHIGAN  
190**



Environment Testing

**Client Information**

Client Contact:  
 Jacob Krenz

Sampler: *FAVIR JMSSE*  
 Pkg#: *734904331C*

Lab Pk: Brooks, Kris M  
 E-Mail: Kris.Brooks@et.eurofins.com

Carrier Tracking No(s):  
 State of Origin:

COC No: 240-120140-33282.1  
 Page: Page 1 of 1

Company:  
 TRC Environmental Corporation.

Due Date Requested:  
 TAT Requested (days):

PWSID:

Analysis Requested

Job #:  
 Preservation Codes:  
 D - HNC3

Address:  
 1540 Eisenhower Place

City:  
 Ann Arbor

State, Zip:  
 MI, 48108-7080

Compliance Project:  Yes  No

Project #:  
 24024154

Other:

Phone:  
 734-971-7080 (Tel) 734-971-9022 (Fax)

PO #:  
 TBD

W/O #:

Project Name:  
 Karm/Wadcock CCR Background Well

Site:

Project #:  
 24024154

SSOW#:

Sample Identification

Sample Date

Sample Time

Sample Type  
 (C=Comp, G=grab) B-Tissue, A=Air

Matrix  
 (W=Water, S=Soil, C=Cement, G=Gravel)

Field Filtered Sample (Yes or No)

Field MS/MS (Yes or No)

903.0, Ra226Ra228\_GFP

904.0 - Standard Target List

Total Number of Containers

Special Instructions/Note:

Sample ID	Sample Date	Sample Time	Sample Type	Matrix	Field Filtered Sample (Yes or No)	Field MS/MS (Yes or No)	Analysis Requested	Total Number of Containers	Special Instructions/Note
MM-15002	5/8/24	1451	C	Water				2	
MM-15008	5/8/24	1315	C	Water				2	
MM-15016	5/8/24	1457	C	Water				2	
MM-15019	5/8/24	1413	C	Water				2	
DUP-Background	5/8/24	-	C	Water				2	
EQ-Background	5/8/24	1405	C	Water				2	

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological

Deliverable Requested: I, II, III, IV, Other (Specify)

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

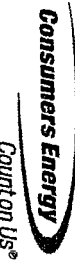
Custody Seal Intact:  Yes  No Custody Seal No.: \_\_\_\_\_

Received by: *John Mac* Date/Time: *5/10/24* Company: *TRC*

Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Cooler Temperature(s) °C and Other Remarks:

# CHAIN OF CUSTODY



**CONSUMERS ENERGY COMPANY - LABORATORY SERVICES**  
 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

**SAMPLING SITE / CUSTOMER:** 22-2024 DEK Lined Impoundment

**PROJECT NUMBER:** 24-0341

**SAP CC or WO#:** \_\_\_\_\_

**REQUESTER:** Harold Register

**TURNAROUND TIME REQUIRED:**  
 24 HR    48 HR    3 DAYS    STANDARD    OTHER \_\_\_\_\_

**SAMPLING TEAM:** A. Whaley

**SEND REPORT TO:** Joseph Firth

**email:** \_\_\_\_\_ **phone:** \_\_\_\_\_

**MATRIX CODES:**  
 GW = Groundwater    OX = Other  
 WW = Wastewater    SL = Sludge  
 W = Water / Aqueous Liquid    A = Air  
 S = Soil / General Solid    WP = Wipe  
 O = Oil    WT = General Waste

**COPY TO:** Harold Register

**TRC:** \_\_\_\_\_

**LAB SAMPLE ID:** \_\_\_\_\_

**DATE:** \_\_\_\_\_ **TIME:** \_\_\_\_\_

**MATRIX:** \_\_\_\_\_

**FIELD SAMPLE ID / LOCATION:** \_\_\_\_\_

**ANALYSIS REQUESTED**  
 (Attach List if More Space is Needed)

**QA REQUIREMENT:**  
 NPDES  
 TNI  
 ISO 17025  
 10 CFR 50 APP. B  
 INTERNAL INFO  
 OTHER \_\_\_\_\_

**REMARKS:**

LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	CONTAINERS							Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	REMARKS
						None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other							
24-0341-01	5/18/24	1444	GW	DEK-MW-15003	7	4	1	1	1	1									
-02	5/18/24	1108	GW	OW-10	7	4	1	1	1	1									
-03	5/18/24	1246	GW	OW-11	7	4	1	1	1	1									
-04			GW	OW-12	7	4	1	1	1	1									
-05			W	KLI-SCS	7	4	1	1	1	1									
-06	5/18/24	1550	SW	KLI-PCS	7	4	1	1	1	1									
-07			SW	SW-DITCH	7	4	1	1	1	1									Dry
-08	5/18/24	—	GW	DUP-KLI	7	4	1	1	1	1									
-09			W	EB-KLI	4	1	1	1	1	1									
-10	5/18/24	1296	W	FB-KLI	4	1	1	1	1	1									

**RELINQUISHED BY:** \_\_\_\_\_ **DATE/TIME:** 5/18/24 1700

**RECEIVED BY:** \_\_\_\_\_

**RELINQUISHED BY:** \_\_\_\_\_ **DATE/TIME:** 5-9-24 1130

**RECEIVED BY:** \_\_\_\_\_

**COMMENTS:**

Received on Ice?  Yes  No

Temperature: 0.2-1.0 °C

M&TE #: 015402

Cal. Due Date: 5-23-24

Pg # 32 of 32

# CHAIN OF CUSTODY



**CONSUMERS ENERGY COMPANY - LABORATORY SERVICES**

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

SAMPLING SITE / CUSTOMER:  
Q2-2024 DEK Lined Impoundment

PROJECT NUMBER:  
**24-0341**

SAP CC or WO#:  
REQUESTER: Harold Register

ANALYSIS REQUESTED  
(Attach List if More Space is Needed)

QA REQUIREMENT:  
 NPDES  
 TNI  
 ISO 17025  
 10 CFR 50 APP. B  
 INTERNAL INFO  
 OTHER \_\_\_\_\_

SAMPLING TEAM:

TURNAROUND TIME REQUIRED:  
 24 HR  48 HR  3 DAYS  STANDARD  OTHER \_\_\_\_\_

SEND REPORT TO:

Joseph Fritt

email:

phone:

COPY TO:

Harold Register  
TRC

MATRIX CODES:

GW = Groundwater  
W/W = Wastewater  
W = Water / Aqueous Liquid  
S = Soil / General Solid  
O = Oil  
OX = Other  
SL = Sludge  
A = Air  
WP = Wipe  
WT = General Waste

CONTAINERS

TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other

Total Metals  
Anions  
Ammonia  
TDS  
Alkalinity  
Sulfide

REMARKS

LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	PRESERVATIVE							Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	REMARKS
	DATE	TIME				None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other							
24-0341-01			GW	DEK-NW-15009	7	4	1	1	1	1	1	1							
-02			GW	GW-10	7	4	1	1	1	1	1	1							
-03			GW	GW-11	7	4	1	1	1	1	1	1							
-04	5-9-24	1245	GW	OW-12	7	4	1	1	1	1	1	1							
-05			W	KLI-SCS	7	4	1	1	1	1	1	1							
-06			SW	KLI-PGS	7	4	1	1	1	1	1	1							
-07			SW	SW-DITCH	7	4	1	1	1	1	1	1							
-08			GW	DUP-KLI	7	4	1	1	1	1	1	1							
-09	5-9-24	1300	W	EB-KLI	4	1	1	1	1	1	1	1							
-10			W	FB-KLI	4	1	1	1	1	1	1	1							

RELINQUISHED BY:

*[Signature]*

DATE/TIME:

5-10-24 / 0759

RECEIVED BY:

*[Signature]*

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

Received on Ice?  Yes  No  
Temperature: \_\_\_\_\_ °C  
M&TE #: \_\_\_\_\_  
Cal. Due Date: \_\_\_\_\_

Pg # 32



# CHAIN OF CUSTODY



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## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page \_\_\_\_ of \_\_\_\_

SAMPLING SITE / CUSTOMER: Q2-2024 DEK Bottom Ash Pond Wells

PROJECT NUMBER: 24-0339

SAP CC or WO#: \_\_\_\_\_

REQUESTER: Harold Register

ANALYSIS REQUESTED  
(Attach List if More Space is Needed)

QA REQUIREMENT:  
 NPDES  
 TNI  
 ISO 17025  
 10 CFR 50 APP. B  
 INTERNAL INFO  
 OTHER \_\_\_\_\_

SAMPLING TEAM:

TURNAROUND TIME REQUIRED:  
 24 HR  48 HR  3 DAYS  STANDARD  OTHER \_\_\_\_\_

SEND REPORT TO:

Joseph Fritit

email: \_\_\_\_\_

phone: \_\_\_\_\_

COPY TO:

Harold Register

MATRIX CODES:

- GW = Groundwater
- WW = Wastewater
- W = Water / Aqueous Liquid
- S = Soil / General Solid
- O = Oil

OX = Other

- SL = Sludge
- A = Air
- WP = Wipe
- WT = General Waste

**CONTAINERS**

TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
7	4	1	1	1			
7	4	1	1	1			
7	4	1	1	1			
7	4	1	1	1			
4	1	1	1	1			

Total Metals

Anions

Ammonia

TDS

Alkalinity

Sulfide

**REMARKS**

LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	CONTAINERS							Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	REMARKS
	DATE	TIME				None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other							
24-0339-01	5-9-24	1031	GW	DEK-MW-15002	7	4	1	1	1				x	x	x	x	x		
-02	5-9-24	0837	GW	DEK-MW-15005	7	4	1	1	1				x	x	x	x	x		
-03	5-9-24	1138	GW	DEK-MW-15006	7	4	1	1	1				x	x	x	x	x		
-04	5-9-24	—	GW	DUP-DEK-BAP-01	7	4	1	1	1				x	x	x	x	x		
-05	5-9-24	1138	W	FB-DEK-BAP	4	1	1	1	1				x	x	x		x		
-06	5-9-24	1200	W	EB-DEK-BAP	4	1	1	1	1				x	x	x		x		

RELINQUISHED BY:

DATE/TIME: 5-10-24 / 0759

RECEIVED BY:

COMMENTS:

RELINQUISHED BY: *[Signature]*

DATE/TIME:

RECEIVED BY: *[Signature]*

Received on Ice?  Yes  No  
 Temperature: \_\_\_\_\_ °C

M&TE #: \_\_\_\_\_  
 Cal. Due Date: \_\_\_\_\_

*6 # 34 of 37*

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

**Chain of Custody Record**

**MICHIGAN  
190**

**eurofins**  
 Environment Testing

<b>Client Information</b>	Company: TRC Environmental Corporation.	Lab P/N: Brooks, Kris M	Carrier Tracking No(S):	COC No: 240-120142-29052.1
Client Contact: Jacob Krenz	Phone:	E-Mail: Kris.Brooks@et.eurofins.com	State of Origin:	Page: 1 of 1
Address: 1540 Eisenhower Place	Due Date Requested:	Job #: <b>240-120142-29052.1</b>		
City: Ann Arbor	TAT Requested (days):	Preservation Codes: D - HNO3		
State Zip: MI, 48108-7080	Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	Job #:		
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO #: TBD	Preservation Codes:		
Email: JKrenz@trccompanies.com	WO #: 553814.0001	Other:		
Project Name: KamWeadock CCR DEK Bottom Ash Pond	Project #: 24024154	Special Instructions/Note:		
Site: SSO#:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Soil, etc.)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Total Number of containers	Special Instructions/Note
DEK-MM-15002	5-4-24	1031	G	Water	X	X		2	
DEK-MM-15005	5-4-24	0837	G	Water	X	X		2	
DEK-MM-15006	5-4-24	1138	G	Water	X	X		2	
DUP-DEK-BAP-01	5-4-24	1400	G	Water	X	X		2	
EB-DEK-BAP	5-4-24	1200	G	Water	X	X		2	



**MICHIGAN  
190**

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological

Deliverable Requested: I, II, III, IV, Other (Specify)

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_

Relinquished by: *[Signature]* Date/Time: 5-10-24/1010 Company: TRC

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

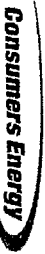
Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Custody Seals Intact:  Yes  No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

# CHAIN OF CUSTODY



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## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

IMPLING SITE / CUSTOMER: 2-2024 DEK Bottom Ash Pond & Lined Impound.

PROJECT NUMBER: 24-0340

SAP CC or WO#: \_\_\_\_\_  
REQUESTER: Harold Register

ANALYSIS REQUESTED  
(Attach List if More Space is Needed)

QA REQUIREMENT:  
 NPDES  
 TNI  
 ISO 17025  
 10 CFR 50 APP. B  
 INTERNAL INFO  
 OTHER \_\_\_\_\_

IMPLING TEAM:

END REPORT TO: Joseph Fritih  
S. Krenz

TURNAROUND TIME REQUIRED:  
 24 HR  48 HR  3 DAYS  STANDARD  OTHER \_\_\_\_\_

email: \_\_\_\_\_

phone: \_\_\_\_\_

COPY TO:

Harold Register  
TRC

MATRIX CODES:

GW = Groundwater  
WW = Wastewater  
W = Water / Aqueous Liquid  
S = Soil / General Solid  
O = Oil

OX = Other  
SL = Sludge  
A = Air  
WP = Wipe  
WT = General Waste

CONTAINERS

PRESERVATIVE

FIELD SAMPLE ID / LOCATION

TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
---------	------	------------------	--------------------------------	------	-----	------	-------

Total Metals  
Anions  
Ammonia  
TDS  
Alkalinity  
Sulfide

REMARKS

LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	CONTAINERS							Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	REMARKS
	DATE	TIME				None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other							
24-0340-01	5-8-24	1303	GW	DEK-MW-18001	7	4	1	1	1										
	-02		GW	DEK-MW-18001 MS	6	3	1	1	1										
	-03		GW	DEK-MW-18001 MSD	6	3	1	1	1										

BLINDQUISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

BLINDQUISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

Fed-Ex

5-9-24

1130

Atseubachhust

5/8/24 1700

Fed-EX

Received on Ice?  Yes  No

Temperature: 0.2-2.0 °C

M&TE #: 015402

Cal. Due Date: 5-23-24

Pg # 36 of 37



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

**Chain of Custody Record**

**MICHIGAN**  
 190

**eurofins** | Environment Testing

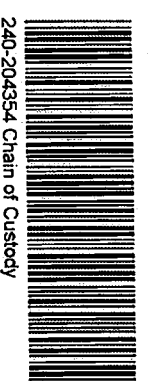
**Client Information**  
 Client Contact: **Jacob Krenz** Phone: \_\_\_\_\_  
 Company: **TRC Environmental Corporation.** PWSID: \_\_\_\_\_  
 Address: **1540 Eisenhower Place** Due Date Requested: \_\_\_\_\_  
 City: **Ann Arbor** TAT Requested (days): \_\_\_\_\_  
 State Zip: **MI, 48108-7080** Compliance Project:  Yes  No  
 Phone: **734-971-7090(Tel) 734-971-9022(Fax)** PO #: **TBD**  
 Email: **JKrenz@trccompanies.com** W/O #: **553814.0001**  
 Project Name: **Karr/Weadock CCR DEK Bottom Ash Pond & I** Project #: **24024154**  
 Site: \_\_\_\_\_ SOW#: \_\_\_\_\_

Lab Pk: **Brooks, Kris M** Carrier Tracking No(S): \_\_\_\_\_  
 E-Mail: **Kris.Brooks@el.eurofins.com** State of Origin: \_\_\_\_\_  
 CQC No: **240-120143-29053.1**  
 Page: **1 of 1**  
 Job #: \_\_\_\_\_  
 Preservation Codes: **D - FIM03**

**Analysis Requested**

Field Filtered Sample (Yes or No)	<input checked="" type="checkbox"/>
Perform MS/MSD (Yes or No)	<input checked="" type="checkbox"/>
903.0, Re226Ra228_GFPC	<input checked="" type="checkbox"/>
904.0 - Standard Target List	<input checked="" type="checkbox"/>

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Sediment, Other)	Preservation Code	Analysis Requested	Total Number of containers	Special Instructions/Note
DEK-MM-18001	5-8-24	1303	G	Water	WN	<input checked="" type="checkbox"/>	2	
				Water	N	<input checked="" type="checkbox"/>		
				Water	X	<input checked="" type="checkbox"/>		



240-204354 Chain of Custody

**MICHIGAN**  
**190**

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological  
 Deliverable Requested: I, II, III, IV, Other (specify) \_\_\_\_\_  
 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/COC Requirements: \_\_\_\_\_

Empty Kit Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: **5-10-24/10:10** Company: **TRC** Received by: **JESSICA RIGDON** Date/Time: **5-12-24 08:00** Company: **TRC**

Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_

Custody Seals Intact: \_\_\_\_\_ Custody Seal No.: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks: \_\_\_\_\_

# Appendix C

## Data Quality Reviews

## Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event May 2024 DE Karn Lined Impoundment

Groundwater and surface water samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for total and/or dissolved 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) 24-0341R (revised 6/7/24), S61915.01(01), and S61971.01(01).

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

- OW-10
- OW-11
- OW-12
- DEK-MW-15003

During the May 2024 sampling event, the following surface water sample was collected:

- KLI-PCS

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total and/or Dissolved Metals	SW-846 6020B
Total and/or Dissolved Mercury	SW-846 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. 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 and dissolved metals, total and dissolved mercury, 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 detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

## **QA/QC Sample Summary**

- One field blank (FB-KLI) and one equipment blank (EB-KLI) 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-KLI and DEK-MW-15003 were submitted as the field duplicate pair with this data set; all criteria were met.

# Laboratory Data Quality Review Groundwater and Surface water Monitoring Event May 2024 DE Karn Lined Impoundment

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) 240-204355-1.

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

- OW-10
- OW-11
- OW-12
- DEK-MW-15003

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-KLI) 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 the samples from this data set.
- Samples DEK-MW-15003/DUP-KLI 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 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 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%.

# Appendix D

## Statistical Analysis

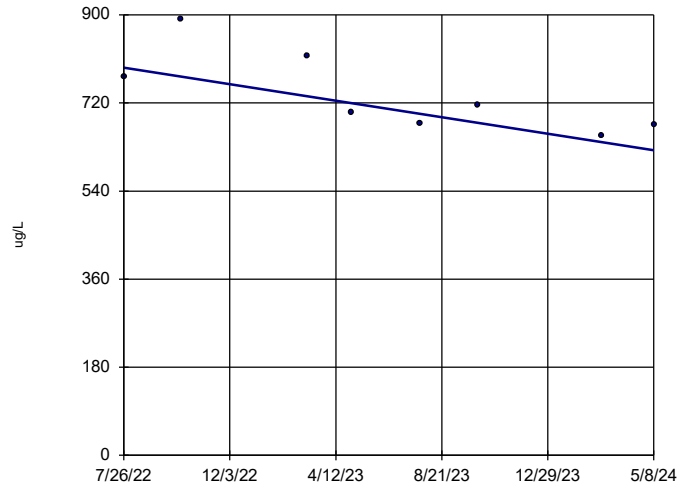
**Appendix D**  
 Statistical Summary for DE Karn Lined Impoundment  
 Second Quarter 2024  
 Data from July 2022 to May 2024

Karn Lined Impoundment Wells						
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	↓*	○	○	○	○
Calcium	Trend	○	↓	○	↑*	○
Chloride	Trend	○	○	○	○	↓
Fluoride	Trend	○*	○*	○*	○	○*
Iron	Trend	○	↓	○	○	○
pH	Trend	○	○	○	○	○
Sulfate	Trend	○	↑*	○	○	○
Total Dissolved Solids	Trend	○	↑*	○	○	○

**Notes:**

- \* = Non-detect
- = No trend
- ↑ = Upward trend, continuous
- ↑\* = Upward trend, new
- ↑ (with red arrow) = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓\* = Downward trend, new

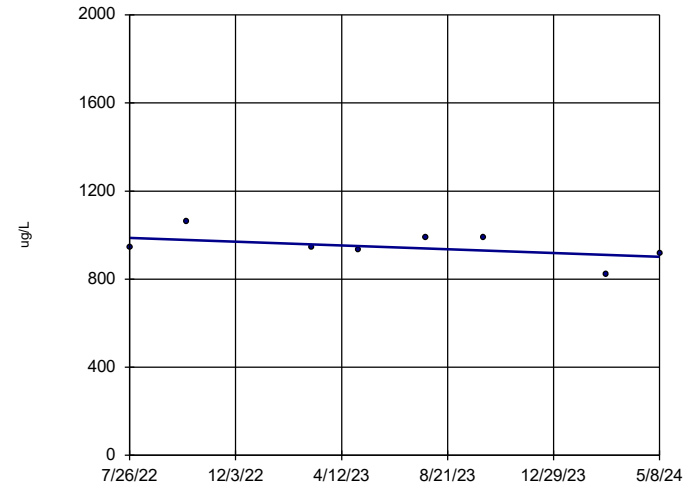
### Boron, Total DEK-MW-15003



n = 8  
 Slope = -94.43  
 units per year.  
 Mann-Kendall  
 statistic = -18  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

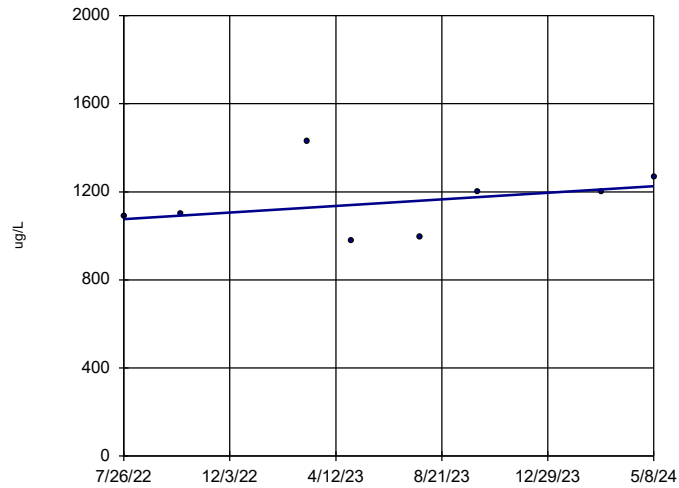
### Boron, Total DEK-MW-18001



n = 8  
 Slope = -48.44  
 units per year.  
 Mann-Kendall  
 statistic = -11  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
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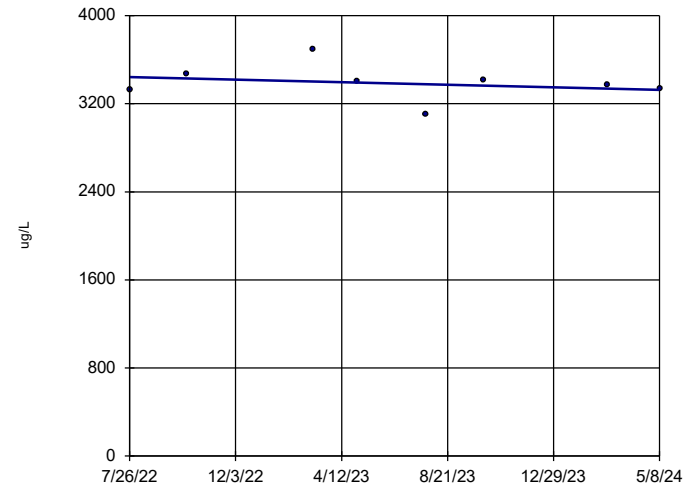
### Boron, Total OW-10



n = 8  
 Slope = 83.72  
 units per year.  
 Mann-Kendall  
 statistic = 9  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Boron, Total OW-11

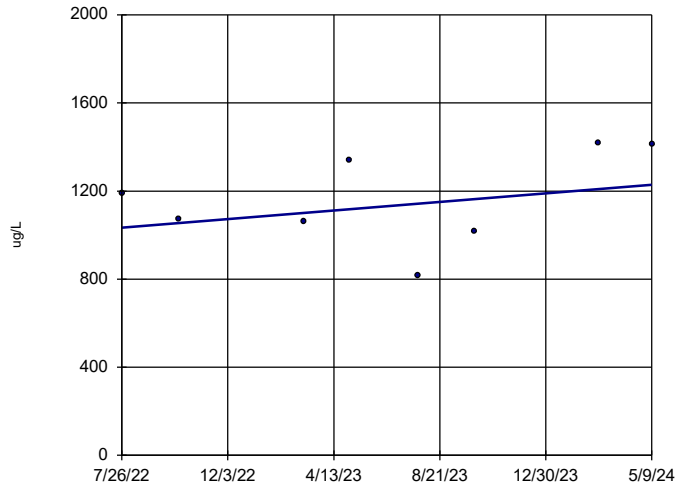


n = 8  
 Slope = -65.23  
 units per year.  
 Mann-Kendall  
 statistic = -6  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Boron, Total

OW-12

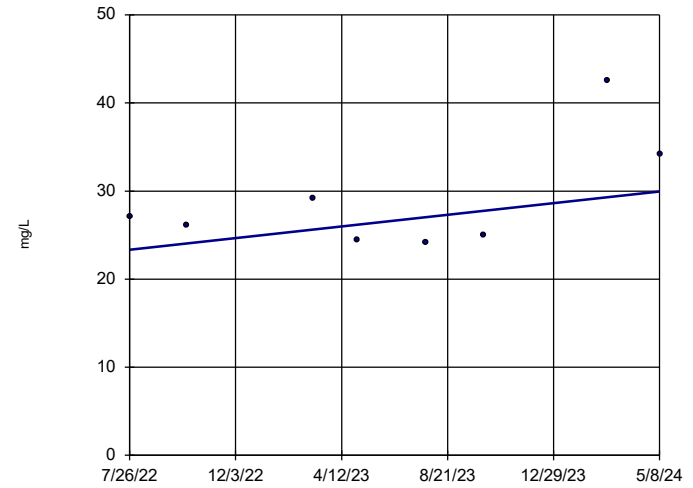


n = 8  
 Slope = 108.9  
 units per year.  
 Mann-Kendall  
 statistic = 4  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Calcium, Total

DEK-MW-15003

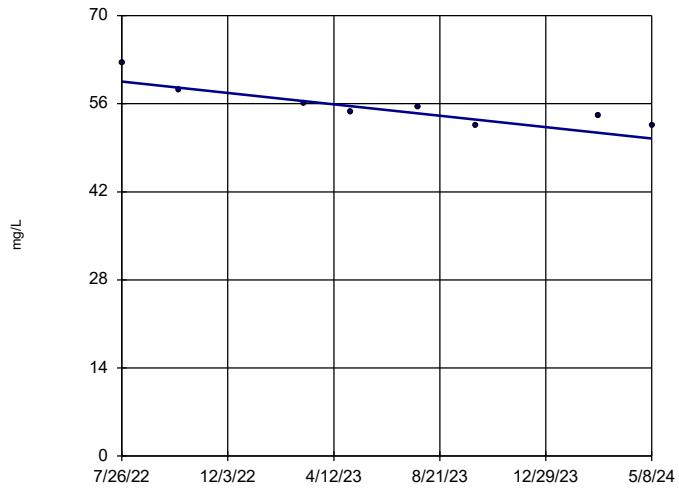


n = 8  
 Slope = 3.691  
 units per year.  
 Mann-Kendall  
 statistic = 4  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Calcium, Total

DEK-MW-18001

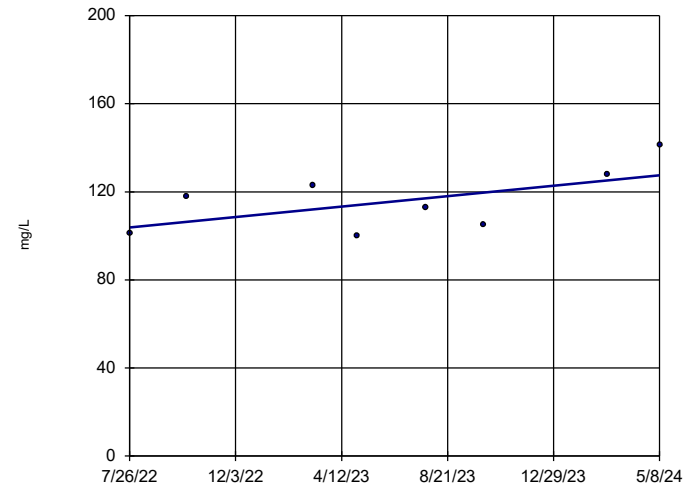


n = 8  
 Slope = -5.069  
 units per year.  
 Mann-Kendall  
 statistic = -23  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Calcium, Total

OW-10

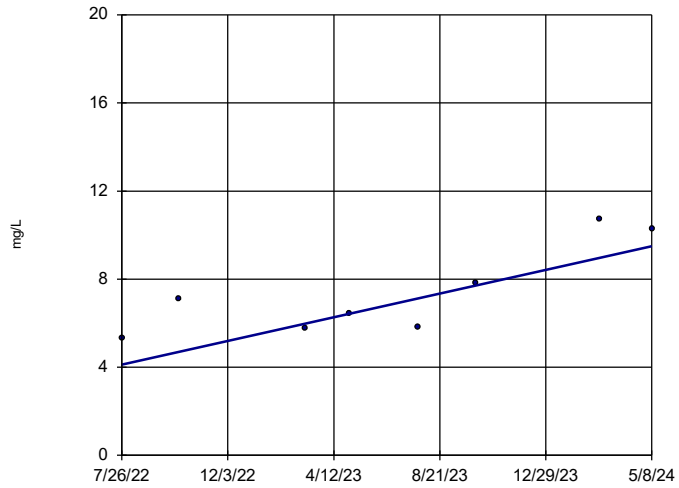


n = 8  
 Slope = 13.22  
 units per year.  
 Mann-Kendall  
 statistic = 12  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Calcium, Total

OW-11

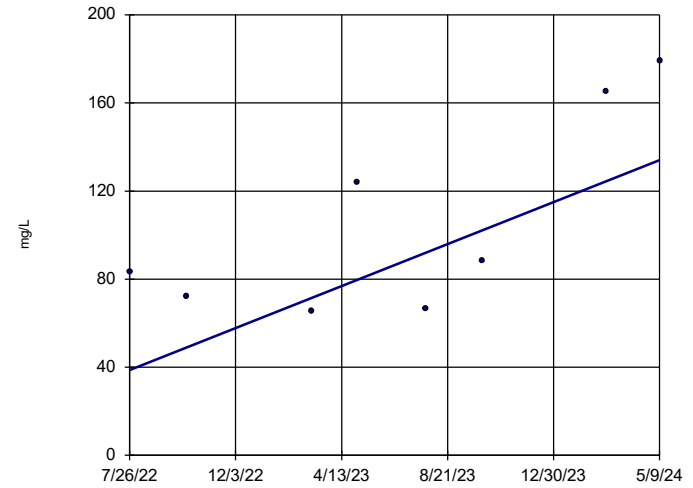


n = 8  
 Slope = 3.016  
 units per year.  
 Mann-Kendall  
 statistic = 18  
 critical = 17  
 Increasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Calcium, Total

OW-12

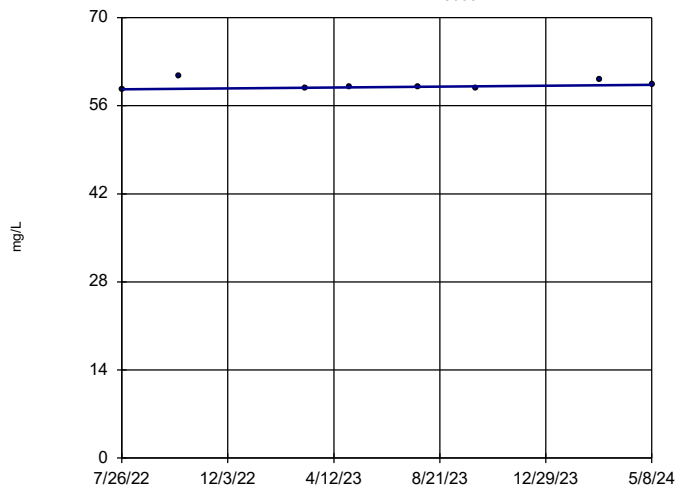


n = 8  
 Slope = 53.32  
 units per year.  
 Mann-Kendall  
 statistic = 14  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Chloride

DEK-MW-15003

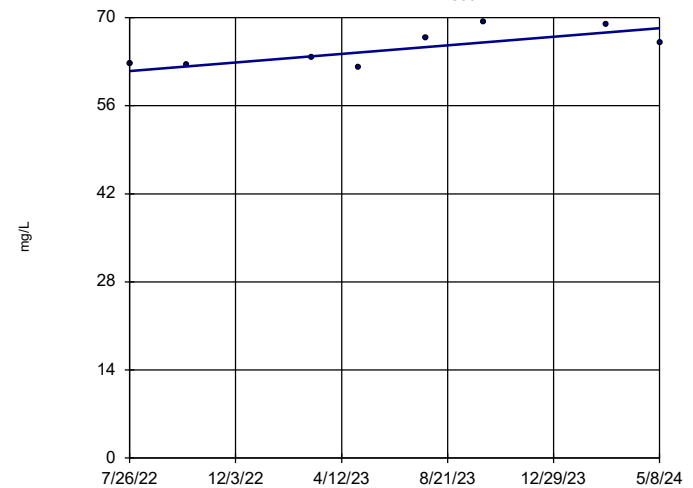


n = 8  
 Slope = 0.4147  
 units per year.  
 Mann-Kendall  
 statistic = 9  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Chloride

DEK-MW-18001

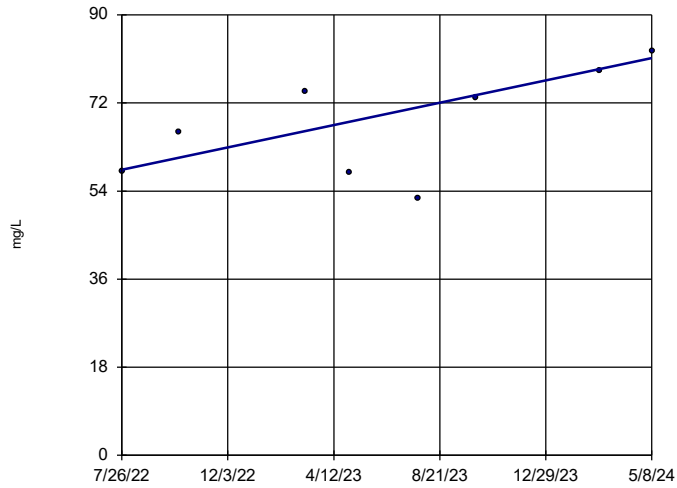


n = 8  
 Slope = 3.809  
 units per year.  
 Mann-Kendall  
 statistic = 12  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2



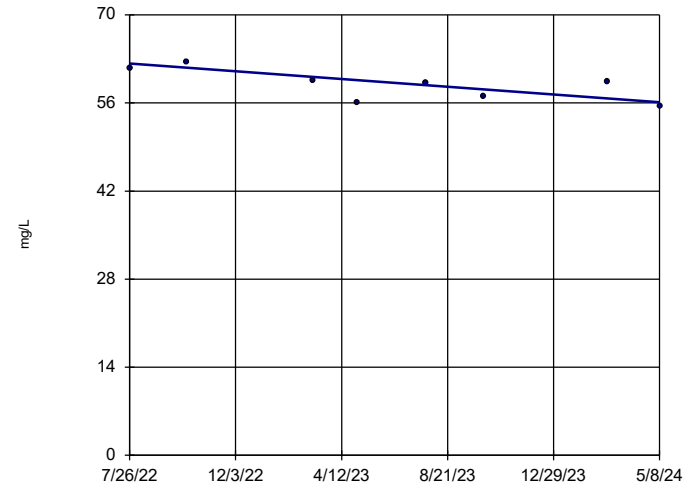
### Chloride OW-10



n = 8  
 Slope = 12.77  
 units per year.  
 Mann-Kendall  
 statistic = 12  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

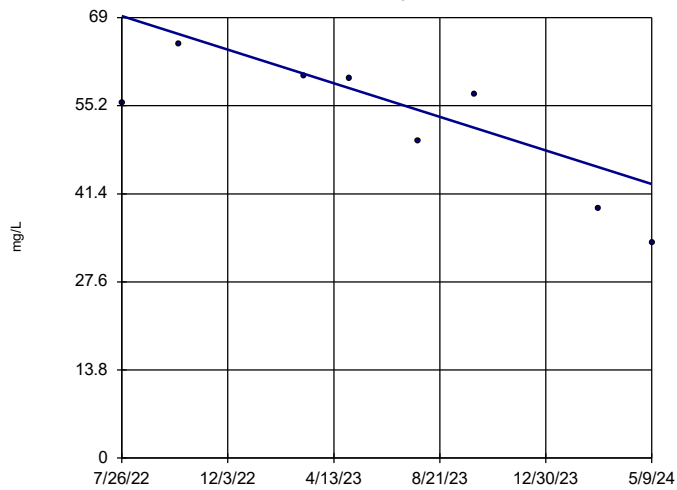
### Chloride OW-11



n = 8  
 Slope = -3.439  
 units per year.  
 Mann-Kendall  
 statistic = -16  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

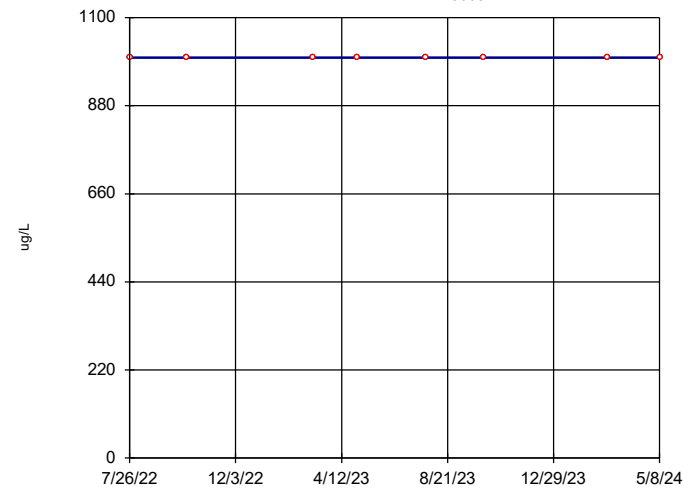
### Chloride OW-12



n = 8  
 Slope = -14.73  
 units per year.  
 Mann-Kendall  
 statistic = -18  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

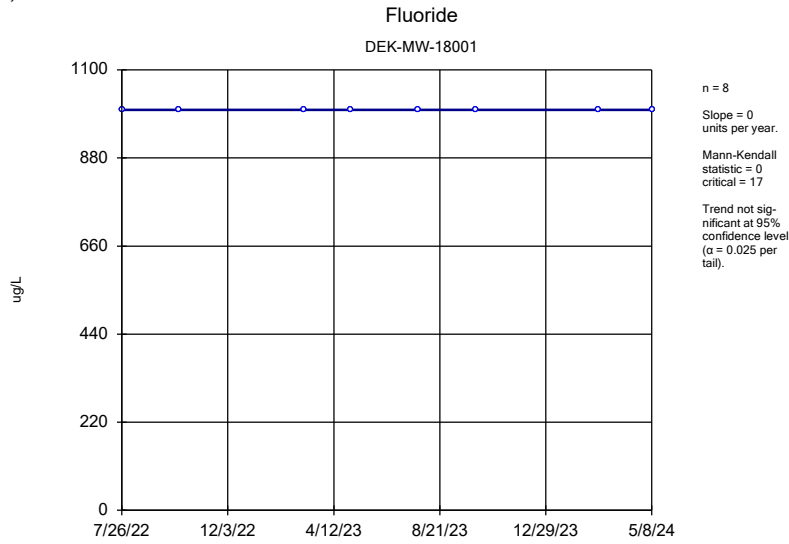
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### Fluoride DEK-MW-15003

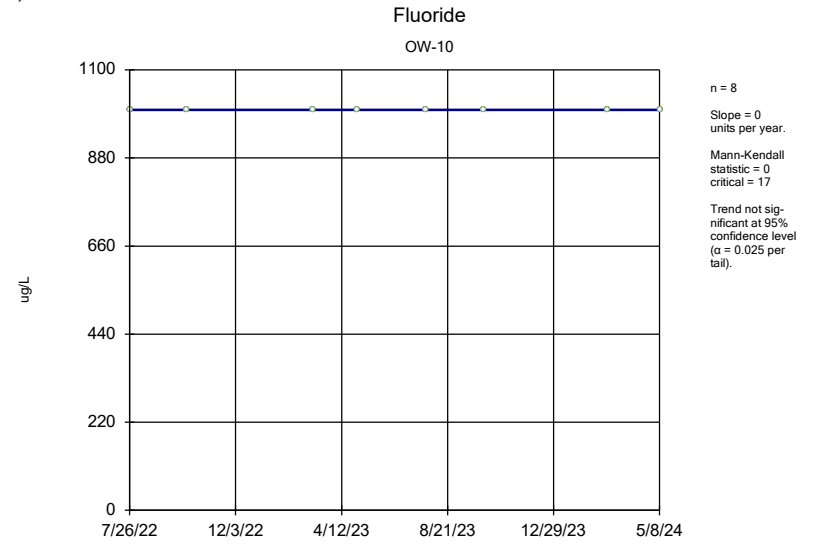


n = 8  
 Slope = 0  
 units per year.  
 Mann-Kendall  
 statistic = 0  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

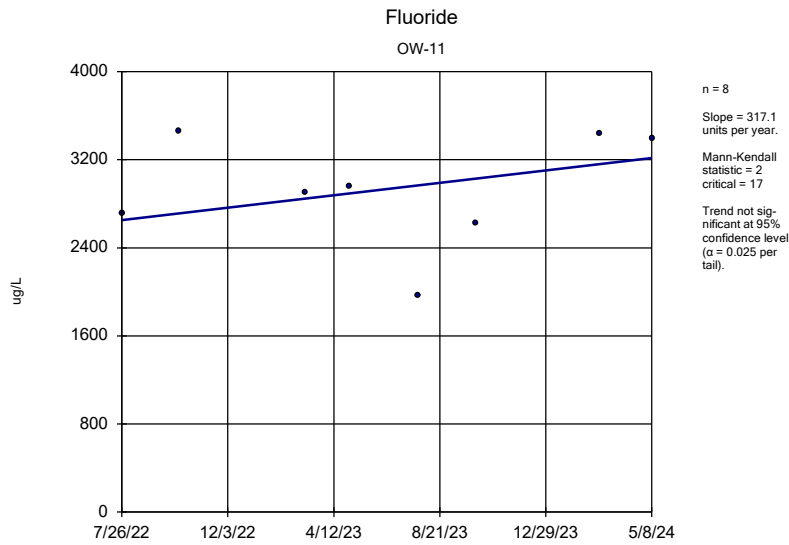
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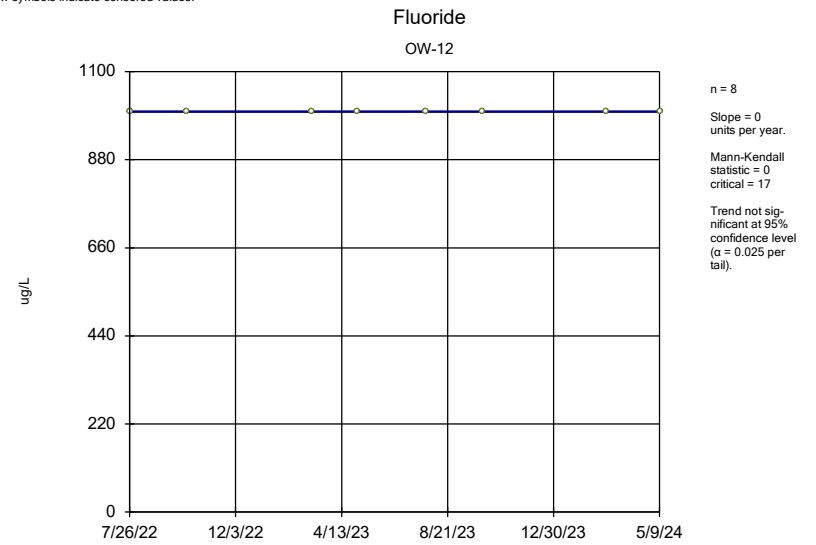
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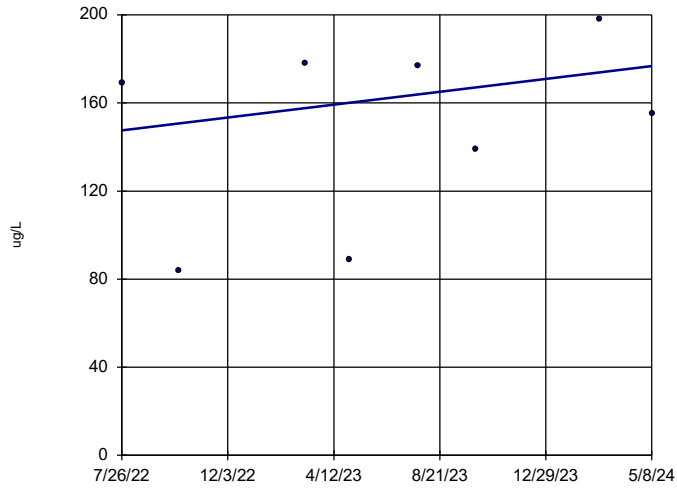


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Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

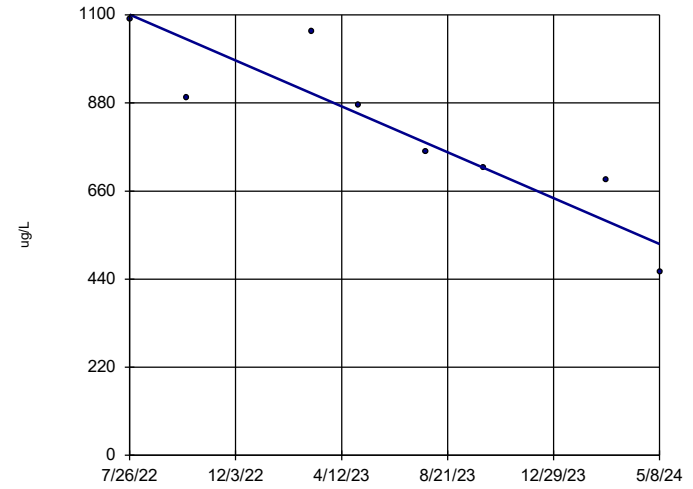
### Iron, Total DEK-MW-15003



n = 8  
 Slope = 16.3  
 units per year.  
 Mann-Kendall  
 statistic = 6  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

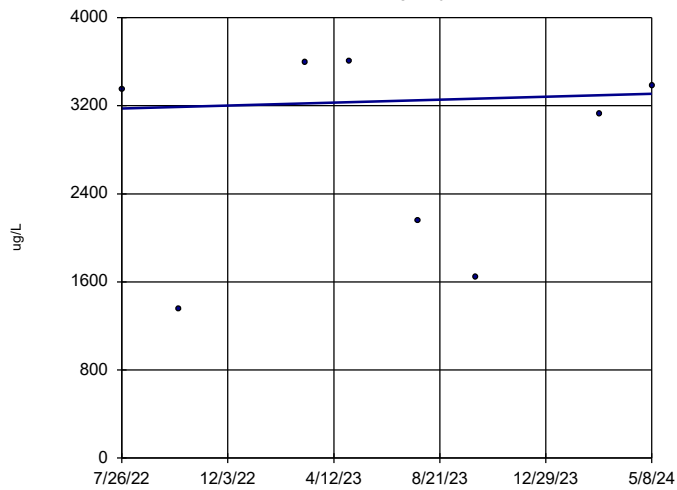
### Iron, Total DEK-MW-18001



n = 8  
 Slope = -320.7  
 units per year.  
 Mann-Kendall  
 statistic = -26  
 critical = -17  
 Decreasing trend  
 significant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

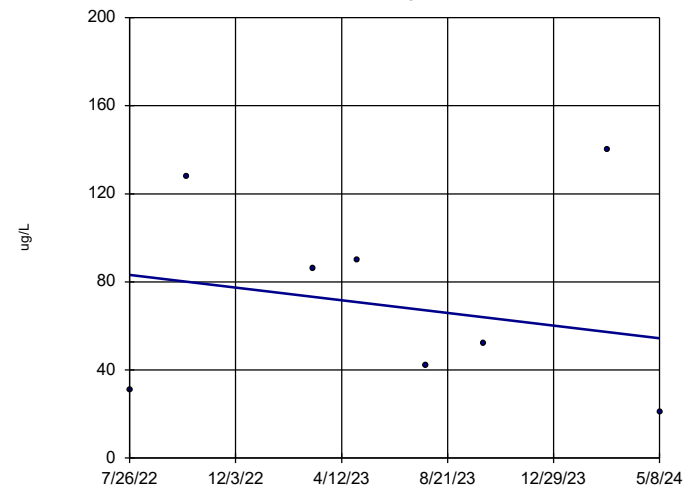
### Iron, Total OW-10



n = 8  
 Slope = 74.76  
 units per year.  
 Mann-Kendall  
 statistic = 2  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

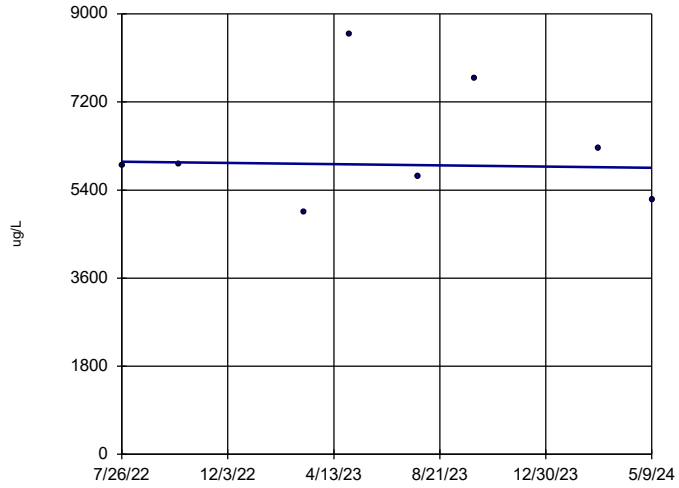
### Iron, Total OW-11



n = 8  
 Slope = -16.15  
 units per year.  
 Mann-Kendall  
 statistic = -2  
 critical = -17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

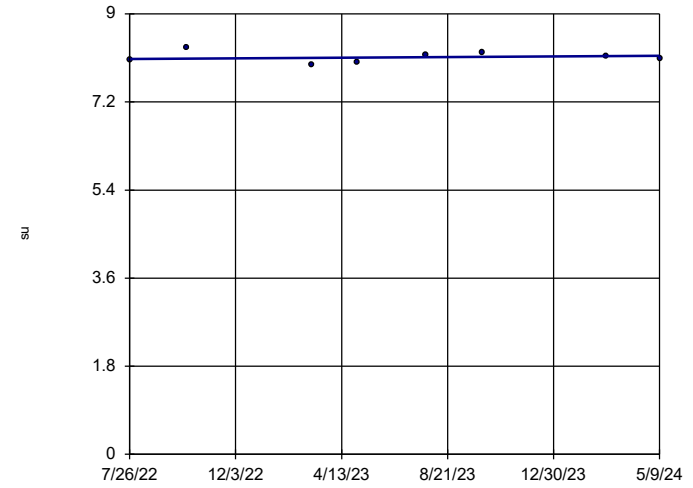
### Iron, Total OW-12



n = 8  
 Slope = -70.89  
 units per year.  
 Mann-Kendall  
 statistic = 0  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

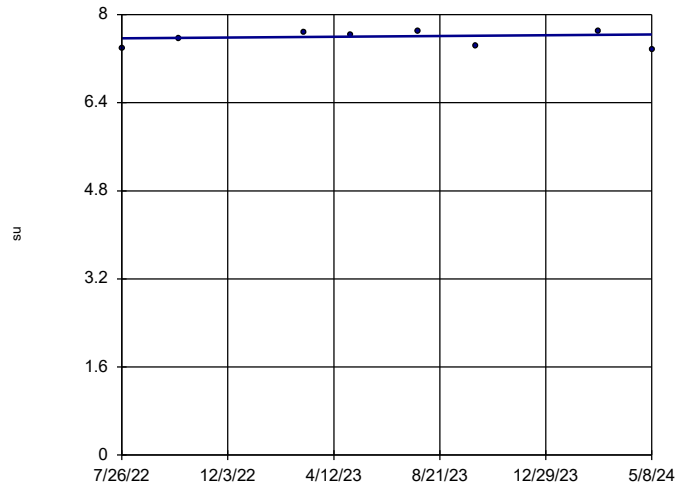
### pH, Field DEK-MW-15003



n = 8  
 Slope = 0.03601  
 units per year.  
 Mann-Kendall  
 statistic = 2  
 critical = 17  
 Trend not sig-  
 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

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 Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

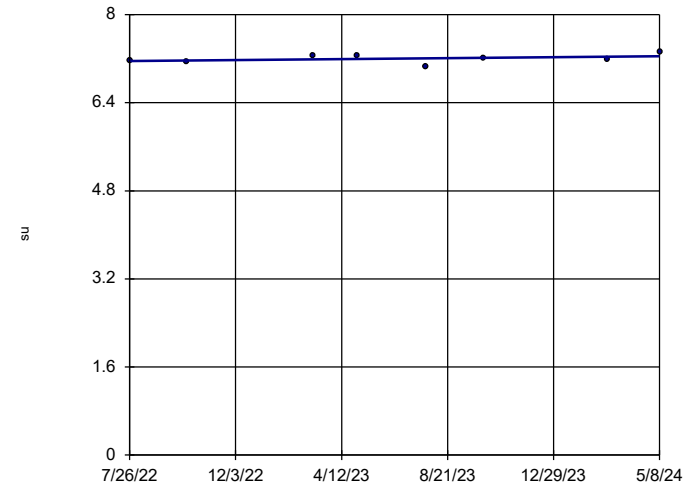
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 units per year.  
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 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

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### pH, Field OW-10

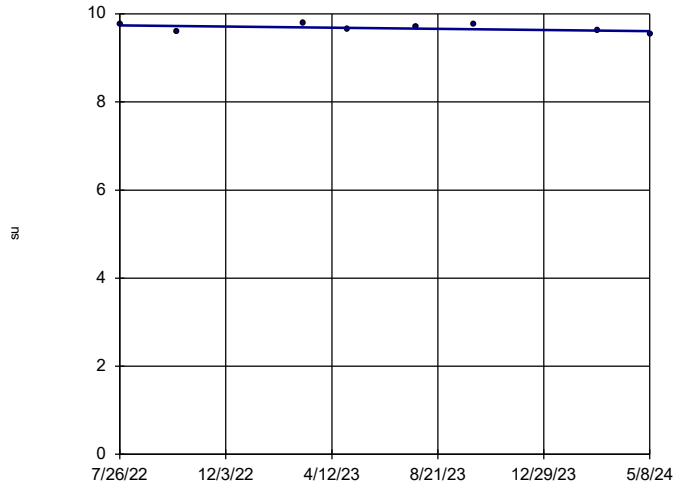


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 ( $\alpha = 0.025$  per  
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### pH, Field

OW-11

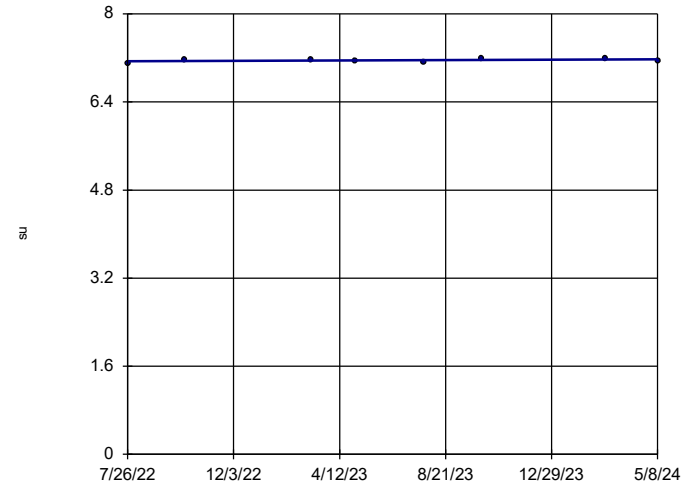


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 critical = -17  
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### pH, Field

OW-12

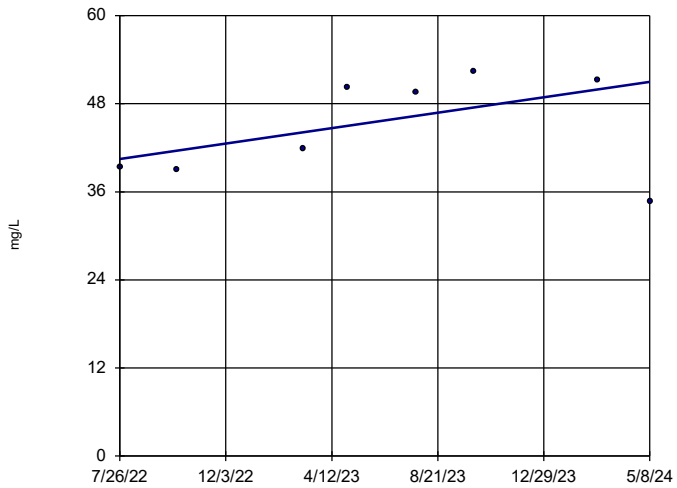


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### Sulfate

DEK-MW-15003

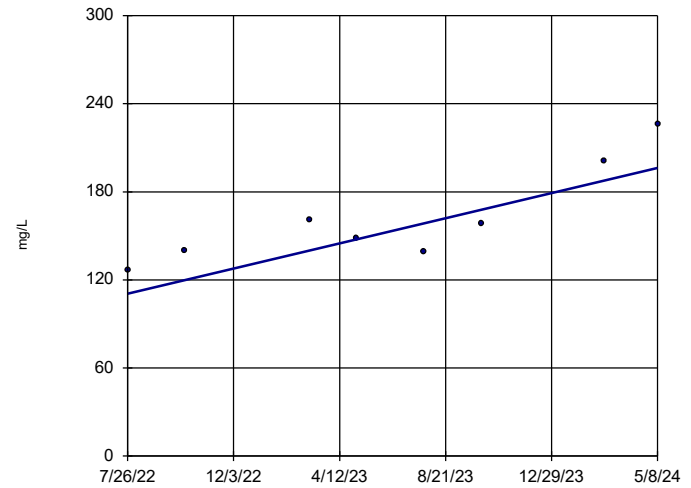


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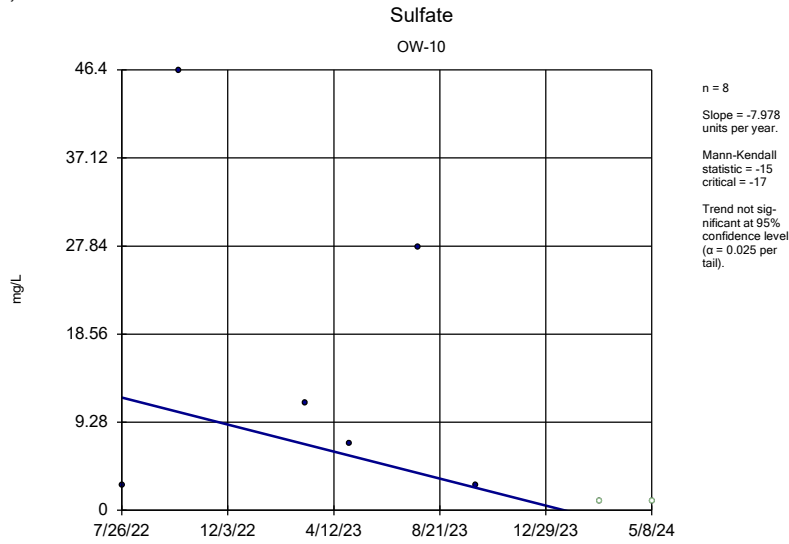
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DEK-MW-18001

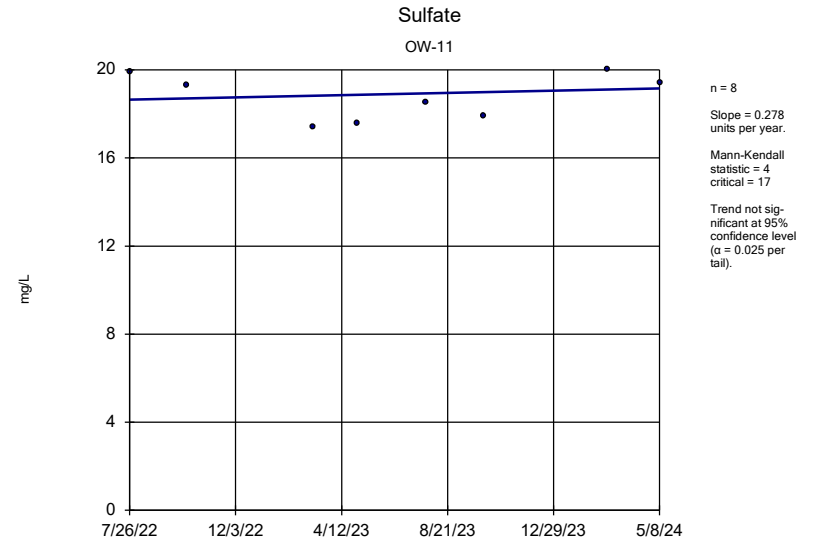


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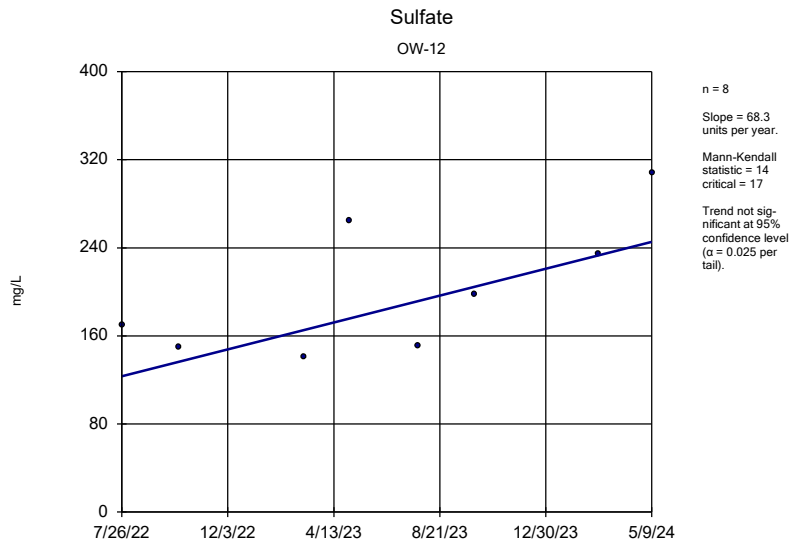
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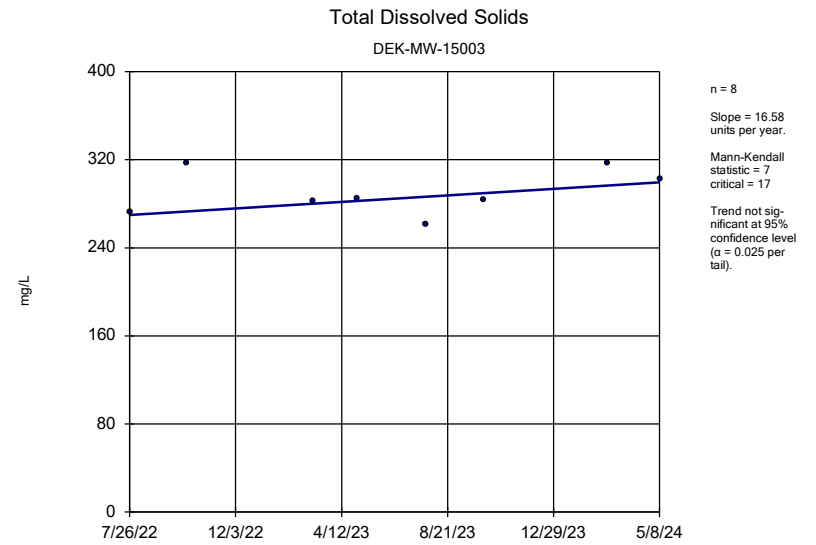
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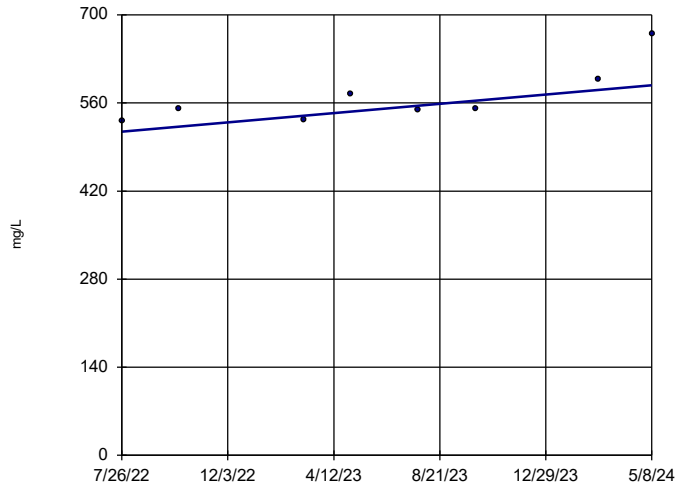
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Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

### Total Dissolved Solids

DEK-MW-18001

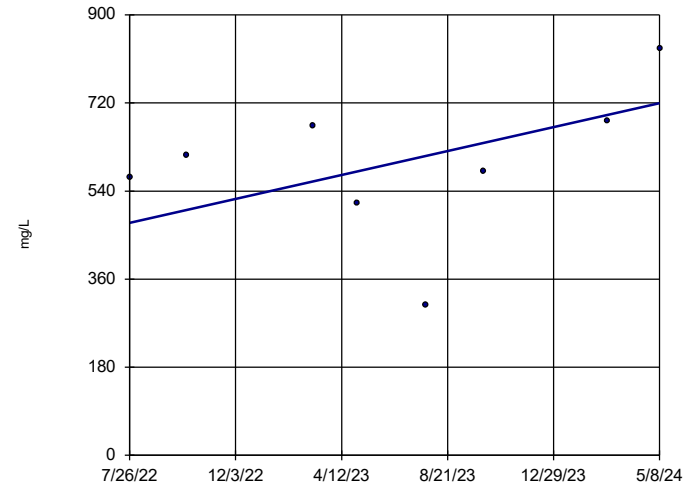


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### Total Dissolved Solids

OW-10

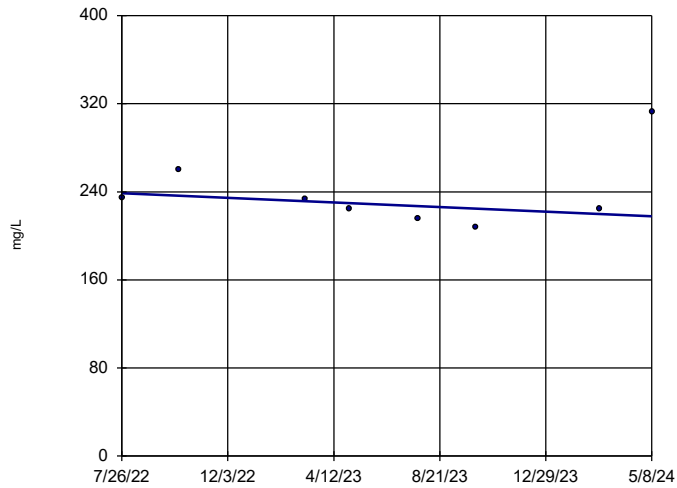


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 units per year.  
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 nificant at 95%  
 confidence level  
 ( $\alpha = 0.025$  per  
 tail).

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### Total Dissolved Solids

OW-11

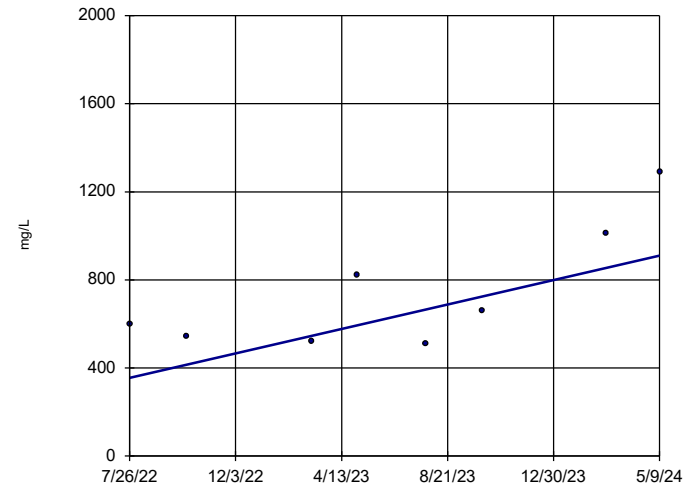


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 nificant at 95%  
 confidence level  
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 tail).

Sen's Slope Estimator Analysis Run 6/6/2024 11:09 PM  
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### Total Dissolved Solids

OW-12



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 units per year.  
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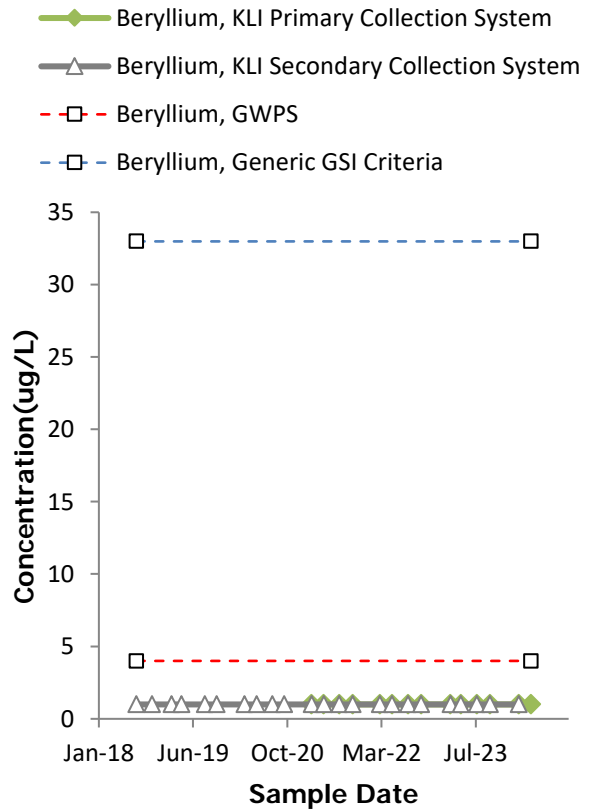
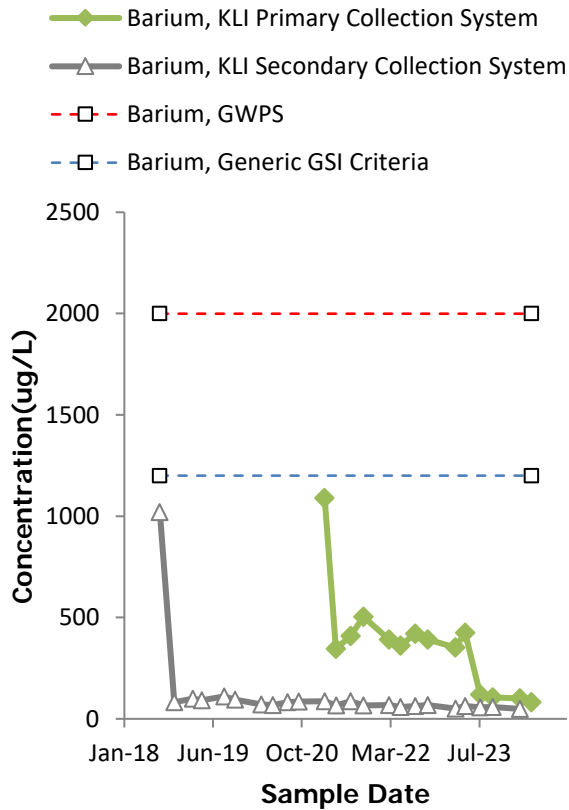
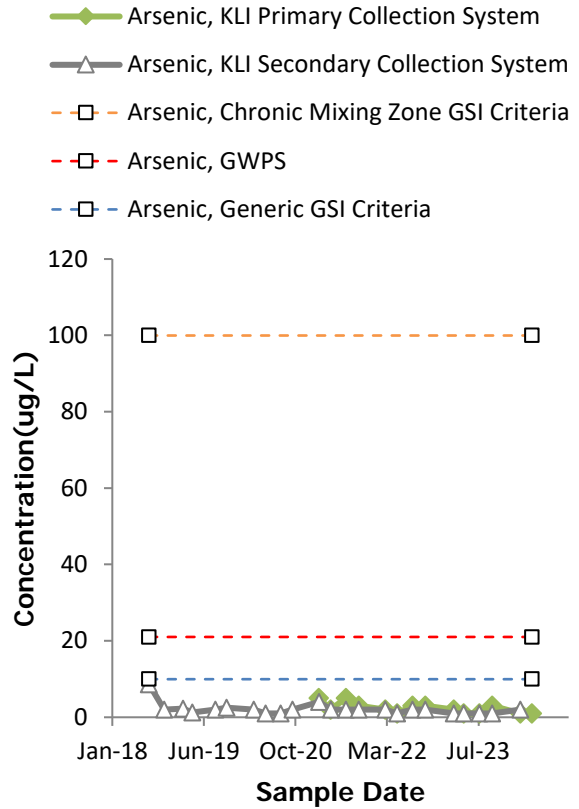
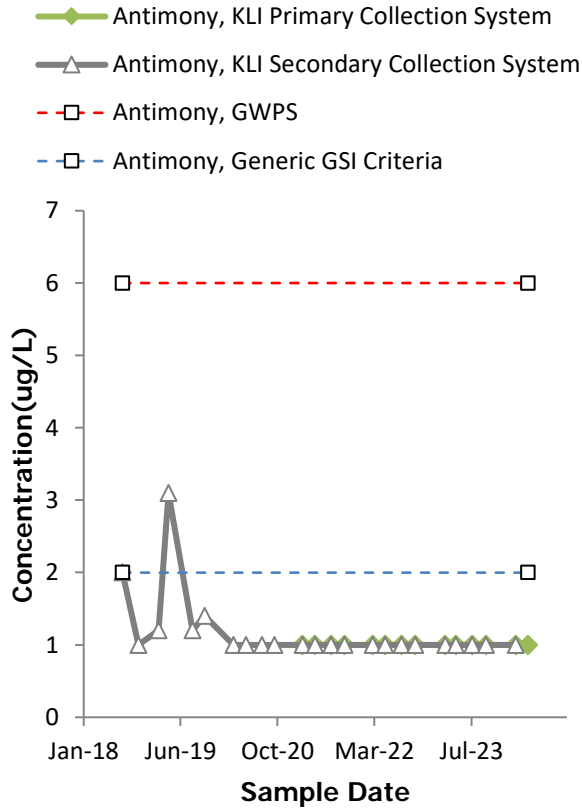
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# **Appendix E**

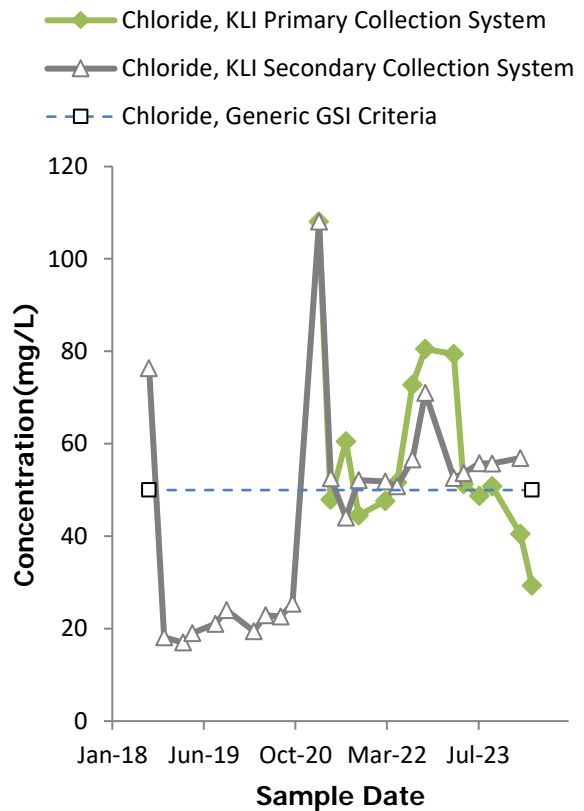
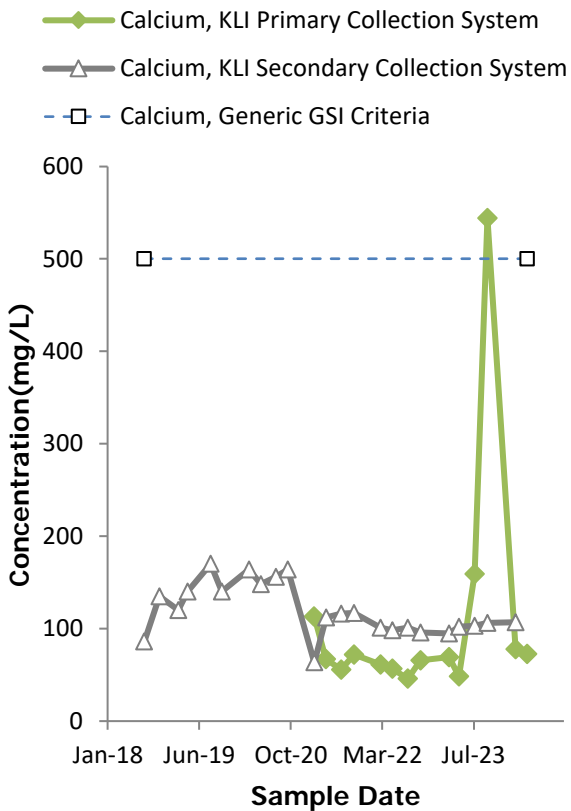
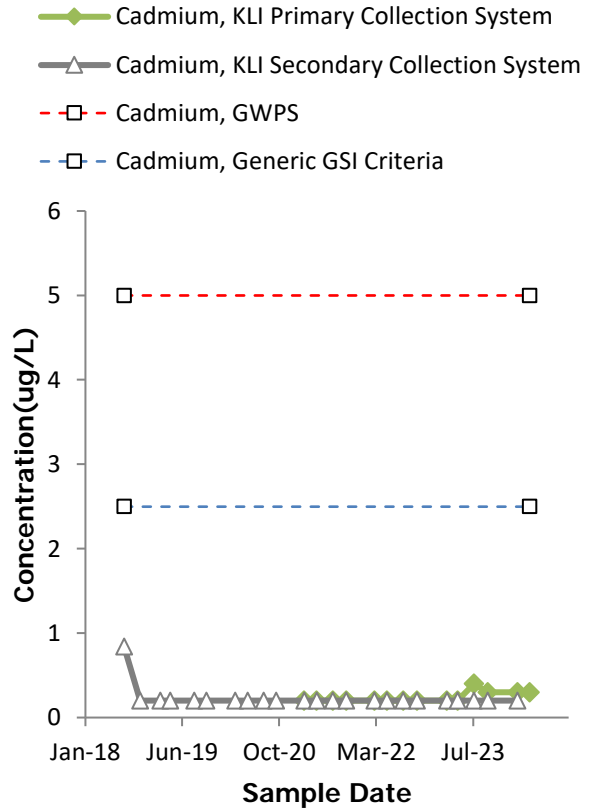
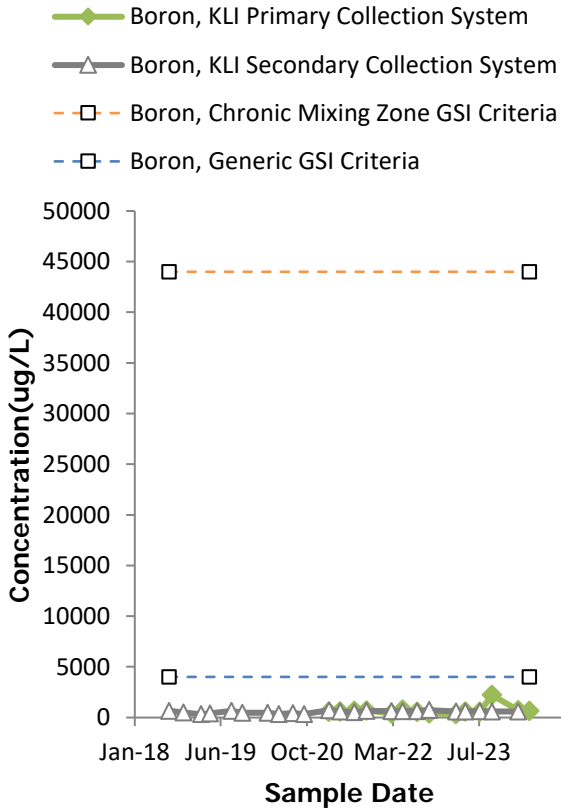
## **Secondary Leachate Collection System Monitoring**



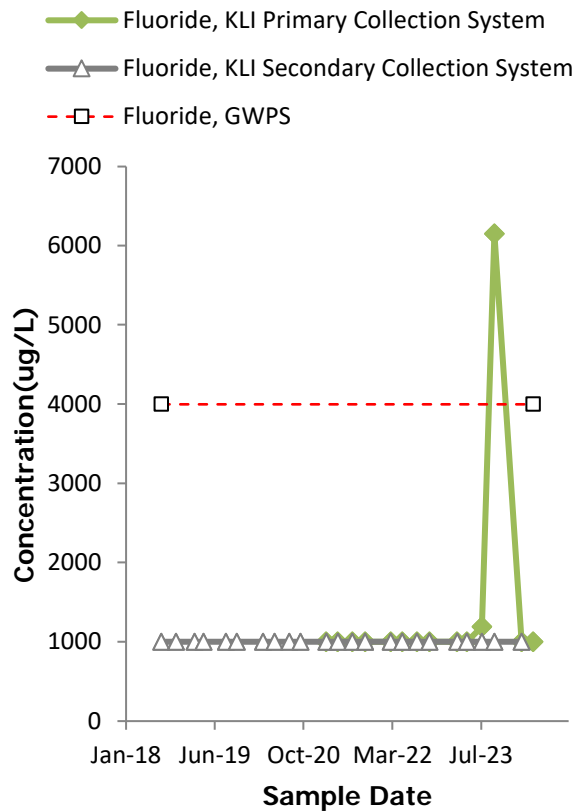
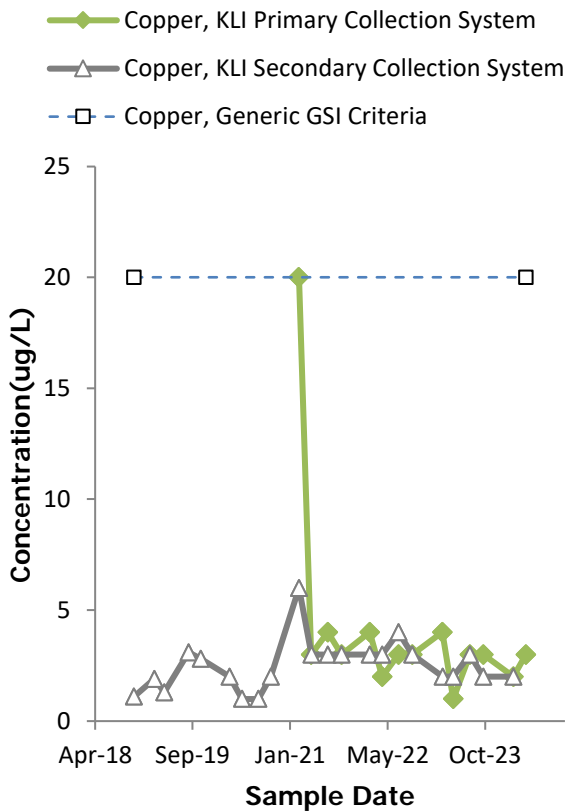
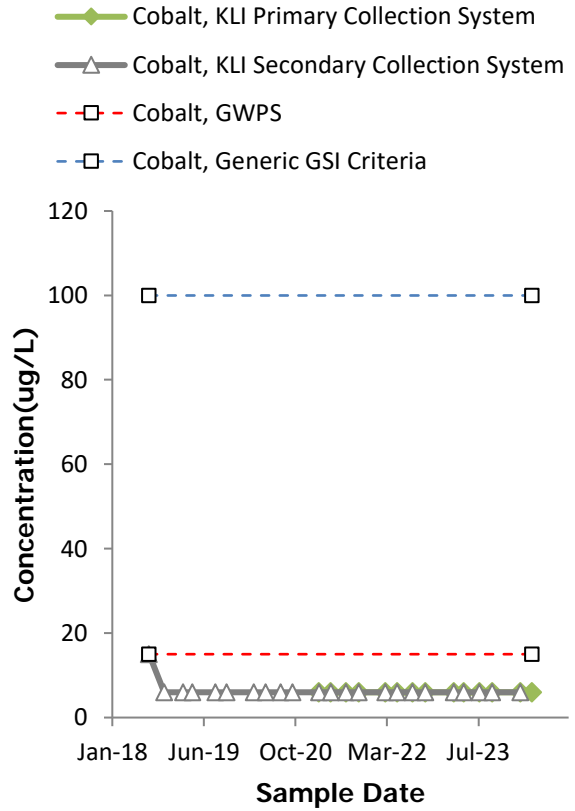
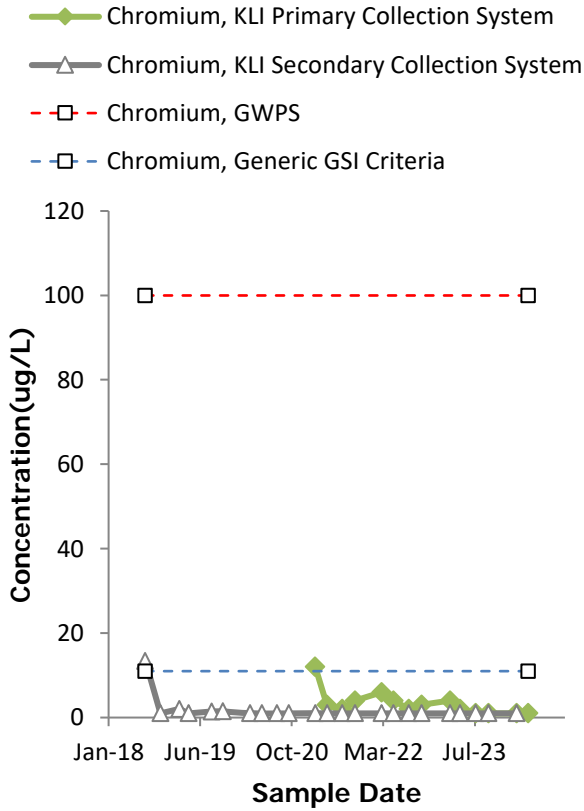
## Water Quality Time Series



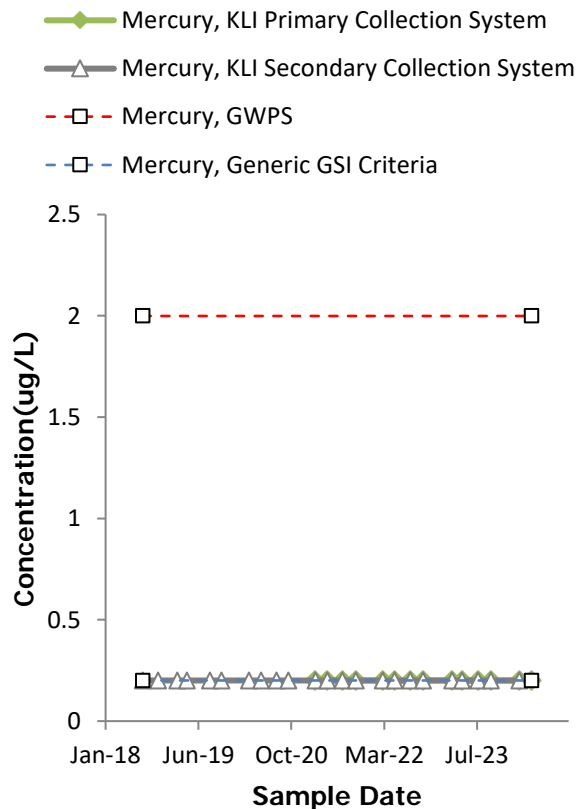
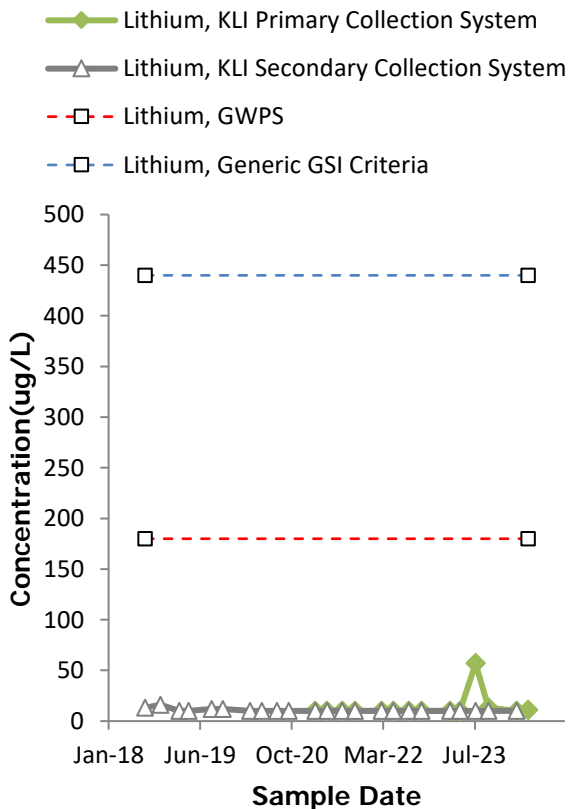
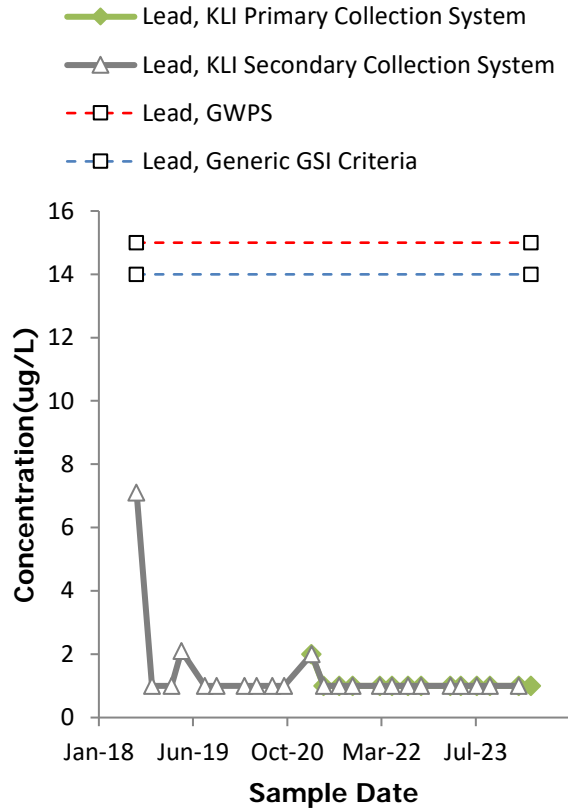
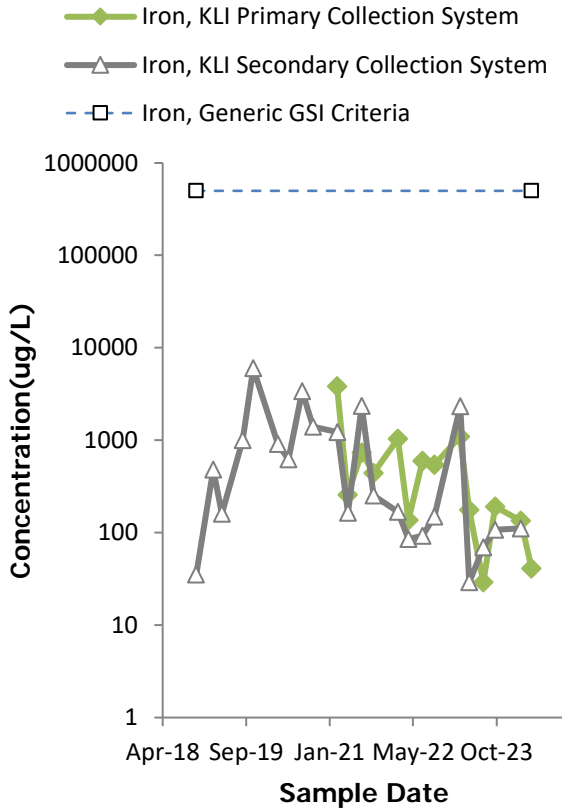
# Water Quality Time Series



# Water Quality Time Series

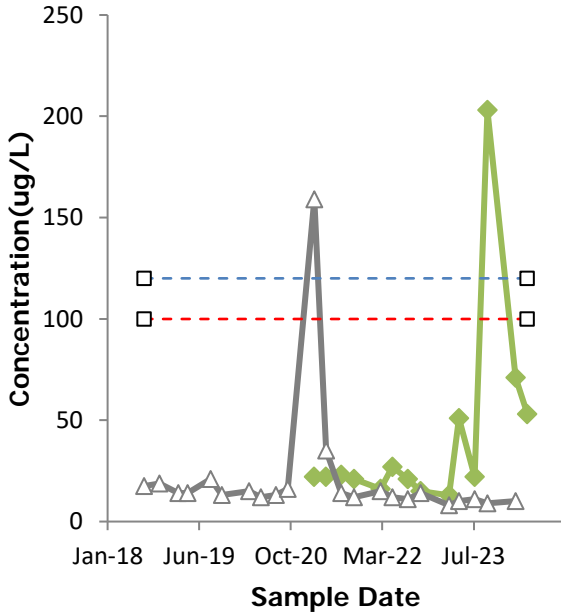


# Water Quality Time Series

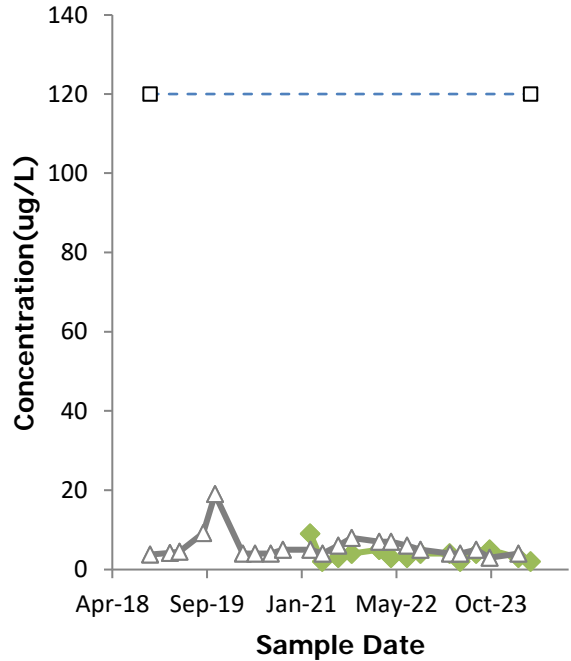


# Water Quality Time Series

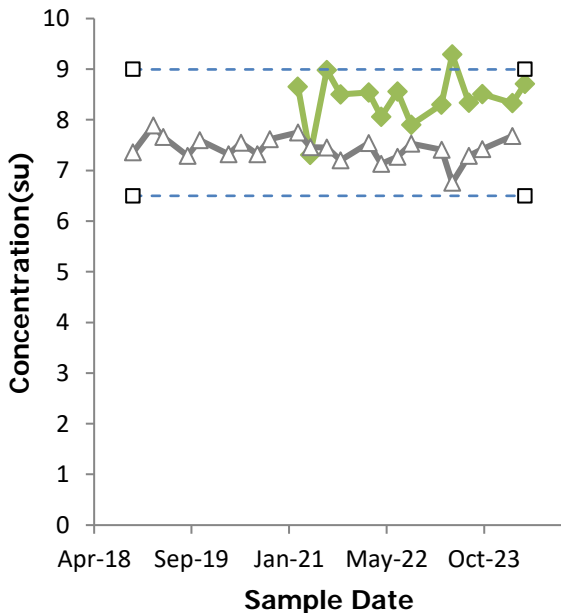
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- ▲ Molybdenum, KLI Secondary Collection System
- Molybdenum, GWPS
- Molybdenum, Generic GSI Criteria



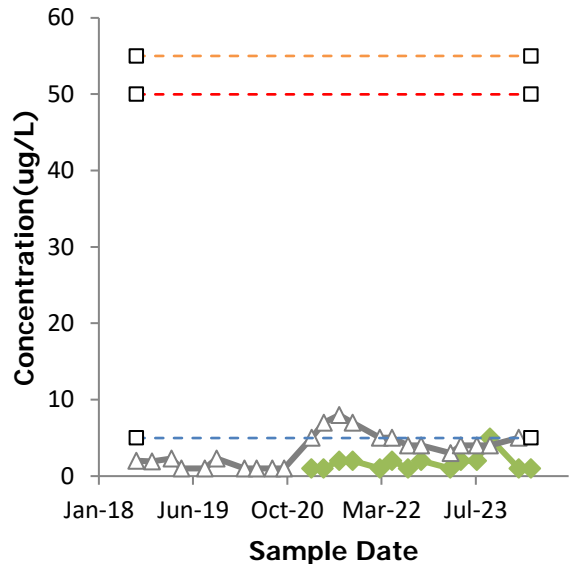
- ◆ Nickel, KLI Primary Collection System
- ▲ Nickel, KLI Secondary Collection System
- Nickel, Generic GSI Criteria



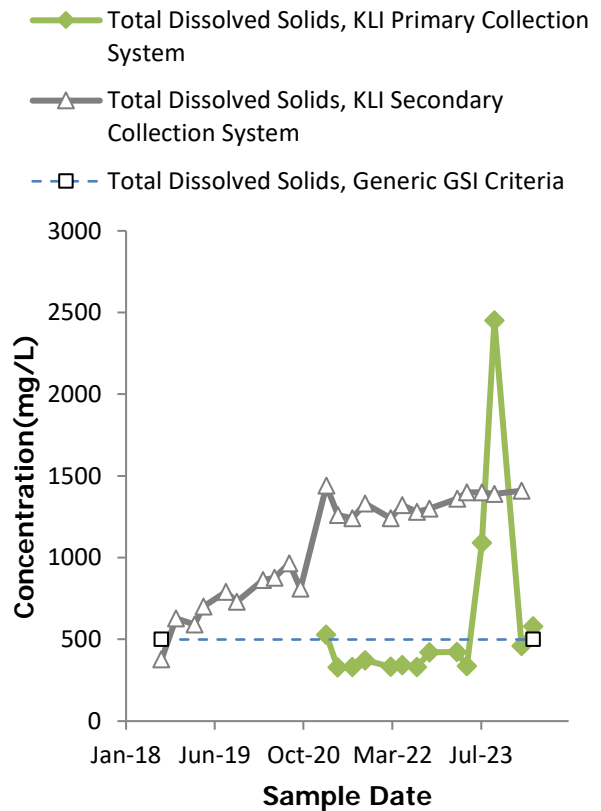
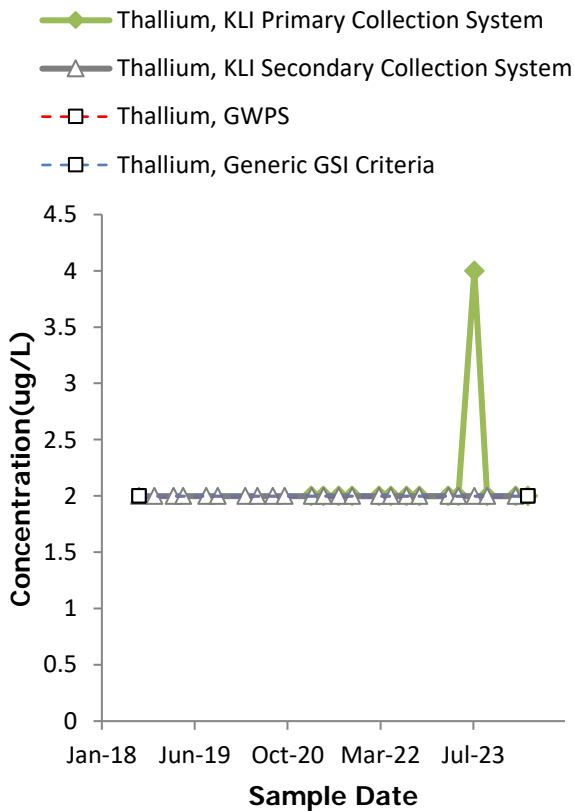
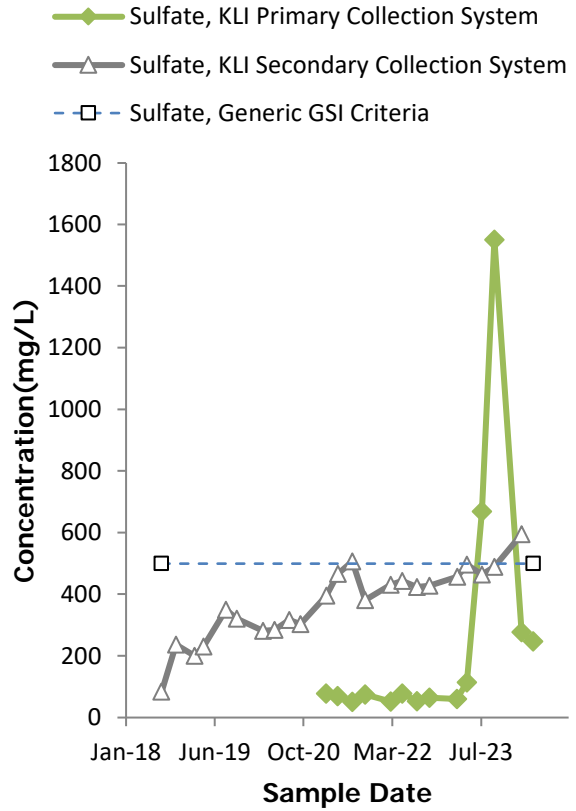
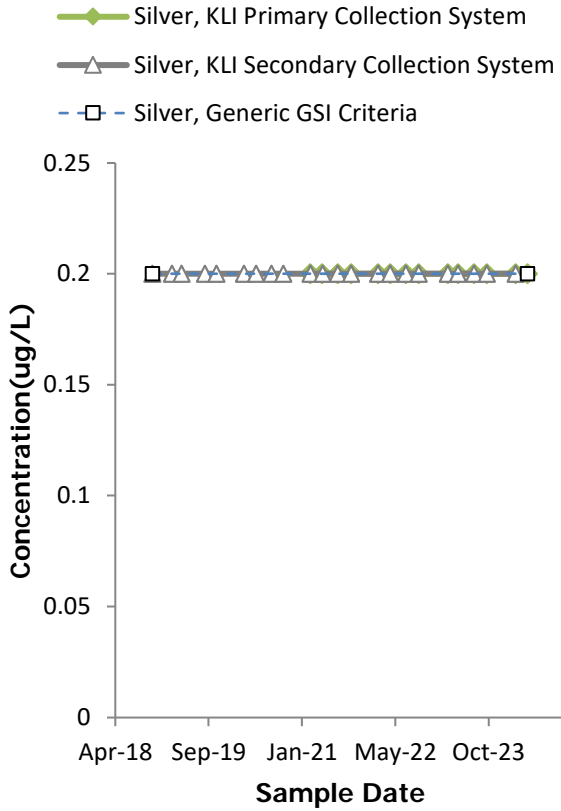
- ◆ pH, Field, KLI Primary Collection System
- ▲ pH, Field, KLI Secondary Collection System
- pH, Field, Generic GSI Criteria
- pH, Field, Generic GSI Criteria



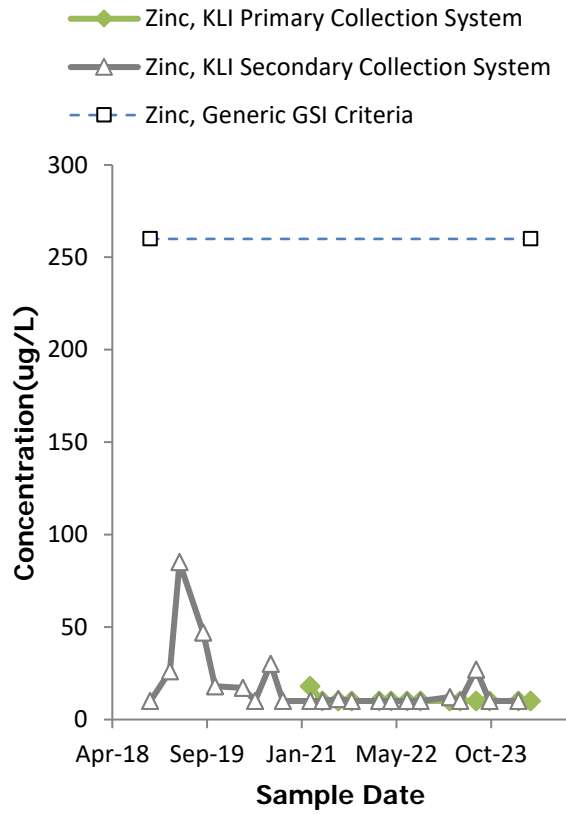
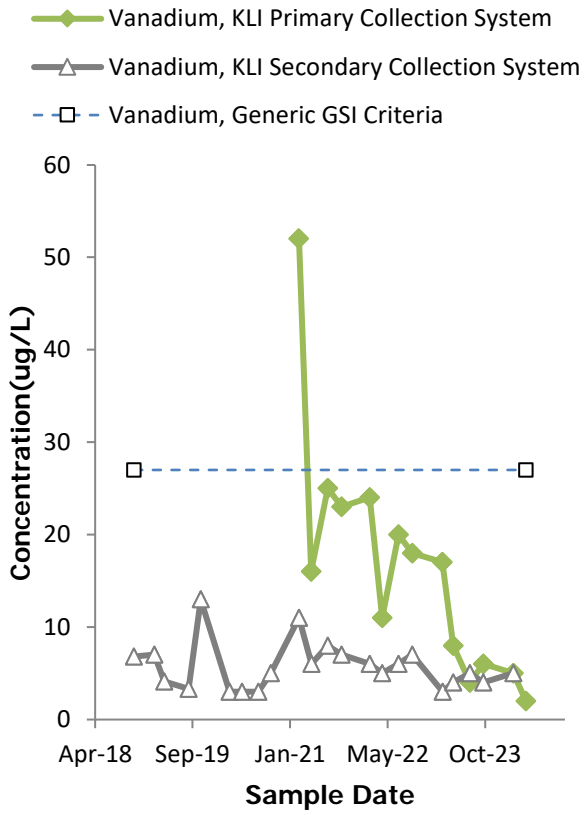
- ◆ Selenium, KLI Primary Collection System
- ▲ Selenium, KLI Secondary Collection System
- Selenium, Chronic Mixing Zone GSI Criteria
- Selenium, GWPS
- Selenium, Generic GSI Criteria



## Water Quality Time Series



# Water Quality Time Series



## **Enclosure 4**

**Third Quarter 2024 Hydrogeological Monitoring Report, DE  
Karn Lined Impoundment CCR Unit, Essexville, Michigan.  
(TRC, October 30, 2024)**





# Third Quarter 2024 Hydrogeological Monitoring Report

**DE Karn Lined Impoundment CCR Unit**

**Essexville, Michigan**

October 2024

A handwritten signature in blue ink that reads "Darby Litz".

---

Darby Litz  
Project Manager/Hydrogeologist

**Prepared For:**

Consumers Energy  
1945 W. Parnall Road  
Jackson, MI 49201

**Prepared By:**

TRC  
1540 Eisenhower Place  
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Andrew Whaley".

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Andrew Whaley  
Project Geologist

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## 1.0 Introduction

Pursuant to the Federal CCR Rule<sup>1</sup>, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018, 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 amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

### 1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Third Quarter 2024 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, *Format for Solid Waste Disposal Facility Monitoring Submittals*, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (NREPA), also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

### 1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the third quarter 2024 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

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<sup>1</sup> 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.

1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the third quarter 2024, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. Closure of the Karn Lined Impoundment was initiated in August 2024 in accordance with the EGLE-approved *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan* (Closure Plan) (Golder, June 2018); therefore, this third quarter sampling event (July 2024) was the final detection monitoring sampling event. In accordance with the Closure Plan and § 257.102(c): Closure by removal of CCR, groundwater monitoring will be conducted to document that constituent concentrations throughout the CCR unit do not exceed the groundwater protection standards per 40 CFR 257.95(h) for two consecutive quarterly groundwater monitoring events. Post-closure monitoring is scheduled to occur in the fourth quarter of 2024 and the first quarter of 2025.

### 1.3 Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former 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. Consumers Energy permanently ceased the operation Karn Units 1 & 2 at the Site in May 2023 and has commenced decommissioning activities for both coal-fired generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled and will continue to operate. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal under the CCR Rule and the Karn Landfill that was certified closed under Part 115 by constructing a final cover system and is currently in post-closure care.

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit NO. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

### 1.4 Geology/Hydrogeology

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. USGS topographic maps and aerial photographs dating back to 1938, in

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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 Site is bound by several surface water features (Figures 1 and 2): 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 Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near OW-12, flowing outward toward the surrounding surface water bodies.

## 2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner (Consumers Energy, 2021a and 2021b). Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow of 25 gallons per acre per day (GPAD). Consumers Energy maintains a record of the volume of leachate collected and the corresponding time-averaged flow each time the secondary collection system is evacuated. Consumers Energy provided notice to initiate closure of the KLI in July 2023 after DE Karn Electric Generating Units 1&2 (coal-fired generating units) ceased operating in May 2023. The KLI-SCS was monitored for the end-of-life CCRs and NPDES decant water that remained in the CCR unit the closure activities commenced in August 2024.

In response to the prior exceedance of the SCS response action flow rate, a sample was collected from the surface water of the primary collection system (KLI-PCS). The secondary leachate collection system sump (KLI-SCS) was dry during the third quarter 2024 sampling event; therefore, a sample was not collected. The leachate collection system data are used to compare leachate chemistry to groundwater chemistry. The sample was analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) - Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) - Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and previously collected KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 through the July 2024 sampling event. This analysis demonstrates that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids, sulfate, and chloride. Consumers notes that as decommissioning of the Karn Units 1&2 proceeds, temporary changes to the mix of the miscellaneous low-volume waste may occur, causing changes in the concentrations of detected constituents in the primary collection system (KLI-PCS) as compared to historical. A few notable observations include:

- **Arsenic concentrations are higher in groundwater than the primary and secondary collection system:** As shown in Appendix E, the arsenic concentrations observed in the

primary and secondary collections system have been consistently low. Arsenic was detected at 4.0 ug/L in the primary collection system in July 2024 and the secondary collection system has historically been detected at concentrations between 1 and 4 ug/L. In contrast, the arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 45 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.

- **Secondary Collection System chemistry has not appreciably changed over the lifetime of the unit:** The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the secondary collection system, except for chloride, total dissolved solids (TDS) and sulfate in the secondary collection system. Chloride concentrations increased in the first quarter of 2021 and have since stabilized near 60 mg/L. TDS concentrations in KLI-SCS increased between 2018 and 2021 and have since began to stabilize. Sulfate concentrations have increased slightly over time. The chloride, TDS and sulfate concentrations in the secondary collection system are more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products. The secondary collection system sump has been dry during the second and third quarters of 2024; therefore no samples were collected.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored for the purposes of confirming closure following removal of the CCR unit.



### 3.0 Groundwater Monitoring

#### 3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

#### 3.2 July 2024 Detection Monitoring Event

In accordance with the HMP, TRC conducted the third quarter 2024 monitoring event for the Karn Lined Impoundment between July 22 and 24, 2024. In addition to the routine groundwater samples collected from the monitoring well network, a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry.

Groundwater samples collected during the third quarter 2024 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents		
Boron	Antimony	Fluoride	Thallium
Calcium	Arsenic	Lead	Vanadium
Chloride	Barium	Lithium	Zinc
Fluoride	Beryllium	Mercury	
Iron	Cadmium	Molybdenum	
pH	Chromium, total	Nickel	
Sulfate	Cobalt	Selenium	
Total Dissolved Solids (TDS)	Copper	Silver	

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory

reports (Appendix A).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix B).

Monitoring wells 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. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater sample preparation and analyses were performed in accordance with SW-846 "Test Methods for Evaluation Solid Waste – Chemical / Physical Methods," USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of one field blank, one equipment blank, one field duplicate (DEK-MW-15003), and field matrix spike/matrix spike duplicate samples collected at DEK-MW-18001.

### **3.2.1 Data Quality Review**

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the HMP program.

The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

### **3.2.2 Groundwater Flow Rate and Direction**

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in July 2024 are generally within the range of 580 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 data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically created localized mounding of the potentiometric surface, the 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 in the vicinity of the former Karn Bottom Ash Pond in July 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. 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. The conveyance ditch was observed to be dry in July 2024 as wastewater is not being generated due to the cessation of operations of Karn Units 1 & 2. The groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond has shifted to the southeast and is currently centered near OW-12. Porewater flow is generally radial, flowing outward towards the adjacent surface water features from this potentiometric “high”, as illustrated in Figure 3.

The average hydraulic gradient observed on July 22, 2024, in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0026 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. 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 calculated to be 0.13 ft/day or 47 ft/year in July 2024 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year in August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.

## 4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the third quarter 2024 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017, and in accordance with the December 23, 2015, mixing zone determination.

### 4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using Sanitas™ Statistical Software (Sanitas™). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from October 2022 through July 2024 were analyzed using Mann-Kendall and Sen's Slope at a significance level ( $\alpha$ ) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.

Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:

- New, unconfirmed increasing trends for calcium and sulfate were observed in OW-12 in third quarter 2024.
- The new, unconfirmed increasing trend for calcium observed in OW-11 during second quarter 2024 did not continue in third quarter 2024.
- The new, unconfirmed increasing trend for sulfate observed in DEK-MW-18001 during second quarter 2024 did not continue in third quarter 2024.
- The new, unconfirmed increasing trend for total dissolved solids observed in DEK-MW-18001 in second quarter 2024 was confirmed in third quarter 2024.

## 4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, the majority of these trends have not been confirmed and the groundwater conditions do not conclusively indicate a release from the unit. Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, intrawell trend tests, in conjunction with SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit, per the HMP.

As presented in Section 2.0, the SCS flow rates are below the action flow rate threshold, which continues to demonstrate the liner system is working effectively following the documented liner repairs. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. The majority of detection monitoring constituent concentrations at OW-12 and DEK-MW-18001 exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. Although an increasing trend in total dissolved solids is observed at DEK-MW-18001, the SCS flow rates remain within acceptable limits. Therefore, this change in groundwater concentrations is not considered to indicate a release to groundwater. The increasing trends noted in Section 4.1 will continue to be evaluated within context of changes in the site operational status.

## 4.3 Alternate Source Demonstration

At this time, Consumers Energy is not asserting an Alternate Source Demonstration (ASD) for any Statistically Significant Increases (SSI) from this reporting period. The groundwater conditions do not conclusively indicate a release from the unit and the average daily KLI-SCS flow rates remain below the action flow rate thresholds.

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## 5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although increasing trends of detection monitoring (Appendix III) constituents exist, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit as the average daily SCS flow rates remain below the response action flow rate thresholds and continue to demonstrate the liner system has worked effectively during operation of the CCR unit.

Closure of the Karn Lined Impoundment was initiated in August 2024 in accordance with the EGLE-approved *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan* (Closure Plan) (Golder, June 2018); therefore, this third quarter sampling event (July 2024) was the final detection monitoring sampling event. In accordance with the Closure Plan and § 257.102(c): Closure by removal of CCR, groundwater monitoring will be conducted to document that constituent concentrations throughout the CCR unit do not exceed the groundwater protection standards per 40 CFR 257.95(h) for two consecutive quarterly groundwater monitoring events. Post-closure monitoring is scheduled to occur in the fourth quarter of 2024 and the first quarter of 2025. The fourth quarter monitoring event is scheduled for October 2024.

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## 6.0 References

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- TRC. 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company. January.
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- USEPA. 2018. 40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.

## Tables



**Table 1**  
 Summary of Groundwater Elevation Data  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	July 22, 2024	
				Depth to Water (ft BTOC)	Groundwater Elevation (ft)
<b>DEK Bottom Ash Pond</b>					
DEK-MW-15002	590.87	Sand	578.3 to 575.3	7.55	583.32
DEK-MW-15005	589.72	Sand	572.3 to 567.3	9.45	580.27
DEK-MW-15006	589.24	Sand	573.0 to 568.0	7.96	581.28
<b>DEK Bottom Ash Pond &amp; Karn Lined Impoundment</b>					
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.78	583.69
<b>Karn Lined Impoundment</b>					
DEK-MW-15003	602.74	Sand	578.8 to 574.8	19.45	583.29
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	8.31	583.27
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	24.60	583.30
OW-12	603.10	Silty Sand	584.2 to 579.2	19.00	584.10
<b>DEK Nature and Extent</b>					
DEK-MW-15004	611.04	Sand	576.6 to 571.6	29.20	581.84
MW-01	597.02	Sand	573.0 to 570.0	16.81	580.21
MW-03	597.30	Sand	569.8 to 566.8	17.12	580.18
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.39	580.05
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	18.25	580.53
MW-10	596.97	Sand	582.5 to 572.5	16.58	580.39
MW-12	598.60	Sand	583.9 to 573.9	18.25	580.35
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.05	580.32
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	15.41	580.39
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.51	581.48
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.55	581.02
<b>DEK Static Water Level</b>					
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.19	580.15
MW-04	598.01	NR	569.5 to 564.5	17.85	580.16
MW-17	597.91	Sand	577.0 to 574.0	14.49	583.42
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.94	582.28
MW-19	597.28	NR	572.1 to 567.1	16.88	580.40
MW-20	632.75	Sand	582.3 to 579.3	52.58	580.17
MW-21	632.91	Sand	587.1 to 584.1	51.80	581.11
OW-01	631.33	NR	572.5 to 567.5	51.28	580.05
OW-02	598.01	Fly Ash	579.4 to 576.4	16.49	581.52
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.24	580.70
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	9.89	580.32
OW-05	593.53	Sand	576.9 to 571.9	12.89	580.64
OW-06	603.95	NR	580.9 to 575.9	22.65	581.30
OW-07	596.41	Ash	583.3 to 580.3	15.45	580.96
OW-08	593.93	NR	581.0 to 576.0	11.30	582.63
OW-09	593.45	NR	585.5 to 580.5	10.50	582.95
OW-13	588.52	NR	579.5 to 574.5	3.47	585.05
OW-15	587.75	NR	572.8 to 567.8	4.95	582.80

**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 Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
<b>DE Karn Lined Impoundment</b>							
DEK-MW-15003	7/24/2024	0.65	-127.1	7.9	384	17.7	1.0
DEK-MW-18001	7/24/2024	1.10	-188.0	8.2	1,026	14.3	10.0
KLI-PCS	7/24/2024	5.74	-9.0	8.3	711	26.2	5.2
OW-10	7/24/2024	0.51	-122.9	7.1	863	14.3	19.2
OW-11	7/24/2024	1.83	-30.1	9.3	406	18.6	9.7
OW-12	7/24/2024	0.04	-103.5	7.1	1,349	15.1	5.2

**Notes:**

- - Parameter was not analyzed
- mg/L - milligram 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 Lined Impoundment - Hydrogeological Monitoring Program  
 Essexville, Michigan

		Sample Location:				DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS
		Sample Date:				7/24/2024	7/24/2024	7/24/2024	7/24/2024	7/24/2024	7/24/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI <sup>^</sup>	Upgradient	Downgradient		Upgradient	Downgradient	Supplemental
<b>Appendix III<sup>(1)</sup></b>											
Boron	ug/L	NC	<b>500</b>	<b>500</b>	4,000	<b>649</b>	<b>842</b>	<b>1,120</b>	<b>3,250</b>	<b>1,390</b>	<b>1,010</b>
Calcium	mg/L	NC	NC	NC	500 <sup>EE</sup>	29.4	57.4	126	8.9	180	48.7
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	<b>50</b>	<b>60</b>	<b>69.3</b>	<b>79</b>	<b>57.7</b>	41	38
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,080	< 1,000	< 1,000
Sulfate	mg/L	<b>250**</b>	<b>250<sup>E</sup></b>	<b>250<sup>E</sup></b>	500 <sup>EE</sup>	36.9	213	< 1	23	<b>386</b>	116
Total Dissolved Solids	mg/L	<b>500**</b>	<b>500<sup>E</sup></b>	<b>500<sup>E</sup></b>	<b>500</b>	318	<b>698</b>	<b>682</b>	228	<b>1,230</b>	446
pH, Field	SU	<b>6.5 - 8.5**</b>	<b>6.5 - 8.5<sup>E</sup></b>	<b>6.5 - 8.5<sup>E</sup></b>	<b>6.5 - 9.0</b>	7.9	8.2	7.1	<b>9.3</b>	7.1	8.3
<b>Appendix IV<sup>(1)</sup></b>											
Antimony	ug/L	6	6.0	6.0	<b>2.0</b>	< 1	< 1	< 1	<b>3</b>	< 1	< 1
Arsenic	ug/L	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>390</b>	<b>482</b>	2	<b>1,080</b>	<b>45</b>	4
Barium	ug/L	2,000	2,000	2,000	1,200	37	152	174	25	245	506
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	2	1	< 1	1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	3,080	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	22	18	32	< 10	52	< 10
Mercury	ug/L	2	2.0	2.0	0.20 <sup>#</sup>	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	<b>73</b>	210	<b>120</b>	24	13	< 5	<b>153</b>	8	9
Selenium	ug/L	50	50	50	<b>5.0</b>	< 1	1	1	<b>12</b>	1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
<b>Additional MI Part 115<sup>(2)</sup></b>											
Iron	ug/L	<b>300**</b>	<b>300<sup>E</sup></b>	<b>300<sup>E</sup></b>	500,000 <sup>EE</sup>	159	<b>845</b>	<b>3,710</b>	60	<b>4,870</b>	174
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	20	< 1	1	2	2	2	1
Nickel	ug/L	NC	100	100	120	< 2	2	5	3	7	3
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	<b>4.5</b>	<b>62</b>	<b>27</b>	2	2	<b>5</b>	<b>178</b>	< 2	4
Zinc	ug/L	5,000**	2,400	5,000 <sup>E</sup>	260	< 10	< 10	< 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 Statistical Exceedances  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
 SUMMARY OF STATISTICAL EXCEEDANCES

<b>Data is in (X) ug/L or          ( ) mg/L          unless otherwise stated</b>
--

Facility: Karn Lined Impoundment – WDS# 392503

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	2 Qtr. 2024 (bold >201)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)
<b>No Exceedances</b>								

# Figures

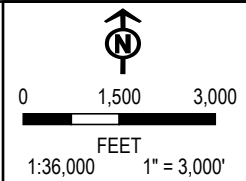


**DE KARN  
POWER PLANT**

**KARN LINED IMPOUNDMENT AREA**

**JC WEADOCK  
POWER PLANT**

COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH FIPS 2113 FEET; MAP ROTATION: 0  
 - SAVED BY: LULL ON 9/18/2024 08:03:52 AM; FILE PATH: T:\1-PROJECTS\CONSUMERS ENERGY\464095 DEKARN\2-APRX\464095 DEKARN.LAPRX; LAYOUT NAME: 553814-TOPO-K01-202402



PROJECT: **CONSUMERS ENERGY COMPANY  
DE KARN AND JC WEADOCK POWER PLANTS  
ESSEXVILLE, MICHIGAN**

TITLE: **SITE LOCATION MAP**

DRAWN BY:	A. ADAIR	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	<b>FIGURE 1</b>	
APPROVED BY:	D. LITZ		
DATE:	OCTOBER 2024		



1540 EISENHOWER PLACE  
ANN ARBOR, MI 48108-3284  
PHONE: 734.971.7080

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

FILE: DEKARN

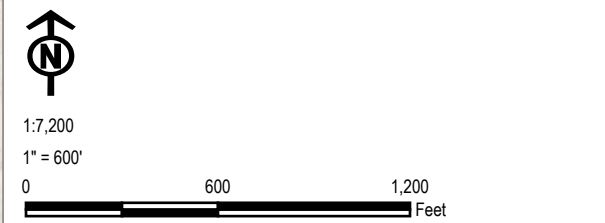


Coordinate System: NAD 1983 UTM Zone 10N; Map Rotation: 0  
 -- Saved By: LILL on 9/18/2024, 08:13:50 AM; File Path: T:\PROJECTS\Consumers\_Energy\464095\_DEKARN\2-A\PRX\464095\_DEKARN.aprx; Layout Name: 55381440-K02-202402



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - EXTENT OF GEOSYNTHETICS
  - PRIMARY CONTAINMENT SYSTEM SAMPLE (KLI-PCS)
  - SURFACE WATER SAMPLE (SW-DITCH)
  - SECONDARY CONTAINMENT SUMP

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LAYOUT MAP	
DRAWN BY:	A. ADAIR	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	<b>FIGURE 2</b>	
APPROVED BY:	D. LITZ		
DATE:	OCOTBER 2024		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trccompanies.com	
FILE:	464095_DEKARN.aprx		



Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0  
 - Saved By: LILL on 9/18/2024, 08:37:26 AM. File Path: T:\PROJECTS\Consumers\_Energy\464095\_DEKARN\2-A\PRX\464095\_DEKARN.aprx. Layout Name: 553814-SGW-K03-2024.Q3



**LEGEND**

- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
- DEK BOTTOM ASH POND MONITORING WELL
- DEK LINED IMPOUNDMENT MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- NATURE AND EXTENT WELL
- SURFACE WATER GAUGING STATION
- EXTENT OF GEOSYNTHETICS
- SLURRY WALL (APPROXIMATE)
- GROUNDWATER ELEVATION CONTOUR (1' INTERVAL, DASHED WHERE INFERRED)
- (580.21) GROUNDWATER ELEVATION (FEET)
- (NM) NOT MEASURED
- (NU) NOT USED

**NOTES**

1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.
5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



1:7,200  
 1" = 600'  
 0 600 1,200 FEET

PROJECT: <b>CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN</b>	
TITLE: <b>SHALLOW GROUNDWATER CONTOUR MAP JULY 2024</b>	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: J. KRENZ	<b>FIGURE 3</b>
APPROVED BY: D. LITZ	
DATE: OCTOBER 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx



# Appendix A

## Laboratory Analytical Reports

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 08, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2024 Q3

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

---

**Chemistry Project: 24-0582**

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 07/22/2024 for the 3<sup>rd</sup> 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 07/25/2024.

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 accreditation 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 in 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q3-2024 DEK Lined Impoundment  
**Date Received:** 7/25/2024  
**Chemistry Project:** 24-0582

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0582-01	DEK-MW-15003	Groundwater	07/24/2024 09:33	DEK Lined Impoundment
24-0582-02	OW-10	Groundwater	07/24/2024 08:28	DEK Lined Impoundment
24-0582-03	OW-11	Groundwater	07/24/2024 10:48	DEK Lined Impoundment
24-0582-04	OW-12	Groundwater	07/24/2024 10:18	DEK Lined Impoundment
24-0582-05	KLI-SCS	Not Collected		DEK Lined Impoundment
24-0582-06	KLI-PCS	Groundwater	07/24/2024 12:03	DEK Lined Impoundment
24-0582-07	SW-DITCH	Not Collected		DEK Lined Impoundment
24-0582-08	DUP-KLI	Groundwater	07/24/2024 00:00	DEK Lined Impoundment
24-0582-09	EB-KLI	Water	07/24/2024 11:30	DEK Lined Impoundment
24-0582-10	FB-KLI	Water	07/24/2024 10:48	DEK Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0582-01  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 09:33 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	390		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	37		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	649		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	29400		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	159		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	22		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	4520		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	68		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	24		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	4550		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	56200		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	2		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	149		ug/L	100.0	07/25/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	60000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0582-01  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 09:33 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/25/2024	AB24-0730-11
Sulfate	36900		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1560		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	318		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-01-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	103000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	103000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	238		ug/L	20.0	07/31/2024	AB24-0729-14

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0582-02  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 08:28 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-02-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-02-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	2		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	174		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	1120		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	126000		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	2		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	2		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	3710		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	32		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	25800		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	592		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	5		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	6190		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	1		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	71100		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	5		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/25/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	79000		ug/L	1000.0	07/31/2024	AB24-0730-11



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0582-02  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 08:28 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/25/2024	AB24-0730-11
Sulfate	ND		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	6070		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-02-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	682		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-02-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	514000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	514000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	170		ug/L	20.0	07/31/2024	AB24-0729-14

**Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa** Aliquot #: 24-0582-02-C08-A01 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0731-08
Arsenic	2		ug/L	1.0	07/30/2024	AB24-0731-08
Barium	155		ug/L	5.0	07/30/2024	AB24-0731-08
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0731-08
Boron	1140		ug/L	20.0	07/30/2024	AB24-0731-08
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0731-08
Calcium	127000		ug/L	1000.0	07/30/2024	AB24-0731-08
Chromium	1		ug/L	1.0	07/30/2024	AB24-0731-08
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0731-08
Copper	1		ug/L	1.0	07/30/2024	AB24-0731-08
Iron	3520		ug/L	20.0	07/30/2024	AB24-0731-08
Lead	ND		ug/L	1.0	07/30/2024	AB24-0731-08
Lithium	32		ug/L	10.0	07/30/2024	AB24-0731-08
Magnesium	26100		ug/L	1000.0	07/30/2024	AB24-0731-08

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0582-02  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 08:28 AM

### Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa

Aliquot #: 24-0582-02-C08-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Manganese	598		ug/L	5.0	07/30/2024	AB24-0731-08
Molybdenum	ND		ug/L	5.0	07/30/2024	AB24-0731-08
Nickel	5		ug/L	2.0	07/30/2024	AB24-0731-08
Potassium	5250		ug/L	100.0	07/30/2024	AB24-0731-08
Selenium	1		ug/L	1.0	07/30/2024	AB24-0731-08
Silver	ND		ug/L	0.2	07/30/2024	AB24-0731-08
Sodium	73000		ug/L	1000.0	07/30/2024	AB24-0731-08
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0731-08
Vanadium	2		ug/L	2.0	07/30/2024	AB24-0731-08
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0731-08

### Mercury by EPA 7470A, Dissolved

Aliquot #: 24-0582-02-C08-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/06/2024	AB24-0806-03

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0582-03  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 10:48 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-03-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	3		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	1080		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	25		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	3250		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	8900		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	1		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	2		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	60		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	ND		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	1150		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	153		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	3		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	4430		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	12		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	61400		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	178		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	363		ug/L	100.0	07/25/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	57700		ug/L	1000.0	07/31/2024	AB24-0730-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-11**  
 Lab Sample ID: 24-0582-03  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 10:48 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	3080		ug/L	1000.0	07/25/2024	AB24-0730-11
Sulfate	23000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	13000		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-03-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	228		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-03-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	91000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	32000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	58500		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-03-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/31/2024	AB24-0729-14

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0582-04  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 10:18 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-04-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-04-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	45		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	245		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	1390		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	180000		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	2		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	4870		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	52		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	101000		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	624		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	8		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	7		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	8750		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	1		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	55500		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/26/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/26/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-04-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	41000		ug/L	1000.0	07/31/2024	AB24-0730-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-12**  
 Lab Sample ID: 24-0582-04  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 10:18 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-04-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/26/2024	AB24-0730-11
Sulfate	386000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-04-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1300		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-04-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1230		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-04-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	602000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	602000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-04-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/31/2024	AB24-0729-14

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-PCS**  
 Lab Sample ID: 24-0582-06  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 12:03 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-06-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	4		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	506		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	1010		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	48700		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	1		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	1		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	174		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	ND		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	19400		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	18		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	9		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	3		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	16400		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	62800		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	4		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-06-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/26/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/26/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-06-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	38000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **KLI-PCS**  
 Lab Sample ID: 24-0582-06  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 12:03 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-06-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/26/2024	AB24-0730-11
Sulfate	116000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-06-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	119		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-06-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	446		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-06-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	192000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	192000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-06-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/31/2024	AB24-0729-14



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DUP-KLI**  
 Lab Sample ID: 24-0582-08  
 Matrix: Groundwater

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 12:00 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-08-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-08-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	394		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	36		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	650		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	28800		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	158		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	21		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	4480		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	68		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	24		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	4710		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	55200		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	3		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-08-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	103		ug/L	100.0	07/26/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/26/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0582-08-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	57600		ug/L	1000.0	07/31/2024	AB24-0730-11

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **DUP-KLI**  
Lab Sample ID: 24-0582-08  
Matrix: Groundwater

Laboratory Project: **24-0582**  
Collect Date: 07/24/2024  
Collect Time: 12:00 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0582-08-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/26/2024	AB24-0730-11
Sulfate	37900		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0582-08-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1370		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0582-08-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	308		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0582-08-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	102000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	101000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0582-08-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	238		ug/L	20.0	07/31/2024	AB24-0729-14

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **EB-KLI**  
 Lab Sample ID: 24-0582-09  
 Matrix: Water

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 11:30 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-09-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-09-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	ND		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	ND		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	ND		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	ND		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-09-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/26/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/26/2024	AB24-0725-06

### Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL

Aliquot #: 24-0582-09-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	07/27/2024	AB24-0727-01



# Analytical Report

Report Date: 08/08/24

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **EB-KLI**  
Lab Sample ID: 24-0582-09  
Matrix: Water

Laboratory Project: **24-0582**  
Collect Date: 07/24/2024  
Collect Time: 11:30 AM

**Sulfide, Total by SM 4500 S2D** **Aliquot #: 24-0582-09-C04-A01** **Analyst: Merit**

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/31/2024	AB24-0729-14

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **FB-KLI**  
 Lab Sample ID: 24-0582-10  
 Matrix: Water

Laboratory Project: **24-0582**  
 Collect Date: 07/24/2024  
 Collect Time: 10:48 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0582-10-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0582-10-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	ND		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	ND		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	ND		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	ND		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	ND		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	ND		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0582-10-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/26/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/26/2024	AB24-0725-06

### Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL

Aliquot #: 24-0582-10-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	07/27/2024	AB24-0727-01



# Analytical Report

Report Date: 08/08/24

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
Field Sample ID: **FB-KLI**  
Lab Sample ID: 24-0582-10  
Matrix: Water

Laboratory Project: **24-0582**  
Collect Date: 07/24/2024  
Collect Time: 10:48 AM

### Sulfide, Total by SM 4500 S2D

Aliquot #: 24-0582-10-C04-A01

Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/31/2024	AB24-0729-14

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**Data Qualifiers****Exception Summary**

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No exceptions occurred.

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CONSUMERS  
ENERGY

Chemistry Department  
General Standard Operating Procedure

PROC CHEM-1.2.01  
PAGE 1 OF 2  
REVISION 5  
ATTACHMENT A

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

Project Number: 24-0582 Inspection Date: 7/25/24 Inspection By: CIE

Sample Origin/Project Name: DEK/JCW Q3-2024 LI

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail \_\_\_\_\_ FedEx \_\_\_\_\_ UPS \_\_\_\_\_ USPS \_\_\_\_\_

Tracking Number: \_\_\_\_\_ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed  N/A \_\_\_\_\_

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.3 - 1.3 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration LS027723/ 6.27.25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>12</u>	_____	_____	_____	_____
Quart/Liter ( g / p )	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>33</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>6</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes  No \_\_\_\_\_ N/A \_\_\_\_\_ pH paper lot # 205522 Exp. Date 2.15.25

FSP # 13-640-508

Indicate if an Exception Report (Page 2 of 2) is needed: Yes \_\_\_\_\_ No



# 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: Q3-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0582</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																																												
SAMPLING TEAM: <i>A. Whaley, J. Krenz</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			email:			phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th rowspan="2">Dissolved Metals</th> <th colspan="8">CONTAINERS</th> </tr> <tr> <th colspan="8">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </table>						Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	Dissolved Metals	CONTAINERS								PRESERVATIVE								TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other											
Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	Dissolved Metals	CONTAINERS																																																				
							PRESERVATIVE																																																				
TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other																																																				
COPY TO:		Harold Register		MATRIX CODES: GW = Groundwater    OX = Other WW = Wastewater    SL = Sludge W = Water / Aqueous Liquid    A = Air S = Soil / General Solid    WP = Wipe O = Oil    WT = General Waste			FIELD SAMPLE ID / LOCATION																																																				
SEND REPORT TO:		Joseph Firlit																																																									
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX																																																							
		DATE	TIME																																																								

RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: <i>7/24/24</i>		RECEIVED BY: <i>[Signature]</i>		COMMENTS:			
RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: <i>07/25/24 7:30</i>		RECEIVED BY: <i>[Signature]</i>		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    M&TE #: <u>LS027723</u>			
		DATE/TIME: <i>07/25/24</i>				Temperature: <u>0.3 - 1.3</u> °C    Cal. Due Date: <u>6-27-25</u>			



# Analytical Laboratory Report

Report ID: S64475.01(01)  
Generated on 08/02/2024

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 Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary  
Lab Sample ID(s): S64475.01-S64475.08  
Project: 24-0582 PR#24070844  
Collected Date(s): 07/24/2024  
Submitted Date/Time: 07/25/2024 12:14  
Sampled by: Unknown  
P.O. #: 4400114090

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Method Summary (Page 4)  
Sample Summary (Page 5)

Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4500 S2 D 2011

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# Analytical Laboratory Report

## Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S64475.01	DEK-MW-15003 (24-0582-01)	Groundwater	07/24/24 09:33
S64475.02	OW-10 (24-0582-02)	Groundwater	07/24/24 08:28
S64475.03	OW-11 (24-0582-03)	Groundwater	07/24/24 10:48
S64475.04	OW-12 (24-0582-04)	Groundwater	07/24/24 10:18
S64475.05	KLI-PCS (24-0582-06)	Groundwater	07/24/24 12:03
S64475.06	DUP-KLI (24-0582-08)	Groundwater	07/24/24 00:01
S64475.07	EB-KLI (24-0582-09)	Groundwater	07/24/24 11:30
S64475.08	FB-KLI (24-0582-10)	Groundwater	07/24/24 10:48



# Analytical Laboratory Report

Lab Sample ID: S64475.01

Sample Tag: DEK-MW-15003 (24-0582-01)

Collected Date/Time: 07/24/2024 09:33

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 21:07, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.238	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.02

Sample Tag: OW-10 (24-0582-02)

Collected Date/Time: 07/24/2024 08:28

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 21:10, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.170	0.02		mg/L	1	18496-25-8	





# Analytical Laboratory Report

Lab Sample ID: S64475.03

Sample Tag: OW-11 (24-0582-03)

Collected Date/Time: 07/24/2024 10:48

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:27, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.04

Sample Tag: OW-12 (24-0582-04)

Collected Date/Time: 07/24/2024 10:18

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:42, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.05

Sample Tag: KLI-PCS (24-0582-06)

Collected Date/Time: 07/24/2024 12:03

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:44, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.06

Sample Tag: DUP-KLI (24-0582-08)

Collected Date/Time: 07/24/2024 00:01

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:48, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.238	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.07

Sample Tag: EB-KLI (24-0582-09)

Collected Date/Time: 07/24/2024 11:30

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:51, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64475.08

Sample Tag: FB-KLI (24-0582-10)

Collected Date/Time: 07/24/2024 10:48

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 22:52, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02		mg/L	1	18496-25-8	

# Merit Laboratories Login Checklist

Lab Set ID:S64475

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0582 PR#24070844

Submitted:07/25/2024 12:14 Login User: MMC

Phone: D:517-788-5888 FAX:  
Email:emil.blaj@cmsenergy.com

Selection	Description	Note
-----------	-------------	------

### Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.4 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

### Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

### Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

### Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                                  |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used             |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                                  |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received                   |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration               |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time               |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC, TOX, DO or Alkalinity bottles contain |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S64475      Submitted: 07/25/2024 12:14  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0582 PR#24070844

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 07/25/2024 13:29 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S64475.01	125mL Plastic NaOH/Zn Acetate	>12			
S64475.02	125mL Plastic NaOH/Zn Acetate	>12			
S64475.03	125mL Plastic NaOH/Zn Acetate	>12			
S64475.04	125mL Plastic NaOH/Zn Acetate	>12			
S64475.05	125mL Plastic NaOH/Zn Acetate	>12			
S64475.06	125mL Plastic NaOH/Zn Acetate	>12			
S64475.07	125mL Plastic NaOH/Zn Acetate	>12			
S64475.08	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

C.O.C. PAGE # 1 OF 1

**REPORT TO** **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME <b>Emil Blaj</b>			CONTACT NAME <input checked="" type="checkbox"/> SAME		
COMPANY <b>Consumers Energy</b>			COMPANY		
ADDRESS <b>135 W. Trail Street</b>			ADDRESS		
CITY <b>Jackson</b>		STATE <b>MI</b>	ZIP CODE <b>49201</b>		CITY
PHONE NO. <b>517-788-5888</b>	FAX NO. <b>517-788-2533</b>	P.O. NO. <b>44001140900</b>		E-MAIL ADDRESS	
E-MAIL ADDRESS <b>emil.blaj@cmsenergy.com</b>			QUOTE NO.		

PROJECT NO./NAME **24-0582 PR#24070844**      SAMPLER(S) - PLEASE PRINT/SIGN NAME **N/A**

TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER \_\_\_\_\_

DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER \_\_\_\_\_

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Total Sulfide	Certifications	Project Locations	Special Instructions
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER					
<b>64475.01</b>	07/24/24	0933	DEK-MW-15003 (24-0582-01)	GW	1									✓			preserved with NaOH/ZnAcetate
<b>.02</b>	07/24/24	0828	OW-10 (24-0582-02)	GW	1									✓			"
<b>.03</b>	07/24/24	1048	OW-11 (24-0582-03)	GW	1									✓			"
<b>.04</b>	07/24/24	1018	OW-12 (24-0582-04)	GW	1									✓			"
<b>.05</b>	07/24/24	1203	KLI-PCS (24-0582-06)	GW	1									✓			"
<b>.06</b>	07/24/24	-	DUP-KLI (24-0582-08)	GW	1									✓			"
<b>.07</b>	07/24/24	1130	EB-KLI (24-0582-09)	GW	1									✓			"
<b>.08</b>	07/24/24	1048	FB-KLI (24-0582-10)	GW	1									✓			"

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Consumers Energy</i> <input type="checkbox"/> Sampler      DATE <b>07-25-24</b> TIME <b>1214</b>	RELINQUISHED BY: SIGNATURE/ORGANIZATION _____      DATE _____      TIME _____
RECEIVED BY: SIGNATURE/ORGANIZATION <i>Johanna Murray</i> DATE <b>7/25/24</b> TIME <b>1214</b>	RECEIVED BY: SIGNATURE/ORGANIZATION _____      DATE _____      TIME _____
RELINQUISHED BY: SIGNATURE/ORGANIZATION _____      DATE _____      TIME _____	SEAL NO.      SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/> INITIALS _____      NOTES:      TEMP. ON ARRIVAL _____
RECEIVED BY: SIGNATURE/ORGANIZATION _____      DATE _____      TIME _____	SEAL NO.      SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/> INITIALS _____ <b>5.4</b>

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 08, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2024 Q3

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

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**Chemistry Project: 24-0581**

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 07/22/2024, for the 3<sup>rd</sup> 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 07/25/2024.

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 accreditation 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q3-2024 DEK Bottom Ash Pond & Lined Impoundment  
**Date Received:** 7/25/2024  
**Chemistry Project:** 24-0581

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0581-01	DEK-MW-18001	Groundwater	07/24/2024 12:35	DEK Bottom Ash Pond & Lined Impoundment
24-0581-02	DEK-MW-18001 MS	Groundwater	07/24/2024 12:35	DEK Bottom Ash Pond & Lined Impoundment
24-0581-03	DEK-MW-18001 MSD	Groundwater	07/24/2024 12:35	DEK Bottom Ash Pond & Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0581-01  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0581-01-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0581-01-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Arsenic	482		ug/L	1.0	07/30/2024	AB24-0730-05
Barium	152		ug/L	5.0	07/30/2024	AB24-0730-05
Beryllium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Boron	842		ug/L	20.0	07/30/2024	AB24-0730-05
Cadmium	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Calcium	57400		ug/L	1000.0	07/30/2024	AB24-0730-05
Chromium	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Cobalt	ND		ug/L	6.0	07/30/2024	AB24-0730-05
Copper	1		ug/L	1.0	07/30/2024	AB24-0730-05
Iron	845		ug/L	20.0	07/30/2024	AB24-0730-05
Lead	ND		ug/L	1.0	07/30/2024	AB24-0730-05
Lithium	18		ug/L	10.0	07/30/2024	AB24-0730-05
Magnesium	11800		ug/L	1000.0	07/30/2024	AB24-0730-05
Manganese	141		ug/L	5.0	07/30/2024	AB24-0730-05
Molybdenum	13		ug/L	5.0	07/30/2024	AB24-0730-05
Nickel	2		ug/L	2.0	07/30/2024	AB24-0730-05
Potassium	5530		ug/L	100.0	07/30/2024	AB24-0730-05
Selenium	1		ug/L	1.0	07/30/2024	AB24-0730-05
Silver	ND		ug/L	0.2	07/30/2024	AB24-0730-05
Sodium	131000		ug/L	1000.0	07/30/2024	AB24-0730-05
Thallium	ND		ug/L	2.0	07/30/2024	AB24-0730-05
Vanadium	2		ug/L	2.0	07/30/2024	AB24-0730-05
Zinc	ND		ug/L	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0581-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/25/2024	AB24-0725-06
Nitrite	ND		ug/L	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0581-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	69300		ug/L	1000.0	07/31/2024	AB24-0730-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0581-01  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0581-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/25/2024	AB24-0730-11
Sulfate	213000		ug/L	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0581-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2020		ug/L	25.0	07/27/2024	AB24-0727-01

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0581-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	698		mg/L	10.0	07/25/2024	AB24-0725-10

**Alkalinity by SM 2320B** Aliquot #: 24-0581-01-C05-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	163000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Bicarbonate	163000		ug/L	10000.0	08/01/2024	AB24-0801-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0581-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	157		ug/L	20.0	07/31/2024	AB24-0729-13

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0581-02  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0581-02-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0581-02-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	105		%	1.0	07/30/2024	AB24-0730-05
Arsenic	107		%	1.0	07/30/2024	AB24-0730-05
Barium	101		%	5.0	07/30/2024	AB24-0730-05
Beryllium	98		%	1.0	07/30/2024	AB24-0730-05
Boron	108		%	20.0	07/30/2024	AB24-0730-05
Cadmium	101		%	0.2	07/30/2024	AB24-0730-05
Calcium	103		%	1000.0	07/30/2024	AB24-0730-05
Chromium	104		%	1.0	07/30/2024	AB24-0730-05
Cobalt	104		%	6.0	07/30/2024	AB24-0730-05
Copper	104		%	1.0	07/30/2024	AB24-0730-05
Iron	104		%	20.0	07/30/2024	AB24-0730-05
Lead	98		%	1.0	07/30/2024	AB24-0730-05
Lithium	97		%	10.0	07/30/2024	AB24-0730-05
Magnesium	107		%	1000.0	07/30/2024	AB24-0730-05
Manganese	104		%	5.0	07/30/2024	AB24-0730-05
Molybdenum	105		%	5.0	07/30/2024	AB24-0730-05
Nickel	103		%	2.0	07/30/2024	AB24-0730-05
Potassium	108		%	100.0	07/30/2024	AB24-0730-05
Selenium	105		%	1.0	07/30/2024	AB24-0730-05
Silver	97.2		%	0.2	07/30/2024	AB24-0730-05
Sodium	106		%	1000.0	07/30/2024	AB24-0730-05
Thallium	97		%	2.0	07/30/2024	AB24-0730-05
Vanadium	107		%	2.0	07/30/2024	AB24-0730-05
Zinc	106		%	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0581-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	92		%	100.0	07/25/2024	AB24-0725-06
Nitrite	101		%	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0581-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	104		%	1000.0	07/31/2024	AB24-0730-11



**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0581-02  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0581-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	95		%	1000.0	07/25/2024	AB24-0730-11
Sulfate	103		%	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0581-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	94		%	25.0	07/27/2024	AB24-0727-01

**Alkalinity by SM 2320B** Aliquot #: 24-0581-02-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	99.0		%	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0581-02-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	98		%	20.0	07/31/2024	AB24-0729-13

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0581-03  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0581-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	99.0		%	0.2	07/29/2024	AB24-0727-06

### Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0581-03-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	103		%	1.0	07/30/2024	AB24-0730-05
Arsenic	107		%	1.0	07/30/2024	AB24-0730-05
Barium	98		%	5.0	07/30/2024	AB24-0730-05
Beryllium	99		%	1.0	07/30/2024	AB24-0730-05
Boron	105		%	20.0	07/30/2024	AB24-0730-05
Cadmium	100		%	0.2	07/30/2024	AB24-0730-05
Calcium	103		%	1000.0	07/30/2024	AB24-0730-05
Chromium	104		%	1.0	07/30/2024	AB24-0730-05
Cobalt	107		%	6.0	07/30/2024	AB24-0730-05
Copper	102		%	1.0	07/30/2024	AB24-0730-05
Iron	114		%	20.0	07/30/2024	AB24-0730-05
Lead	100		%	1.0	07/30/2024	AB24-0730-05
Lithium	98		%	10.0	07/30/2024	AB24-0730-05
Magnesium	106		%	1000.0	07/30/2024	AB24-0730-05
Manganese	110		%	5.0	07/30/2024	AB24-0730-05
Molybdenum	107		%	5.0	07/30/2024	AB24-0730-05
Nickel	103		%	2.0	07/30/2024	AB24-0730-05
Potassium	105		%	100.0	07/30/2024	AB24-0730-05
Selenium	105		%	1.0	07/30/2024	AB24-0730-05
Silver	95.0		%	0.2	07/30/2024	AB24-0730-05
Sodium	108		%	1000.0	07/30/2024	AB24-0730-05
Thallium	98		%	2.0	07/30/2024	AB24-0730-05
Vanadium	108		%	2.0	07/30/2024	AB24-0730-05
Zinc	104		%	10.0	07/30/2024	AB24-0730-05

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0581-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	93		%	100.0	07/25/2024	AB24-0725-06
Nitrite	101		%	100.0	07/25/2024	AB24-0725-06

### Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0581-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	103		%	1000.0	07/31/2024	AB24-0730-11

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0581-03  
 Matrix: Groundwater

Laboratory Project: **24-0581**  
 Collect Date: 07/24/2024  
 Collect Time: 12:35 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0581-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	95		%	1000.0	07/25/2024	AB24-0730-11
Sulfate	102		%	1000.0	07/31/2024	AB24-0730-11

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0581-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	85		%	25.0	07/27/2024	AB24-0727-01

**Alkalinity by SM 2320B** Aliquot #: 24-0581-03-C04-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	98.0		%	10000.0	08/01/2024	AB24-0801-03

**Sulfide, Total by SM 4500 S2D** Aliquot #: 24-0581-03-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	111		%	20.0	07/31/2024	AB24-0729-13



# Analytical Report

Report Date: 08/08/24

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

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

Project Number: 24-0581 Inspection Date: 7/25/24 Inspection By: CIE

Sample Origin/Project Name: DEK) JCW Q3-2024 BAP + LI

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail \_\_\_\_\_ FedEx \_\_\_\_\_ UPS \_\_\_\_\_ USPS \_\_\_\_\_

Tracking Number: \_\_\_\_\_ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed  N/A \_\_\_\_\_

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0-3-1.0 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration LS027723/ 6.27.25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>6</u>	_____	_____	_____	_____
Quart/Liter ( g / p )	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>12</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes  No \_\_\_\_\_ N/A \_\_\_\_\_ pH paper lot # 205522 Exp. Date 2.15.25  
FSP # 13-640-508

Indicate if an Exception Report (Page 2 of 2) is needed: Yes \_\_\_\_\_ No

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q3-2024 DEK Bottom Ash Pond & Lined Impound.		PROJECT NUMBER: <b>24-0581</b>		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																																							
SAMPLING TEAM:		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																																	
SEND REPORT TO: Joseph Firlit		email:		phone:		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">Ammonia</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th rowspan="2">Sulfide</th> <th colspan="8">CONTAINERS</th> </tr> <tr> <th colspan="8">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO<sub>3</sub></th> <th>H<sub>2</sub>SO<sub>4</sub></th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </table>						Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide	CONTAINERS								PRESERVATIVE								TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other										
Total Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide													CONTAINERS																																	
												PRESERVATIVE																																							
TOTAL #	None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl							MeOH	Other																																						
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater      OX = Other WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste																																																	
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION								REMARKS																																							

RELINQUISHED BY:	DATE/TIME: 7/10/24 0770	RECEIVED BY:	COMMENTS:  Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>LS027723</u> Temperature: <u>0.3 - 1.0</u> °C      Cal. Due Date: <u>6-27-25</u>
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	



# Analytical Laboratory Report

Report ID: S64477.01(01)  
Generated on 08/02/2024

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 Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S64477.01-S64477.03  
Project: 24-0581 PR#24070844  
Collected Date(s): 07/24/2024  
Submitted Date/Time: 07/25/2024 12:14  
Sampled by: Unknown  
P.O. #: 4400114090

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- Laboratory Accreditations (Page 3)
- Qualifier Descriptions (Page 3)
- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)

Maya Murshak  
Technical Director



# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report





# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4500 S2 D 2011

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# Analytical Laboratory Report

## Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S64477.01	DEK-MW-18001 (24-0581-01)	Groundwater	07/24/24 12:35
S64477.02	DEK-MW-18001 Field MS (24-0581-01)	Groundwater	07/24/24 12:35
S64477.03	DEK-MW-18001 Field MSD (24-0581-01)	Groundwater	07/24/24 12:35



# Analytical Laboratory Report

Lab Sample ID: S64477.01

Sample Tag: DEK-MW-18001 (24-0581-01)

Collected Date/Time: 07/24/2024 12:35

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 23:22, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.157	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S64477.02

Sample Tag: DEK-MW-18001 Field MS (24-0581-01)

Collected Date/Time: 07/24/2024 12:35

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 23:40, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.354	0.02		mg/L	1	18496-25-8	1

1-\*Sample Spiked @ 0.200ppm level



# Analytical Laboratory Report

Lab Sample ID: S64477.03

Sample Tag: DEK-MW-18001 Field MSD (24-0581-01)

Collected Date/Time: 07/24/2024 12:35

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	5.4	IR

### Inorganics

Method: SM4500-S2 D, Run Date: 07/31/24 23:43, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.379	0.02		mg/L	1	18496-25-8	1

1-\*Sample Spiked @ 0.200ppm level

# Merit Laboratories Login Checklist

Lab Set ID:S64477

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0581 PR#24070844

Submitted:07/25/2024 12:14 Login User: MMC

Phone: D:517-788-5888 FAX:  
Email:emil.blaj@cmsenergy.com

Selection	Description	Note
<b>Sample Receiving</b>		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.4
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC, TOX, DO or Alkalinity bottles contain

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S64477      Submitted: 07/25/2024 12:14  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0581 PR#24070844

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 07/25/2024 13:31 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S64477.01	125mL Plastic NaOH/Zn Acetate	>12			
S64477.02	125mL Plastic NaOH/Zn Acetate	>12			
S64477.03	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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 4400114090  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

PROJECT NO./NAME 24-0581 PR#24070844 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

Certifications  
 OHIO VAP  Drinking Water  
 DoD  NPDES  
 Project Locations  
 Detroit  New York  
 Other  
 Special Instructions

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Total Sulfide			
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NI(OH)	MI(OH)	OTHER					
<u>64477.01</u>	<u>07/24/24</u>	<u>1235</u>	<u>DEK-MW-18001 (24-0581-01)</u>	<u>GW</u>	<u>1</u>									<input checked="" type="checkbox"/>			<u>preserved with NaOH/ZnAcetate</u>
<u>.02</u>	<u>07/24/24</u>	<u>1235</u>	<u>DEK-MW-18001 Field MS (24-0581-02)</u>	<u>GW</u>	<u>1</u>									<input checked="" type="checkbox"/>			<u>"</u>
<u>03</u>	<u>07/24/24</u>	<u>1235</u>	<u>DEK-MW-18001 Field MSD (24-0581-03)</u>	<u>GW</u>	<u>1</u>									<input checked="" type="checkbox"/>			<u>"</u>
																	<u>Please spike MS/MSD and report spike concentration and/or rec.</u>

RELINQUISHED BY: Consumers Energy  Sampler DATE 07-25-24 TIME 12:14  
 RECEIVED BY: Johanne Murray DATE 7/25/24 TIME 12:14

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME  
 RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 SEAL NO. SEAL INTACT YES  NO  INITIALS  
 NOTES: TEMP. ON ARRIVAL 5.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

# Appendix B Field Notes



PROJECT NAME:	CEC Karn LF and Weadock LF: 2024 GW Compliance
PROJECT NUMBER:	553814.0000/553814.0001/553828.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI
DATES OF FIELDWORK:	<del>TO</del> 7-22-2024
PURPOSE OF FIELDWORK:	Site Wide Water Levels
WORK PERFORMED BY:	Javier Jasso

 8-2-24  
SIGNED DATE

 8-2-24  
CHECKED BY DATE



### EQUIPMENT SUMMARY

PROJECT NAME: CEC Karn LF and Weadock	SAMPLER NAME: Javier Jasso
PROJECT NO.: 553814.0000/553814.0001/5	

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	PROJECT DEDICATED
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	PROJECT DEDICATED
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PURGING METHOD**

NA	NA
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

**SAMPLING METHOD**

BLADDER PUMP (DEDICATED)	PROJECT DEDICATED
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

NA	NA
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED TEFLON TUBING	<input type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

- GROUND   
  DRUM   
  POTW   
  POLYTANK   
  OTHER \_\_\_\_\_

**DECONTAMINATION WATER SOURCE**

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE

8-2-24  
 SIGNED \_\_\_\_\_ DATE \_\_\_\_\_

8-2-24  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_



### WATER LEVEL DATA

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514404.0000.0000	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	1319	TOC	10.50	12.77	NA	NM
OW-10	1336	TOC	8.31	17.95	NA	NM
OW-11	0931	TOC	24.60	29.50	NA	NM
OW-12	0903	TOC	19.00	23.41	NA	NM
OW-13	0850	TOC	could not locate	could not locate	NA	NM
OW-15	0917	TOC	4.95	15.25	NA	NM
EW-01	1151	TOC	13.53	DWN	NA	NM
EW-02	1203	TOC	14.95		NA	NM
EW-03	1220	TOC	14.38		NA	NM
EW-04	1231	TOC	14.29		NA	NM
EW-05	1238	TOC	13.68		NA	NM
EW-06	1249	TOC	10.46		NA	NM
PZ-01	1144	TOC	13.67	14.10	NA	NM
PZ-02	1146	TOC	15.29	23.10	NA	NM
PZ-03	1200	TOC	14.65	19.80	NA	NM
PZ-04	1205	TOC	14.52	20.95	NA	NM
PZ-05	1210	TOC	14.35	21.18	NA	NM
PZ-06	1228	TOC	14.89	20.35	NA	NM
PZ-07	1233	TOC	14.45	21.00	NA	NM
PZ-08	1236	TOC	14.20	20.54	NA	NM
PZ-09	1240	TOC	15.08	21.61	NA	NM
PZ-10	1251	TOC	10.82	17.74	NA	NM
PZ-11	1253	TOC	13.45	18.10	NA	NM
OW-13	1303	TOC	3.97	14.38	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE



**WATER LEVEL DATA**

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/25/24
PROJECT NUMBER: 514404.0000.0000	AUTHOR: AW, JJ, JK

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW-01	1100	TOC	16.61	24.24	NA	NM
MW-02	1108	TOC	17.19	30.38	NA	NM
MW-03	1106	TOC	17.12	30.75	NA	NM
MW-04	1107	TOC	17.85	33.82	NA	NM
MW-06	1116	TOC	9.39		NA	NM
MW-08	1135	TOC	18.25	27.50	NA	NM
MW-10	1154	TOC	16.58	29.85	NA	NM
MW-12	1232	TOC	18.25	23.85	NA	NM
MW-14	1244	TOC	14.05	19.23	NA	NM
MW-16	1300	TOC	15.41	21.23	NA	NM
MW-17	1334	TOC	14.49	24.34	NA	NM
MW-18	1007	TOC	26.94	39.65	NA	NM
MW-19	1013	TOC	16.88	30.00	NA	NM
MW-20	1029	TOC	52.58	72.00	NA	NM
MW-21	1025	TOC	51.60	60.58	NA	NM
MW-22	1146	TOC	17.51	24.59	NA	NM
MW-23	1214	TOC	14.55	15.10	NA	NM
OW-01	1035	TOC	51.28	64.00	NA	NM
OW-02	1141	TOC	16.49	21.95	NA	NM
OW-03	1149	TOC	17.24	28.20	NA	NM
OW-04	1242	TOC	9.89	14.26	NA	NM
OW-05	1256	TOC	12.89	18.00	NA	NM
OW-06	1326	TOC	22.05	24.80	NA	NM
OW-07	1216	TOC	15.41	23.91	NA	NM
OW-08	1320	TOC	11.30	17.96	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE



**WATER LEVEL DATA**

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514404.0000.0000	AUTHOR: Jake Krenz, Javier Jasso, And

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	0933		9.78	19.74		
DEK-MW-15002	0900		7.95	16.84		
DEK-MW-15003	0945		19.45	27.89		
DEK-MW-15004	1004		29.20	41.78		
DEK-MW-15005	0458		9.45	22.30		
DEK-MW-15006	0905		7.94	21.53		
DEK-MW-22001	0956		9.25	24.15		
DEK-MW-22002	1002		12.08	26.85		
DEK-MW-22003	0948		12.20	24.40		
DEK-MW-22004	0952		10.55	22.40		
DEK-MW-22005	0953		8.85	20.30		
DEK-MW-22006	0950		9.88	17.10		
Tw-21-003	1047		17.80	26.20		
Tw-21-008	1049		12.49	20.51		
Tw-21-001	1055		12.46	17.59		
Tw-21-013	1108		22.49	36.50		
Tw-21-012D	1115		20.05	54.80		
Tw-21-012I	1113		20.33	38.60		
Tw-21-012J	1111		20.15	27.85		
Tw-21-011S	1120		21.84	27.60		
Tw-21-011I	1121		21.31	35.30		
Tw-21-011D	1123		21.50	50.35		
Tw-21-010	1127		20.82	28.00		
Tw-21-009	1130		21.45	27.91		
Tw-21-008	1302		13.55	19.80		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE







**WATER LEVEL DATA**

PROJECT NAME: CEC Weadock LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514403.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	0629	TOC	16.41	19.76	NA	NM
JCW-MW-18004	0709	TOC	12.00	14.72	NA	NM
JCW-MW-18005	0734	TOC	9.11	16.28	NA	NM
JCW-MW-18006	0758	TOC	13.80	23.68	NA	NM
JCW-OW-18001	0631	TOC	10.12	20.25	NA	NM
JCW-OW-18002	0636	TOC	11.00	19.41	NA	NM
JCW-OW-18003	<del>6:47</del>	<del>TOC</del>	<del>18.74</del>	<del>14.72</del>	<del>NA</del> (sk not used)	<del>NM</del>
JCW-OW-18004	0710	TOC	6.70	14.65	NA	NM
JCW-OW-18006	0800	TOC	8.00	23.45	NA	NM
LH-103R	0728	TOC	20.95	33.44	NA	NM
LH-104	0717	TOC	8.78	14.00	NA	NM
JCW-MW-20	0737	TOC	6.85	14.00	NA	NM
MW-50	0635	TOC	13.03	19.46	NA	NM
MW-51	0640	TOC	13.10	20.08	NA	NM
MW-52	0645	TOC	14.68	19.74	NA	NM
MW-53	652	TOC	13.39	18.18	NA	NM
MW-53R	657	TOC	13.91	18.80	NA	NM
MW-54R	0702	TOC	13.49	17.22	NA	NM
MW-55	0721	TOC	13.72	16.38	NA	NM
MW-58	0823	TOC	5.50	18.28	NA	NM
OW-51	0644	TOC	9.02	17.28	NA	NM
OW-53	0654	TOC	7.53	18.00	NA	NM
OW-54	0705	TOC	7.60	16.48	NA	NM
OW-55	0723	TOC	6.53	18.42	NA	NM
OW-56	0741	TOC	6.00	19.27	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE

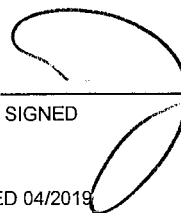



**WATER LEVEL DATA**

PROJECT NAME: CEC Weadock LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514403.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-56R	0742	TOC	6.00	20.22	NA	NM
OW-57 IN	0753	TOC	5.64	20.18	NA	NM
OW-57R IN	7.51	TOC	5.78	19.60	NA	NM
OW-57 OUT	0748	TOC	9.95	19.46	NA	NM
OW-57R OUT	0749	TOC	9.34	20.20	NA	NM
JCW-MW-15007	0557	TOC	4.18	8.95	NA	NM
JCW-MW-15009	0604	TOC	9.03	13.00	NA	NM
JCW-MW-15010	0614	TOC	17.15	19.57	NA	NM
JCW-MW-15028	0604	TOC	8.38	25.16	NA	NM
MW-15002	0825	TOC	7.38	16.80	NA	NM
MW-15008	0817	TOC	4.94	17.40	NA	NM
MW-15016	0846	TOC	4.78	8.16	NA	NM
MW-15019	0822	TOC	5.92	16.87	NA	NM
OW-Ce1	0625		8.24	37.07		
JCW-MW15003	0648		14.84	DNM		
JCW-MW15006	0656		13.85	DNM		
MW-11eR	0704		14.00	19.67		
JCW-MW15021	0713		13.94	DNM		
MW-19	0805		9.54	20.83		
MW15020	0820		5.21	17.17		
MW-11eB	0824		5.00	DNM		
MW-15024	0824		5.93	17.17		
MW-15018	0832		5.92	9.94		
JCW-MW15001	0836		7.85	DNM		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  7/25/24  
DATE

CHECKED  7-31-24  
DATE





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:	7/24/24 TO
PURPOSE OF FIELDWORK:	Third Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Whaley, K. Krieger

*[Signature]* 7/25/24  
SIGNED DATE

*[Signature]* 7-31-24  
CHECKED BY DATE



**GENERAL NOTES**

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: <u>7/24/2024</u>	TIME ARRIVED: <u>0700</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK <u>AW</u> KK	TIME LEFT: <u>1515</u>

WEATHER		
TEMPERATURE: <u>67-78</u> °F	WIND: <u>5-10</u> MPH	VISIBILITY: <u>Overcast</u>
WORK / SAMPLING PERFORMED		
Notify Site contact of work area Calibrate YSI Sample KLI monitoring wells <del>at</del> <sup>DUP-KLI</sup> OW-10, OW-11, DEK MW-15023, and surface water sample KLI PLS		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
KLI SCS and SW Ditch were Dry	NO samples collected from these locations

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

 7/25/24  
 SIGNED DATE

 7-31-24  
 CHECKED BY DATE



### EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	SAMPLER NAME:	J. Jasso, J. Krenz, A. Whaley, K. Krieger
PROJECT NO.:	553814.0001.0000		

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED 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 FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND  
  DRUM  
  POTW  
  POLYTANK  
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
 SIGNED _____ DATE <u>7/25/24</u>	 CHECKED BY _____ DATE <u>7-31-24</u>



**GENERAL NOTES**

PROJECT NAME: CEC Kern BAP/LI: 2024 GW Comp	DATE: <u>7-24-24</u>	TIME ARRIVED: <u>0800</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK AW	TIME LEFT: <u>1515</u>

WEATHER		
TEMPERATURE: <u>78</u> °F	WIND: <u>8-10</u> MPH	VISIBILITY: <u>clear</u>
WORK / SAMPLING PERFORMED		
<u>Sampled monitoring wells DEK-mw-15002, 15005, and 15006</u>		
<u>sampled monitoring well OW-12 (KLI).</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

   *Je Ky*    7-31-24  
 SIGNED DATE

   *John Gaeth*    8-2-24  
 CHECKED BY DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: <u>(AW)</u> JK, JJ, KK
PROJECT NO.: 553814.0001.0000	SERIAL #: <u>office</u>	DATE: <u>7/24/2024</u>

PH CALIBRATION CHECK

PH 7 (LOT #): <u>46A0629</u> (EXP. DATE): <u>Jan 26</u>	PH 10 (LOT #): <u>46B1376</u> (EXP. DATE): <u>Feb 26</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
7.02 / 7.02	4.05 / 4.00	<input checked="" type="checkbox"/> WITHIN RANGE	0718
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <u>46L0232</u> (EXP. DATE): <u>Dec 25</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1350 / 1350	21.9	<input checked="" type="checkbox"/> WITHIN RANGE	0732
1330 / 1330	21.6	<input checked="" type="checkbox"/> WITHIN RANGE	0802
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>23G10046</u> (EXP. DATE): <u>July 28</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
222.1 / 222.1	22.1	<input checked="" type="checkbox"/> WITHIN RANGE	0727
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING (LOT #): <u>23G10046</u> (EXP. DATE): <u>July 28</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.72 / 8.72	20.6	<input checked="" type="checkbox"/> WITHIN RANGE	0732
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>24004711</u> (EXP. DATE): <u>2/25</u>	(LOT #): <u>24006053</u> (EXP. DATE): <u>3/25</u>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
0.0 / 0.0	10.0 / 10.0	<input checked="" type="checkbox"/> WITHIN RANGE	0737
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	

<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

Separate Turbidity Meter  
Lamotte 200t

PROBLEMS ENCOUNTERED

Spa. encountered problem w/ unstable conductivity readings while sampling

CORRECTIVE ACTIONS

Cleaned conductivity sensor and tightened probe, recalibrated for conductivity

[Signature] 7/25/24  
SIGNED DATE

[Signature] 7-31-24  
CHECKED BY DATE





### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: AW <u>JK</u> JJ, KK
PROJECT NO.: 553814.0001.0000	SERIAL #: <u>Rental</u>	DATE: <u>7-24-24</u>

#### PH CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
pH 7 (LOT #): <u>46A0629</u> (EXP. DATE): <u>Jun/26</u>	pH 4 / 10 (LOT #): <u>46B1376</u> (EXP. DATE): <u>Feb/26</u>			
		7.01 / 7.01	4.00 / 4.00	
		/	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0829</u>
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	

#### SPECIFIC CONDUCTIVITY CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
(LOT #): <u>46C1196</u> (EXP. DATE): <u>Mar/25</u>					
		1715 / 1715	22.7		
		/		<input checked="" type="checkbox"/> WITHIN RANGE	<u>0826</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

#### ORP CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
(LOT #): <u>14774</u> (EXP. DATE): <u>10-8-23</u>					
		227.7 / 227.7	22.7		
		/		<input checked="" type="checkbox"/> WITHIN RANGE	<u>0831</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

#### D.O. CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / SATURATED AIR	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
		8.72 / 8.72	20.5		
		/		<input checked="" type="checkbox"/> WITHIN RANGE	<u>0835</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

#### TURBIDITY CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
(LOT #): <u>A1907</u> (EXP. DATE): <u>APR-25</u>				
		100.0 / 100.0		
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	

#### COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

#### NOTES


#### PROBLEMS ENCOUNTERED

#### CORRECTIVE ACTIONS



SIGNED: [Signature] DATE: 7-31-24

CHECKED BY: [Signature] DATE: 8-2-24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW (JK) JJ, KK	DATE: 7-24-24
	BY: AW JK	DATE: 7-24-24

SAMPLE ID: DEK-MW-15002	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0842	DATE: 7-24-24	SAMPLE	TIME: 0916	DATE: 7-24-24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.20 SU		CONDUCTIVITY: 901 umhos/cm		
	ORP: -167.4 mV		DO: 0.05 mg/L		
DEPTH TO WATER: 7.70 T/ PVC	TURBIDITY: 7.58 NTU				
DEPTH TO BOTTOM: NM T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 14.8 °C		FERROUS Fe: _____ mg/L		
VOLUME REMOVED: 7 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear		ODOR: none		
COLOR: clear	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- DEK-BAD			
COMMENTS:					

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)
0844	200	7.70	924	-96.5	1.86	4.32	16.3	7.42	INITIAL
0849	200	7.74	881	-116.2	0.61	4.76	15.7	7.42	1
0854	200	7.26	931	-139.5	0.19	2.93	15.1	7.42	2
0859	200	7.27	971	-144.4	0.09	3.76	15.0	7.42	3
0904	200	7.22	925	-153.1	0.09	6.75	15.0	7.42	4
0909	200	7.22	912	-160.3	0.05	6.15	14.8	7.42	5
0914	200	7.22	906	-164.5	0.05	7.81	14.7	7.42	6
0919	200	7.20	901	-167.4	0.05	7.58	14.8	7.42	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	40 mL VOA E <input type="checkbox"/> Y <input type="checkbox"/> N				
4	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1 L PLASTIC B <input type="checkbox"/> Y <input type="checkbox"/> N				
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 7-31-24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JJ, KK	DATE: 7-24-24

SAMPLE ID: <b>DEK -mw - 15005</b>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <b>1135</b>	DATE: <b>7-24-24</b>	SAMPLE	TIME: <b>1203</b>	DATE: <b>7-24-24</b>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <b>7.40</b> SU	CONDUCTIVITY: <b>1335</b> umhos/cm	ORP: <b>-110.7</b> mV	DO: <b>0.10</b> mg/L	
DEPTH TO WATER: <b>9.35</b> T/ PVC	TURBIDITY: <b>1.56</b> NTU				
DEPTH TO BOTTOM: <b>21.35</b> T/ PVC	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <b>NA</b> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <b>13.5</b> °C	FERROUS Fe: _____ mg/L			
VOLUME REMOVED: <b>5</b> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <b>clear</b>	ODOR: <b>none</b>			
COLOR: <b>clear</b>	ODOR: <b>none</b>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS: <b>FB-DEK BAP</b>					

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)
1138	200	7.45	1234	-28.5	1.41	1.42	13.7	9.55	INITIAL
1143	200	7.45	1247	-81.5	0.50	1.52	13.6	9.55	1
1148	200	7.43	1292	-99.1	0.18	1.35	13.7	9.55	2
1153	200	7.41	1314	-105.4	0.10	1.36	13.6	9.55	3
1158	200	7.40	1330	-108.9	0.10	1.46	13.6	9.55	4
1203	200	7.40	1335	-110.7	0.10	1.56	13.5	9.55	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<del>40 mL VOA E</del>					
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<del>1 L PLASTIC B</del>					
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <b>Lab Drop off</b>	DATE SHIPPED: <b>7-25-24</b>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <b>7-31-24</b>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JJ, KK	DATE: 7-24-24
	BY: <u>AW</u>	DATE: <u>8-2-24</u>

SAMPLE ID: <u>DEK-mw-15006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1036</u>	DATE: <u>7-24-24</u>	SAMPLE	TIME: <u>1059</u>	DATE: <u>7-24-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.49</u> SU		CONDUCTIVITY: <u>1359</u> umhos/cm		
	ORP: <u>-132.4</u> mV		DO: <u>0.09</u> mg/L		
DEPTH TO WATER: <u>8.75</u> T/ PVC	TURBIDITY: <u>2.00</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>21.64</u> T/ PVC	TEMPERATURE: <u>14.6</u> °C		FERROUS Fe: _____ mg/L		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>		ODOR: <u>none</u>		
VOLUME REMOVED: <u>4</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____		
COLOR: <u>clear</u> ODOR: <u>none</u>	TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____				
COMMENTS:					

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)
1039	200	7.62	1406	-49.1	4.20	3.78	16.3	8.90	INITIAL
1044	200	7.56	1359	-114.7	0.48	2.13	14.9	8.90	1
1049	200	7.53	1354	-126.1	0.14	2.40	14.6	8.90	2
1054	200	7.51	1352	-132.6	0.10	1.51	14.6	8.90	3
1059	200	7.49	1359	-132.4	0.09	2.00	14.6	8.90	4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<del>40 mL VOA E <input type="checkbox"/> Y <input type="checkbox"/> N</del>					
1	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<del>1L PLASTIC B <input type="checkbox"/> Y <input type="checkbox"/> N</del>					
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7-31-24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW JK, JJ, KK</u>	DATE: <u>7/24/24</u>
	BY: <u>JK</u>	DATE: <u>7-31-24</u>

SAMPLE ID: <u>OW-10</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0755</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0828</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.12</u> SU	CONDUCTIVITY: <u>863</u> umhos/cm	ORP: <u>-122.9</u> mV	DO: <u>0.51</u> mg/L	
DEPTH TO WATER: <u>8.10</u> T/ PVC	TURBIDITY: <u>19.2</u> NTU	<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>17.96</u> T/ PVC	TEMPERATURE: <u>14.3</u> °C	FERROUS Fe <u>—</u> mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	VOLUME REMOVED: <u>5.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Cloudy gray - Clear</u>	ODOR: <u>—</u>		
COLOR: <u>Slightly gray</u>	ODOR: <u>NONE</u>	FILTRATE (0.45 um) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: <u>Clear</u>	FILTRATE ODOR: <u>NONE</u>	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>Coal ash/sediment build up in bottom of well</u>				

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)
0755	200	6.95		-126.5	1.13	29.6	13.8	8.10	INITIAL
		Error with conductivity sensor stop sampling to recalibrate/address issue							
808	200	6.96	912	-80.8	2.80	34.8	14.3	8.65	1.0
813		7.05	873	-115.4	1.00	30.3	14.3	8.85	2.0
818		7.09	869	-120.3	0.79	20.3	14.4	8.90	3.0
823		7.11	867	-122.4	0.60	20.7	14.4		4.0
828		7.12	863	-122.9	0.51	19.2	14.3		5.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	Plastic	B	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>DROP-OFF</u>	DATE SHIPPED: <u>7/25/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>A. [Signature]</u>	DATE SIGNED: <u>7/25/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ, KK DATE: 7/24/24	BY: JK DATE: 7-31-24

SAMPLE ID: DW-11	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1010	DATE: 7/24/24	SAMPLE	TIME: 1018	DATE: 7/24/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 9.27	SU	CONDUCTIVITY: 406.0	umhos/cm	
	ORP: -30.1	mV	DO: 1.83	mg/L	
DEPTH TO WATER: 24.76	T/ PVC		TURBIDITY: 9.7	NTU	
DEPTH TO BOTTOM: NA	T/ PVC Transducer		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 18.6	°C FERROUS Fe: — mg/L		
VOLUME REMOVED: 2.0	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: None		
COLOR: Green	ODOR: None	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS: FB - KLI					

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)
1002	100	8.70	418.1	11.5	2.90	239	16.2	25.60	INITIAL
1028	100	9.11	409.1	-13.7	2.40	161	18.2	25.80	0.5
1038	100	9.32	385.1	-24.0	2.00	48.9	18.8	25.50	1.5
1048	100	9.27	406.0	-30.1	1.83	9.7	18.6	25.50	2.0
Dry, collect sample after recharge									
1140	Sample collection complete								

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Drop-off	DATE SHIPPED: 7/25/24	AIRBILL NUMBER: —
COC NUMBER: —	SIGNATURE: A. White	DATE SIGNED: 7/25/24



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, <u>JK</u> , KK	DATE: 7-24-24
	BY: <u>AW</u>	DATE: 8-2-24

SAMPLE ID: <u>OW-12</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0945</u>	DATE: <u>7-24-24</u>	SAMPLE	TIME: <u>1018</u>	DATE: <u>7-24-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.06</u> SU	CONDUCTIVITY: <u>1349</u> umhos/cm	ORP: <u>-103.5</u> mV	DO: <u>0.04</u> mg/L	
DEPTH TO WATER: <u>18.93</u> T/ PVC	TURBIDITY: <u>5.20</u> NTU				
DEPTH TO BOTTOM: <u>23.43</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>15.1</u> °C		<del>FERROUS Fe</del> mg/L		
VOLUME REMOVED: <u>6</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>Orange</u>	ODOR: <u>none</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

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)
0948	200	7.09	1236	-75.0	4.09	99.14	16.2	19.01	INITIAL
0953	200	7.06	1268	-94.8	0.30	27.32	15.0	19.01	1
0958	200	7.06	1282	-96.5	0.22	23.34	15.1	19.01	2
1003	200	7.07	1299	-99.9	0.10	16.87	15.0	19.01	3
1008	200	7.06	1330	-101.6	0.04	8.59	15.1	19.01	4
1013	200	7.05	1347	-102.7	0.04	6.02	15.2	19.01	5
1018	200	7.06	1349	-103.5	0.04	5.20	15.1	19.01	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>40 mL VOA E <input type="checkbox"/> Y <input type="checkbox"/> N</del>				
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<del>1 L PLASTIC B <input type="checkbox"/> Y <input type="checkbox"/> N</del>				
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7-31-24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW</u> JK, JJ, KK	DATE: <u>7/24/24</u> BY: <u>JK</u> DATE: <u>7-31-24</u>

SAMPLE ID: <u>DEK-MV-15003</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0858</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0933</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.91</u> SU		CONDUCTIVITY: <u>383.7</u> umhos/cm		
	ORP: <u>-127.1</u> mV		DO: <u>0.65</u> mg/L		
DEPTH TO WATER: <u>19.45</u> T/ PVC	TURBIDITY: <u>0.98</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>NA</u> T/ PVC <u>Transducer</u>	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>17.7</u> °C FERROUS Fe: <u>—</u> mg/L		
VOLUME REMOVED: <u>4.0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>		ODOR: <u>None</u>		
COLOR: <u>Clear</u> ODOR: <u>—</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: <u>—</u> FILTRATE ODOR: <u>—</u>		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>KLI</u>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

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)
<u>0858</u>	<u>200</u>	<u>7.68</u>	<u>386.6</u>	<u>-3.6</u>	<u>1.98</u>	<u>3.78</u>	<u>17.7</u>	<u>19.45</u>	INITIAL
<u>903</u>	<u>100</u>	<u>7.55</u>	<u>373.0</u>	<u>-40.9</u>	<u>0.90</u>	<u>2.70</u>	<u>17.7</u>	<u>20.67</u>	<u>1.0</u>
<u>908</u>	<u>↓</u>	<u>7.62</u>	<u>375.0</u>	<u>-70.3</u>	<u>0.87</u>	<u>1.59</u>	<u>17.8</u>	<u>21.00</u>	<u>2.0</u> <small>AV 7/24/24 1.5</small>
<u>913</u>	<u>↓</u>	<u>7.68</u>	<u>376.2</u>	<u>-84.7</u>	<u>0.81</u>	<u>1.86</u>	<u>17.7</u>	<u>21.24</u>	<u>3.0</u> <small>AV 7/24/24 2.0</small>
<u>918</u>	<u>↓</u>	<u>7.77</u>	<u>378.0</u>	<u>-105.3</u>	<u>0.73</u>	<u>1.34</u>	<u>17.7</u>	<u>21.30</u>	<u>2.5</u>
<u>923</u>	<u>↓</u>	<u>7.83</u>	<u>380.0</u>	<u>-120.6</u>	<u>0.69</u>	<u>0.60</u>	<u>17.7</u>	<u>21.30</u>	<u>3.0</u>
<u>928</u>	<u>↓</u>	<u>7.89</u>	<u>382.4</u>	<u>-124.0</u>	<u>0.66</u>	<u>1.07</u>	<u>17.7</u>	<u>21.30</u>	<u>3.5</u>
<u>933</u>	<u>↓</u>	<u>7.91</u>	<u>383.7</u>	<u>-127.1</u>	<u>0.65</u>	<u>0.98</u>	<u>17.7</u>	<u>21.30</u>	<u>4.0</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>2</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>4</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Drop-off</u>	DATE SHIPPED: <u>7/25/24</u>	AIRBILL NUMBER: <u>—</u>
COC NUMBER: <u>—</u>	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7/25/24</u>





# WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW, JK, JJ, KK</u> DATE: <u>7/24/24</u>	BY: <u>JK</u> DATE: <u>7-31-24</u>

SAMPLE ID: <u>KL1-PCS</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER <u>NA</u>
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input checked="" type="checkbox"/> OTHER <u>NA</u>	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input checked="" type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>1203</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP <input type="checkbox"/> PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>8.29</u> SU	CONDUCTIVITY: <u>711</u> umhos/cm	
			ORP: <u>-9.0</u> mV	DO: <u>5.74</u> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>5.22</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>26.2</u> °C	FERROUS Fe: _____ mg/L	
VOLUME REMOVED: _____ <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>clear</u>	ODOR: <u>None</u>	
COLOR: _____ ODOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

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)
<u>1157</u>	<u>NA</u>	<u>8.27</u>	<u>691</u>	<u>5.3</u>	<u>6.13</u>	<u>4.86</u>	<u>25.8</u>	<u>NA</u>	<u>INITIAL NA</u>
<u>1200</u>	<u>↓</u>	<u>8.29</u>	<u>701</u>	<u>3.5</u>	<u>5.81</u>	<u>4.56</u>	<u>26.0</u>	<u>NA</u>	<u>NA</u>
<u>1203</u>	<u>↓</u>	<u>8.29</u>	<u>711</u>	<u>-4.0</u>	<u>5.74</u>	<u>5.22</u>	<u>26.2</u>	<u>NA</u>	<u>NA</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>2</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Drop-off</u>	DATE SHIPPED: <u>7/25/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7/25/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: <u>AW JK, JJ, KK</u> DATE: <u>7/24/24</u>	BY: <u>JK</u> DATE: <u>7-31-24</u>

SAMPLE ID: <u>KLI-SLS</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME:	DATE:
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: _____ SU	CONDUCTIVITY: _____ umhos/cm	
DEPTH TO WATER: _____ T/ PVC			ORP: _____ mV	DO: _____ mg/L	
DEPTH TO BOTTOM: _____ T/ PVC			TURBIDITY: _____ NTU		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	TEMPERATURE: _____ °C	FERROUS Fe _____ mg/L
VOLUME REMOVED: _____ <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: _____	ODOR: _____	
COLOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
			TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

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)
									INITIAL
<b>DRY</b>									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>NA</u>	DATE SHIPPED: <u>NA</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>H.W. Dealey</u>	DATE SIGNED: <u>7/25/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2022 GW	PREPARED	CHECKED
PROJECT NUMBER: 464096.0001.0000	BY: JJ	DATE: 7/25/24
	BY: JK	DATE: 7-31-24

SAMPLE ID: DFK-mw-18001	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1210	DATE: 7/24/24	SAMPLE	TIME: 1235	DATE: 7/24/24
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 8.15 SU CONDUCTIVITY: 1026 umhos/cm		
			ORP: -188 mV DO: 1.10 mg/L		
DEPTH TO WATER: 9.78 T/ PVC			TURBIDITY: 10 NTU		
DEPTH TO BOTTOM: 19.26 T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: 14.3 °C OTHER:		
VOLUME REMOVED: 5 LITERS <input type="checkbox"/> GALLONS			COLOR: cloudy ODOR:		
COLOR: cloudy ODOR: slight			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: FILTRATE ODOR:		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

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)
1210	200	7.79	550	-185	9.85	30	24.0	9.58	INITIAL
1215		8.08	1061	-178	235	11	14.9	9.70	1
1220		8.12	1038	-185	1.76	11	14.6	9.70	2
1225		8.15	1030	-188	1.10	10	14.3	9.70	3
1230		8.14	1028	-188	1.10	10	14.2	9.70	4
1235		8.15	1026	-188	1.10	10	14.3	9.70	5
<del>1240</del>								<del>9.70</del>	<del>6</del>

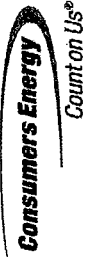
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
6	600	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	250	DI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
3	125	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
3	125	PI	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
3	125	PI	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
3	125	PI	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD:	DATE SHIPPED:	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 7/25/24

# CHAIN OF CUSTODY



**CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**  
 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page \_\_\_\_\_ of \_\_\_\_\_

SAMPLING SITE / CUSTOMER: Q3-2024 DEK Bottom Ash Pond Wells		PROJECT NUMBER: <b>24-0580</b>		SAP CC or WO#: _____ REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)											
SAMPLING TEAM: SEND REPORT TO: Joseph Firlit		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER		email: _____ phone: _____		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____											
COPY TO: Harold Register TRC		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		CONTAINERS PRESERVATIVE None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCl MeOH Other		REMARKS											
LAB SAMPLE ID		MATRIX		FIELD SAMPLE ID / LOCATION		Total Metals Ammonia TDS Alkalinity Sulfide											
24-0580-01	7-24-24	0919	GW	DEK-MW-15002	7	4	1	1	1	x	x	x	x				
-02	7-24-24	1203	GW	DEK-MW-15005	7	4	1	1	1	x	x	x	x				
-03	7-24-24	1059	GW	DEK-MW-15006	7	4	1	1	1	x	x	x	x				
-04	7-24-24	---	GW	DUP-DEK-BAP-01	7	4	1	1	1	x	x	x	x				
-05	7-24-24	1203	W	FB-DEK-BAP	4	1	1	1	1	x	x	x	x				
-06	7-24-24	1410	W	EB-DEK-BAP	4	1	1	1	1	x	x	x	x				
RELINQUISHED BY:		DATE/TIME: 7/25/24 0720		RECEIVED BY:		DATE/TIME: _____		COMMENTS: _____		Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No		M&TE #: _____		Temperature: _____ °C		Cal. Due Date: _____	

Pg 17 of 19



# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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SAMPLING SITE / CUSTOMER: Q3-2024 DEK Lined Impoundment		PROJECT NUMBER: <b>24-0582</b>		SAP CC or WO#: _____ REQUESTER: Harold Register		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> ITNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR.50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM: <b>A. W. Baley, J. Krenz</b>		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER		ANALYSIS REQUESTED (Attach List if More Space is Needed)		REMARKS: Discussed Metals, Same list as total					
SEND REPORT TO: Joseph Firilit		email: _____ phone: _____		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		CONTAINERS PRESERVATIVE None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCl MeOH Other					
COPY TO: Harold Register TRC		MATRIX FIELD SAMPLE ID / LOCATION DEK-MW-15003		TOTAL #		Total Metals					
LAB SAMPLE ID	DATE	TIME	MATRIX	OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste	None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCl MeOH Other	Ammonia	TDS	Alkalinity	Sulfide		
24-0582-01	7/24/24	0933	GW								
-02	7/24/24	0828	GW	OW-10							
-03	7/24/24	1048	GW	OW-11							
-04	7/24/24	1018	GW	OW-12							
-05			W	KLI-SCS							
-06	7/24/24	1203	SW	KLI-PCS							
-07			SW	SW-DHFCM							
-08	7/24/24		GW	DUP-KLI							
-09	7/24/24	1130	W	EB-KLI							
-10	7/24/24	1048	W	FB-KLI							
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		DATE/TIME:		COMMENTS:		Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____ Temperature: _____ °C Cal. Due Date: _____	
[Signature]		7/24/24		[Signature]		7/24/24		pg 19 of 19			

# Appendix C

## Data Quality Reviews

## Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event July 2024 DE Karn Lined Impoundment

Groundwater and surface water samples were collected by TRC for the July 2024 sampling event. Samples were analyzed for total and/or dissolved 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) 24-0582 and S64475.01(01).

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

- OW-10
- OW-11
- OW-12
- DEK-MW-15003

During the July 2024 sampling event, the following surface water sample was collected:

- KLI-PCS

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total and/or Dissolved Metals	SW-846 6020B
Total and/or Dissolved Mercury	SW-846 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. 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 and dissolved metals, total and dissolved mercury, 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 detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

## **QA/QC Sample Summary**

- One field blank (FB-KLI) and one equipment blank (EB-KLI) 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-KLI and DEK-MW-15003 were submitted as the field duplicate pair with this data set; all criteria were met.

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

A groundwater sample was collected by TRC for the July 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) 24-0581 and S64477.01(01).

During the July 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.

# Appendix D

## Statistical Analysis

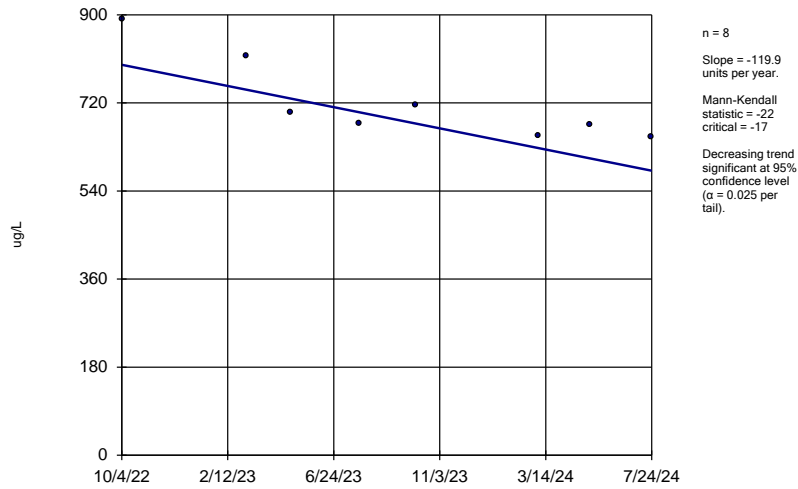
**Appendix D**  
 Statistical Summary for DE Karn Lined Impoundment  
 Third Quarter 2024  
 Data from October 2022 to July 2024

Karn Lined Impoundment Wells						
Constituent	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	↓	○	○	○	○
Calcium	Trend	○	○	○	○	↑*
Chloride	Trend	○	○	○	○	↓
Fluoride	Trend	○*	○*	○*	○	○*
Iron	Trend	○	↓	○	○	○
pH	Trend	○	○	○	○	○
Sulfate	Trend	○	○	↓*	○	↑*
Total Dissolved Solids	Trend	○	↑	○	○	○

**Notes:**

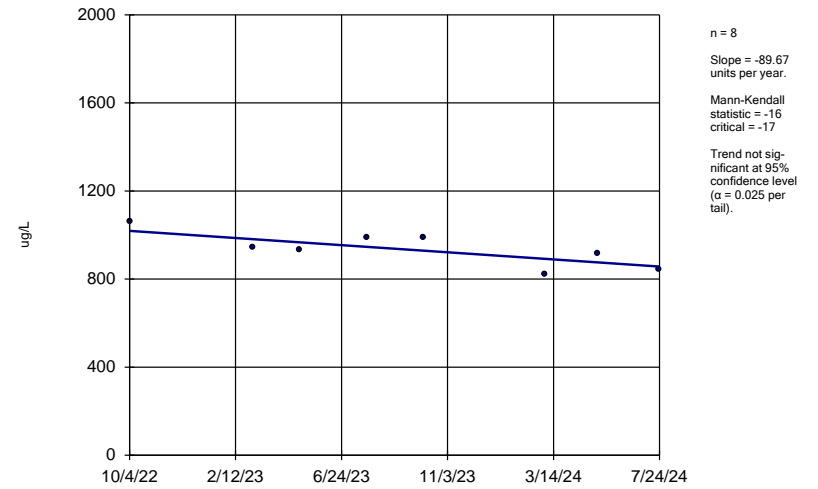
- \* = Non-detect
- = No trend
- ↑ = Upward trend, continuous
- ↑\* = Upward trend, new
- ↑ = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓\* = Downward trend, new

### Boron, Total DEK-MW-15003



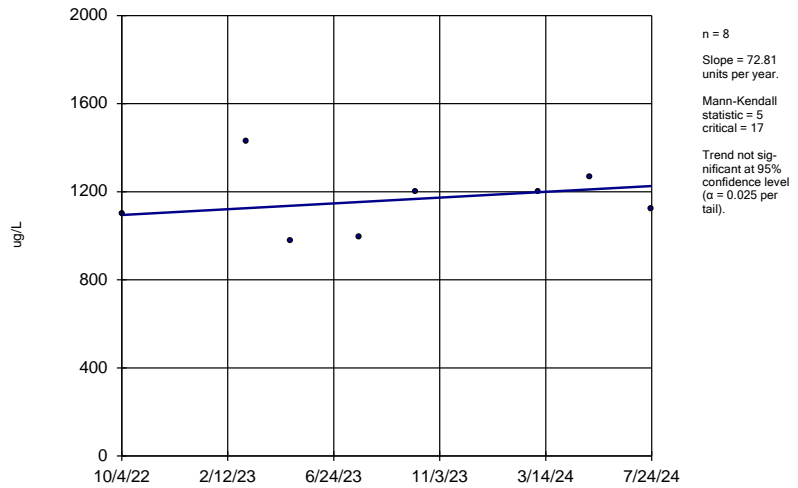
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Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q3\_rev

### Boron, Total DEK-MW-18001



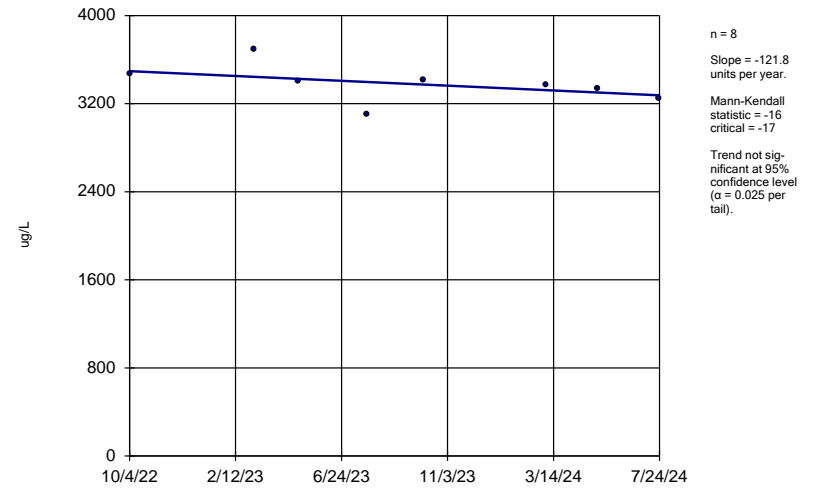
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### Boron, Total OW-10



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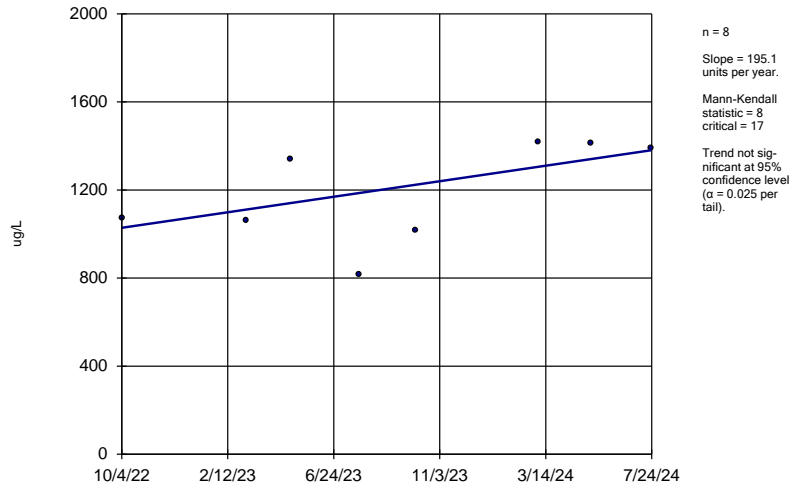
### Boron, Total OW-11



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### Boron, Total

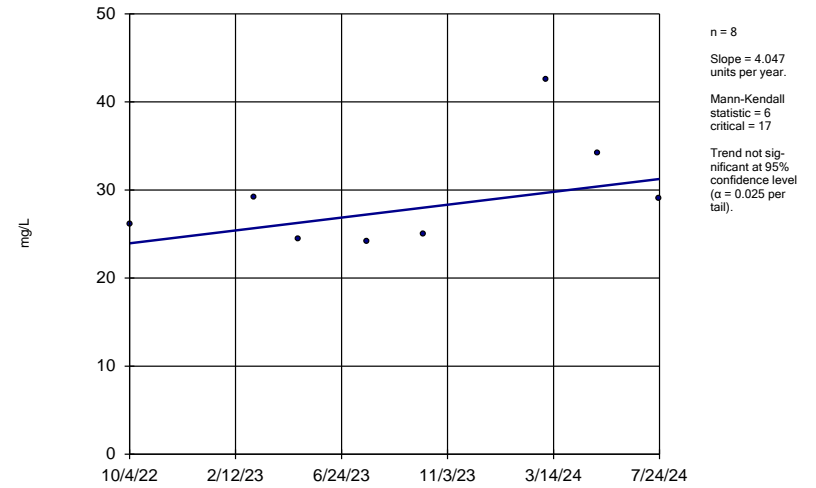
OW-12



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### Calcium, Total

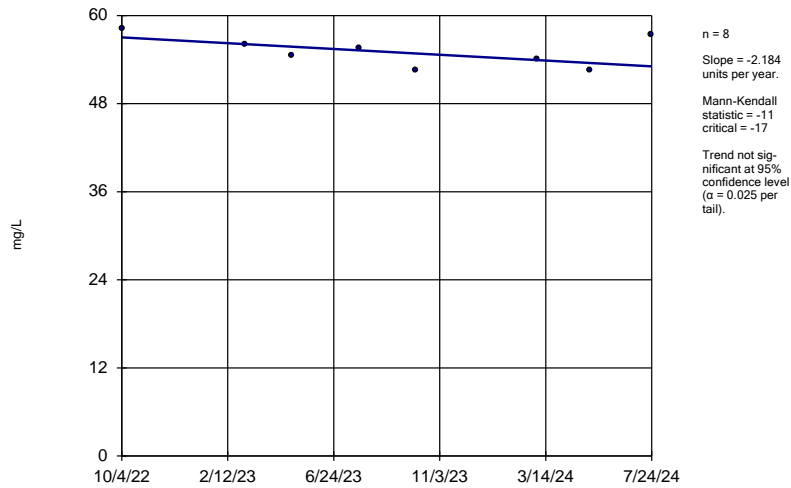
DEK-MW-15003



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### Calcium, Total

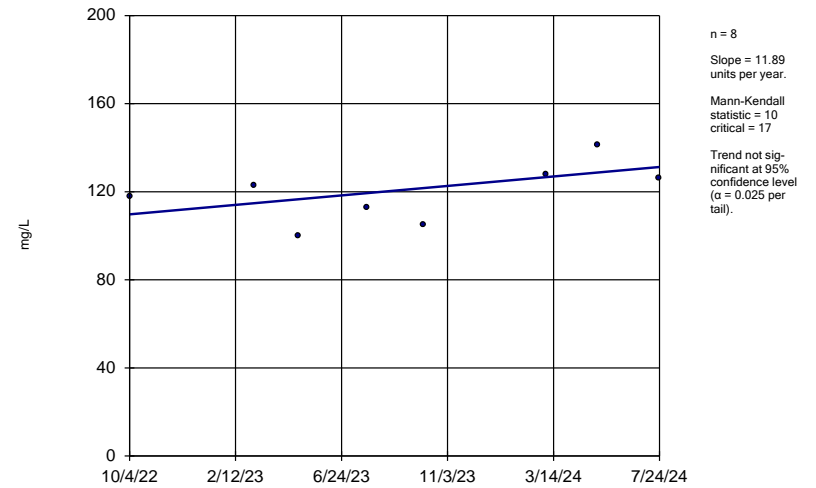
DEK-MW-18001



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### Calcium, Total

OW-10

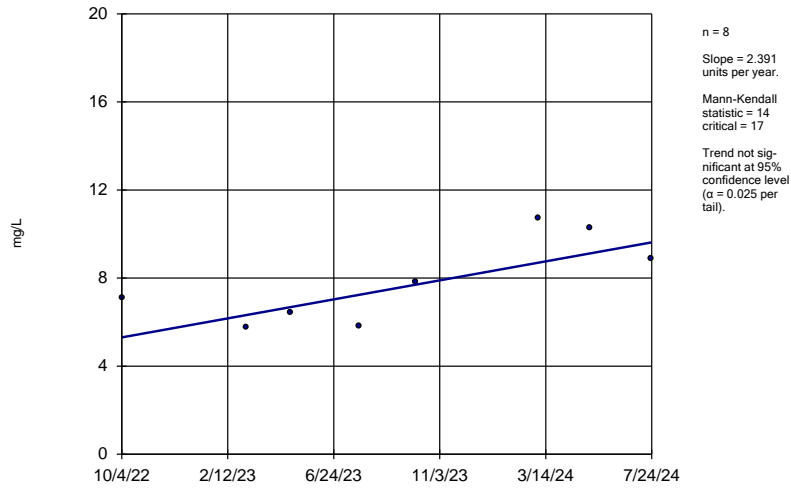


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### Calcium, Total

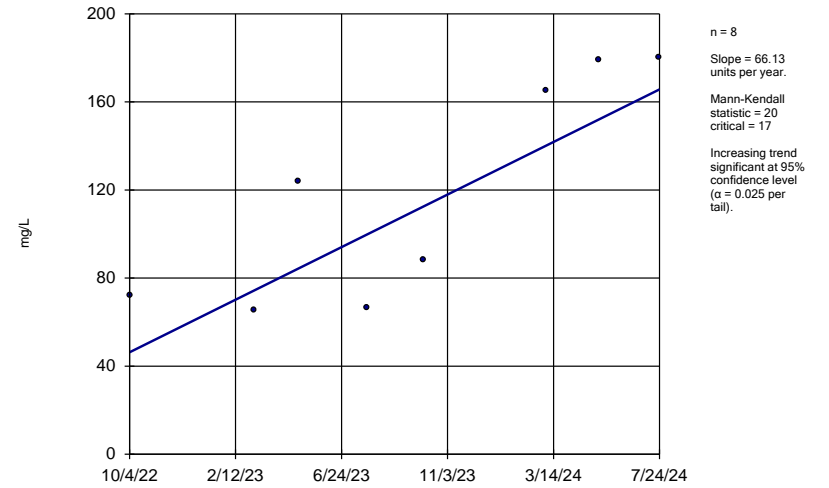
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### Calcium, Total

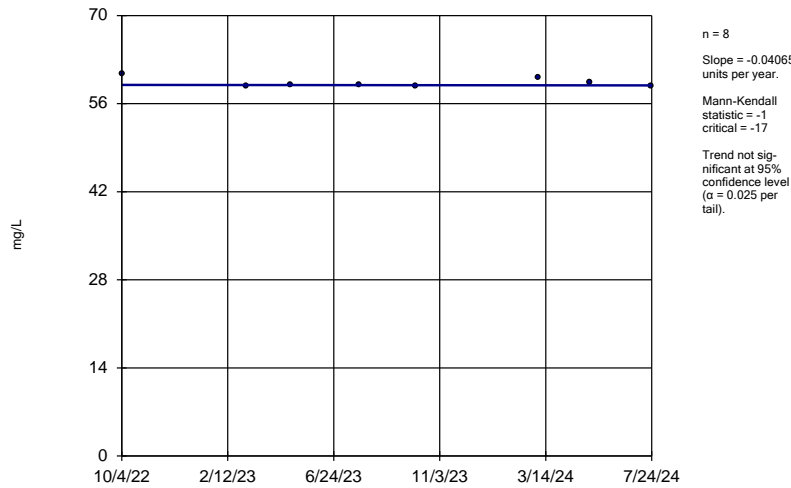
OW-12



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### Chloride

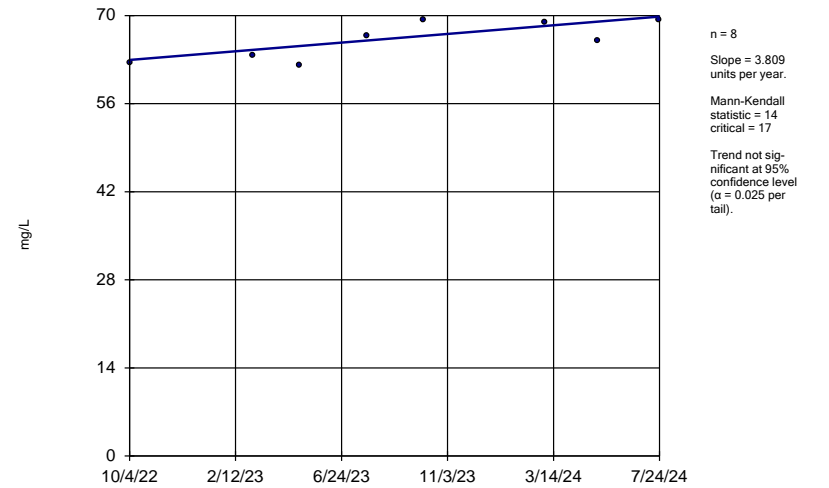
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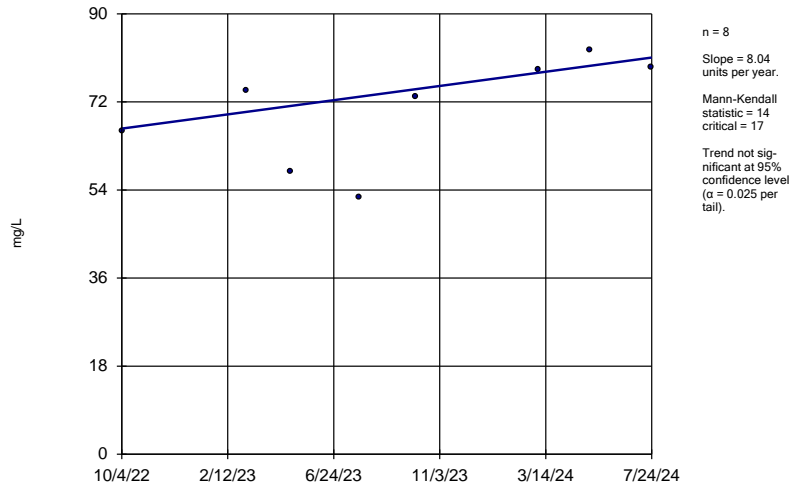
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### Chloride

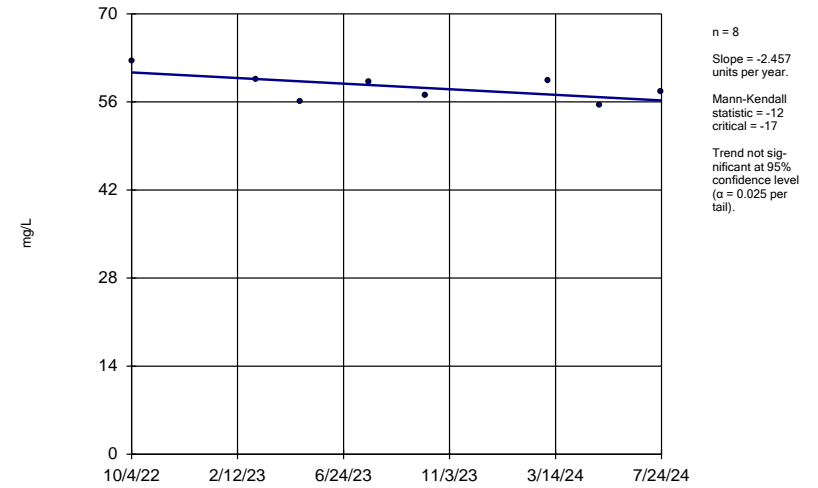
OW-10



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### Chloride

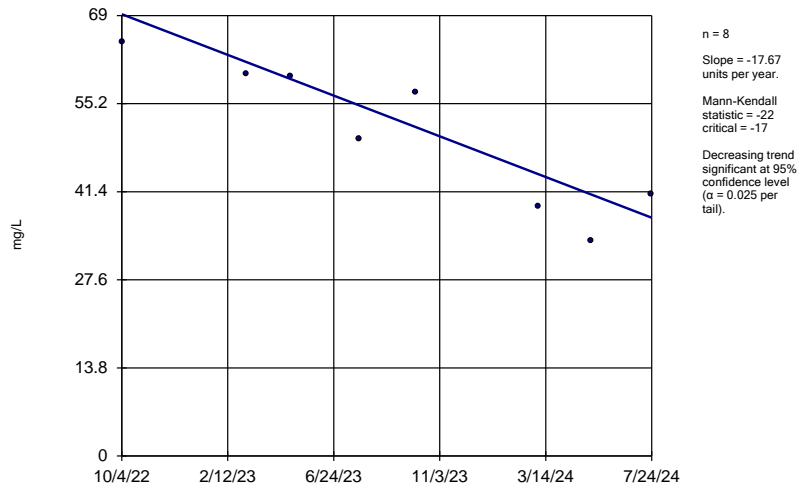
OW-11



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### Chloride

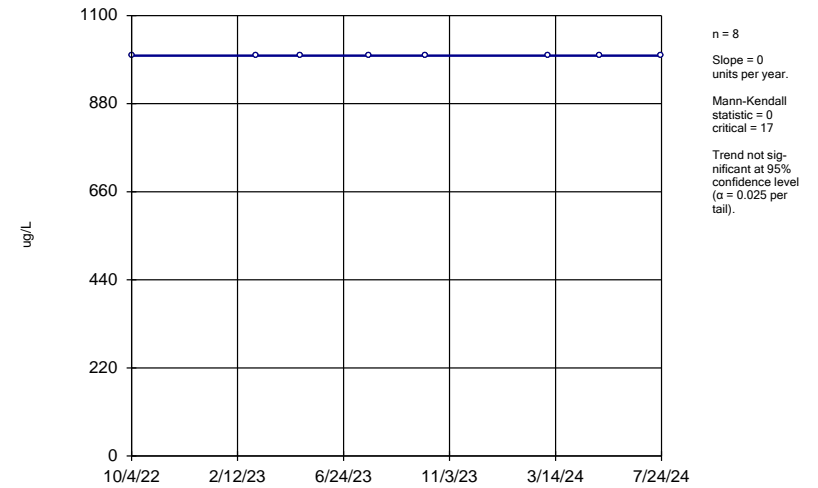
OW-12



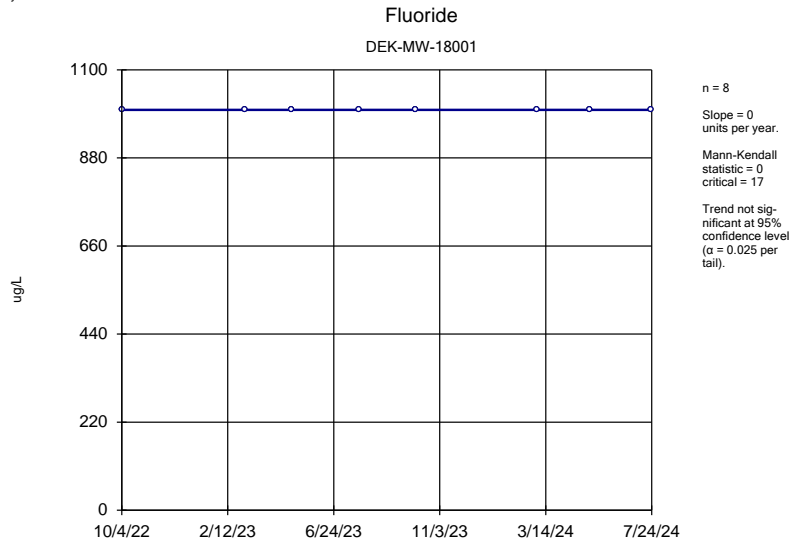
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### Fluoride

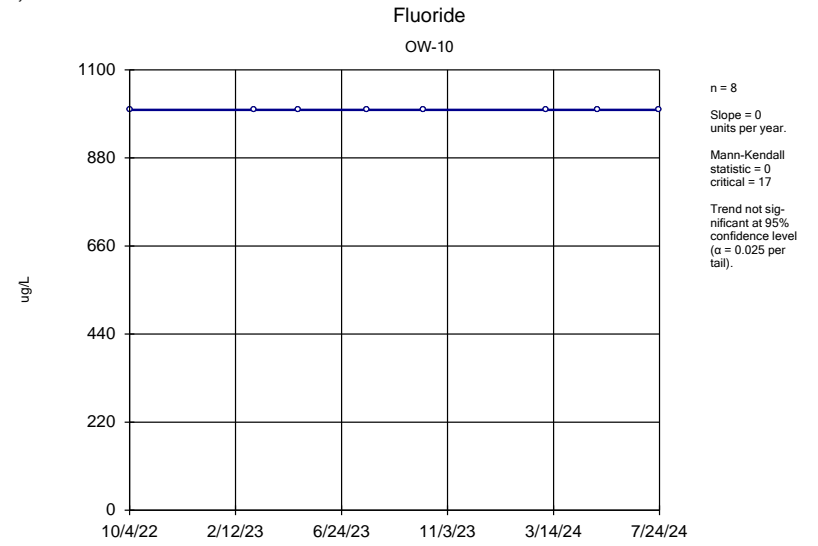
DEK-MW-15003



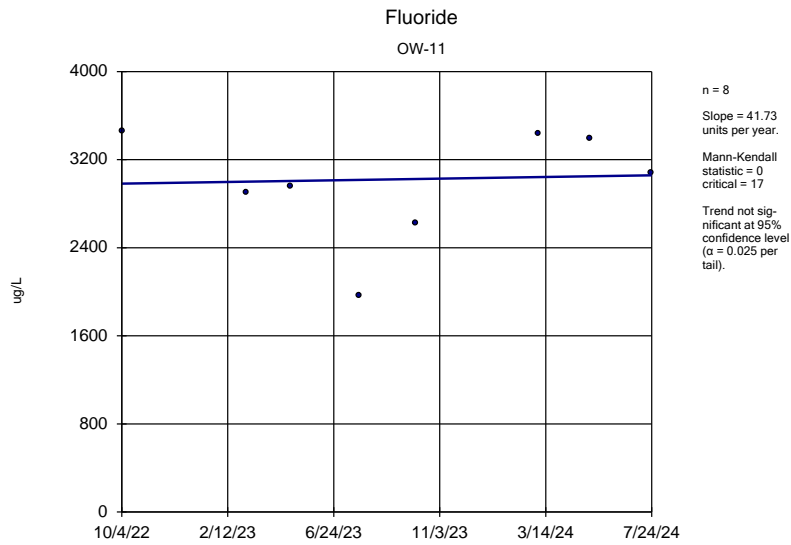
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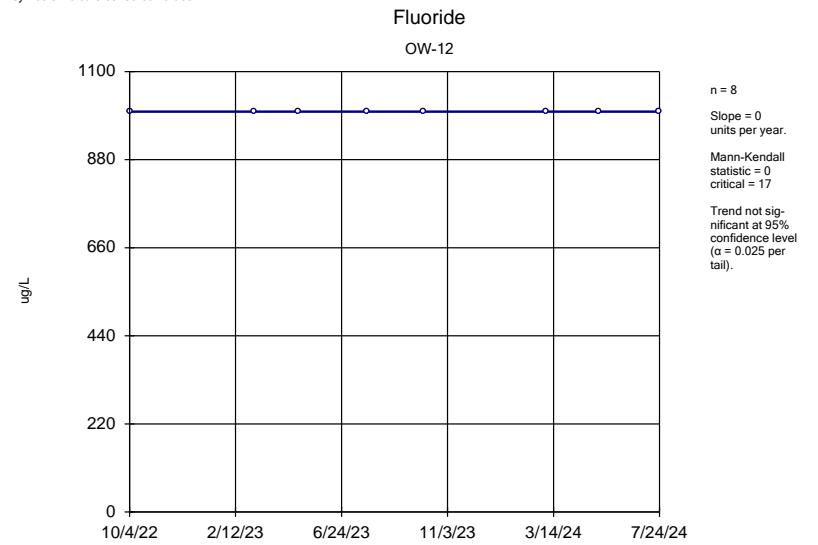
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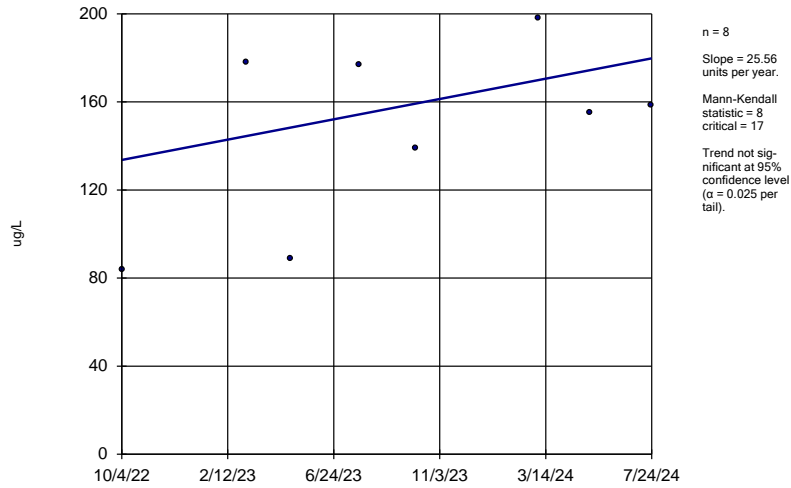


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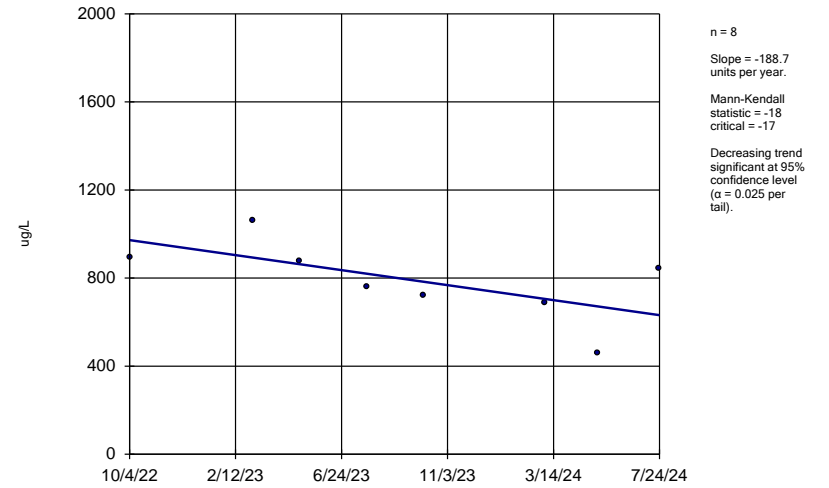
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Iron, Total  
DEK-MW-15003



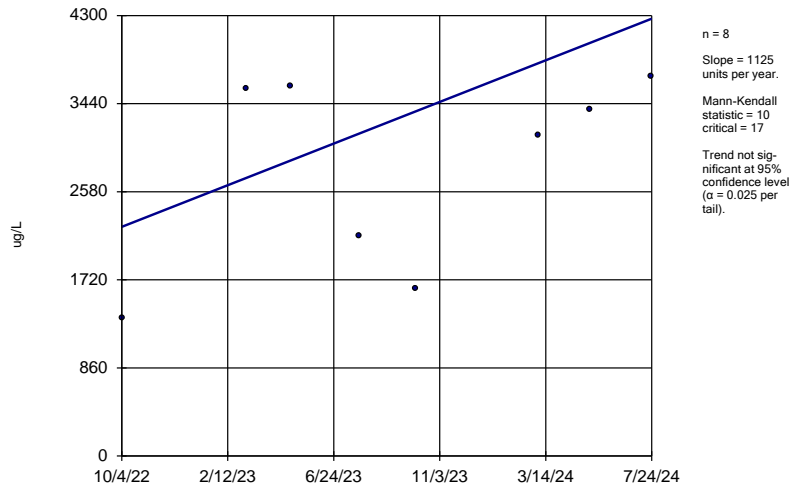
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Iron, Total  
DEK-MW-18001



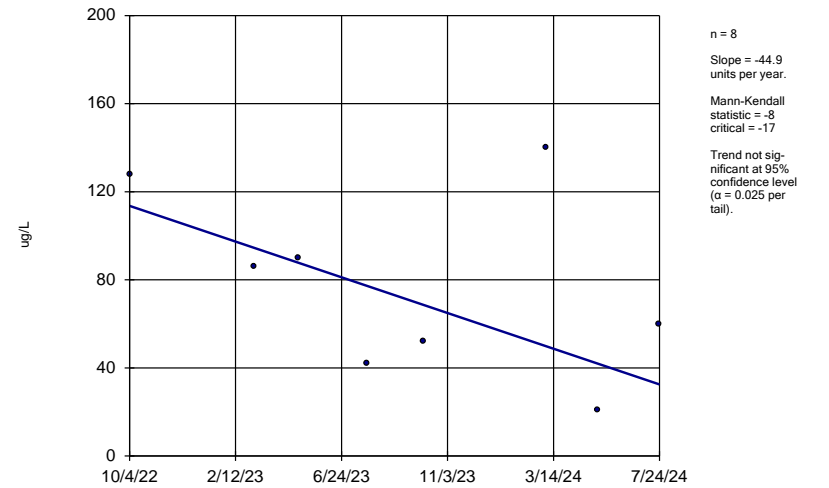
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Iron, Total  
OW-10



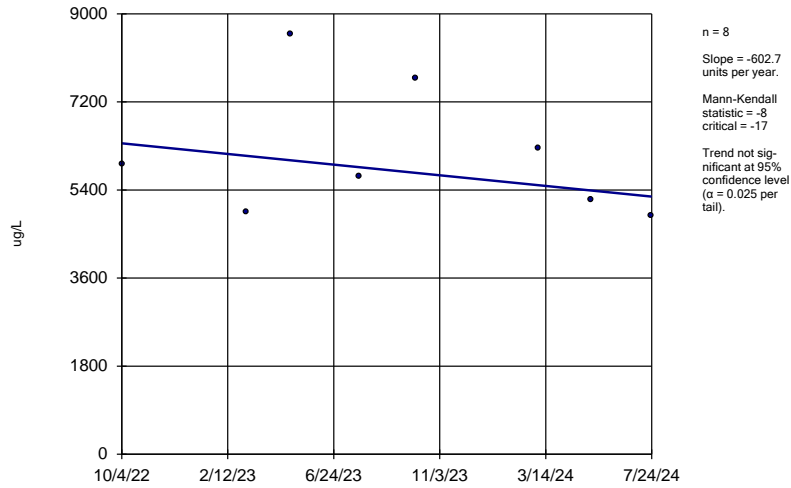
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OW-11



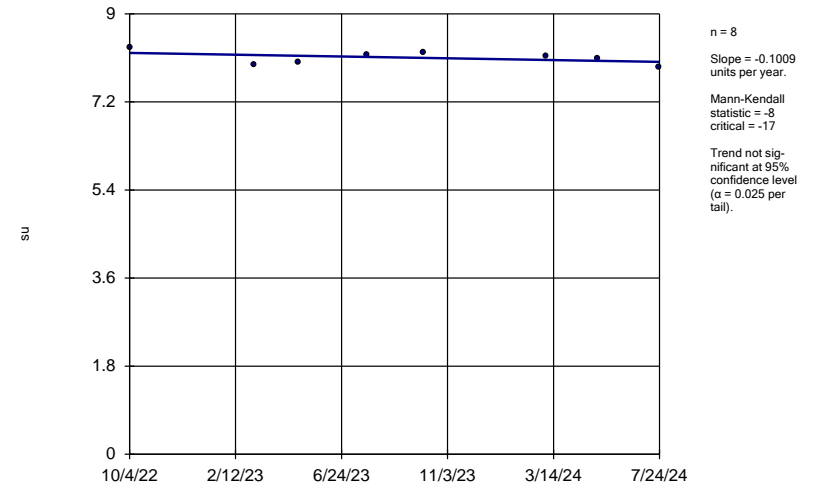
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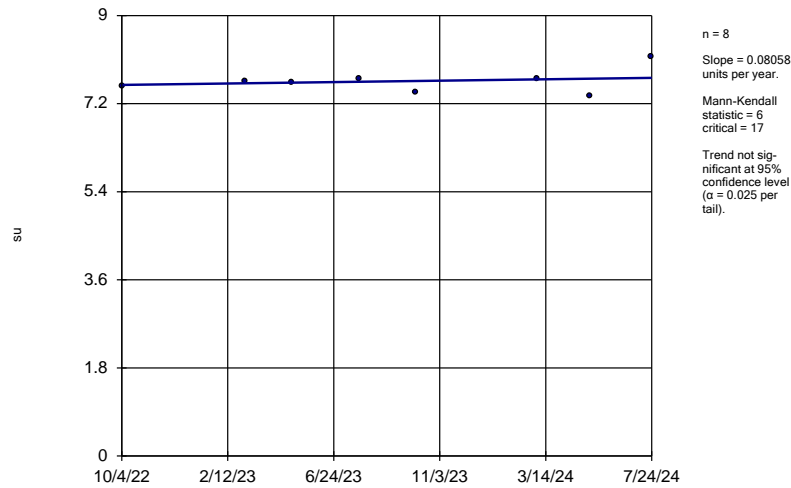
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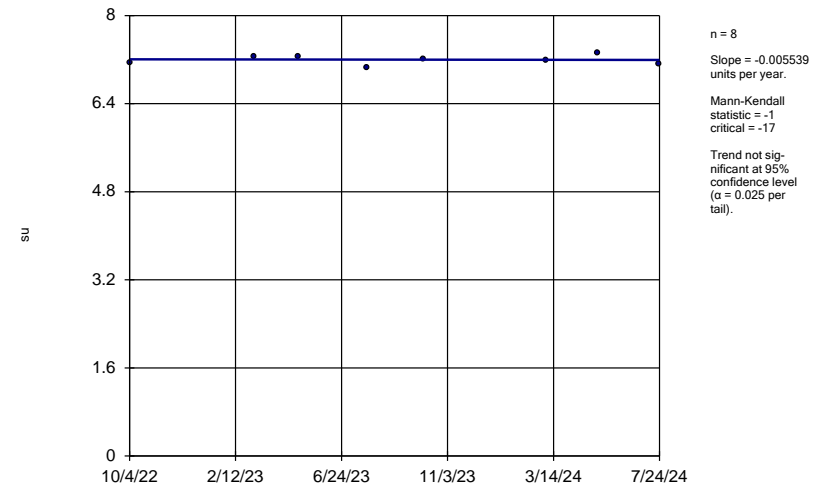
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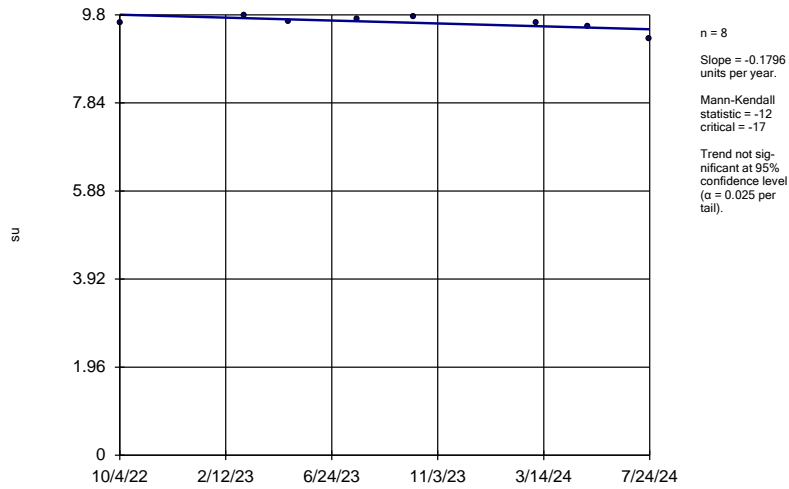
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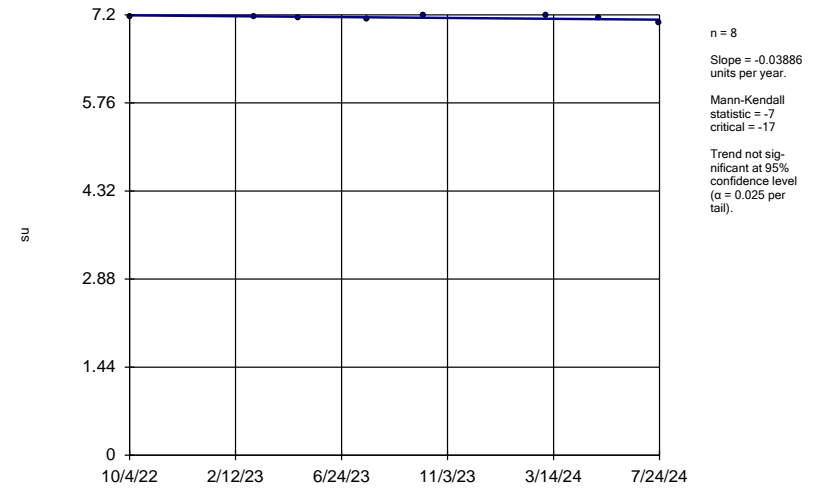
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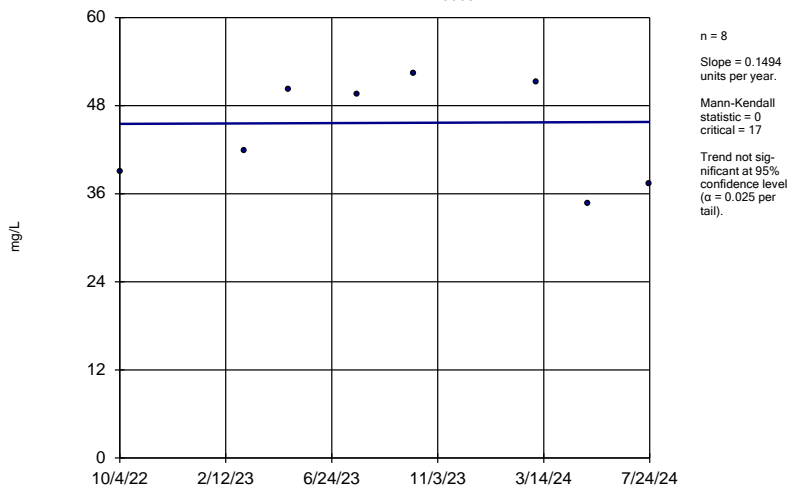
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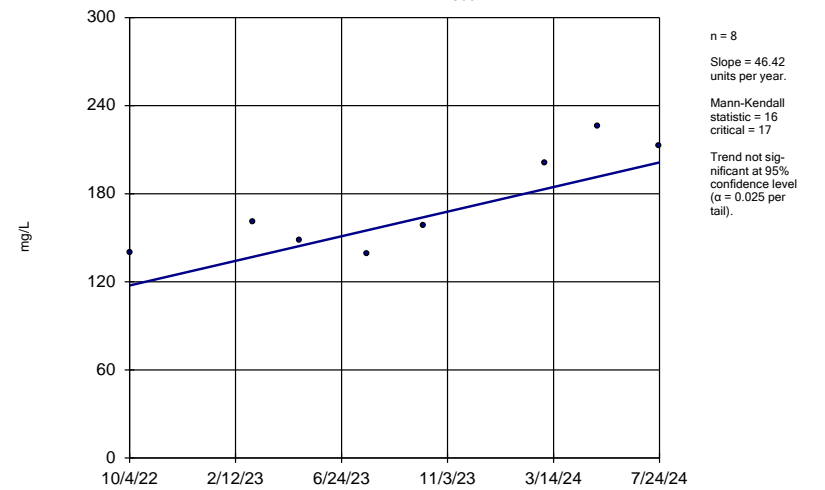
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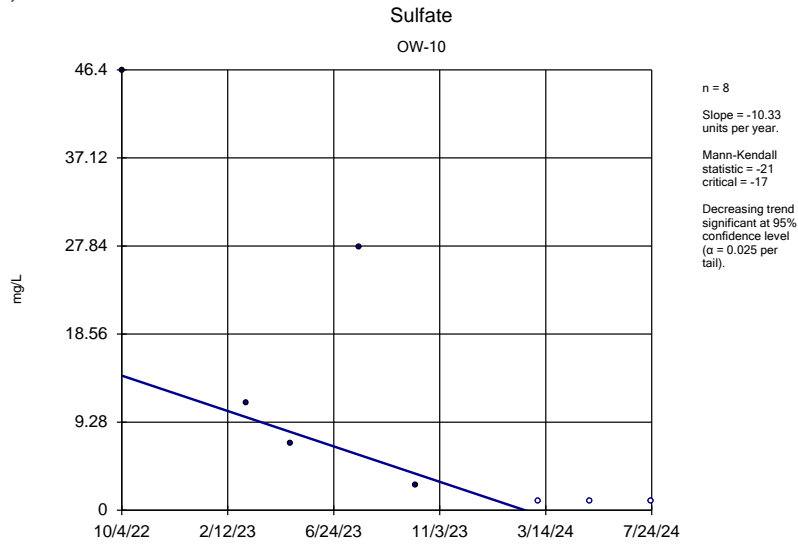
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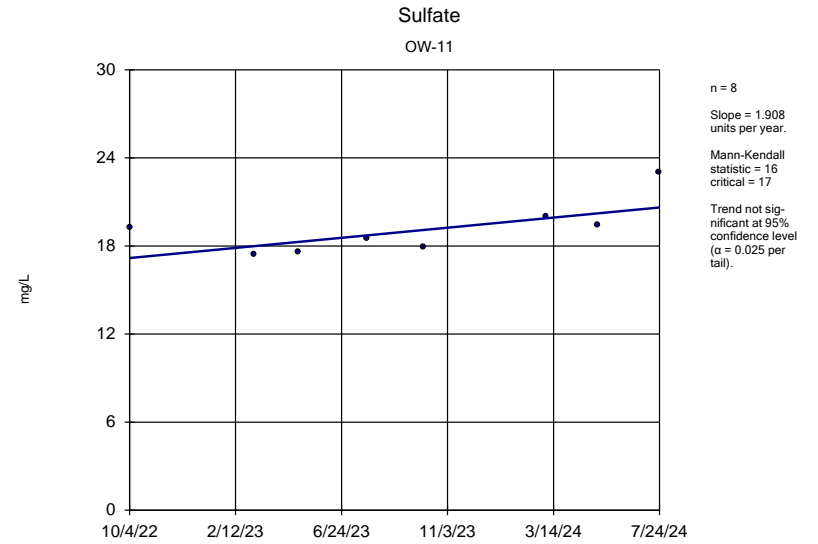
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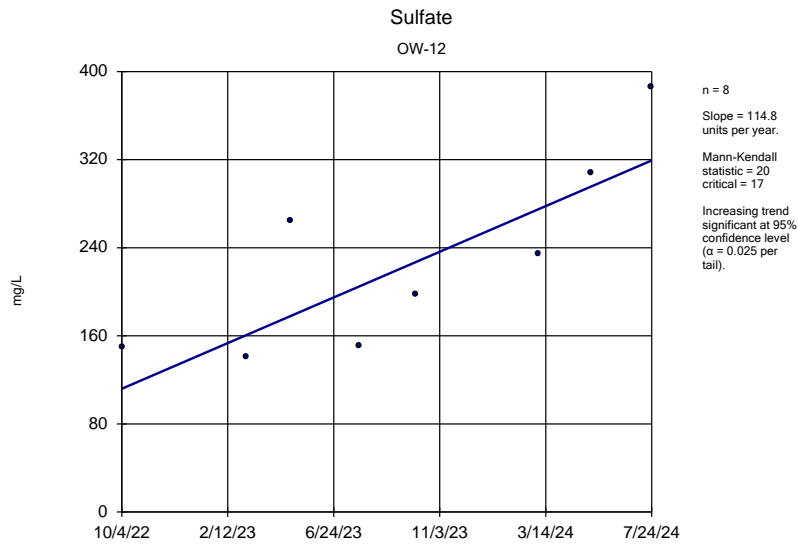
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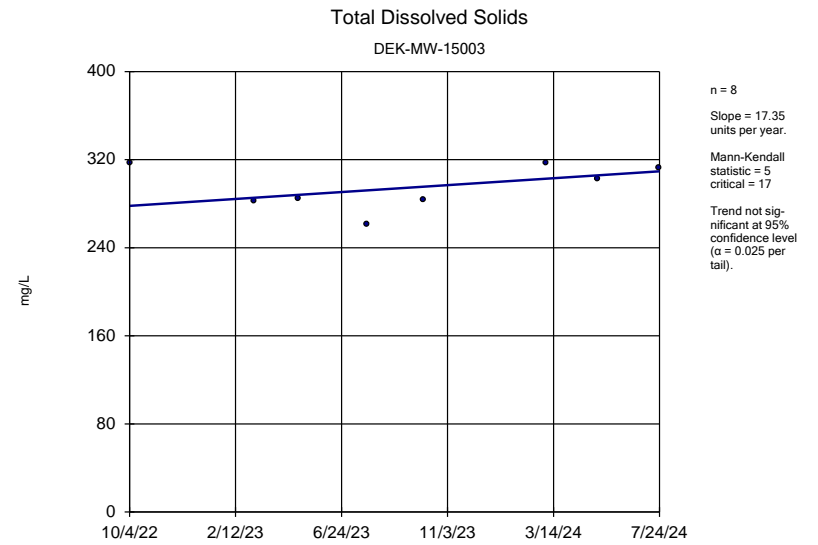
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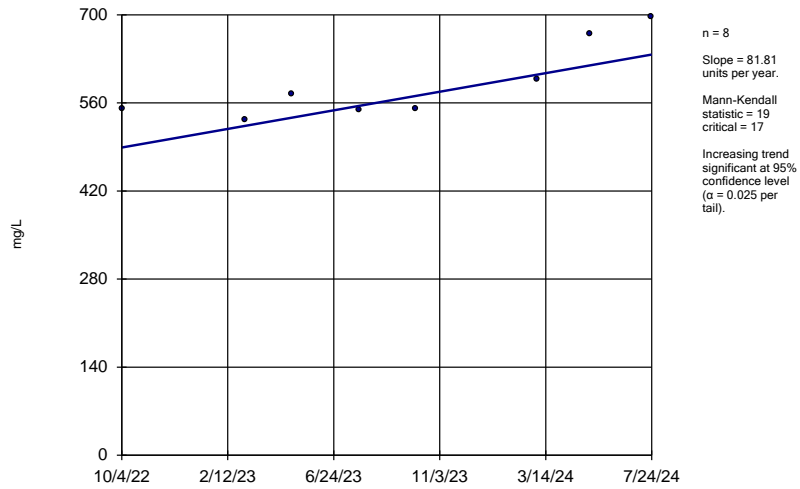
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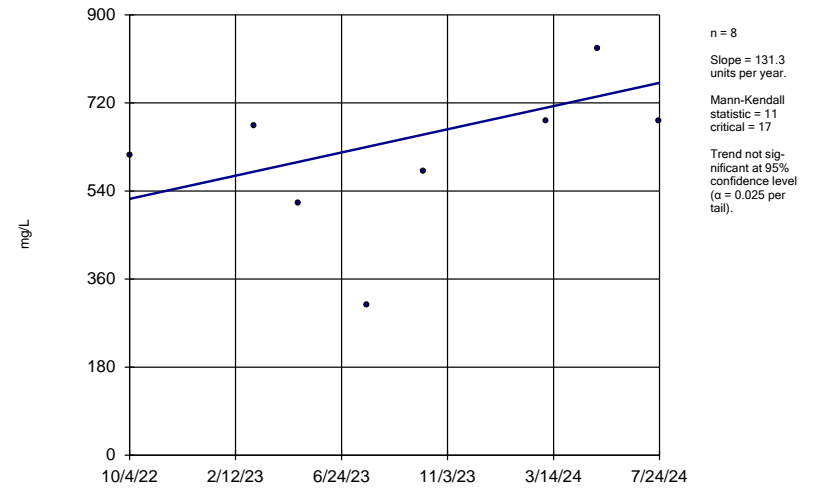
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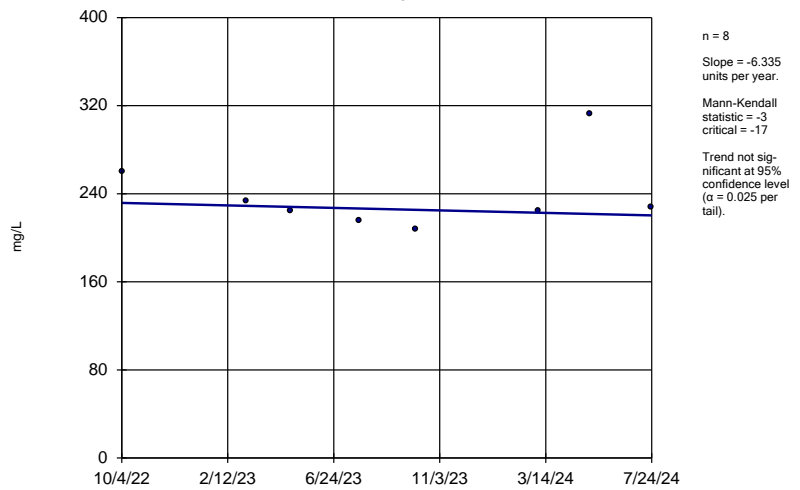
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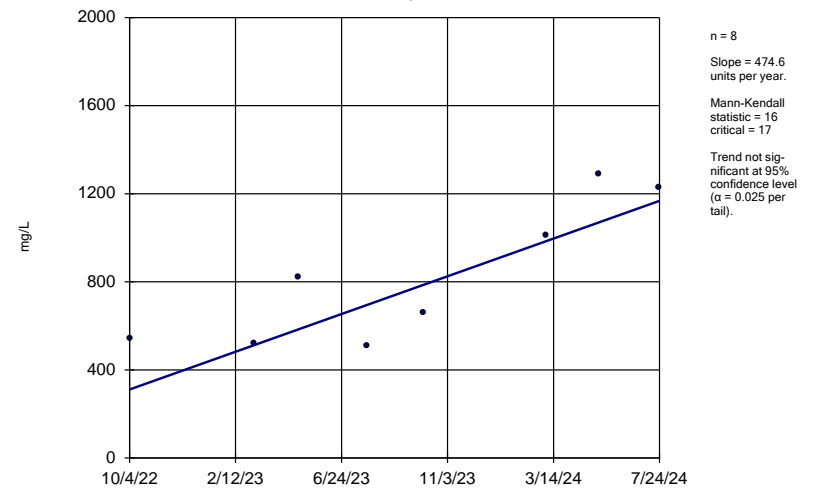
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OW-12



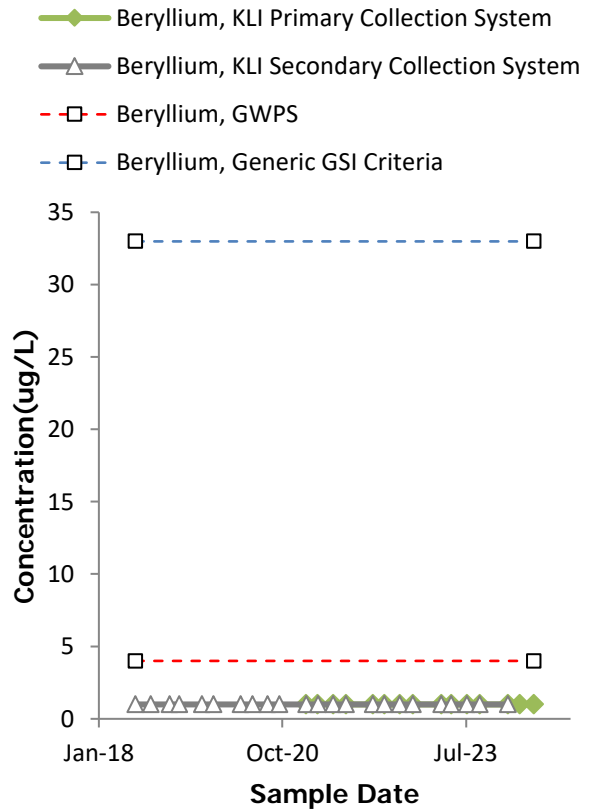
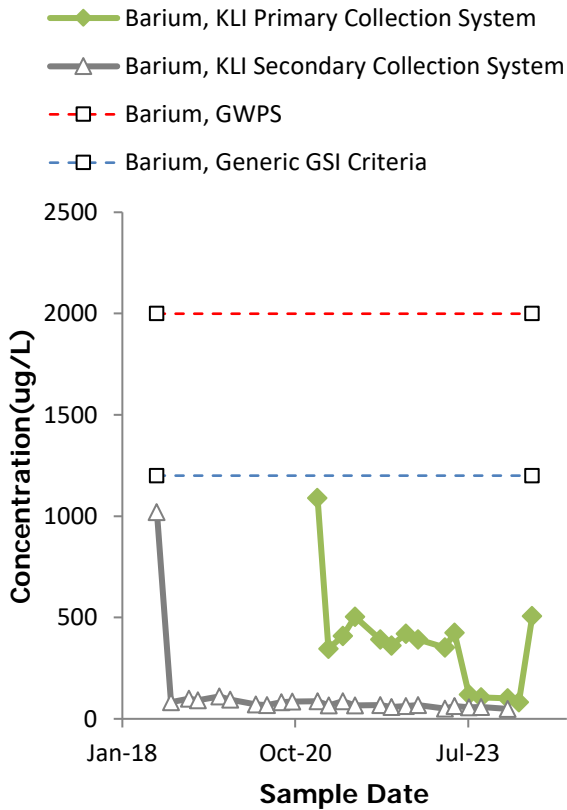
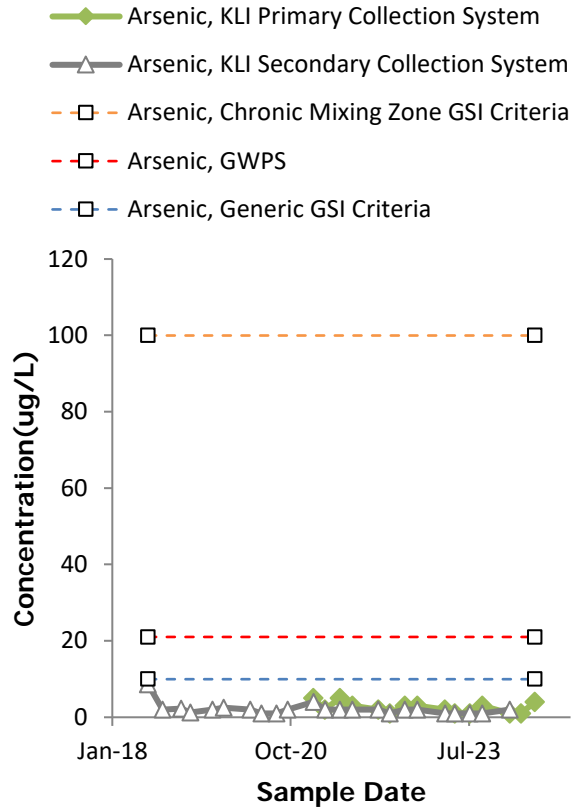
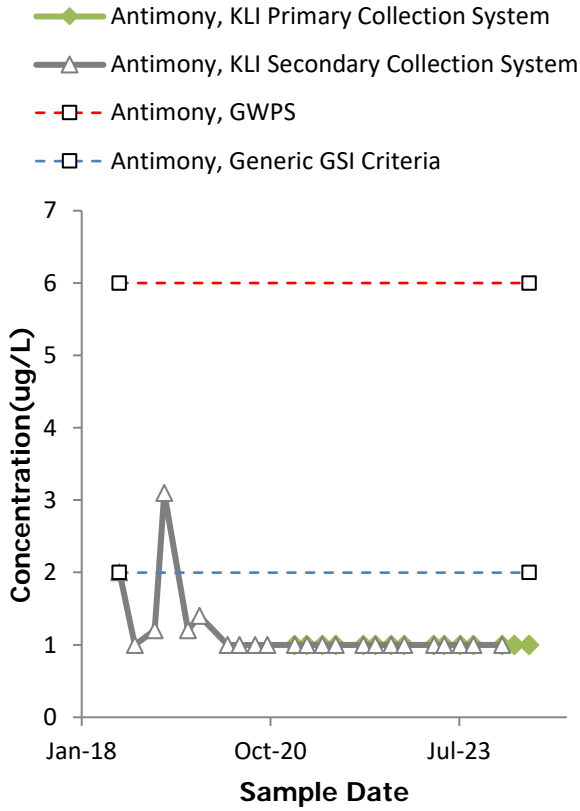
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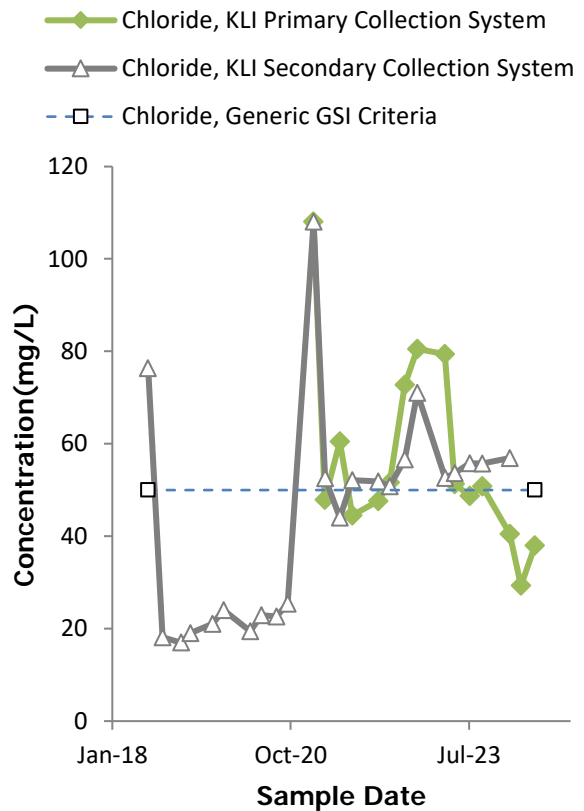
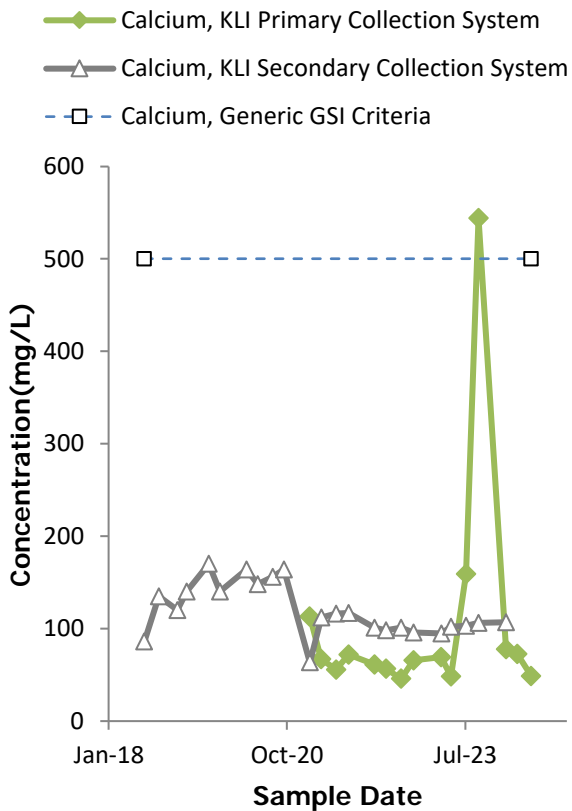
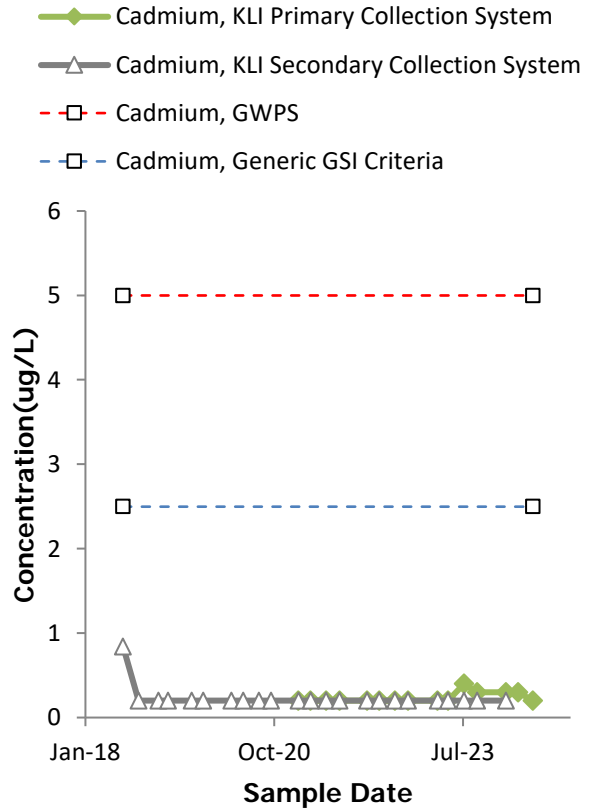
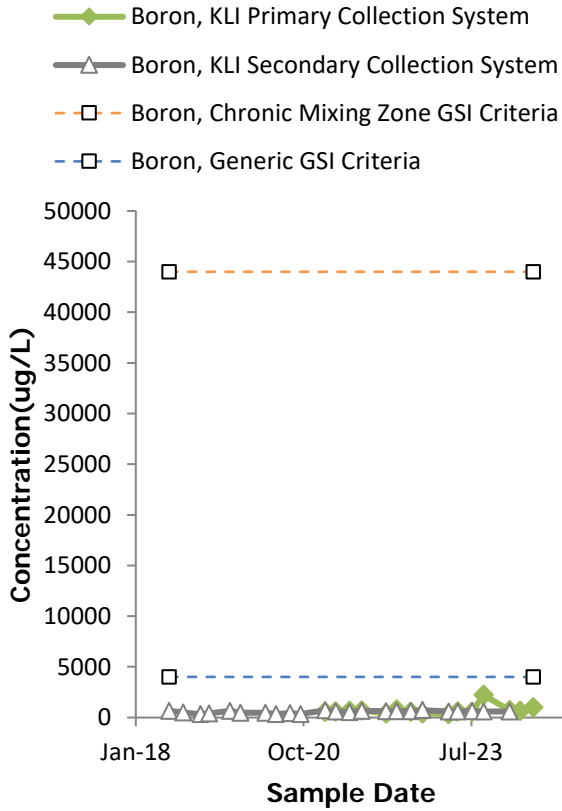
# **Appendix E**

## **Secondary Leachate Collection System Monitoring**

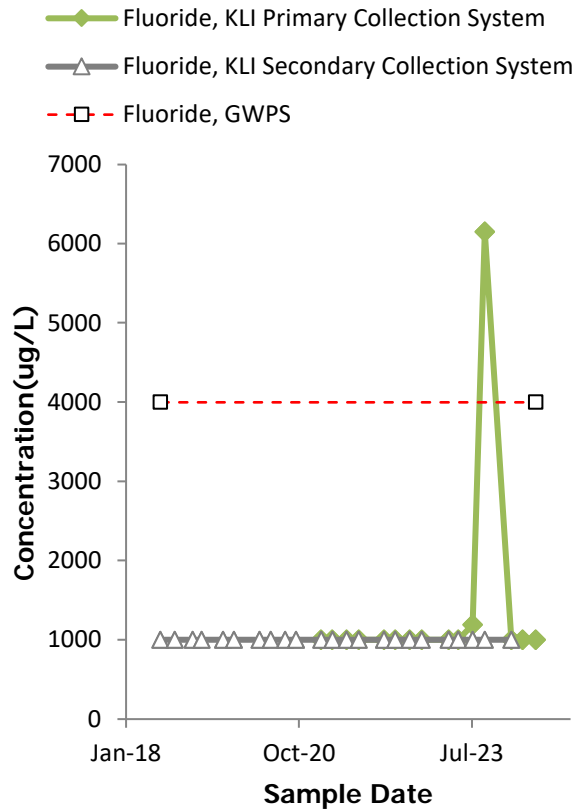
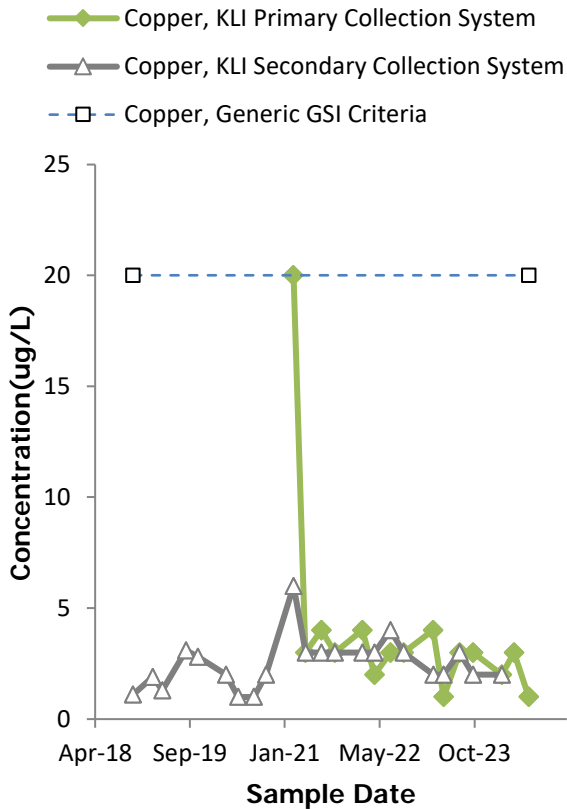
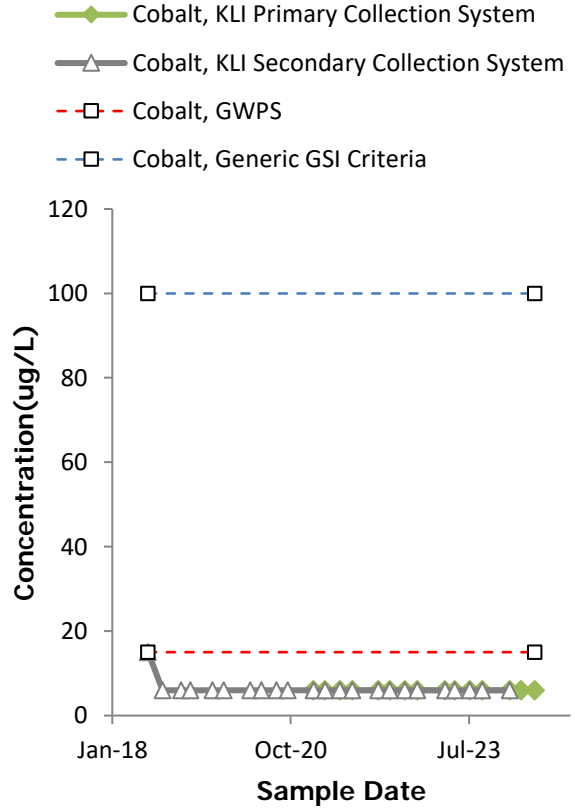
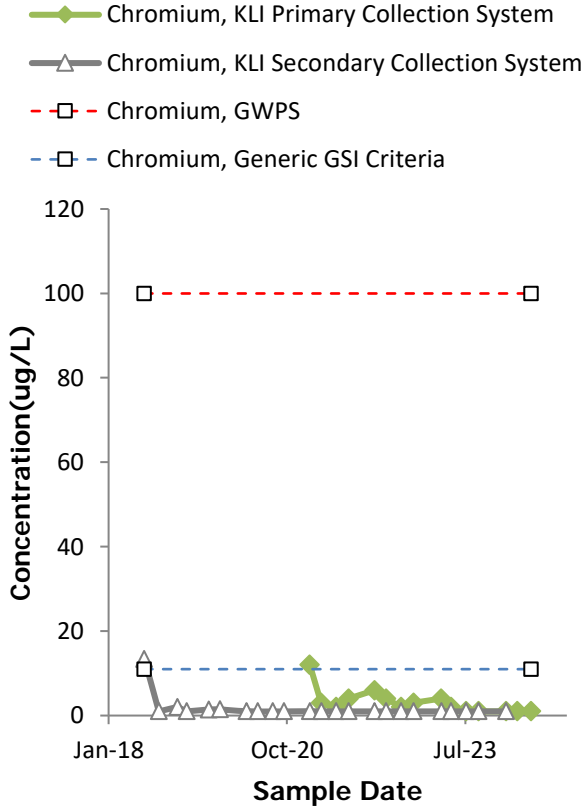
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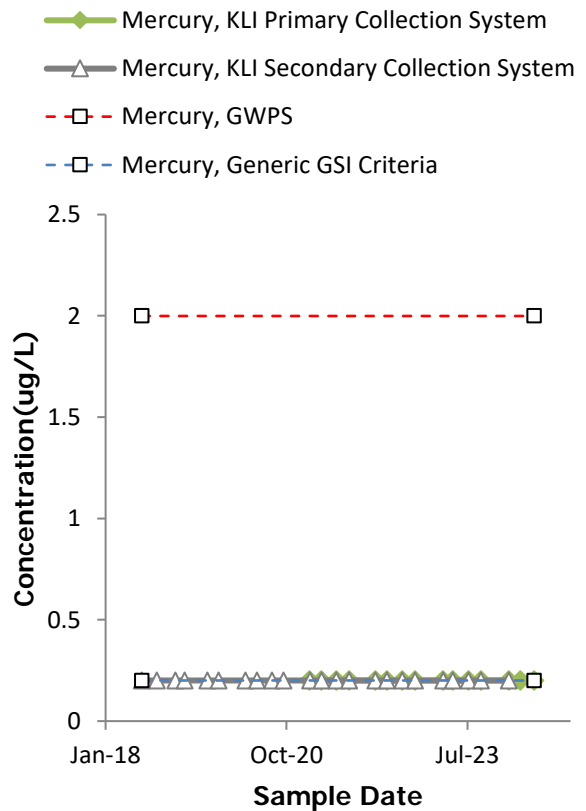
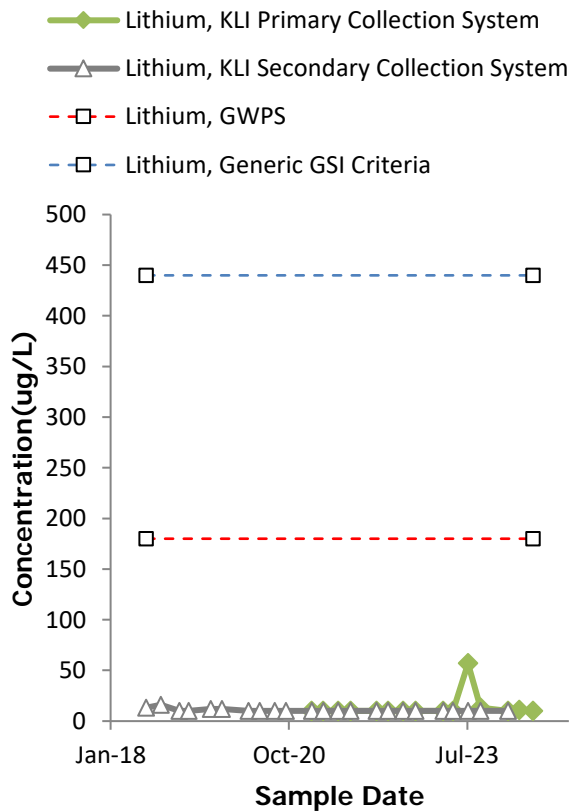
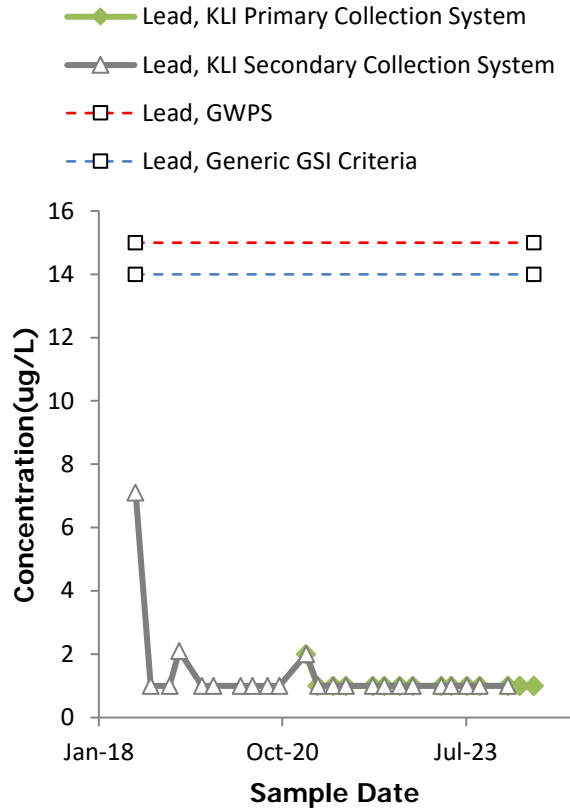
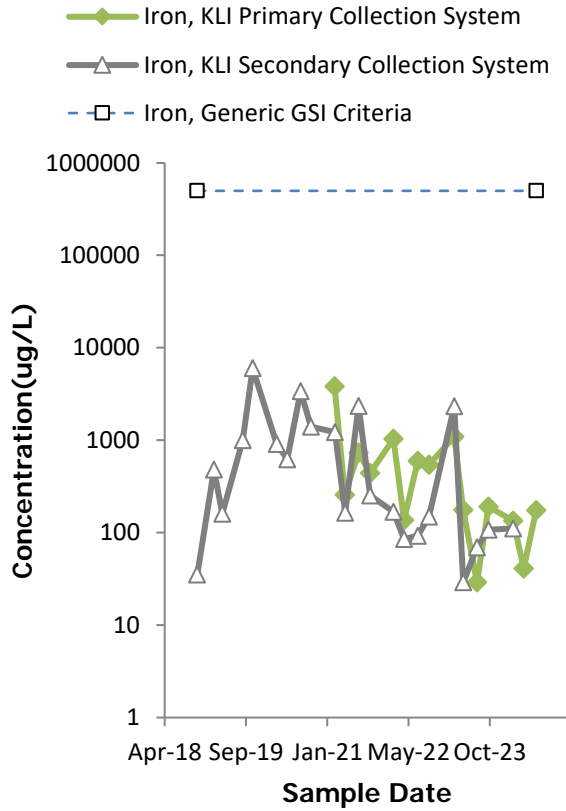
## Water Quality Time Series



# Water Quality Time Series

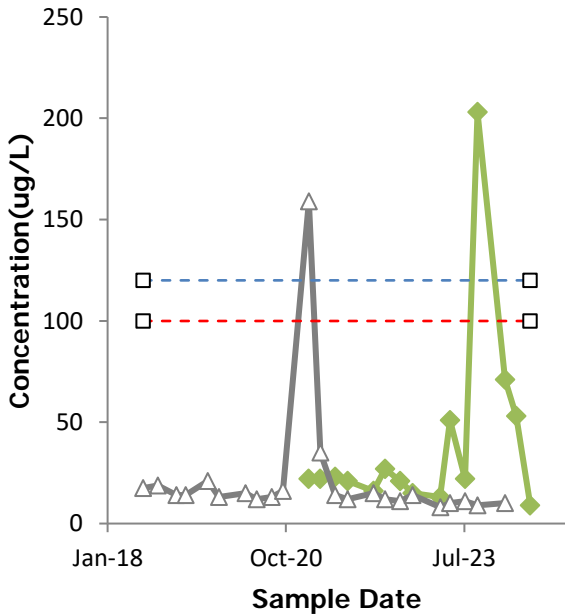


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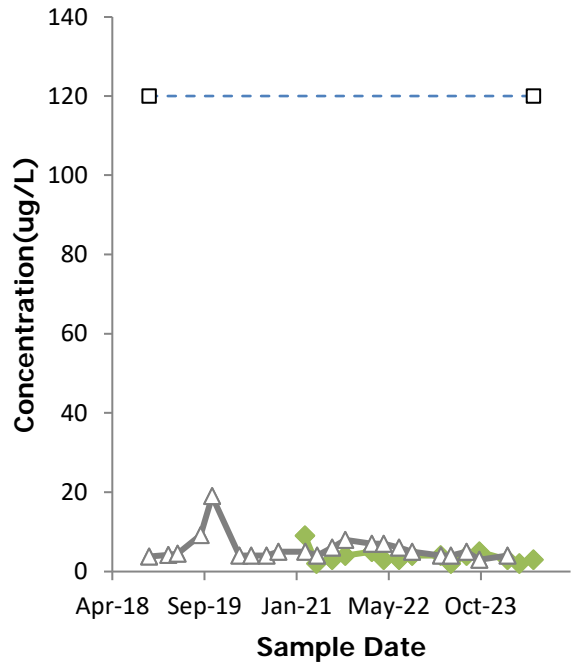


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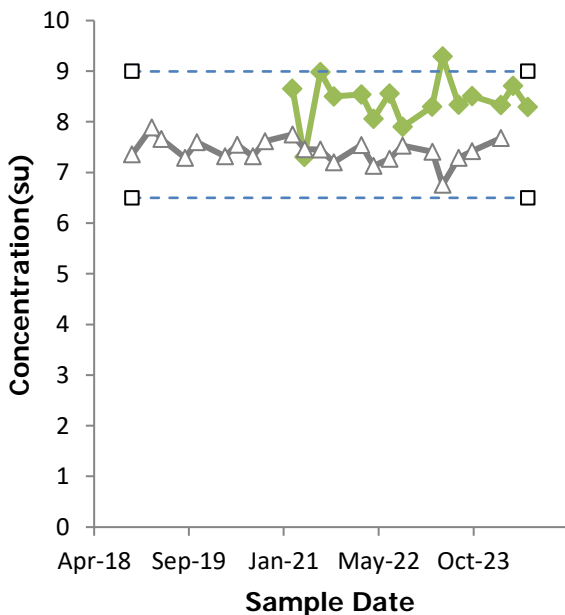
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- Molybdenum, GWPS
- Molybdenum, Generic GSI Criteria



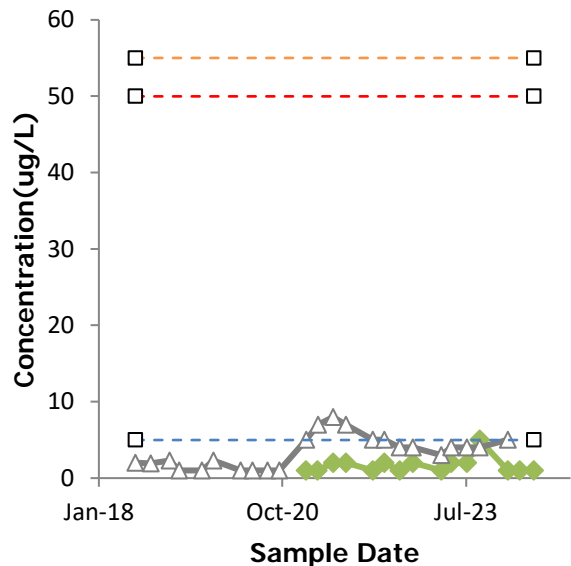
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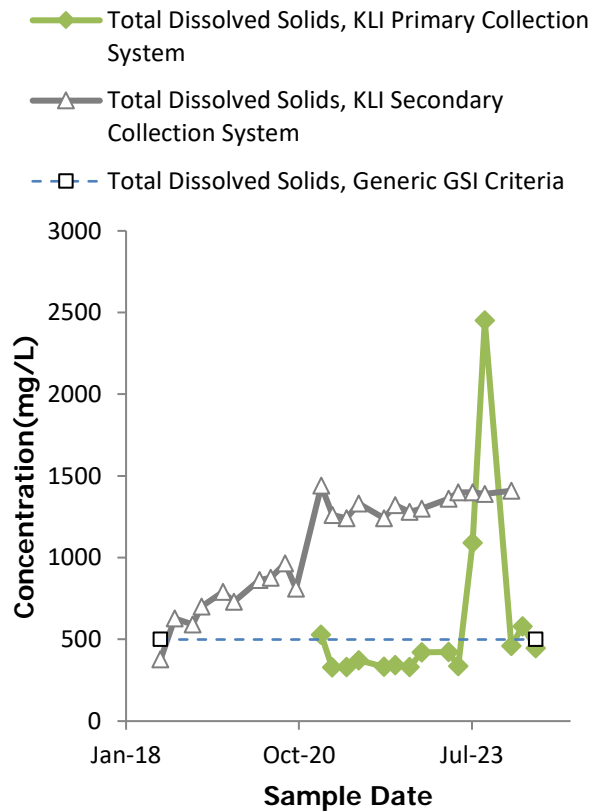
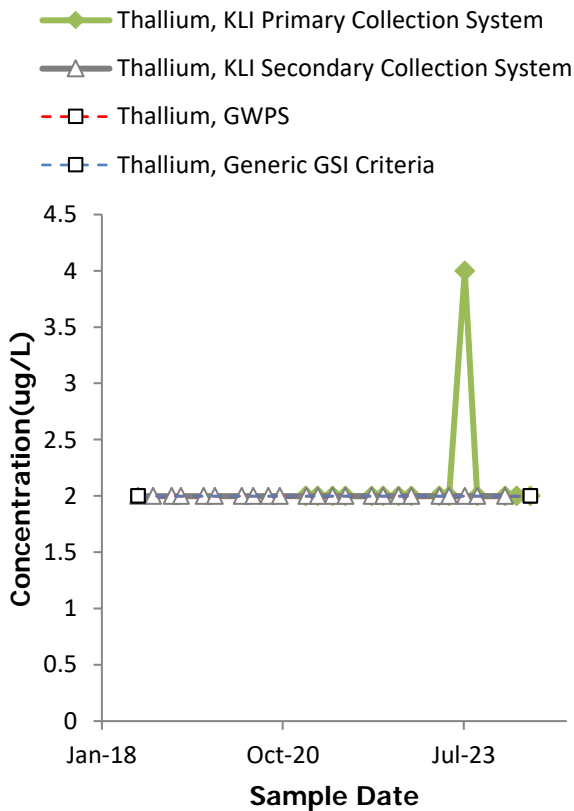
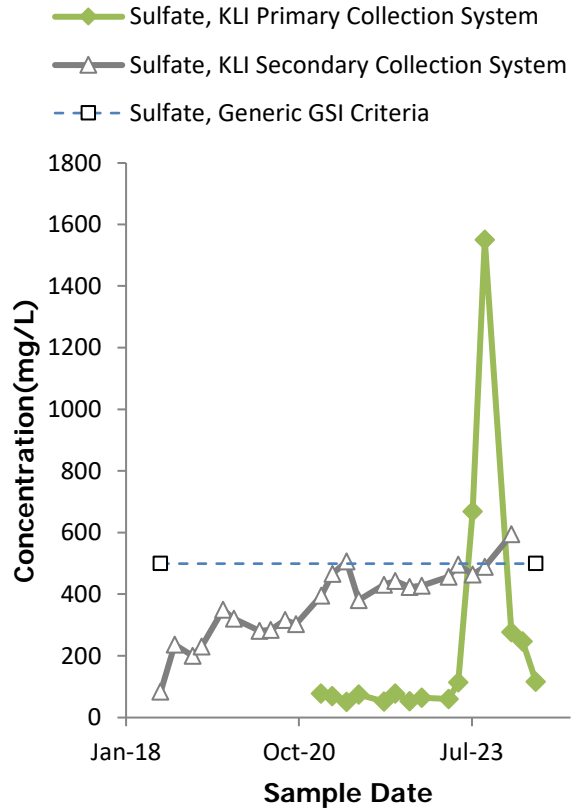
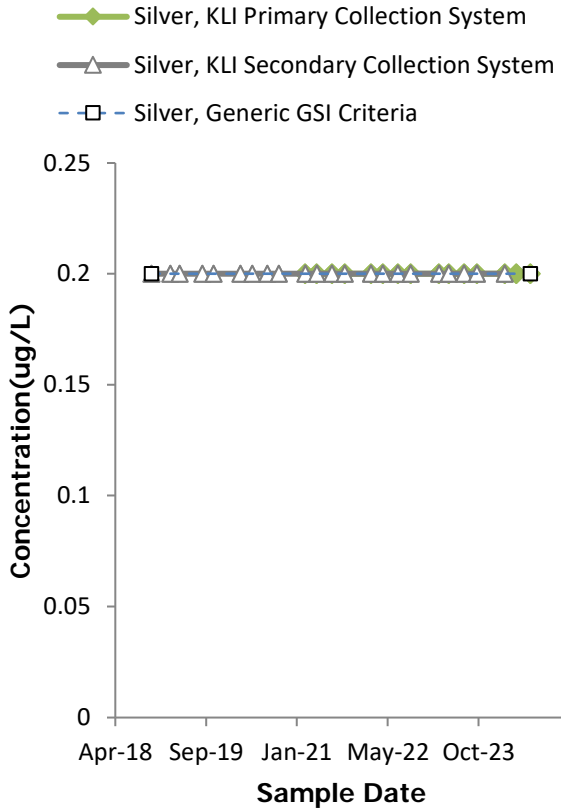
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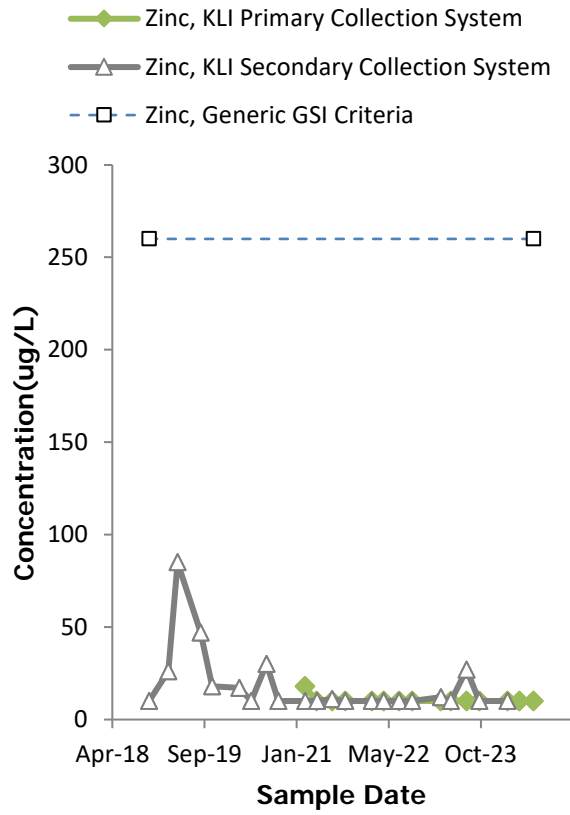
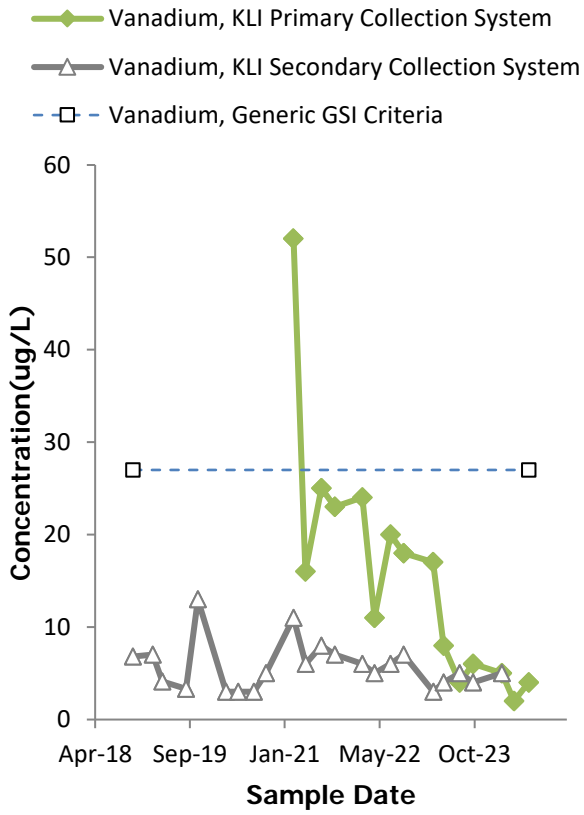
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## Water Quality Time Series



# Water Quality Time Series





**Enclosure 5**

**Fourth Quarter 2024 Hydrogeological Monitoring Report, DE  
Karn Lined Impoundment CCR Unit, Essexville, Michigan.  
(TRC, January 30, 2025)**



# Fourth Quarter 2024 Hydrogeological Monitoring Report

**DE Karn Lined Impoundment CCR Unit**

**Essexville, Michigan**

January 2025

A handwritten signature in blue ink that reads "Darby Litz".

---

Darby Litz  
Project Manager/Hydrogeologist

**Prepared For:**

Consumers Energy  
1945 W. Parnall Road  
Jackson, MI 49201

**Prepared By:**

TRC  
1540 Eisenhower Place  
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Andrew Whaley".

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Andrew Whaley  
Project Geologist

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## 1.0 Introduction

Pursuant to the Federal CCR Rule<sup>1</sup>, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018, 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 amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

### 1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Fourth Quarter 2024 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the life of the coal ash impoundment. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, *Format for Solid Waste Disposal Facility Monitoring Submittals*, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in PA 640.

### 1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the fourth quarter 2024 at the Karn Lined Impoundment CCR unit located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (TRC, 2019). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment CCR unit consists of two parts to evaluate if there are new releases from the unit:

1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and

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<sup>1</sup> 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.

2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

The Karn Lined Impoundment has remained in detection monitoring, based on groundwater compliance monitoring completed in accordance with the HMP, during the active life of the CCR unit (June 2018 through August 2024). Closure of the Karn Lined Impoundment was initiated in August 2024 in accordance with the EGLE-approved *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan* (Closure Plan) (Golder, 2018). Consumers Energy also prepared a *Closure Work Plan* (WSP, 2023) that was submitted to EGLE to provides additional details for excavation and confirmation that coal ash has been removed.<sup>2</sup>

In August and September 2024, the Karn Lined Impoundment was dewatered and hydraulic structures were removed. The remaining CCR, the geosynthetic liner systems, and all areas within the limits of the Karn Lined Impoundment that were in contact with CCR were removed, as documented in the *D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report* (WSP, 2024). Since closure by removal activities were completed in September 2024, this fourth quarter sampling event (October 2024) is the first post-excavation groundwater monitoring sampling event. In accordance with the Closure Plan and § 257.102(c)<sup>3</sup>: Closure by removal of CCR, groundwater monitoring will be conducted post-CCR removal to document that constituent concentrations throughout the CCR unit do not exceed the groundwater protection standards established per 40 CFR 257.95(h) for two consecutive groundwater monitoring events. The second post-excavation monitoring event is scheduled to occur in the first quarter of 2025.

### 1.3 Site Overview

The Karn Lined Impoundment CCR unit is located within the DE Karn Power Plant site (Site) located north of the former 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. Consumers Energy permanently ceased the operation Karn Units 1 & 2 at the Site in May 2023 and has commenced decommissioning activities for both coal-fired generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled and will continue to operate. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal under the CCR Rule and the Karn Landfill that was certified closed under Part 115 by constructing a final cover system and is currently in post-closure care.

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment served a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit N0. MI0001678 and as temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area

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<sup>2</sup> The Federal CCR rule requirements are self-implementing and need to be coordinated with state requirements. Therefore, submittal of the Closure Plan and Closure Work Plan to the EGLE meets both the state and federal requirements.

<sup>3</sup> The closure requirements of § 257.102(c) are equivalent to Section 11519(b)(9)(a) of Part 115.

(Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a plan for closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

#### **1.4 Geology/Hydrogeology**

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. 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 Site is bound by several surface water features (Figures 1 and 2): 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 Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near DEK-MW-18001, flowing outward toward the surrounding surface water bodies.

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## 2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system (SCS) flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS served as a leak detection system and the SCS flow rate data were used to demonstrate compliance with Part 115. During the active life of the unit, Consumers Energy complied with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules. The SCS flow was monitored for the end-of-life CCRs and NPDES decant water that remained in the CCR unit the closure activities commenced in August 2024.

There are no secondary collection system monitoring data to report for the Fourth Quarter 2024, as impoundment closure and removal activities have been completed.

### 3.0 Groundwater Monitoring

#### 3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2019). Given the radial groundwater flow direction and that constituents associated with CCR formerly managed at the Karn Lined Impoundment CCR unit are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

Due to the proximity of OW-12 to the Karn Lined Impoundment, the compliance monitoring well was decommissioned to allow for removal of the hydraulic structures and geosynthetic liner systems. The well plugging record for OW-12 is included in Appendix D.

#### 3.2 October 2024 Post-Excavation Monitoring Event

In accordance with the HMP, TRC conducted the fourth quarter 2024 monitoring event for the Karn Lined Impoundment on October 3, 2024. As mentioned above, OW-12 was decommissioned and therefore was not sampled. Additionally, due to decreasing water levels following discontinuation of loading to the NPDES discharge ditch, OW-11 did not yield a sufficient volume of water for the required sample analysis.

Groundwater samples collected during the fourth quarter 2024 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan for analysis of total metals and inorganic indicator constituents. Radium analysis was performed by Eurofins Environment Testing in Earth City, Missouri. Monitoring constituents include:

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents		
Boron	Antimony	Fluoride	Thallium
Calcium	Arsenic	Lead	Vanadium
Chloride	Barium	Lithium	Zinc
Fluoride	Beryllium	Mercury	Radium 226/228
Iron	Cadmium	Molybdenum	
pH	Chromium, total	Nickel	
Sulfate	Cobalt	Selenium	
Total Dissolved Solids (TDS)	Copper	Silver	



Samples were also analyzed for additional constituents including magnesium, sodium, potassium, bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix B).

Monitoring wells 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. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Groundwater sample preparation and analyses were performed in accordance with SW-846 "Test Methods for Evaluation Solid Waste – Chemical / Physical Methods," USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of a field matrix spike/matrix spike duplicate sample collected at DEK-MW-18001.

### **3.2.1 Data Quality Review**

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The data were found to be complete and usable for the purposes of the HMP program.

The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

### **3.2.2 Groundwater Flow Rate and Direction**

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The 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 578 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 data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically 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 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 in the vicinity of the former Karn Bottom Ash Pond in October 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. 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 recently shifted to the south, towards DEK-MW-18001, with groundwater generally flowing radially towards the adjacent surface water features from this potentiometric “high”, as illustrated in Figure 3.

The average hydraulic gradient observed on September 30, 2024, in the vicinity of the former Karn Bottom Ash Pond and former Karn Lined Impoundment is estimated at 0.0030 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005 and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. 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 calculated to be 0.15 ft/day or 55 ft/year in October 2024 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year in August 2018).

Due to the operational changes of the former bottom ash pond in 2018 and 2019, the completion of the landfill capping activities in 2020, and the cessation of NPDES discharge in 2023, the gradient between the area of the former Karn Bottom Ash Pond and former Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general radial flow direction relative to the former Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.

## 4.0 Data Evaluation

Although the Karn Lined Impoundment CCR unit has remained in detection monitoring throughout its operation, to certify completion of closure per 257.102(c) and to achieve equivalency for closure pursuant to Section 11519(b)(9)(a) of Part 115, the owner/operator must demonstrate that the groundwater concentrations of Appendix IV constituents do not exceed the groundwater protection standards (GWPS) established for the Karn Lined Impoundment CCR unit per 40 CFR 257.95(h) for two consecutive sampling events. This October 2024 event is the first post-excavation sampling event.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017, and in accordance with the October 4, 2024, mixing zone determination.

### 4.1 Data Discussion

Groundwater quality is generally consistent with previous monitoring events. Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation, as documented in the HMP. Consumers Energy will formally establish GWPS and compare the GWPS with the Appendix IV groundwater data from the Karn Lined Impoundment CCR unit compliance well network following the second post-excavation groundwater sampling event to be completed in March 2025. As a part of the post-excavation groundwater data evaluation and closure demonstration, the data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether concentrations that exceed GWPS, if identified, are from a possible release from the Karn Lined Impoundment or attributed to another on-site source or sources.

### 4.2 Alternate Source Demonstration

At this time, Consumers Energy is not asserting an Alternate Source Demonstration (ASD) for any Statistically Significant Increases (SSI) from this reporting period.

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## 5.0 Conclusions and Recommendations

Closure of the Karn Lined Impoundment was initiated in August 2024 and completed in September 2024 in accordance with the EGLE-approved *D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan* (Closure Plan) (Golder, 2018). Consumers Energy will continue the groundwater monitoring program for the Karn Lined Impoundment CCR unit in conformance with the Karn Lined Impoundment HMP to assess post-excavation groundwater conditions in support of closure by removal per 257.102(c) and to achieve equivalency for closure pursuant to Section 11519(b)(9)(a) of Part 115. Although the Karn Lined Impoundment CCR unit has remained in detection monitoring throughout its operation, to certify completion of closure, the owner/operator must demonstrate that the groundwater concentrations of Appendix IV constituents do not exceed the GWPS established for the Karn Lined Impoundment CCR unit per 40 CFR 257.95(h) for two consecutive sampling events.

Consumers Energy will formally establish GWPS and compare the GWPS with the Appendix IV groundwater data from the Karn Lined Impoundment CCR unit compliance well network following the second post-excavation groundwater sampling event to be completed in March 2025. As a part of the post-closure excavation groundwater data evaluation and closure demonstration, the data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether concentrations that exceed GWPS, if identified, are from a possible release from the Karn Lined Impoundment or attributed to another on-site source or sources.

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## 6.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. October 30.
- Consumers Energy. 2017. Hydrogeological Monitoring Plan, Rev. 3. DE Karn Solid Waste Disposal Area. December 19.
- Golder Associates Inc. 2018. D.E. Karn Generating Facility, Karn Lined Impoundment Closure Plan. June.
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation at the Consumers Energy DE Kam and JC Weadock Solid Waste Disposal Areas. September.
- TRC. 2019. 2018 Annual Groundwater Report for the DE Karn Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company. January.
- TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company. November.
- TRC. 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. 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.
- WSP. 2023. Closure Work Plan, D.E. Karn Generating Facility Karn Lined Impoundment. June.
- WSP. 2024. D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report. October 30.

## Tables

**Table 1**  
 Summary of Groundwater Elevation Data  
 DE Karn Lined Impoundment – Hydrogeological Monitoring Program  
 Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	September 30, 2024	
				Depth to Water (ft BTOC)	Groundwater Elevation (ft)
<b>DEK Bottom Ash Pond</b>					
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	NM <sup>(1)</sup>	
<b>DEK Bottom Ash Pond &amp; Karn Lined Impoundment</b>					
DEK-MW-18001	593.47	Sand	579.2 to 574.2	10.18	583.29
<b>Karn Lined Impoundment</b>					
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	NM <sup>(2)</sup>	
<b>DEK Nature and Extent</b>					
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
<b>DEK Static Water Level</b>					
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	NM <sup>(1)</sup>	
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

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

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

**Table 2**  
 Summary of Field Parameters  
 DE Karn Lined Impoundment - Hydrogeological Monitoring Program  
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
<b>DE Karn Lined Impoundment</b>							
DEK-MW-15003	10/3/2024	1.12	-143.1	8.1	359	18.8	0.0
DEK-MW-18001	10/3/2024	1.00	-228.0	8.1	941	13.7	4.3
OW-10	10/3/2024	0.27	-136.8	7.3	808	15.2	12.5

**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 Lined Impoundment - Hydrogeological Monitoring Program  
 Essexville, Michigan

		Sample Location: <b>DEK-MW-15003</b> <b>DEK-MW-18001</b> <b>OW-10</b>							
		Sample Date: 10/3/2024 10/3/2024 10/3/2024							
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI <sup>A</sup>	Downgradient			
<b>Appendix III<sup>(1)</sup></b>									
Boron	ug/L	NC	<b>500</b>	<b>500</b>	4,000	<b>666</b>	<b>953</b>	<b>1,310</b>	
Calcium	mg/L	NC	NC	NC	500 <sup>EE</sup>	35	58.5	139	
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	<b>50</b>	<b>63.6</b>	<b>78.1</b>	<b>87.9</b>	
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	
Sulfate	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	500 <sup>EE</sup>	37.9	207	< 1	
Total Dissolved Solids	mg/L	<b>500**</b>	<b>500<sup>E</sup></b>	<b>500<sup>E</sup></b>	<b>500</b>	304	<b>624</b>	<b>650</b>	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	8.1	8.1	7.3	
<b>Appendix IV<sup>(1)</sup></b>									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	
Arsenic	ug/L	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>382</b>	<b>495</b>	5	
Barium	ug/L	2,000	2,000	2,000	1,200	46	148	339	
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	< 1	< 1	5	
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	4	
Lithium	ug/L	NC	170	350	440	21	18	34	
Mercury	ug/L	2	2.0	2.0	0.20 <sup>#</sup>	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	73	210	120	22	10	< 5	
Radium-226	pCi/L	NC	NC	NC	NC	< 0.117	0.353	0.232	
Radium-228	pCi/L	NC	NC	NC	NC	< 0.753	0.774	< 1.21	
Radium-226/228	pCi/L	5	NC	NC	NC	< 0.753	1.13	< 1.21	
Selenium	ug/L	50	50	50	5.0	2	1	2	
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	
<b>Additional MI Part 115<sup>(2)</sup></b>									
Iron	ug/L	<b>300**</b>	<b>300<sup>E</sup></b>	<b>300<sup>E</sup></b>	500,000 <sup>EE</sup>	215	<b>763</b>	<b>5,370</b>	
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	20	< 1	< 1	4	
Nickel	ug/L	NC	100	100	120	< 2	< 2	8	
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NC	<b>4.5</b>	62	27	3	2	<b>15</b>	
Zinc	ug/L	5,000**	2,400	5,000 <sup>E</sup>	260	< 10	< 10	17	

**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.

<sup>A</sup> - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO<sub>3</sub>/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)

<sup>#</sup> - 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.

<sup>E</sup> - Criterion is the aesthetic drinking water value per footnote (E).

<sup>EE</sup> - 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.

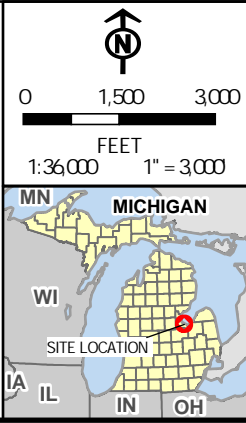
**BOLD** value indicates an exceedance of one or more of the listed criteria.


**RED** value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

## Figures

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PROJECT: CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE: SITE LOCATION MAP	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: A. WHALEY	FIGURE 1
APPROVED BY: D. LITZ	
DATE: JANUARY 2025	
	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	DEKARN

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

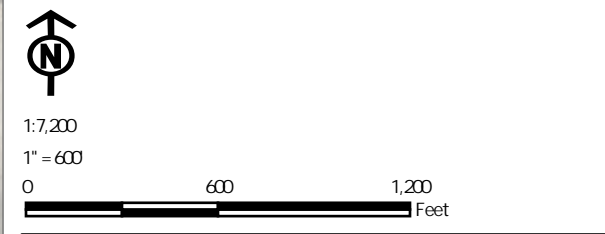


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- LEGEND**
- DEK BOTTOMASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOMASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - LINED IMPOUNDMENT (COVENANT BOUNDARY)

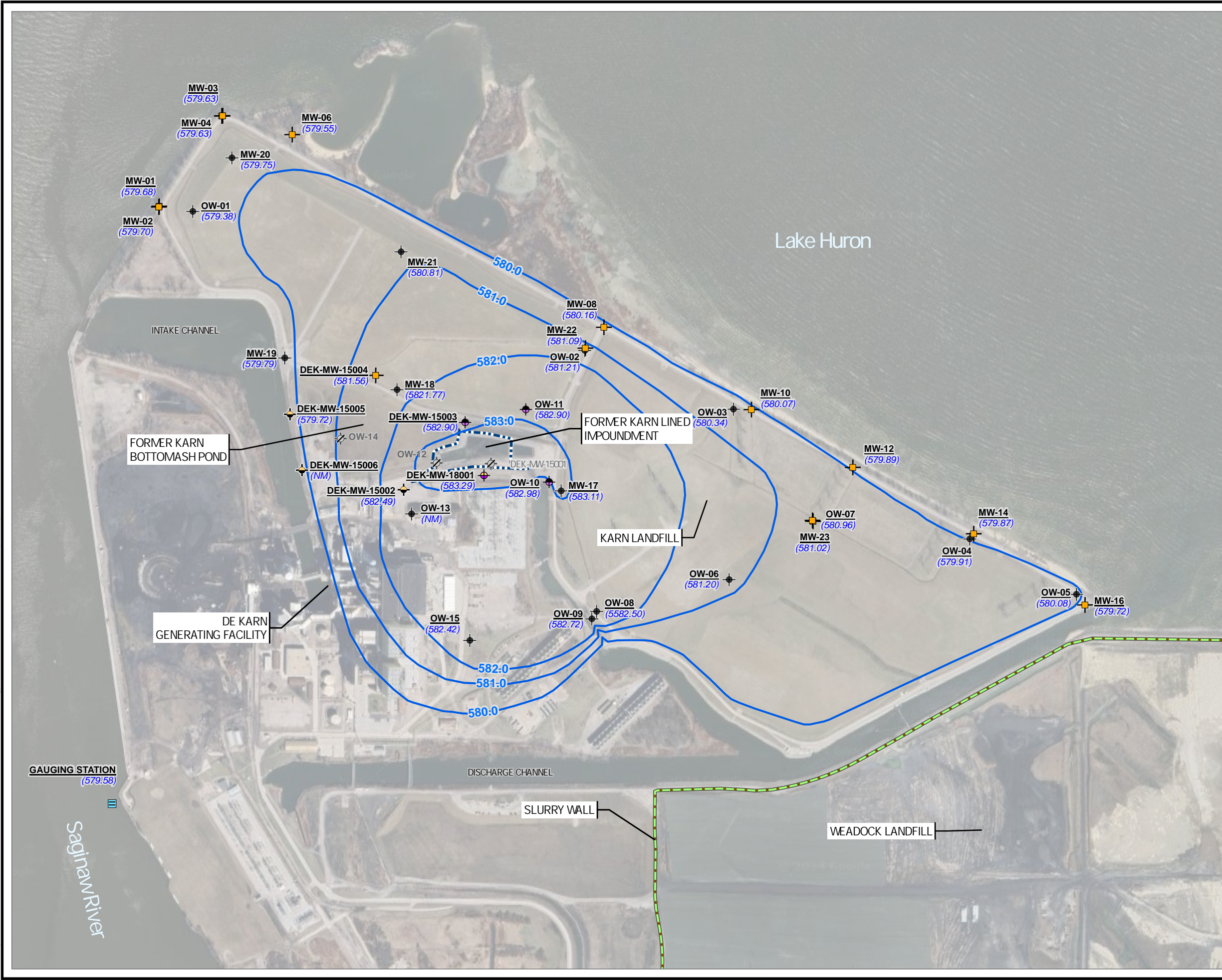
- NOTES**
1. BASE MAP IMAGERY FROM GOOGLE SATELLITE, (4/5/2024).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015
  3. NOAA NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, M (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LAYOUT MAP	
DRAWN BY:	A. ADAIR	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	<b>FIGURE 2</b>	
APPROVED BY:	D. LITZ		
DATE:	JANUARY 2025		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7030 www.trccompanies.com	
FILE:	464095_DEKARN.aprx		

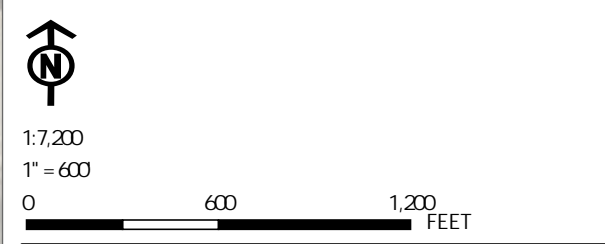


Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0  
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- LEGEND**
- DEK BOTTOMMASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOMMASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - LINED IMPOUNDMENT (COVENANT BOUNDARY)
  - SLURRY WALL (APPROXIMATE)
  - GROUNDWATER ELEVATION CONTOUR (1' INTERVAL, DASHED WHERE INFERRED)
  - (580.21) GROUNDWATER ELEVATION (FEET)
  - (NM) NOT MEASURED
  - (NU) NOT USED

- NOTES**
1. BASE MAP IMAGERY FROM GOOGLE SATELLITE, (4/5/2024).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015
  3. NOAA NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.
  5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
  6. MONITORING WELLS DEK-MW-15006 AND OW-13 WERE INACCESSIBLE DUE TO DECOMMISSIONING ACTIVITIES AT THE GENERATING FACILITY; THEREFORE, WATER LEVEL MEASUREMENTS WERE NOT COLLECTED.



PROJECT: CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SHALLOW GROUNDWATER CONTOUR MAP OCTOBER 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: J. KRENZ	FIGURE 3
APPROVED BY: D. LITZ	
DATE: JANUARY 2025	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx



# Appendix A

## Laboratory Analytical Reports

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2024 Q4

CC: HDRegister, P22-521

Darby Litz, Project Manager  
TRC Companies, Inc.  
1540 Eisenhower Place  
Ann Arbor, MI 48108

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**Chemistry Project: 24-0803**

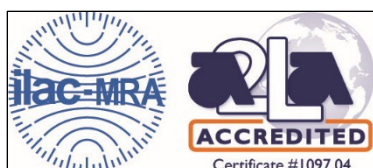
TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 10/01/2024 for the 4<sup>th</sup> Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory 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 accreditation 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 in 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, 22<sup>nd</sup> 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



<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**Customer Name:** Karn/Weadock Complex  
**Work Order ID:** Q4-2024 Karn Lined Impoundment  
**Date Received:** 10/4/2024  
**Chemistry Project:** 24-0803

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0803-01	DEK-MW-15003	Groundwater	10/03/2024 15:01	DEK Lined Impoundment
24-0803-02	OW-10	Groundwater	10/03/2024 16:08	DEK Lined Impoundment
24-0803-03	OW-11	Not Collected		DEK Lined Impoundment
24-0803-04	OW-12	Not Collected		DEK Lined Impoundment
24-0803-05	KLI-SCS	Not Collected		DEK Lined Impoundment
24-0803-06	KLI-PCS	Not Collected		DEK Lined Impoundment
24-0803-07	SW-DITCH	Not Collected		DEK Lined Impoundment
24-0803-08	DUP-KLI	Not Collected		DEK Lined Impoundment
24-0803-09	EB-KLI	Not Collected		DEK Lined Impoundment
24-0803-10	FB-KLI	Not Collected		DEK Lined Impoundment

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0803-01  
 Matrix: Groundwater

Laboratory Project: **24-0803**  
 Collect Date: 10/03/2024  
 Collect Time: 03:01 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0803-01-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 Appendix III-IV Total Metals Exp

Aliquot #: 24-0803-01-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	382		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	46		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	666		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	35000		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	215		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	5280		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	83		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	22		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	4570		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	56300		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 #: 24-0803-01-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 Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0803-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	63600		ug/L	1000.0	10/07/2024	AB24-1007-02

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **DEK-MW-15003**  
 Lab Sample ID: 24-0803-01  
 Matrix: Groundwater

Laboratory Project: **24-0803**  
 Collect Date: 10/03/2024  
 Collect Time: 03:01 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0803-01-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	37900		ug/L	1000.0	10/07/2024	AB24-1007-02

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0803-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1950		ug/L	25.0	10/09/2024	AB24-1009-03

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0803-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	304		mg/L	10.0	10/07/2024	AB24-1007-04

**Alkalinity by SM 2320B** Aliquot #: 24-0803-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	116000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	116000		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 #: 24-0803-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	276		ug/L	20.0	10/09/2024	AB24-1007-12

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0803-02  
 Matrix: Groundwater

Laboratory Project: **24-0803**  
 Collect Date: 10/03/2024  
 Collect Time: 04:08 PM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0803-02-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 Appendix III-IV Total Metals Exp

Aliquot #: 24-0803-02-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	5		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	339		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1310		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	139000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	5		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	4		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	5370		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	4		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	34		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	25700		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	507		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	8		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	5610		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	70300		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	15		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	17		ug/L	10.0	10/08/2024	AB24-1009-01

### Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0803-02-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 #: 24-0803-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	87900		ug/L	1000.0	10/08/2024	AB24-1007-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**  
 Field Sample ID: **OW-10**  
 Lab Sample ID: 24-0803-02  
 Matrix: Groundwater

Laboratory Project: **24-0803**  
 Collect Date: 10/03/2024  
 Collect Time: 04:08 PM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0803-02-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	ND		ug/L	1000.0	10/08/2024	AB24-1007-02

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0803-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	7190		ug/L	25.0	10/09/2024	AB24-1009-03

**Total Dissolved Solids by SM 2540C** Aliquot #: 24-0803-02-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	650		mg/L	10.0	10/07/2024	AB24-1007-04

**Alkalinity by SM 2320B** Aliquot #: 24-0803-02-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	497000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	497000		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 #: 24-0803-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	179		ug/L	20.0	10/09/2024	AB24-1007-12



# Analytical Report

Report Date: 10/18/24

**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 5  
ATTACHMENT A

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

Project Number: 24-0803 Inspection Date: 10-4-24 Inspection By: CE

Sample Origin/Project Name: Q4-2024 DEK LI

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail \_\_\_\_\_ FedEx \_\_\_\_\_ UPS \_\_\_\_\_ USPS \_\_\_\_\_

Tracking Number: \_\_\_\_\_ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_

Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_

Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed  N/A \_\_\_\_\_

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.8 - 3.9 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration LS027723 / 6-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>4</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>8</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>2</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes  No \_\_\_\_\_ N/A \_\_\_\_\_ pH paper lot # 205522 Exp. Date 2-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes \_\_\_\_\_ No



# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

SAMPLING SITE / CUSTOMER: Q4-2024 DEK Lined Impoundment			PROJECT NUMBER: <b>24-0803</b>			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
SAMPLING TEAM: <i>AK, ER, JK</i>			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																			
SEND REPORT TO: Joseph Firlit			email:			phone:			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
COPY TO: Harold Register			MATRIX CODES:			CONTAINERS																
TRC			GW = Groundwater      OX = Other _____ WW = Wastewater      SL = Sludge W = Water / Aqueous Liquid      A = Air S = Soil / General Solid      WP = Wipe O = Oil      WT = General Waste			PRESERVATIVE			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT:  <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #								None	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	HCl	MeOH	Other
DATE	TIME	DATE	TIME		DATE	TIME	DATE		TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE
24-0803-01	<i>10/3/24</i>	<i>1501</i>	GW	DEK-MW-15003			7	4	1	1	1					x	x	x	x	x	x	
-02	<i>10/2/24</i>	<i>1608</i>	GW	OW-10			7	4	1	1	1					x	x	x	x	x	x	
-03	<del><i>10/3/24</i></del>	<del><i>1256</i></del>	GW	<del>OW-11</del>			7	4	1	1	1					x	x	x	x	x	x	
-04	<del>_____</del>	<del>_____</del>	GW	<del>OW-12</del>			7	4	1	1	1					x	x	x	x	x	x	
-05	<del>_____</del>	<del>_____</del>	W	<del>KLI-SCS</del>			7	4	1	1	1					x	x	x	x	x	x	
-06	<del>_____</del>	<del>_____</del>	SW	<del>KLI-PCS</del>			7	4	1	1	1					x	x	x	x	x	x	
-07	<del>_____</del>	<del>_____</del>	SW	<del>SW-DITCH</del>			7	4	1	1	1					x	x	x	x	x	x	
-08	<del>_____</del>	<del>_____</del>	GW	<del>DUP-KLI</del>			7	4	1	1	1					x	x	x	x	x	x	
-09	<del>_____</del>	<del>_____</del>	W	<del>EB-KLI</del>			4	1	1	1	1					x	x	x		x		
-10	<del>_____</del>	<del>_____</del>	W	<del>FB-KLI</del>			4	1	1	1	1					x	x	x		x		

RELINQUISHED BY: <i>asham</i>		DATE/TIME: <i>10/4/24 0810</i>		RECEIVED BY: <i>[Signature]</i>		COMMENTS:  Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      M&TE #: <u>LS027723</u> Temperature: <u>0.8-3.9</u> °C      Cal. Due Date: <u>06-27-25</u>					
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:							



# Analytical Laboratory Report

Report ID: S67052.01(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  
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John Lavery (johnlavery@meritlabs.com)  
Barbara Ball (bball@meritlabs.com)

Report Summary  
Lab Sample ID(s): S67052.01-S67052.02  
Project: 24-0803 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



# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4500 S2 D 2011

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# Analytical Laboratory Report

## Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S67052.01	DEK-MW-15003 (24-0803-01)	Groundwater	10/03/24 15:01
S67052.02	OW-10 (24-0803-02)	Groundwater	10/03/24 16:08



# Analytical Laboratory Report

Lab Sample ID: S67052.01

Sample Tag: DEK-MW-15003 (24-0803-01)

Collected Date/Time: 10/03/2024 15:01

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	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 19:35, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.276	0.02		mg/L	1	18496-25-8	



# Analytical Laboratory Report

Lab Sample ID: S67052.02

Sample Tag: OW-10 (24-0803-02)

Collected Date/Time: 10/03/2024 16:08

Matrix: Groundwater

COC Reference:

### Sample Containers

#	Type	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 19:37, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.179	0.02		mg/L	1	18496-25-8	



# Merit Laboratories Login Checklist

Lab Set ID:S67052

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0803 PR#24101038

Submitted: 10/04/2024 14:46 Login User: MMC

Phone: D:517-788-5888 FAX:  
Email: emil.blaj@cmsenergy.com

Selection	Description	Note
-----------	-------------	------

## Sample Receiving

- |     |  |  |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 3.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun                 |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped  |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box                        |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

## Chain of Custody

- |     |  |  |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out                |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab   |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC          |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

## Preservation

- |     |  |   |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation        |
| 11. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab?    |

## Bottle Conditions

- |     |  |   |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact                                  |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used             |
| 15. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used                                  |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received                   |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration               |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time               |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC, TOX, DO or Alkalinity bottles contain |

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ Date: \_\_\_\_\_

# Merit Laboratories Bottle Preservation Check

Lab Set ID: S67052      Submitted: 10/04/2024 14:46  
Client: CONSUMERS (Consumers Energy Company)  
Project: 24-0803 PR#24101038

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 10/04/2024 15:44 MMC  
Preservation Recheck (E200.8): N/A

Phone: D:517-788-5888      FAX:  
Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S67052.01	125mL Plastic NaOH/Zn Acetate	>12			
S67052.02	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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 4400121437  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME 24-0803 PR#24101038 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A

TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER

DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

# Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Total Sulfide
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER		
<u>67052.01</u>	<u>10/03/24</u>	<u>1501</u>	<u>DEK-MW-15003 (24-0803-01)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>	
<u>.02</u>	<u>10/03/24</u>	<u>1608</u>	<u>OW-10 (24-0803-02)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>	

Certifications  
 OHIO VAP  Drinking Water  
 DoD  NPDES  
 Project Locations  
 Detroit  New York  
 Other \_\_\_\_\_  
 Special Instructions

preserved with NaOH/ZnAcetate

"

RELINQUISHED BY: CONSUMERS ENERGY  Sampler DATE 10-04-24 TIME 1446  
 RECEIVED BY: Johanna Murray DATE 10/4/24 TIME 1446  
 RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 RECEIVED BY: \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_ NOTES: TEMP. ON ARRIVAL 3.1  
 SEAL NO. SEAL INTACT YES  NO  INITIALS \_\_\_\_\_

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5/16/12



# 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 Lined Impoundment

## JOB NUMBER

240-212645-1

# 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](mailto:Kris.Brooks@et.eurofinsus.com)  
(330)966-9790



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# Definitions/Glossary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

## Qualifiers

### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
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

# Case Narrative

Client: TRC Environmental Corporation.  
Project: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

**Job ID: 240-212645-1**

**Eurofins Cleveland**

## Job Narrative 240-212645-1

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-15003 (240-212645-1), OW-10 (240-212645-2), (LCS 160-683235/2-A), (MB 160-683235/1-A), (240-212644-A-2-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-15003 (240-212645-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method 904.0: Radium-228 Prep Batch 160-684916:

The detection goal was not met for the following sample due to the reduction of sample size required by the presence of matrix interferences (particulates, yellow discoloration): OW-10 (240-212645-2). Analytical results are reported with the detection limit achieved.

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



# Method Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

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



# Sample Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212645-1	DEK-MW-15003	Water	10/03/24 14:25	10/09/24 08:00
240-212645-2	OW-10	Water	10/03/24 16:08	10/09/24 08:00

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

**Client Sample ID: DEK-MW-15003**

**Lab Sample ID: 240-212645-1**

Date Collected: 10/03/24 14:25

Matrix: Water

Date Received: 10/09/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0849	U	0.0773	0.0777	1.00	0.117	pCi/L	10/11/24 08:47	10/30/24 08:17	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.8		30 - 110					10/11/24 08:47	10/30/24 08:17	1

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.439	U	0.464	0.466	1.00	0.753	pCi/L	10/24/24 08:31	11/04/24 14:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		30 - 110					10/24/24 08:31	11/04/24 14:21	1
Y Carrier	79.3		30 - 110					10/24/24 08:31	11/04/24 14:21	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.524	U	0.470	0.472	5.00	0.753	pCi/L		11/07/24 08:45	1

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

**Client Sample ID: OW-10**

**Lab Sample ID: 240-212645-2**

Date Collected: 10/03/24 16:08

Matrix: Water

Date Received: 10/09/24 08:00

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.232		0.124	0.126	1.00	0.158	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

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.909	U G	0.778	0.783	1.00	1.21	pCi/L	10/24/24 08:31	11/04/24 14:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.6		30 - 110					10/24/24 08:31	11/04/24 14:21	1
Y Carrier	81.9		30 - 110					10/24/24 08:31	11/04/24 14:21	1

**Method: TAL-STL Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.14	U	0.788	0.793	5.00	1.21	pCi/L		11/07/24 08:45	1

# Tracer/Carrier Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

## Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
240-212645-1	DEK-MW-15003	80.8	
240-212645-2	OW-10	90.6	
LCS 160-683235/2-A	Lab Control Sample	94.7	
MB 160-683235/1-A	Method Blank	94.7	
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
240-212645-1	DEK-MW-15003	84.6	79.3
240-212645-2	OW-10	86.6	81.9
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 160-684916/1-A	Method Blank	96.8	72.5
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			
Y = Y Carrier			

# QC Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-683235/1-A**  
**Matrix: Water**  
**Analysis Batch: 685958**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 683235**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
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**  
**Matrix: Water**  
**Analysis Batch: 685958**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 683235**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	8.915		0.961	1.00	0.125	pCi/L	93	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	94.7		30 - 110						

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

**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**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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
Carrier	MB %Yield	MB 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			

**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**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.37	9.504		1.33	1.00	0.532	pCi/L	114	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.9		30 - 110						
Y Carrier	75.1		30 - 110						

# QC Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

## 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**

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec		RER	
									Limits	RER	RER	Limit
Radium-228	8.37	9.529		1.29	1.00	0.530	pCi/L	114	75 - 125	0.01		1
<b>Carrier</b>		<b>LCSD %Yield</b>	<b>LCSD Qualifier</b>								<b>Limits</b>	
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 Lined Impoundment

Job ID: 240-212645-1

## Rad

### Prep Batch: 683235

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212645-1	DEK-MW-15003	Total/NA	Water	PrecSep STD	
240-212645-2	OW-10	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	

### Prep Batch: 684916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212645-1	DEK-MW-15003	Total/NA	Water	PrecSep_0	
240-212645-2	OW-10	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	





# Lab Chronicle

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

**Client Sample ID: DEK-MW-15003**

**Lab Sample ID: 240-212645-1**

Date Collected: 10/03/24 14:25

Matrix: Water

Date Received: 10/09/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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	686653	SWS	EET SL	11/04/24 14:21
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/07/24 08:45

**Client Sample ID: OW-10**

**Lab Sample ID: 240-212645-2**

Date Collected: 10/03/24 16:08

Matrix: Water

Date Received: 10/09/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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	686653	SWS	EET SL	11/04/24 14:21
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



# Accreditation/Certification Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-212645-1

## 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
Iowa	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

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Eurofins - Cleveland Sample Receipt Form/Narrative  
 Barberton Facility

Login # \_\_\_\_\_

Client TRC Site Name \_\_\_\_\_

Cooler unpacked by:  
MATISSA LOAR

Cooler Received on 10.9.24 Opened on 10.9.24

FedEx 1<sup>st</sup> Grd Exp UPS FAS (Waypoint) Client Drop Off Eurofins Courier Other \_\_\_\_\_

Receipt After-hours, Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_

Eurofins Cooler # 2 Foam Box Client Cooler Box Other \_\_\_\_\_

Packing material used: Bubble Wrap Wet Ice Blue Ice Dry Ice Water None  See Multiple Cooler Form

1 Cooler temperature upon receipt \_\_\_\_\_ °C Observed Cooler Temp. 14 °C Corrected Cooler Temp. 15 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity Yes No No

-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA

-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NO

-Were tamper/custody seals intact and uncompromised? Yes No NA

3 Shippers' packing slip attached to the cooler(s)? Yes No NO

4. Did custody papers accompany the sample(s)? Yes No NO

5 Were the custody papers relinquished & signed in the appropriate place? Yes No NO

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No NO

7 Did all bottles arrive in good condition (Unbroken)? Yes No NO

8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No NO

9 For each sample, does the COC specify preservative (Y/N), # of containers (Y/N) and sample type of grab/comp (Y/N)?

10 Were correct bottle(s) used for the test(s) indicated? Yes No NO

11 Sufficient quantity received to perform indicated analyses? Yes No NO

12. Are these work share samples and all listed on the COC? Yes No NO

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

13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HQ447997

14 Were VOAs on the COC? Yes No NA

15 Were air bubbles >6 mm in any VOA vials? Yes NA Larger than this.

16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes NO No NO

17 Was a LL Hg or Me Hg trip blank present? Yes NO No NO

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_

Concerning \_\_\_\_\_

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_

19. SAMPLE CONDITION  
 Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired.  
 Sample(s) \_\_\_\_\_ were received in a broken container  
 Sample(s) \_\_\_\_\_ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION  
 Sample(s) \_\_\_\_\_ were further preserved in the laboratory  
 Time preserved. \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_

VOA Sample Preservation - Date/Time VOAs Frozen. \_\_\_\_\_

Tests that are not checked for pH by Receiving:  
 VOAs  
 Oil and Grease  
 TOC

10/9/2024 Login Container Summary Report

240-212645

Temperature readings

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservation Added	Preservation Lot Number
DEK-MW-15003	240-212645-A-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
DEK-MW-15003	240-212645-B-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
OW-10	240-212645-A-2	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
OW-10	240-212645-B-2	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____

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

# Chain of Custody Record



Environment Testing

<b>Client Information (Sub Contract Lab)</b>		Lab PM: Brooks, Kris M	Carrier Tracking No(s): 240-191846.1
Client Contact: Shipping/Receiving		E-Mail: Kris.Brooks@et.eurofins.com	Page Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note)	Job # 240-212645-1
Address: 13715 Rider Trail North, Earth City, State, Zip: MO, 63045		Preservation Codes:	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)		Analysis Requested	
Email:		Total Number of Containers	
Project Name: Karn/Weadock CCR Groundwater Monitoring		903.0/PrecSep STD Standard Target List	
Site:		904.0/PrecSep_0 Standard Target List	
Due Date Requested: 11/7/2024		Field Filtered Sample (Yes or No)	
TAT Requested (days):		Perform MS/MSD (Yes or No)	
PO #		99.0/PrecSep_0 Standard Target List	
WO #		99.0/PrecSep_0 Standard Target List	
Project # 24024154		99.0/PrecSep_0 Standard Target List	
SSON#		99.0/PrecSep_0 Standard Target List	
Sample Identification - Client ID (Lab ID)		99.0/PrecSep_0 Standard Target List	
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, A=air)
10/3/24	14:25 Eastern	G	Water
10/3/24	16:08 Eastern	G	Water
Special Instructions/Notes:		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
DEK-MW-15003 (240-212645-1)		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
OW-10 (240-212645-2)		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	

**Possible Hazard Identification**  
 Unconfirmed  
 Deliverable Requested: I, II, III, IV, Other (specify)  
 Empty Kit Relinquished by:  
 Relinquished by: **JESSICA RIGDON**  
 Relinquished by:  
 Relinquished by:  
 Custody Seals Intact:  Yes  No  
 Custody Seal No.:

**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months  
 Special Instructions/QC Requirements:

Received by: **Sena Weathington** Date/Time: **10-9-24 16:00** Company: **ET**  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
 Cooler Temperature(s) °C and Other Remarks:





## Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212645-1

**Login Number: 212645**

**List Number: 2**

**Creator: Worthington, Sierra M**

**List Source: Eurofins St. Louis**

**List Creation: 10/10/24 11:26 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	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	



To: JFirlit, 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

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**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 4<sup>th</sup> 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 accreditation 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, 22<sup>nd</sup> 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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	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

**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

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<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

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0802-01  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0802-01-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 Appendix III-IV Total Metals Exp

Aliquot #: 24-0802-01-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	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, NO2, NO3

Aliquot #: 24-0802-01-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 Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0802-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	78100		ug/L	1000.0	10/07/2024	AB24-1007-02

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001**  
 Lab Sample ID: 24-0802-01  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0802-01-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	207000		ug/L	1000.0	10/07/2024	AB24-1007-02

**Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL** Aliquot #: 24-0802-01-C03-A01 Analyst: CLE

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 #: 24-0802-01-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 #: 24-0802-01-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** Aliquot #: 24-0802-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	167		ug/L	20.0	10/09/2024	AB24-1007-12

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0802-02  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0802-02-C01-A01

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 Appendix III-IV Total Metals Exp

Aliquot #: 24-0802-02-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 #: 24-0802-02-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 Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0802-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	104		%	1000.0	10/07/2024	AB24-1007-02

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MS**  
 Lab Sample ID: 24-0802-02  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0802-02-C02-A02 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), Groundwater HL** Aliquot #: 24-0802-02-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 #: 24-0802-02-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 #: 24-0802-02-C06-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	96		%	20.0	10/09/2024	AB24-1007-12

## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0802-03  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

### Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0802-03-C01-A01 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 Appendix III-IV Total Metals Exp

Aliquot #: 24-0802-03-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 #: 24-0802-03-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 Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0802-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	104		%	1000.0	10/07/2024	AB24-1007-02



## Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**  
 Field Sample ID: **DEK-MW-18001 MSD**  
 Lab Sample ID: 24-0802-03  
 Matrix: Groundwater

Laboratory Project: **24-0802**  
 Collect Date: 10/03/2024  
 Collect Time: 08:37 AM

**Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous** Aliquot #: 24-0802-03-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), Groundwater HL** Aliquot #: 24-0802-03-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 #: 24-0802-03-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 #: 24-0802-03-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

**Laboratory Services**  
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
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No exceptions occurred.

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

Project Number: 24-0802 Inspection Date: 10-03-24 Inspection By: EB

Sample Origin/Project Name: 24-2024 DEK BAP + LI

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail \_\_\_\_\_ FedEx \_\_\_\_\_ UPS \_\_\_\_\_ USPS \_\_\_\_\_  
Tracking Number: \_\_\_\_\_ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler  Cardboard Box \_\_\_\_\_ Custom Case \_\_\_\_\_ Envelope/Mailer \_\_\_\_\_  
Loose/Unpackaged Containers \_\_\_\_\_ Other \_\_\_\_\_

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None  Dented \_\_\_\_\_ Leaking \_\_\_\_\_  
Other \_\_\_\_\_

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened \_\_\_\_\_ Sealed \_\_\_\_\_ N/A

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC  Work Request \_\_\_\_\_ Air Data Sheet \_\_\_\_\_ Other \_\_\_\_\_

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 4.9-5.8 °C Samples Received on Ice: Yes  No \_\_\_\_\_

M&TE # and Expiration LS 027723 / 06-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 10mL)	<u>6</u>	_____	_____	_____	_____
Quart/Liter ( g / p )	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>12</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes  No \_\_\_\_\_ N/A \_\_\_\_\_ pH paper lot # 205522 Exp. Date 02-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes \_\_\_\_\_ No





# Analytical Laboratory Report

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 Lavery (johnlavery@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



# Analytical Laboratory Report

## General Report Notes

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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

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There is no additional narrative for this analytical report



# Analytical Laboratory Report

## Laboratory Accreditations (For Reference Only)

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#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

Qualifier	Description
!	Result is outside of stated limit criteria
B	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
H	Sample submitted and run outside of holding time
I	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
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
o	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



# Analytical Laboratory Report

## Method Summary

Method	Version
SM4500-S2 D	Standard Method 4500 S2 D 2011

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# Analytical Laboratory Report

## 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



# Analytical Laboratory Report

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

#	Type	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		mg/L	1	18496-25-8	



# Analytical Laboratory Report

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

#	Type	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 19:11, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.360	0.02		mg/L	1	18496-25-8	1

1-\*Sample Spiked @ 0.200ppm level



# Analytical Laboratory Report

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

#	Type	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		mg/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
<b>Sample Receiving</b>		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.1
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
<b>Chain of Custody</b>		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
<b>Preservation</b>		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
<b>Bottle Conditions</b>		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Do water VOC, TOX, DO or Alkalinity bottles contain

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: \_\_\_\_\_ 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

Attention: Emil Blaj  
Address: Consumers Energy Company  
135 West Trail Street  
Jackson, MI 49201

Initial Preservation Check: 10/04/2024 15:42 MMC  
Preservation Recheck (E200.8): N/A

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

C.O.C. PAGE # 1 OF 1

**REPORT TO**

**CHAIN OF CUSTODY RECORD**

**INVOICE TO**

CONTACT NAME Emil Blaj  
 COMPANY Consumers Energy  
 ADDRESS 135 W. Trail Street  
 CITY Jackson STATE MI ZIP CODE 49201  
 PHONE NO. 517-788-5888 FAX NO. 517-788-2533 P.O. NO. 4400121437  
 E-MAIL ADDRESS emil.blaj@cmsenergy.com QUOTE NO.

CONTACT NAME  SAME  
 COMPANY  
 ADDRESS  
 CITY STATE ZIP CODE  
 PHONE NO. E-MAIL ADDRESS

**ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)**

PROJECT NO./NAME 24-0802 PR#24101038 SAMPLER(S) - PLEASE PRINT/SIGN NAME N/A  
 TURNAROUND TIME REQUIRED  1 DAY  2 DAYS  3 DAYS  STANDARD  OTHER  
 DELIVERABLES REQUIRED  STD  LEVEL II  LEVEL III  LEVEL IV  EDD  OTHER  
 MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID  
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE

**Certifications**  
 OHIO VAP  Drinking Water  
 DoD  NPDES  
**Project Locations**  
 Detroit  New York  
 Other  
**Special Instructions**

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Total Sulfide	
	DATE	TIME				NONE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	MeOH	OTHER			
<u>67051.01</u>	<u>10/03/24</u>	<u>0837</u>	<u>DEK-MW-18001 (24-0802-01)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>		preserved with NaOH/ZnAcetate
<u>.02</u>	<u>10/03/24</u>	<u>0837</u>	<u>DEK-MW-18001 Field MS (24-0802-02)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>		"
<u>.03</u>	<u>10/03/24</u>	<u>0837</u>	<u>DEK-MW-18001 Field MSD (24-0802-03)</u>	<u>GW</u>	<u>1</u>								<input checked="" type="checkbox"/>		"
															Please spike MS/MSD and report spike concentration and/or rec.

RELINQUISHED BY: J. CONSUMERS ENERGY  Sampler DATE 10-04-24 TIME 1446  
 RECEIVED BY: Johanna Murray DATE 10/4/24 TIME 1446  
 RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME

RELINQUISHED BY: DATE TIME  
 RECEIVED BY: DATE TIME  
 SEAL NO. SEAL INTACT INITIALS NOTES: TEMP. ON ARRIVAL  
 YES  NO   
 SEAL NO. SEAL INTACT INITIALS  
 YES  NO  3.1

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.16.12



# 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

## 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](mailto: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

### 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

# Case Narrative

Client: TRC Environmental Corporation.  
Project: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

**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

# Method Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

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



# Sample Summary

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

---

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

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

# Client Sample Results

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

**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

**Method: EPA 903.0 - Radium-226 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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

**Method: EPA 904.0 - Radium-228 (GFPC)**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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 Ra226\_Ra228 - Combined Radium-226 and Radium-228**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (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)	
Lab Sample ID	Client Sample ID	Ba (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	
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			

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

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (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
<b>Tracer/Carrier Legend</b>			
Ba = Ba Carrier			
Y = Y Carrier			



# QC Sample Results

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

## Method: 903.0 - Radium-226 (GFPC)

**Lab Sample ID: MB 160-682572/1-A**  
**Matrix: Water**  
**Analysis Batch: 685116**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 682572**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
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	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	87.6		30 - 110		10/08/24 08:27	10/25/24 09:24	1			

**Lab Sample ID: LCS 160-682572/2-A**  
**Matrix: Water**  
**Analysis Batch: 685116**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 682572**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	10.06		1.06	1.00	0.123	pCi/L	105	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	92.5		30 - 110						

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

**Lab Sample ID: MB 160-682573/1-A**  
**Matrix: Water**  
**Analysis Batch: 683951**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 682573**

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.05134	U	0.294	0.294	1.00	0.542	pCi/L	10/08/24 08:29	10/17/24 14:12	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	87.6		30 - 110		10/08/24 08:29	10/17/24 14:12	1			
Y Carrier	78.5		30 - 110		10/08/24 08:29	10/17/24 14:12	1			

**Lab Sample ID: LCS 160-682573/2-A**  
**Matrix: Water**  
**Analysis Batch: 683951**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 682573**

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.42	10.09		1.36	1.00	0.548	pCi/L	120	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	92.5		30 - 110						
Y Carrier	81.9		30 - 110						

# 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	



# Lab Chronicle

Client: TRC Environmental Corporation.  
Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

**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**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared 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

# Accreditation/Certification Summary

Client: TRC Environmental Corporation.  
 Project/Site: Karn/Weadock CCR DEK Bottom Ash Pond

Job ID: 240-212372-1

## 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
Iowa	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

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.



Eurofins - Cleveland Sample Receipt Form/Narrative  
 Barberon Facility  
 Client TRC Env Corp Site Name \_\_\_\_\_  
 Login # \_\_\_\_\_

Cooler unpacked by [Signature]  
 Cooler Received on 10-4-24 Opened on 10-4-24

FedEx 1<sup>st</sup> Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other \_\_\_\_\_  
 Receipt After-hours Drop-off Date/Time \_\_\_\_\_ Storage Location \_\_\_\_\_

Eurofins Cooler # EC Foam Box Client Cooler Box Other \_\_\_\_\_  
 Packing material used. Bubble Wrap Wet Ice Foam Plastic Bag None Other \_\_\_\_\_

COOLANT Wet Ice Blue Ice Dry Ice Water None \_\_\_\_\_  
 1 Cooler temperature upon receipt  See Multiple Cooler Form

IR GUN # 17 (CF 0.1 °C) Observed Cooler Temp. \_\_\_\_\_ °C Corrected Cooler Temp \_\_\_\_\_ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No  
 -Were the seals on the outside of the cooler(s) signed & dated? Yes NO No NA  
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes NO No NA  
 -Were tamper/custody seals intact and uncompromised? Yes NO No NA  
 3 Shippers' packing slip attached to the cooler(s)? Yes NO No NA  
 4. Did custody papers accompany the sample(s)? Yes NO No NA  
 5 Were the custody papers relinquished & signed in the appropriate place? Yes NO No NA  
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes NO No NA  
 7 Did all bottles arrive in good condition (Unbroken)? Yes NO No NA  
 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes NO No NA  
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes NO No NA  
 10 Were correct bottle(s) used for the test(s) indicated? Yes NO No NA  
 11 Sufficient quantity received to perform indicated analyses? Yes NO No NA  
 12 Are these work share samples and all listed on the COC? Yes NO No NA  
 If yes, Questions 13-17 have been checked at the originating laboratory

Tests that are not checked for pH by Receiving:  
 VOAs  
 Oil and Grease  
 TOC

13 Were all preserved sample(s) at the correct pH upon receipt? Yes NO No NA pH Strip Lot# HC447997  
 14 Were VOAs on the COC? Yes NO No NA  
 15 Were air bubbles > 6 mm in any VOA vials? NO Larger than this. Yes NO NA  
 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes NO NA  
 17 Was a LL Hg or Me Hg trip blank present? Yes NO No NA

Contacted PM \_\_\_\_\_ Date \_\_\_\_\_ by \_\_\_\_\_ via Verbal Voice Mail Other \_\_\_\_\_  
 Concerning \_\_\_\_\_

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES  additional next page Samples processed by: \_\_\_\_\_

19. SAMPLE CONDITION  
 Sample(s) \_\_\_\_\_ were received after the recommended holding time had expired  
 Sample(s) \_\_\_\_\_ were received in a broken container  
 Sample(s) \_\_\_\_\_ were received with bubble > 6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION  
 Sample(s) \_\_\_\_\_ were further preserved in the laboratory  
 Time preserved \_\_\_\_\_ Preservative(s) added/Lot number(s): \_\_\_\_\_  
 VOA Sample Preservation - Date/Time VOAs Frozen \_\_\_\_\_





Temperature readings

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservation Added	Preservation Lot Number
DET-MW-18001	240-212372-A-1	Plastic 1 liter - Nitric Acid	<2			
DET-MW-18001	240-212372-B-1	Plastic 1 liter - Nitric Acid	<2			





## Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212372-1

**Login Number: 212372**

**List Number: 2**

**Creator: Forrest, Cheyenne L**

**List Source: Eurofins St. Louis**

**List Creation: 10/07/24 12:24 PM**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	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	



# Appendix B

## Field Notes



**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 to

**PURPOSE OF FIELDWORK:** Karn Sitewide Water Levels

**WORK PERFORMED BY:** J. Jasso

SIGNED [Signature] 10-24-24  
DATE

CHECKED BY [Signature] 10-24-24  
DATE



### EQUIPMENT SUMMARY

PROJECT NAME: CEC Weadock LF: 2023 GW Co	SAMPLER NAME: Javier Jasso
PROJECT NO.: 514403.0000.0000	

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED 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 FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND   
  DRUM   
  POTW   
  POLYTANK   
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

STORE BOUGHT

POTABLE WATER SOURCE

\_\_\_\_\_  
 SIGNED \_\_\_\_\_ DATE 10/4/24

LABORATORY PROVIDED

DI WATER SOURCE

\_\_\_\_\_  
 CHECKED BY \_\_\_\_\_ DATE 10-8-24




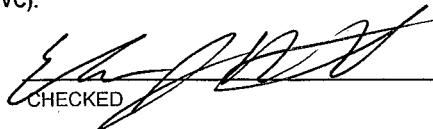
**WATER LEVEL DATA**

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 9/30/24
PROJECT NUMBER: 553814.0001	AUTHOR: AW, JJ, JK

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW-01	1049	TOC	17.34	24.24	NA	NM
MW-02	1050	TOC	17.64	30.38	NA	NM
MW-03	1055	TOC	17.67	30.75	NA	NM
MW-04	1056	TOC	18.38	33.80	NA	NM
MW-06	1115	TOC	9.89	24.31	NA	NM
MW-08	1134	TOC	18.62	27.50	NA	NM
MW-10	1157	TOC	16.90	24.88	NA	NM
MW-12	1225	TOC	18.71	24.10	NA	NM
MW-14	1242	TOC	14.50	19.00	NA	NM
MW-16	1300	TOC	16.08	21.25	NA	NM
MW-17	1343	TOC	14.80	24.34	NA	NM
MW-18	0920	TOC	27.45	39.65	NA	NM
MW-19	0959	TOC	17.49	30.00	NA	NM
MW-20	1013	TOC	53.00	72.00	NA	NM
MW-21	1005	TOC	52.10	60.60	NA	NM
MW-22	1138	TOC	17.90	29.59	NA	NM
MW-23	1218	TOC	14.80	15.10	NA	NM
OW-01	1018	TOC	55.95	64.90	NA	NM
OW-02	1140	TOC	16.80	21.95	NA	NM
OW-03	1150	TOC	17.60	28.20	NA	NM
OW-04	1246	TOC	10.30	14.26	NA	NM
OW-05	1258	TOC	13.45	18.00	NA	NM
OW-06	1336	TOC	22.75	24.80	NA	NM
OW-07	1220	TOC	15.65	23.91	NA	NM
OW-08	1330	TOC	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 10/4/24

CHECKED  DATE 10-8-24



### WATER LEVEL DATA

PROJECT NAME: CEC Karn/Weadock: 2024 GW Compliance	DATE: 9/30/24
PROJECT NUMBER: 553814.0001	AUTHOR: Jake Krenz, Javier Jasso, An

NM; OW-12 has been decommissioned (DL - 12/5/2024)

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	1330	TOC	10.73	12.25	NA	NM
OW-10	1345	TOC	8.60	17.95	NA	NM
OW-11	1350	TOC	25.00	25.50	NA	NM
→ OW-12	0914	TOC	25.00	25.40	NA	NM
OW-13	NM	TOC	NM	NM	NA	NM
OW-15	0900	TOC	5.33	15.25	NA	NM
EW-01	1152	TOC	13.98	Dry	NA	NM
EW-02	1204	TOC	13.37	↓	NA	NM
EW-03	1214	TOC	14.81		NA	NM
EW-04	1231	TOC	14.60		NA	NM
EW-05	1238	TOC	14.10		NA	NM
EW-06	1240	TOC	10.95		NA	NM
PZ-01	1144	TOC	Dry	14.16	NA	NM
PZ-02	1146	TOC	15.70	23.10	NA	NM
PZ-03	1201	TOC	15.25	19.60	NA	NM
PZ-04	1207	TOC	14.90	20.95	NA	NM
PZ-05	1210	TOC	14.75	21.18	NA	NM
PZ-06	1220	TOC	15.32	20.23	NA	NM
PZ-07	1233	TOC	14.90	21.00	NA	NM
PZ-08	1236	TOC	14.64	20.54	NA	NM
PZ-09	1244	TOC	15.36	21.61	NA	NM
PZ-10	1252	TOC	11.22	17.74	NA	NM
PZ-11	1259	TOC	13.93	18.10	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 10/4/24 DATE

CHECKED [Signature] 10-5-24 DATE



**WATER LEVEL DATA**

PROJECT NAME: GEC Karn/Weadock: 2024 GW Compliance	DATE: 9/30/24
PROJECT NUMBER: 553819.0001	AUTHOR: J. Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	0909	TBC	10.16	19.66	NA	NM
DEK-MW-15002	0908	↓	8.38	15.46	↓	↓
DEK-MW-15003	0917		19.84	27.90		
DEK-MW-15004	0926		29.48	41.85		
DEK-MW-15005	0930		10.00	22.30		
DEK-MW-15006	NM		NM	NM		
DEK-MW-22001	0932		10.82	24.18		
DEK-MW-22002	0934		12.50	26.90		
DEK-MW-22003	0938		12.75	24.44		
DEK-MW-22004	0936		11.18	22.45		
DEK-MW-22005	0943		9.74			
DEK-MW-22006	0941		10.57	19.10		
<del>TW-21-002</del>	1033		18.31	26.20		
<del>TW-21-003</del>	1035		13.00	20.51		
<del>TW-21-006</del>	1044		12.92	17.59		
<del>TW-21-008</del>	1058		23.00	36.53		
TW-21-002S	1103		20.59	27.81		
TW-21-012I	1104		20.75	36.63		
TW-21-012B	1105		20.57	54.78		
TW-21-011S	1120		22.00	27.60		
TW-21-011I	1121		21.78	35.70		
TW-21-011B	1122	22.03	52.31			
TW-21-010	1121	21.10	28.00			
TW-21-009	1127	22.00	27.91			
TW-21-008	1305	✓	14.16	19.84	✓	✓

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

P 10/4/24  
SIGNED \_\_\_\_\_ DATE

[Signature] 10-8-24  
CHECKED \_\_\_\_\_ DATE







### GENERAL NOTES

PROJECT NAME: CEC Karn LF: 2024 GW Compliance	DATE: <u>9-30-24</u>	TIME ARRIVED: <u>615</u>
PROJECT NUMBER: 553814.0000.0000	AUTHOR: JJ	TIME LEFT: <u>1330</u>

WEATHER		
TEMPERATURE: <u>64</u> °F	WIND: <u>5-10</u> MPH	VISIBILITY: <u>clear</u>

WORK / SAMPLING PERFORMED
<u>Collect site wide water levels</u>

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED \_\_\_\_\_ DATE 10/24/24

CHECKED BY \_\_\_\_\_ DATE 10-24-24



**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 to

**PURPOSE OF FIELDWORK:** Fourth Quarter 2024 Groundwater Sampling

**WORK PERFORMED BY:** J. Jasso, J. Krenz, E. Rinehart

*[Signature]* 10-4-24  
 SIGNED DATE

*[Signature]* 10/8/24  
 CHECKED BY DATE



**GENERAL NOTES**

PROJECT NAME: CEC Kern BAP/LI: 2024 GW Comp	DATE: 10/3/26	TIME ARRIVED: 072
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK AW	TIME LEFT: 1115

WEATHER		
TEMPERATURE: <u>60</u> °F	WIND: <u>25</u> MPH	VISIBILITY: <u>over 2</u>
WORK / SAMPLING PERFORMED		
wells Sample DEK-MW-18001 ms + msd, MW-19, ms MSD, MW 18, Dup #01, FB #01		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

SIGNED [Signature] DATE 10/04/24 CHECKED BY [Signature] DATE 10/3/24



**GENERAL NOTES**

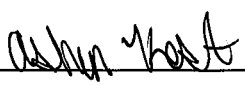
PROJECT NAME: CEC Karn LF: 2024 GW Compliance	DATE: 10/3/24	TIME ARRIVED: 7:20
PROJECT NUMBER: 553814.0000.0000	AUTHOR: JK, JJ, ER, AV	TIME LEFT: 2053

WEATHER		
TEMPERATURE: <u>52/74</u> °F	WIND: <u>10</u> MPH	VISIBILITY: <u>clear</u>
WORK / SAMPLING PERFORMED		
Arrive on site @ 7:20, meet with team to discuss order of sampling start sampling LH-101 w/ Elrich, <del>sample</del> stabilizing LH-102 individually sample OW-10, OW-11 collect transducer data for 2 wells, sent data to Elric		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
OW-11 ran dry, viable samples were not collected, insufficient water (DL)	called PM to discuss what to do with samples - discarded 1 L bottle (DL)

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground


 \_\_\_\_\_ 10/8/24  
 SIGNED DATE


 \_\_\_\_\_ 10-8-24  
 CHECKED BY DATE



**GENERAL NOTES**

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Comp	DATE: <u>10-3-24</u>	TIME ARRIVED: <u>7:15</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK <del>AK</del> KK <u>ETC</u>	TIME LEFT: <del>2</del> <u>2053</u>

WEATHER		
TEMPERATURE: <u>52/74</u> °F	WIND: <u>10</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
<u>Sample OW-2, OW-7, DEK-MW-15005, OW-11</u>		
<u>DEK-MW-15003, DEK-MW-15006, DEK-MW-15002</u>		
<u>Collected Com' data for wells</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
<u>OW-11 does not hold significant water</u>	<u>Added PM</u>

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

[Signature] 10-3-24  
 SIGNED DATE

[Signature] 10/6/24  
 CHECKED BY DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: <u>Pre DSS</u>	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: <u>AM</u>	DATE: <u>10/3/24</u>

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #): <u>3650918</u>	(EXP. DATE): <u>10/15</u>	(LOT #): <u>4001317</u>	(EXP. DATE): <u>4/10</u>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD				
<u>700 / 700</u>	<u>400 / 400</u>	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0500</u>	
/	/	<input type="checkbox"/>	WITHIN RANGE		
/	/	<input type="checkbox"/>	WITHIN RANGE		
/	/	<input type="checkbox"/>	WITHIN RANGE		

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME	
(LOT #): <u>46E 0284</u>	(°CELSIUS)			
(EXP. DATE): <u>5/15</u>				
POST-CAL. READING / STANDARD	POST-CAL. READING / SATURATED AIR			
<u>1360 / 1360</u>	<u>23</u>	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0700</u>
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME	
(LOT #): <u>23209319</u>	(°CELSIUS)			
(EXP. DATE): <u>9/10</u>				
POST-CAL. READING / STANDARD	POST-CAL. READING / SATURATED AIR			
<u>223 / 223</u>	<u>23</u>	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0500</u>
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME	
(LOT #): <u>46E 0284</u>	(°CELSIUS)			
(EXP. DATE): <u>5/15</u>				
POST-CAL. READING / STANDARD	POST-CAL. READING / SATURATED AIR			
<u>835 / 835</u>	<u>23</u>	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0700</u>
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME	
(LOT #): <u>47897</u>	(LOT #): <u>47897</u>			
(EXP. DATE): <u>4/15</u>	(EXP. DATE): <u>4/15</u>			
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD			
<u>100 / 100</u>	<u>100 / 100</u>	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0700</u>
/	/	<input checked="" type="checkbox"/>	WITHIN RANGE	<u>0800</u>
/	/	<input type="checkbox"/>	WITHIN RANGE	
/	/	<input type="checkbox"/>	WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES


PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS



SIGNED

[Signature] 10/4/24  
DATE

CHECKED BY

[Signature] 10-8-24  
DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: <u>Acucontrol</u>	SAMPLER: JK, JJ, <u>ER</u>
PROJECT NO.: 553814.0001.0000	SERIAL #: <u>1as1u</u>	DATE: <u>9/30/24 - 10/6/24</u>

PH CALIBRATION CHECK

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

pH 7		pH 10		CAL RANGE	TIME
(LOT #): <u>4B00370</u>	(LOT #): <u>3610691</u>	(EXP. DATE): <u>Apr/26</u>	(EXP. DATE): <u>Sep/25</u>		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
<u>9-30</u>	<u>7.02 / 7.02</u>	<u>4.0 / 4.0</u>		<input checked="" type="checkbox"/> WITHIN RANGE	<u>9:05</u>
<u>10-1</u>	<u>7.02 / 7.02</u>	<u>4.0 / 4.0</u>		<input checked="" type="checkbox"/> WITHIN RANGE	<u>8:45</u>
<u>10-2</u>	<del><u>7.62 / 7.02</u></del>	<del><u>4.0 / 4.0</u></del>		<input checked="" type="checkbox"/> WITHIN RANGE	<del><u>15:10</u></del> <u>EX-100</u>
<u>10-3</u>	<u>7.06 / 7.06</u>	<u>4.0 / 4.0</u>		<input type="checkbox"/> WITHIN RANGE	<u>7:50</u>

CAL. READING	TEMPERATURE	CAL RANGE	TIME
(LOT #): <u>4GE0784</u>	(*CELSIUS)		
(EXP. DATE): <u>May/25</u>			
POST-CAL. READING / STANDARD			
<u>9-30</u>	<u>1260 / 1260</u>	<u>19.4</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>9:15</u>
<u>10-1</u>	<u>1260 / 1260</u>	<u>19.3</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>8:55</u>
<u>10-3</u>	<u>1070 / 1070</u>	<u>11.85</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>8:07</u>

ORP CALIBRATION CHECK

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL RANGE	TIME
(LOT #): <u>22K100180</u>	(*CELSIUS)		
(EXP. DATE): <u>2027/10/11</u>			
POST-CAL. READING / STANDARD			
<u>4/30</u>	<u>229 / 229</u>	<u>20.39</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>9:08</u>
<u>10-1</u>	<u>231 / 231</u>	<u>19.93</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>8:50</u>
<u>10-2</u>	<del><u>230.</u></del>	<del><u>20.03</u></del>	<input checked="" type="checkbox"/> WITHIN RANGE <del><u>3:17</u></del> <u>EX-100</u>
<u>10-3</u>	<u>240 / 240</u>	<u>12.42</u>	<input type="checkbox"/> WITHIN RANGE <u>7:55</u>

CAL. READING	TEMPERATURE	CAL RANGE	TIME
	(*CELSIUS)		
POST-CAL. READING / SATURATED AIR			
<u>9/30</u>	<u>9.08 / 9.08</u>	<u>18.83</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>9:20</u>
<u>10-1</u>	<u>9.03 / 9.03</u>	<u>18.95</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>9:00</u>
<u>10-3</u>	<u>10.5 / 10.5</u>	<u>11.88</u>	<input checked="" type="checkbox"/> WITHIN RANGE <u>8:11</u>

TURBIDITY CALIBRATION CHECK

COMMENTS

CALIBRATION READING (NTU)		CAL RANGE	TIME
(LOT #): <u>A2067</u>	(LOT #):		
(EXP. DATE): <u>Apr/25</u>	(EXP. DATE):		
POST-CAL. READING / STANDARD			
<u>9-30</u>	<u>100 / 100</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>9:16</u>
<u>10-1</u>	<u>100 / 100</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>8:57</u>
<u>10-2</u>	<del>_____</del>	<input type="checkbox"/> WITHIN RANGE	<del>_____</del> <u>EX</u>
<u>10-3</u>	<u>100 / 100</u>	<input type="checkbox"/> WITHIN RANGE	<u>8:05</u>

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/> _____	<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER
<input type="checkbox"/> _____	

NOTES

<u>10-1</u>	<u>LaMOTTE 2020T 10/10, 0/0 8:15</u>
<u>10-3</u>	<u>10/00, 0/0 8:00</u>

PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS

SIGNED: [Signature] DATE: 9/30/24  
[Signature] 10-3-24

CHECKED BY: [Signature] DATE: 10/6/24





### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: <u>YSI Pro DSS</u>	SAMPLER: JK, J. <u>ER 2 AM</u>
PROJECT NO.: 553814.0001.0000	SERIAL #:	DATE: <del>10/3/24</del> <u>10/3/24</u>

#### PH CALIBRATION CHECK

pH 7 (LOT #): <u>4600730</u> (EXP. DATE): <u>APR/26</u>	pH 4 / 10 (LOT #): <u>4601317</u> (EXP. DATE): <u>APR/26</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>7.05 / 7.05</u>	<u>4.0 / 4.0</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0756</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <u>46E0784</u> (EXP. DATE): <u>MAY/26</u>	TEMPERATURE <u>12.8</u> (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>1063 / 1063</u>	<u>12.8</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0758</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>236100046</u> (EXP. DATE): <u>2023 10/10/24</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>241.3 / 241.3</u>	<u>12.5</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0802</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<u>10.4 / 10.4</u>	<u>12.4</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0809</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

#### TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>24004711</u> (EXP. DATE): <u>2/25</u>	(LOT #): <u>22350220</u> (EXP. DATE): <u>11/24</u>		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>0.0 / 0.0</u>	<u>10.39 / 10.0</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0815</u>
/	<u>10.01</u>	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

#### COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES <sup>(1)</sup>
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

<sup>(1)</sup> CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

#### NOTES

#### PROBLEMS ENCOUNTERED

#### CORRECTIVE ACTIONS

--	--

SIGNED John Kat DATE 10/3/24

CHECKED BY [Signature] DATE 10-8-24



### EQUIPMENT SUMMARY

*Kain BAP/LI 2024*

PROJECT NAME: <u>CEC Weadock LF: 2023 GW Co</u>	SAMPLER NAME: <u>Javier Jasso</u>
PROJECT NO.: <u>514403-0000-0000</u> <i>55384.0001</i> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">DL</span>	

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

<u>HERON DIPPER-T</u>	<u>TRC A2</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

<u>NA</u>	<u>NA</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:**

<u>HERON DIPPER-T</u>	<u>TRC A2</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PURGING METHOD**

<u>PERISTALTIC PUMP</u>	<u>TRC A2</u>
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

**SAMPLING METHOD**

<u>PERISTALTIC PUMP</u>	<u>TRC A2</u>
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

<u>GEOTECH DISPOSABLE FILTER</u>	<u>0.45 MICRON</u>
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

<u>DEDICATED POLY TUBING</u>	<input checked="" type="checkbox"/> <u>LOW-FLOW SAMPLING EVENT</u>
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND   
  DRUM   
  POTW   
  POLYTANK   
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

<u>STORE BOUGHT</u>	<u>LABORATORY PROVIDED</u>
POTABLE WATER SOURCE	DI WATER SOURCE
_____ SIGNED	_____ CHECKED BY
<u>10/4/24</u>	<u>10-8-24</u>
DATE	DATE



**EQUIPMENT SUMMARY**

LF

PROJECT NAME:	CEC Karn BAP/CI: 2024 GW	SAMPLER NAME:	J. Jasso, J. Krenz, E. Rinehart
PROJECT NO.:	553814.0004.0000		

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED 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)

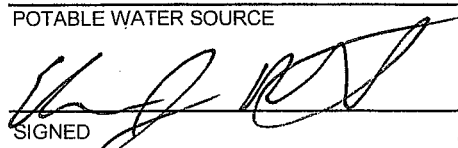
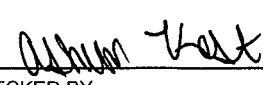
GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND  
  DRUM  
  POTW  
  POLYTANK  
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
 9/30/24	 10/8/24
SIGNED DATE	CHECKED BY DATE



### EQUIPMENT SUMMARY

PROJECT NAME: <u>CEC Kaim BAPILI GW</u>	SAMPLER NAME: <u>J. Jasso, J. Krenz, E. Rinehart, A. Kast</u>
PROJECT NO.: <u>553814.0001</u>	

**WATER LEVEL MEASUREMENTS COLLECTED WITH:**

<u>HERON DIPPER-T</u>	<u>TRC A2</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:**

<u>NA</u>	<u>NA</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:**

<u>HERON DIPPER-T</u>	<u>TRC A2</u>
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

**PURGING METHOD**

<u>PERISTALTIC PUMP</u>	<u>TRC A2</u>
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

**SAMPLING METHOD**

<u>PERISTALTIC PUMP</u>	<u>TRC A2</u>
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

<u>GEOTECH DISPOSABLE FILTER</u>	<u>0.45 MICRON</u>
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

<u>DEDICATED POLY TUBING</u>	<input checked="" type="checkbox"/> <u>LOW-FLOW SAMPLING EVENT</u>
TUBING TYPE	

**PURGE WATER DISPOSAL METHOD**

GROUND   
  DRUM   
  POTW   
  POLYTANK   
  OTHER \_\_\_\_\_

**DECONTAMINATION AND FIELD BLANK WATER SOURCE**

<u>STORE BOUGHT</u>	<u>LABORATORY PROVIDED</u>
POTABLE WATER SOURCE	DI WATER SOURCE

<u>A. Kast</u>	<u>Dave King</u>
SIGNED	CHECKED BY
<u>10/24/24</u>	<u>10-24-24</u>
DATE	DATE



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn RAP/WSP: Addition	PREPARED	CHECKED
PROJECT NUMBER: 553814.0002.0000	BY: AW, JJ, JK, ER DATE: 10/1/24	BY: ERL DATE: 10-8-24

SAMPLE ID: DFK- MW 10001	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0802	DATE: 10/3/24	SAMPLE	TIME: 0837	DATE: 10/3/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 8.15	SU	CONDUCTIVITY: 941	umhos/cm	
DEPTH TO WATER: 10.10 T/ PVC	ORP: -228	mV	DO: 1.00	mg/L	
DEPTH TO BOTTOM: 19.68 T/ PVC	TURBIDITY: 4.3	NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 13.7	°C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: 7 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear		ODOR: non		
COLOR: clear	ODOR: non		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

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)
0802	200	8.17	1249	-126	1.0	1.3	13.5	10.14	INITIAL
0807	}	8.18	957	-179	1.97	4.5	13.6	10.30	1
0812		8.15	945	-191	1.39	4.4	13.6	10.30	2
0817		8.13	944	-205	1.21	4.3	13.6	10.30	3
0822		8.13	943	-218	1.10	4.3	13.6	10.30	4
0827		8.12	942	-228	1.09	4.3	13.7	10.30	5
0832		8.12	941	-228	1.00	4.3	13.7	10.30	6
0837		8.12	941	-228	1.00	4.3	13.7	10.30	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	3	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
6	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	1L	PI	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
3	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/3/2024</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10/4/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: JK, JJ, ER	DATE: 10/3/24
	BY: <i>[Signature]</i>	DATE: 10/6/24

SAMPLE ID: <b>DEK-MW-15005</b>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VWW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1113	DATE: 10/3	SAMPLE	TIME: 1146	DATE: 10-5-24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.62	SU	CONDUCTIVITY: 1361.0	umhos/cm	
	ORP: -113.9	mV	DO: 0.95	mg/L	
DEPTH TO WATER: 10.63	T/ PVC		TURBIDITY: 0.45	NTU	
DEPTH TO BOTTOM: 22.80	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 14.7		°C FERROUS Fe _____ mg/L		
VOLUME REMOVED: 6.6 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear		ODOR: No		
COLOR: Clear	ODOR: No		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS: In Situ Turb issues (R+Blue)		

DUP - DEK-BAP  
 01  
 \*Non-radium analysis only  
 DL

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)
1113	200	7.69	1326.3	45.3	2.3	6.93	16.88	10.63	INITIAL
1116	}	7.7	1345.8	56.7	1.06	1.92	14.8	10.74	0.6
1119		7.7	1359.7	-88.0	1.01	9.04	14.7	10.76	1.2
1122		7.7	1363.9	-99.4	1.0	12.84	14.71	10.71	1.8
1125		7.69	1364.5	-106.0	0.99	23.61	14.72	10.70	2.4
1128		7.68	1347.5	-109.5	0.98	31.46	14.23	10.74	3.0
1131		7.69	1367.9	-86.9	1.03	0.0	14.95	10.74	3.6
1134		7.67	1321.6	-103.6	0.97	1.85	14.72	10.74	4.2
1137		7.65	1318.4	-109.2	0.96	5.39	14.72	—	4.8
1140		7.64	1373.4	-111.5	0.96	8.38	14.7	—	5.4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
4	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	Plastic	B	<input type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <i>Drop-off</i>	DATE SHIPPED: 10-4-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 10-7-24





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER	DATE: <u>10-3-24</u>
	BY: <u>John Hart</u>	DATE: <u>10/6/24</u>

SAMPLE ID: <u>060-11</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1356</u>	DATE: <u>10-3-24</u>	SAMPLE	TIME: <u>1356</u>	DATE: <u>10-3-24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: _____ SU	CONDUCTIVITY: _____ umhos/cm	ORP: _____ mV	DO: _____ mg/L	
DEPTH TO WATER: <u>25.0</u> T/ PVC	TURBIDITY: _____ NTU	<i>not collected</i>			
DEPTH TO BOTTOM: <u>25.48</u> T/ PVC	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: _____ °C	FERROUS Fe _____ mg/L	COLOR: _____	ODOR: _____	
VOLUME REMOVED: _____ <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		FILTRATE COLOR: _____	FILTRATE ODOR: _____	
COLOR: <u>Grey</u>	ODOR: _____		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>Sample after recharge</u>				

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)
<u>1356</u>	<u>&gt;101</u>	<u>8.3</u>	<u>388.38</u>	<u>202</u>	<u>4.16</u>	<u>1109.3</u>	<u>26.28</u>	<u>25.0</u>	INITIAL
	<u>Well Ran Dry</u>				<u>Sample after recharge</u>				
	<u>if insufficient volume for analysis</u>								

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Drop off DL</u>	DATE SHIPPED: <u>10-4-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10-3-24</u>





### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, SR	DATE: 10-3-24
	BY: <i>Cyano Vert</i>	DATE: 10/6/24

SAMPLE ID: <b>DEK-MW-15003</b>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <b>1425</b>	DATE: <b>10-3-24</b>	SAMPLE	TIME: <b>1501</b>	DATE: <b>10/3/24</b>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <b>8.07</b> SU	CONDUCTIVITY: <b>358.91</b> umhos/cm	ORP: <b>-143.1</b> mV	DO: <b>1.12</b> mg/L	
DEPTH TO WATER: <b>19.78</b> T/ PVC	TURBIDITY: <b>0.0</b> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <b>28.0</b> T/ PVC	TEMPERATURE: <b>18.79</b> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <b>NA</b> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <b>Clear</b>	ODOR: <b>No</b>			
VOLUME REMOVED: <b>3.9</b> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <b>light cloudy</b> ODOR: <b>No</b>	TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <b>Recollected Radium after stabilization</b>				

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)
1425	200	8.15	328.74	119.3	2.81	90.76	21.55	19.78	INITIAL
1428	100	8.42	303.76	-21.4	1.67	0.0	18.39	21.65	0.6
1431	27 min mark	8.47	328.17	-97.4	1.33	0.0	18.75	21.83	0.9
1434		8.33	324.6	-121.5	1.28	0.0	18.72	21.91	1.2
1437		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	20.31	21.49	1.8
1443		8.0	344.18	-101.3	1.2	0.0	19.09	21.52	2.1
1446		7.99	344.22	-105.8	1.2	0.0	19.07	21.65	2.4
1449		8.01	347.22	-114.0	1.16	0.0	19.0	21.70	2.7
1452		8.04	349.41	-124.1	1.15	0.0	18.94	21.72	3.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <b>Drop-off</b>	DATE SHIPPED: <b>10-4-24</b>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: <b>10/3/24</b>





### WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: <u>AK</u> DATE: <u>10/3/24</u>	BY: <u>ER</u> DATE: <u>10-8-24</u>

SAMPLE ID: <u>OW-10</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER	
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER			
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER			

PURGING	TIME: <u>1541</u>	DATE: <u>10/3/24</u>	SAMPLE	TIME: <u>1608</u>	DATE: <u>10/3/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.31</u> SU	CONDUCTIVITY: <u>808</u> umhos/cm	
DEPTH TO WATER: <u>8.59</u> T/ PVC			ORP: <u>-136.8</u> mV	DO: <u>0.27</u> mg/L	
DEPTH TO BOTTOM: <u>17.89</u> T/ PVC			TURBIDITY: <u>12.5</u> NTU		
WELL VOLUME: NA <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
VOLUME REMOVED: <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>15.2</u> °C	FERROUS Fe _____ mg/L	
COLOR: <u>cloudy/slight brown</u>			ODOR: <u>slight</u>		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS: <u>issue w/ turbidity meter</u>		

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)
1541	150	7.32	853	-135.6	1.83	874 (AU)	16.5	8.59	INITIAL
1544		7.33	831	-137.1	1.01	668 (AU)	15.9	8.29	0.45
1547		7.32	826	-136.3	0.75	27.4	15.7	8.29	0.90
1550		7.32	829	-135.8	0.67	28.9	16.1	<del>8.36</del>	1.35
1553		7.31	831	-134.6	0.54	25.8	15.7	9.39	1.80
1556		7.30	819	-134.3	0.45	17.9	15.3	9.43	2.25
1559		7.30	816	-134.8	0.39	15.7	15.2	9.50	2.70
1602		7.31	813	-136.2	0.34	13.5	15.2	9.51	3.15
1605		7.32	809	-136.7	0.28	11.6	15.2	9.53	3.60
1608		7.31	808	-136.8	0.27	12.5	15.2	9.56	4.05

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10% or <= 10    TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Dropped off</u>	DATE SHIPPED: <u>10/4/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10/7/24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER DATE: <u>10/3</u>	BY: <u>William Hunt</u> DATE: <u>10/6/24</u>

SAMPLE ID: DEK-MW-15006 WELL DIAMETER:  2"  4"  6"  OTHER \_\_\_\_\_

WELL MATERIAL:  PVC  SS  IRON  GALVANIZED STEEL  OTHER \_\_\_\_\_

SAMPLE TYPE:  GW  WW  SW  DI  LEACHATE  OTHER \_\_\_\_\_

PURGING	TIME: <u>1607</u>	DATE: <u>10/3/24</u>	SAMPLE	TIME: <u>1631</u>	DATE: <u>10/3/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.64</u> SU	CONDUCTIVITY: <u>1366.4</u> umhos/cm	
DEPTH TO WATER: <u>9.53</u> T/ PVC			ORP: <u>-132.7</u> mV	DO: <u>0.92</u> mg/L	
DEPTH TO BOTTOM: <u>NM</u> T/ PVC			TURBIDITY: <u>1.37</u> NTU		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
VOLUME REMOVED: <u>4.8</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>14.94</u> °C	FERROUS Fe _____ mg/L	
COLOR: <u>Clear</u> ODOR: <u>NO</u>			COLOR: <u>Clear</u> ODOR: <u>NO</u>		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

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)
1607	200	7.74	1230.6	35.5	2.75	12.86	16.83	9.53	INITIAL
1610		7.68	1381.9	-94.0	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	0.94	33.92	14.85	9.69	1.8
1619		7.57	1404.3	-122.5	0.94	49.75	14.85	9.69	2.4
1622		7.51	1358.3	-114.9	1.05	0.0	15.02	9.64	3.0
1625		7.6	1370.3	-124.3	0.94	0.0	14.98	9.60	3.6
1628		7.63	1369.9	-129.4	0.93	0.0	15.0	—	4.2
1631		7.64	1366.4	-132.7	0.92	1.37	14.94	—	4.8
1634									5.4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Drop-off</u>	DATE SHIPPED: <u>10-4-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10-3-24</u>



### WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER DATE: 10/3/24	BY: <i>Adrian White</i> DATE: 10/8/24

SAMPLE ID: <u>DEK-MW-15002</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1744</u>	DATE: <u>10/3/24</u>	SAMPLE	TIME: <u>1802</u>	DATE: <u>10/3/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.43</u> SU	CONDUCTIVITY: <u>822.23</u> umhos/cm	ORP: <u>-135.1</u> mV	DO: <u>0.99</u> mg/L	
DEPTH TO WATER: <u>8.66</u> T/ PVC	TURBIDITY: <u>6.63</u> NTU	<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>15.76</u> T/ PVC	TEMPERATURE: <u>15.69</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>Slight</u>			
VOLUME REMOVED: <u>3.6</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>Clear</u>	ODOR: <u>N.</u>			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>DEK-15AP-01</u>				
COMMENTS: <u>+ Duplicate for radium only (DL)</u>					

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)
1744	200	7.64	693.32	-16.1	1.45	0.0	17.82	8.66	INITIAL
1747	↓	7.63	696.43	-78.3	1.09	0.0	16.89	8.68	0.6
1750	↓	7.59	793.59	-110.1	1.03	0.0	16.13	8.70	1.2
1753	↓	7.52	800.43	-120.0	1.01	0.0	15.82	—	1.8
1756	↓	7.47	801.94	-125.6	1.00	0.35	15.82	—	2.4
1759	↓	7.45	799.46	-131.1	1.0	5.27	15.75	—	3.0
1802	↓	7.43	822.23	-135.1	0.99	6.63	15.69	—	3.6

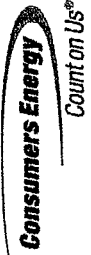
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1    COND.: +/- 3%    ORP: +/- 10    D.O.: +/- 0.3    TURB: +/- 10%    or <= 10    TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE    B - HNO3    C - H2SO4    D - NaOH    E - HCL    F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N	4	1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Drop-off</u>	DATE SHIPPED: <u>10-4-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: <u>10/3/24</u>

# CHAIN OF CUSTODY



## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page \_\_\_\_\_ of \_\_\_\_\_

SAMPLING SITE / CUSTOMER: Q4-2024 DEK Bottom Ash Pond Wells		PROJECT NUMBER: <b>24-0801</b>		SAP CC or WO#: _____ REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)		QA REQUIREMENT:	
SAMPLING TEAM: <b>AH, ER, JK</b>		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: _____ phone: _____		Total Metals <input checked="" type="checkbox"/>		<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____	
SEND REPORT TO: Joseph Firiti		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste		CONTAINERS PRESERVATIVE		REMARKS	
COPY TO: Harold Register TRC		FIELD SAMPLE ID / LOCATION		TOTAL #		Ammonia		Alkalinity	
LAB SAMPLE ID		MATRIX		None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCl HClO Other		TDS		Sulfide	
DATE 10/23/24		TIME 1802		DEK-MW-15002		7		x	
DATE 10/23/24		TIME 1146		DEK-MW-15005		7		x	
DATE 10/23/24		TIME 1607		DEK-MW-15006		7		x	
DATE 10/23/24		TIME —		DUP-DEK-BAP-01		7		x	
DATE 10/23/24		TIME 1146		FB-DEK-BAP		4		x	
DATE 10/23/24		TIME 1802		EB-DEK-BAP		4		x	
DATE/TIME: _____		DATE/TIME: _____		RECEIVED BY: _____		COMMENTS: _____		Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____	
RELINQUISHED BY: <b>Joseph Firiti</b>		DATE/TIME: <b>10/4/24 0810</b>		RECEIVED BY: <b>[Signature]</b>		Temperature: _____ °C		Cal. Due Date: _____	
RELINQUISHED BY: _____		DATE/TIME: _____		RECEIVED BY: _____		COMMENTS: _____		Temperature: _____ °C	

2151 (10)







# Chain of Custody Record

<b>Client Information</b> Company: TRC Environmental Corporation. Address: 1540 Eisenhower Place City: Ann Arbor State, Zip: MI, 48108-7080 Phone: 734-971-7080(Tel) 734-971-9022(Fax) Email: JKrenz@trccompanies.com Project Name: Karn/Wheadock CCR DEK Bottom Ash Pond Site:		Sampler: <b>AK, ER</b> Lab PM: Brooks, Kris M Phone: Kris.Brooks@eteuofinsus.com E-Mail:		Carrier Tracking No(s): COC No: 240-124392-29052.1 Page: Page 1 of 1 Job #:	
Due Date Requested: <b>standard</b> TAT Requested (days): <b>standard</b> Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: 215951 WO #: 553814.0001 Project #: 24024154 SSOW#:		<b>Analysis Requested</b>			
Field Filtered Sample (Yes or No)		Performance MS/MSD (Yes or No)		Total Number of Containers	
Sample Identification		Preservation Code		Special Instructions/Note:	
DEK-MW-15002	Sample Date: 10/3/24	Sample Time: 1602	Sample Type: G	Matrix: Water	903.0, Ra226Ra228_GFP
DEK-MW-15005	Sample Date: 10/3/24	Sample Time: 1146	Sample Type: G	Matrix: Water	903.0, Ra226Ra228_GFP
DEK-MW-15006	Sample Date: 10/3/24	Sample Time: 1607	Sample Type: G	Matrix: Water	903.0, Ra226Ra228_GFP
DUP-DEK-BAP-01	Sample Date: 10/3/24	Sample Time: —	Sample Type: G	Matrix: Water	903.0, Ra226Ra228_GFP
EB-DEK-BAP	Sample Date: 10/3/24	Sample Time: 1802	Sample Type: G	Matrix: Water	903.0, Ra226Ra228_GFP
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify) <b>TRC EDD</b>		Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:		Method of Shipment:	
Relinquished by: <b>ASAM YARD</b>		Date/Time: 10/4/24 1547		Received by: <b>Miguel</b>	
Relinquished by:		Date/Time:		Received by:	
Relinquished by:		Date/Time:		Received by:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

# Chain of Custody Record

<b>Client Information</b> Client Contact: Jacob Krenz Company: TRC Environmental Corporation. Address: 1540 Eisenhower Place City: Ann Arbor State, Zip: MI, 48108-7080 Phone: 734-971-7080 (Tel) 734-971-9022 (Fax) Email: JKrenz@trccompanies.com Project Name: Karn/Weadock CCR DEK Bottom Ash Pond & I Site:		Lab PM: Brooks, Kris M E-Mail: Kris.Brooks@eurofins.com Carrier Tracking No(s): State of Origin:		COC No: 240-124393-29053.1 Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #: 215951 WO #: 553814.0001 Project #: 24024154 SOW #:		<b>Analysis Requested</b>			
Sample Identification DEK-MW-18001		Sample Date 10/31/24	Sample Time 06:57	Sample Type (C=comp, G=grab) G	Matrix (Water, Sewage, Other) Water
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested: I, II, III, IV, Other (specify)			
Empty Kit Relinquished by:		Date:			
Relinquished by:		Date: 10/31/24			
Relinquished by:		Date: 11/14/24			
Relinquished by:		Date:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			
Relinquished by:		Received by:		Date: 10/31/24	
Relinquished by:		Received by:		Date:	
Relinquished by:		Received by:		Date:	
Cooler Temperature(s) °C and Other Remarks:		Method of Shipment:			
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:			
Special Instructions/Note:		Total Number of Containers:			
Preservation Codes: D - HNO3		Other:			

# Chain of Custody Record

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

**Client Information**  
 Client Contact: Jacob Krenz  
 Company: TRC Environmental Corporation.  
 Address: 1540 Eisenhower Place  
 City: Ann Arbor  
 State, Zip: MI, 48108-7080  
 Phone: 734-971-7080(Tel) 734-971-9022(Fax)  
 Email: JKrenz@trccompanies.com  
 Project Name: Karn/Weadock CCR DEK Lined Impoundment  
 Site:

**Sampler:** ER, AK  
**Lab Pkt:** Brooks, Kris M  
**Carrier Tracking No(s):**  
**State of Origin:** MI  
**E-Mail:** Kris.Brooks@et.eurofins.com  
**Phone:**  
**PWSID:**

**Due Date Requested:** Standard  
**TAT Requested (days):** Standard  
**Compliance Project:** Δ Yes Δ No  
**PO #:** 215951  
**WO #:** 553814.0001  
**Project #:** 24024154  
**SSOW#:**

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, On-waste/oil, etc.)	Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		904 - Standard Target List	Total Number of Containers	Special Instructions/Note:
					D	F	D	F			
DEK-MW-15003	10/13/24	1415	G	Water	N	N	X	X			
OW-10	10/13/24	1608	G	Water	N	N	X	X			
OW-11	10/13/24	1956	G	Water							
OW-12				Water							
DUP-KLI				Water							
EB-KLI				Water							
				Water							
				Water							
				Water							

**Possible Hazard Identification**  
 Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown  Radiological  
**Deliverable Requested:** I, II, III, IV, Other (specify) TRC EDD  
**Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)**  
 Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

**Empty Kit Relinquished by:** \_\_\_\_\_ Date: \_\_\_\_\_  
**Relinquished by:** *John Felt* Date/Time: 10/14/24 1547 Company: TRC  
**Relinquished by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
**Relinquished by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
**Custody Seals Intact:** Δ Yes Δ No  
**Custody Seal No.:** \_\_\_\_\_  
**Method of Shipment:** \_\_\_\_\_  
**Received by:** *Matthew* Date/Time: 10/13/24 1025 Company: EFTA  
**Received by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
**Received by:** \_\_\_\_\_ Date/Time: \_\_\_\_\_ Company: \_\_\_\_\_  
**Cooler Temperature(s) °C and Other Remarks:** \_\_\_\_\_

# Appendix C

## Data Quality Reviews

# Laboratory Data Quality Review Groundwater Monitoring Event October 2024 DE Karn Lined Impoundment

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) 24-0803 and S67052.01(01).

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

- OW-10
- DEK-MW-15003

Each sample was analyzed for one or more of 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
Total Mercury	SW-846 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. 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, total mercury, 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 detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

## **QA/QC Sample Summary**

- No field blanks or equipment blanks were collected with this data set.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.
- No field duplicates were submitted with this data set.
- The nondetect RL for sulfate (1,000 µg/L) in sample OW-10 was below the RL specified in the bottle request for this event (2,000 µg/L). There is no adverse impact on data usability since the reported RL is lower than the requested RL.

# **Laboratory Data Quality Review Groundwater and Surface water Monitoring Event October 2024 DE Karn Lined Impoundment**

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) 240-212645-1.

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

- OW-10
- DEK-MW-15003

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 result reflects 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.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD, laboratory duplicate, and field duplicate analyses were not performed on the samples from this data set.
- Carrier recoveries were within 40-110%.



**Attachment A**

Summary of Data Non-Conformances for Groundwater Analytical Data  
DE Karn Lined Impoundment  
Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
OW-10	10/3/2024	Radium-226	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The result is well below the applicable screening criteria and is therefore deemed usable as reported.

# 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 and Lined Impoundment**

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) 240-212372-1.

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

- 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 result reflects 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.
- No equipment or field blank was collected.
- LCS/LCSD percent recoveries (%Rs) and relative percent differences 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%.

**Attachment A**

Summary of Data Non-Conformances for Groundwater Analytical Data  
DE Kam Bottom Ash Pond and Lined Impoundment  
Essexville, Michigan

Sample	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-18001	10/3/2024	Radium-226, Combined Radium	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The result is well below the applicable screening criteria and is therefore deemed usable as reported.

## Appendix D

# OW-12 Well Plugging Record



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER BUREAU

**ABANDONED WELL PLUGGING RECORD**

Completion is required under authority of Part 127 Act 368 PA 1978.  
Failure to comply is a misdemeanor.

Permit No. \_\_\_\_\_

WSSN & Source ID/Well No. OW-12

Township Hampton

Fraction	Section	Town No.	Range No.
<u>SE 1/4 NG 1/4 1/4</u>	<u>02</u>	<u>14N</u>	<u>5E</u>

Well Owner Consumers Energy Company  
Address 1945 W. Parnall Rd  
City/ZIP Jackson 49201  
Owner Address Same as Well Address?  Yes  No

Tax No. \_\_\_\_\_

Latitude N 43° 38' 48.82" Longitude W 83° 50' 20.51" County Bay

Distance & Direction from Road Intersection  
West of Former Karn Lined Impoundment

Well Street Address, City/ZIP  
2742 Weadock Hwy  
Essexville 48732

Drilling  Unknown  Rotary  Cable Tool  
Method  Other \_\_\_\_\_

Date of Well Plugging 09/13/2024

Well Use  Household  Type I Public  
 Type II Public  Type III Public  Industrial  
 Irrigation  Test Well  Heat Pump  
 Other \_\_\_\_\_

Measured Well Depth 23.9 ft.

Date Well Constructed 05/19/2010

Well Construction Type  Drift Well  
 Rock Well  Dry Hole  Unknown  
 Other \_\_\_\_\_

Flowing Well  Yes  No

Casing Status After Plugging 2 ft.  Below Grade  Above Grade  
 Casing Pulled  
*Note: Cutting casing off 4 feet below grade is recommended.*

Reason For Abandoning Well  Public Water Connection  Well in Disrepair  
 Well No Longer Needed  Dry Hole  Uncompleted Well  
 Other \_\_\_\_\_

Abandonment Method  Pumped Through Grout Pipe  Poured From Surface  
 Poured Through Grout Pipe  Other \_\_\_\_\_

Pumping Equipment Removed  Yes  No

Equipment Removed  Bremer Check Valve  Drawdown Seal  
 Drop Pipe  Electrical Wiring  Packer  Pitless Adapter Spool  
 Check Valve  Pump Cylinder  Pump Rods  Stones/Debris  
 Submersible Pump  Turbine Pump Bowls  Unknown Obstruction  
 Obstruction Driven to Bottom  Other \_\_\_\_\_

*Note: Plugging well from bottom up to ground surface is required.*

Casing  Steel-black  Steel-galvanized  Plastic  
 Clay Tile Crock  Other \_\_\_\_\_

Diameter 2 in. to 23.9 ft. depth  
Diameter \_\_\_\_\_ in. to \_\_\_\_\_ ft. depth

Plugging Material (Enter the layers from top to bottom.)	From	To	Quantity	Units
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Other <u>Granulated Bentonite</u>	<u>24</u> ft.	<u>9</u> ft.	<u>2</u>	<input checked="" type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Other <u>Removed during Demo</u>	<u>9</u> ft.	<u>0</u> ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____
<input type="checkbox"/> Bentonite Chips/Pellets <input type="checkbox"/> Bentonite Slurry <input type="checkbox"/> Clean Soil Fill <input type="checkbox"/> Concrete <input type="checkbox"/> Neat Cement <input type="checkbox"/> Other _____	_____ ft.	_____ ft.		<input type="checkbox"/> Bags <input type="checkbox"/> Yards <input type="checkbox"/> Other _____

General Remarks  
Monitoring well was abandoned during the decommissioning of the Karn Lined Impoundment.

Water Well Contractor's Certification  Well Owner Plugged Well  
*This well was plugged under my supervision and this report is true to the best of my knowledge and belief.*

WSP

Registered Business Name \_\_\_\_\_ Registration No. \_\_\_\_\_

Address 4775 S. 2 Mile Rd

City/State/ZIP Bay City, MI 48706

Stephen Thumma 09-13-2024  
Signature of Registered Contractor Date

IMPORTANT: FILE WITH DEED

WELL OWNER COPY



## **Enclosure 6**

**Alternate Source Demonstration: March 2024 Detection  
Monitoring Sampling Event, Karn Lined Impoundment Coal  
Combustion Residuals (CCR) Unit, Essexville, Michigan. (TRC,  
July 30, 2024)**

A CMS Energy Company

Date: July 30, 2024

To: Operating Record

From: Harold D. Register, Jr., P.E.

RE: Alternate Source Demonstration Professional Engineer Certification, §257.94(e)2  
DE Karn Lined Impoundment CCR Unit

Professional Engineer Certification Statement [40 CFR 257.94(e)2]

I hereby certify that the alternative source demonstration presented within this July 30, 2024 letter report has been prepared to meet the requirements of Title 40 CFR §257.94(e) 2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e) 2.

*Harold D. Register, Jr.*

Signature

July 30, 2024

Date of Certification

Harold D. Register, Jr., P.E.

Name

6201056266

Professional Engineer Certification Number



*07/30/2024*

## ENCLOSURES

TRC (July 2024). Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan

July 30, 2024

Harold D. Register, Jr., P.E.  
Risk Management – Environmental Quality & Sustainability  
Consumers Energy  
1945 W. Parnall Road  
Jackson, MI 49201

Subject: Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event  
Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan

Dear Mr. Register:

TRC was retained by Consumers Energy to conduct routine groundwater monitoring activities at the DE Karn Lined Impoundment coal combustion residual (CCR) unit, located in Essexville, Michigan (the Site). Routine groundwater monitoring at the DE Karn Lined Impoundment CCR unit is conducted in accordance with the Michigan Department of Environment, Great Lakes, and Energy (EGLE)-approved Karn Lined Impoundment Hydrogeological Monitoring Plan (HMP),<sup>1</sup> which was written to comply with the requirements of the State of Michigan's Part 115, Rule 299.4905 and the United States Environmental Protection Agency (USEPA) final rule for the regulation and management of CCR under the Resource Conservation and Recovery Act (RCRA), as amended (the CCR Rule) (USEPA, April 2015). The detection monitoring indicator parameters are evaluated quarterly to identify potential statistically significant increases (SSIs) above background levels. Per the HMP and the CCR Rule, an SSI occurs when a statistically significant increasing trend is observed over two consecutive sampling events.

As detailed in *Fourth Quarter 2023 Hydrogeologic Monitoring Report*,<sup>2</sup> an initial statistically significant trend was observed for sulfate at DEK-MW-15003 as of the October 2023 detection monitoring event. Subsequently, the statistical evaluation of the March 2024 sulfate data at DEK-MW-15003 also showed a statistically significant increasing trend,<sup>3</sup> indicating an SSI over background for:

- Sulfate at DEK-MW-15003

All other detection monitoring indicator parameters indicated stable or decreasing trends, i.e., no additional increasing trends or SSIs are currently observed within the Karn Lined Impoundment monitoring well network.

In accordance with §257.94(3)(2), Consumers Energy may demonstrate that a source other than the

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<sup>1</sup> TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan. Prepared for Consumers Energy Company. August.

<sup>2</sup> TRC. 2024. Fourth Quarter 2023 Hydrogeologic Monitoring Report – DE Karn Lined Impoundment. Prepared for Consumers Energy Company. January 30.

<sup>3</sup> TRC. 2024. First Quarter 2024 Hydrogeologic Monitoring Report – DE Karn Lined Impoundment. Prepared for Consumers Energy Company. July 30.

CCR unit caused the SSI or that the SSI resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This Alternate Source Demonstration (ASD) has been prepared to address the SSI identified in the March 2024 detection monitoring event. The results of this ASD show that the sulfate SSI at DEK-MW-15003 is attributable to other onsite sources and is not due to a release from the Karn Lined Impoundment.

## **Background**

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay. Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Consumers Energy permanently ceased the operation of Karn Units 1 & 2 in May 2023 and has commenced decommissioning activities for both coal-fired generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled and will continue to operate. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal under the CCR Rule and the Karn Landfill that was certified closed by constructing a final cover system and is currently in post-closure care under P115.

## **CCR Unit Description**

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn Units 1 & 2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit NO. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a process for closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

## **Geology/Hydrogeology**

Most of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. 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 the construction of perimeter dikes and subsequent ash filling.<sup>4</sup>

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,

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<sup>4</sup> AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. October 30.

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 Site is bounded by several surface water features (Figures 1 and 2): 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. Near the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near OW-12, flowing outward toward the surrounding surface water bodies.

### ***Monitoring Well Network***

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit.<sup>5</sup> Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring, as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). The detection monitoring well network for the Karn Lined Impoundment CCR Unit currently consists of five monitoring wells (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12) that are screened in the uppermost aquifer.

### **Alternate Source Demonstration: Sulfate at DEK-MW-15003**

As discussed above, the statistical evaluation of the March 2024 detection monitoring indicator parameters showed a confirmed increasing trend, indicating an SSI over background for sulfate at DEK-MW-15003. All other detection monitoring constituents indicated stable or decreasing trends, i.e., no additional increasing trends or SSIs are currently observed within the Karn Lined Impoundment monitoring well network. There are several lines of evidence to demonstrate that the increase in sulfate at DEK-MW-15003 is attributable to other sources onsite and is not related to the operation of the Karn Lined Impoundment, as outlined further below.

### ***Karn Lined Impoundment Unit Construction***

The liner system for the Karn Lined Impoundment was designed as a double composite liner system, with the primary and secondary composite liners each consisting of 60-mil high-density polyethylene (HDPE) geomembrane (GM) overlaying a 236-mil geosynthetic clay liner (GCL). The secondary collection system (SCS) serves as a leak detection system, and the SCS flow rate data is used to demonstrate compliance under Michigan’s 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

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<sup>5</sup> TRC. 2018. Groundwater Monitoring System Summary Report – Consumers Energy, DE Karn Lined Impoundment (KLI). Prepared for Consumers Energy Company. June.

Management). The flow rate is calculated each time the SCS is evacuated. Since early 2021, the SCS flow rate has been below the state-established response action flow of 25 gallons per acre per day (GPAD) and the action flow rate of 5 GPAD, indicating that the liner is not leaking. Consumers Energy continues to document this information in their operating record.

The double composite liner system construction of the Karn Lined Impoundment and the SCS flow rate monitoring for leak detection are operating as designed and indicate that wet ash dewatering liquids managed within the unit have not migrated past the liner system and affected groundwater quality. Attachment A contains figures that illustrate the Karn Lined Impoundment as-built construction.

### ***Pre-Existing Groundwater Conditions***

The footprint of the Karn Lined Impoundment is immediately adjacent to the pre-existing Karn Bottom Ash Pond. As reported in the 2017 Annual Groundwater Monitoring Report: DE Karn Bottom Ash Pond CCR Unit,<sup>6</sup> potential SSIs over background limits were noted for boron, fluoride, pH, and sulfate in one or more downgradient wells during September 2017. Although the CCR material associated with the operation of the Karn Bottom Ash Pond has been removed;<sup>7</sup> the groundwater in the vicinity of the Karn Lined Impoundment is documented to have been affected by CCR due to the pre-existing Karn Bottom Ash Pond. DEK-MW-15003 was one of the downgradient compliance wells for the Karn Bottom Ash Pond that continues to be monitored and evaluated with regards to both the Karn Bottom Ash Pond and Karn Lined Impoundment.

Additionally, as noted in the Geology/Hydrogeology section, the site development included reclaiming low-lands with ash fill. The soil boring log for DEK-MW-15003 documents the presence of ash from depths of 7 to 19.5 ft bgs (Attachment B). Ash fill present in this area of the Site provides an additional influence on groundwater quality that is unrelated to the operation of the Karn Lined Impoundment as the presence of ash fill pre-dates construction and operation of the impoundment.

Although a statistically significant increasing trend has been identified for two consecutive quarters (Q4 2023 and Q1 2024) for sulfate at DEK-MW-15003,<sup>8</sup> current concentrations are similar to historical results, including groundwater data collected prior to closure of the Karn Bottom Ash Pond and construction of the Karn Lined Impoundment. Welch's t-test was performed on the sulfate concentrations from DEK-MW-15003 to compare the recent data (July 2022-May 2024) to the historical data (2015-July 2022). The t-test results are included as Attachment B and indicate that there is no statistical difference in the current and historical means at all tested significance levels (alpha values). The "background" median of 45.8 milligrams per liter (mg/L) is effectively the same as the "current" median of 45.65 mg/L. Furthermore, the sulfate concentrations are consistent with or lower than concentrations elsewhere in the Karn Bottom Ash Pond and Lined Impoundment well networks. The

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<sup>6</sup> TRC. 2018. Annual Groundwater Monitoring Report – DE Karn Power Plant Bottom Ash Pond CCR Unit. January.

<sup>7</sup> Consumers Energy. 2019. D.E. Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report. October 30.

<sup>8</sup> The 8 most recent data points are evaluated following each detection monitoring event to determine whether a statistically significant trend is present.



magnitude of the sulfate concentrations currently observed at DEK-MW-15003, as well as the overall historical range of concentrations, are much smaller than the magnitude and range of sulfate concentrations observed at other nearby wells, as evidenced by the Box and Whisker Plots included in Attachment B.

### ***Regional Groundwater Quality Changes***

In addition to increasing at DEK-MW-15003, sulfate concentrations are also increasing in several wells in the vicinity of the Karn Bottom Ash Pond (e.g., DEK-MW-15004, DEK-MW-18001, and OW-12), over the same time period, whereas sulfate concentrations at OW-11 are declining, as illustrated by the time series plots in Attachment C: Charts 1 & 2. Groundwater quality is continuing to change after hydraulic loading to the Karn Bottom Ash Pond ceased in June 2018, when groundwater was diverted to the Karn Lined Impoundment. Changes in groundwater elevations have resulted in variability in the groundwater flow direction, as well as changes in redox conditions, both of which affect contaminant transport and contribute to changes in groundwater quality.

Groundwater elevation changes and the resulting changes in groundwater flow direction are illustrated in the groundwater contour maps included in Attachment C. The “high” elevation of mounded groundwater relative to the Karn Bottom Ash Pond has historically been observed near DEK-MW-15003. 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 has been continuously collecting 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 in 2024 demonstrate a reduction in groundwater elevation measurements by several feet when compared to groundwater elevations measured prior to 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 DE Karn Power Plant stopped operating and consequently stopped routine discharge to the discharge ditch north of the Karn Lined Impoundment.<sup>9</sup> This operational change triggered a decrease in groundwater elevation at DEK-MW-15003 and additional flattening of the mounded groundwater, as shown in the groundwater elevation time series plot in Attachment C: Chart 1.

Post-closure changes in groundwater quality are also evident from the field data measurement collected during groundwater sampling events, specifically in measured dissolved oxygen, oxidation reduction potential (ORP), and pH. Field data time-series plots show increased variability following the dewatering and excavation activities at the Karn Bottom Ash Pond (Appendix C: Charts 3 & 4). The overall range of dissolved oxygen measured after the closure activities has increased and shows more variability of measurements within a single well, in addition to more variability between wells. ORP has generally decreased (i.e., more negative and a greater potential for reducing conditions) since July

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<sup>9</sup> Discharge to this ditch was completed under authorization of the National Pollutant Discharge Elimination System (NPDES) permit.

2019 at DEK-MW-15003 as well as within other wells in the area. The decrease in ORP and dissolved oxygen at DEK-MW-15003 generally correlates with the time where the increase in sulfate concentrations have been observed (October 2021 – March 2024). This relationship between sulfate and field ORP is further demonstrated during the recent May 2024 event, where ORP increases compared to prior events and sulfate concentrations decrease. Groundwater elevations at DEK-MW-15003 are further decreasing in this area of the Site following the discontinuation of discharge to the NPDES conveyance ditch located just north of the Karn Lined Impoundment in late 2023. The statistical evaluation of the May 2024 detection monitoring event shows that sulfate concentrations are no longer exhibiting an increasing trend and instead show no trend.<sup>10</sup>

The measured pH at OW-11 has increased since July 2019 and the pH at DEK-MW-15003 has been fluctuating since the nearby closure activities were completed. We continue to observe variability in the groundwater quality as a result of both groundwater flow direction changes and redox condition changes following closure activities. These regional groundwater quality changes will continue to be monitored.

### Conclusions and Recommendations

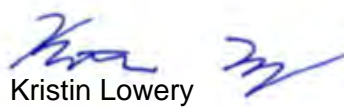
Based on the multiple lines of evidence presented above, the sulfate SSI at DEK-MW-15003 first observed in the October 2023 sampling event and confirmed following the March 2024 sampling event is not attributed to the Karn Lined Impoundment. The information provided in this technical memorandum serves as the ASD for the Karn Lined Impoundment. This ASD was prepared in accordance with 40 CFR 257.94(e)(2) of the CCR Rule and the 2020 HMP and demonstrates that the sulfate SSI at DEK-MW-15003 determined based on the May 2024 detection monitoring event are due to pre-existing groundwater conditions and regional changes in geochemistry. Although there is a confirmed increasing trend of one indicator parameter at one compliance groundwater well, the construction of the Karn Lined Impoundment unit and the measured SCS flow rates demonstrate that there has not been a release from the unit. Therefore, based on the information provided in this ASD, Consumers Energy will continue detection monitoring in accordance with 40 CFR 257.94 at the Karn Lined Impoundment CCR unit.

Sincerely,

TRC



Darby Litz, P.G.  
Project Manager/Sr. Hydrogeologist



Kristin Lowery  
Project Engineer

<sup>10</sup> TRC. 2024. First Quarter 2024 Hydrogeologic Monitoring Report – DE Karn Lined Impoundment. Prepared for Consumers Energy Company. July 30.



Mr. Harold D. Register  
Consumers Energy  
July 30, 2024  
Page 7

Attachments

Figures

Attachment A Karn Lined Impoundment Unit Construction

Attachment B Pre-Existing Groundwater Conditions


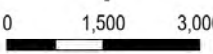


Attachment C Regional Groundwater Quality Changes

cc: Sarah B. Holmstrom, TRC  
Graham Crockford, TRC

# Figures

C:\Users\jwhaley\OneDrive\Documents\PROJECTS\CONSUMERS ENERGY\464995\_DEKARN\2-APR-24\APR-24-2024\DEKARN.APRX LAYOUT NAME: 553814-TOPO-K01-202402



  0 1,500 3,000 FEET 1:36,000 1" = 3,000'	PROJECT: <b>CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN</b>	
	TITLE: <b>SITE LOCATION MAP</b>	
 MN MICHIGAN WI IL IN OH SITE LOCATION	DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
	CHECKED BY: A. WHALEY	<b>FIGURE 1</b>
	APPROVED BY: D. LITZ	
	DATE: JULY 2024	
		1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080
BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.		FILE: DEKARN

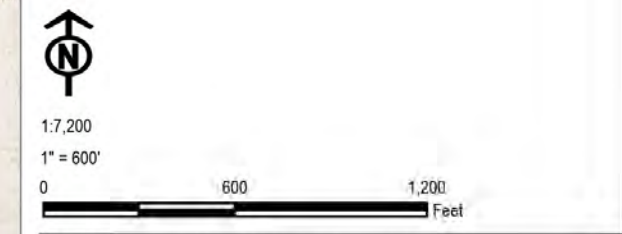


Coordinate System: NAD 1983 UTM Zone 10N, Map Rotation: 0  
 Saved By: AAD/afcm 7/10/2024, 09:55:11 AM, File Path: T:\PROJECTS\Consumers\_Energy\64095\_DEKARN.aprx, Layer Name: 553814\_LO\_K02\_202402



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - EXTENT OF GEOSYNTHETICS
  - PRIMARY CONTAINMENT SYSTEM SAMPLE (KLI-PCS)
  - SURFACE WATER SAMPLE (SW-DITCH)
  - SECONDARY CONTAINMENT SUMP

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LAYOUT MAP	
DRAWN BY:	A. ADAIR	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	<b>FIGURE 2</b>	
APPROVED BY:	D. LITZ		
DATE:	JULY 2024		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trccompanies.com	
FILE:	464095_DEKARN.aprx		



# **Attachment A**

## **Karn Lined Impoundment Unit Construction**



A

B

C

D



0 150 300  
1" = 150' FEET

Saginaw Bay

KARN LANDFILL

KARN SOLID WASTE DISPOSAL AREA

KARN BOTTOM ASH POND

KARN LINED IMPOUNDMENT CCR UNIT

POWER PLANT AND SUPPORTING INFRASTRUCTURE

Consumers Energy  
D.E. Karn Generating Facility

Saginaw River

INTAKE CHANNEL

- REFERENCES**
1. AERIAL IMAGE PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE AUGUST 14, 2021.
  2. HORIZONTAL DATUM AND COORDINATES SHOWN BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), SOUTH ZONE, INTERNATIONAL FOOT.

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
									B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
									A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE  
NAME  
MICHIGAN P.E. No.

**Consumers Energy**  
**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

**GENERAL SITE PLAN**

**KARN LINED IMPOUNDMENT CLOSURE WORK PLAN**

SCALE: AS SHOWN	DRAWING NO.	FIGURE	REV.
JOB: GL21489845		<b>2</b>	<b>B</b>

A

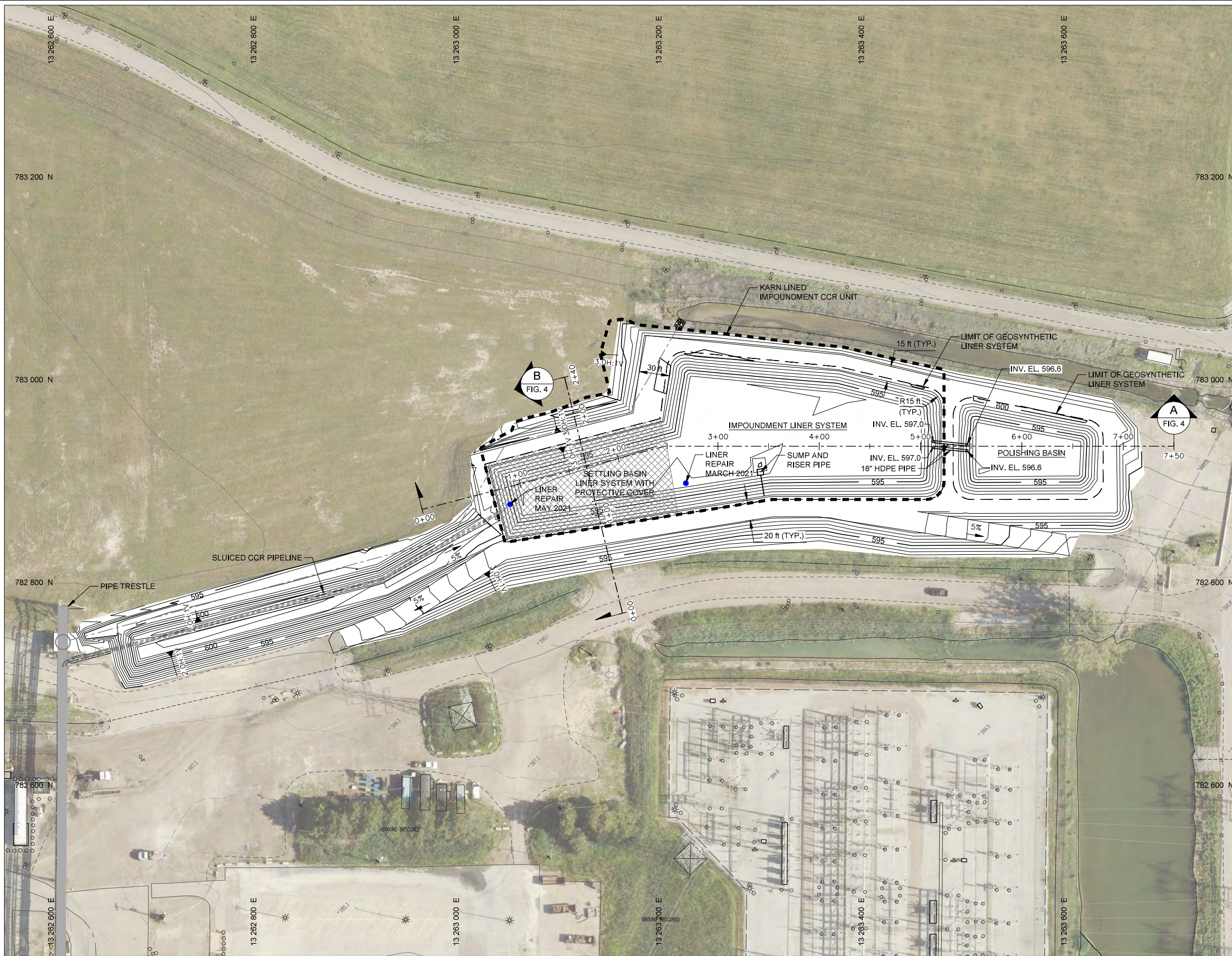
B

C

D

F:\ConsumersEnergy\31489845\_DGX\_Closure\GIS\Drawings\PRODUCTION\A - Lined Impoundment Closure - General Site Plan.dwg Jun 14, 2023 - 8:59am By: STAnderson



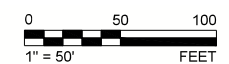


**LEGEND**

	EXISTING GROUND TOPOGRAPHY
	AS-BUILT GRADES (TOP OF EMBANKMENT FILL), SEE REFERENCE NOTE 5
	EXISTING PROCESS WATER PIPE
	EXISTING CULVERT
	LIMIT OF GEOSYNTHETIC LINER SYSTEM
	LIMIT OF KARN LINED IMPOUNDMENT CCR UNIT
	EXISTING ASH TRESTLE
	PROTECTIVE COVER
	LINER REPAIR LOCATION

- NOTES**
- EXISTING FEATURES OUTSIDE OF THE PROJECT AREA MAY NOT BE SHOWN FOR CLARITY.
  - EXISTING CONDITIONS IN THE BOTTOM ASH POND AND ASH LANDFILL MAY VARY FROM THOSE SHOWN DUE TO ONGOING ASH DISPOSAL OPERATIONS.

- REFERENCES**
- AERIAL IMAGE PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE AUGUST 14, 2021.
  - HORIZONTAL COORDINATE SYSTEM: MICHIGAN STATE PLANE, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (1994 ADJUSTMENT), INTERNATIONAL SURVEY FOOT.
  - VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  - EXISTING SITE TOPOGRAPHY PROVIDED IN APRIL 2016 BY ENGINEERING & ENVIRONMENTAL SOLUTIONS, L.L.C. AUGMENTED WITH DESIGN GRADES FOR PROCESS WATER MODIFICATIONS IMPLEMENTED IN FALL 2017.
  - AS-BUILT IMPOUNDMENT GRADES SHOWN BASED ON RECORD DRAWINGS, DRAWING NO. 695-1278 - SHEET 102, "KARN BOTTOM ASH IMPOUNDMENT GRADING PLAN (TOP OF EMBANKMENT FILL), ISSUED FOR RECORD DATE DECEMBER 04, 2018.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
									B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
									A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE

NAME

MICHIGAN P.E. No.

**Consumers Energy**

**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

**LINED IMPOUNDMENT AS-BUILT SITE PLAN**

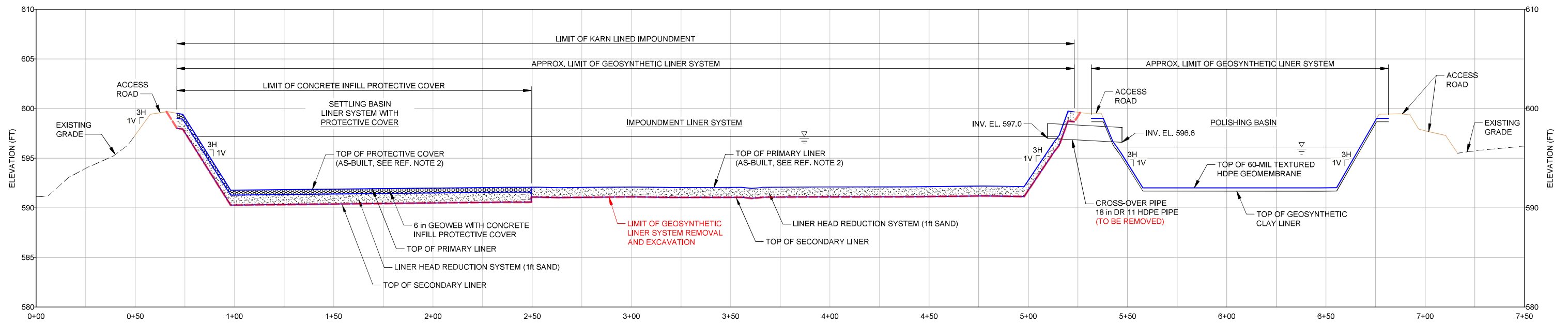
**KARN LINED IMPOUNDMENT CLOSURE WORK PLAN**

SCALE: AS SHOWN  
JOB: GL21489845

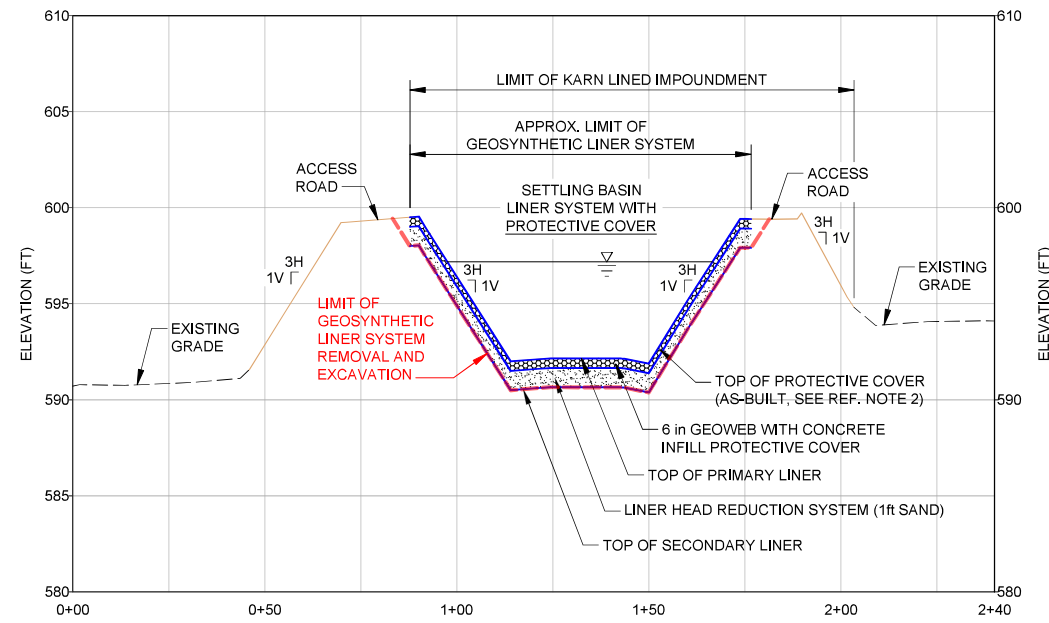
DRAWING NO. FIGURE 3

REV. **B**



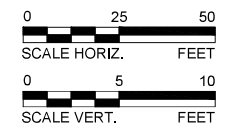


SCALE 1" = 25'  
5X VERT. SECTION A  
FIG. 4



SCALE 1" = 25'  
5X VERT. SECTION B  
FIG. 4

- REFERENCES
- VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  - AS-BUILT IMPOUNDMENT GRADES SHOWN BASED ON RECORD DRAWINGS, DRAWING NO. 695-1278 - SHEET 102, "KARN BOTTOM ASH IMPOUNDMENT GRADING PLAN (TOP OF EMBANKMENT FILL), ISSUED FOR RECORD DATE DECEMBER 04, 2018.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE
NAME
MICHIGAN P.E. No.

**Consumers Energy**

**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

<b>LINED IMPOUNDMENT AS-BUILT CROSS SECTIONS A &amp; B</b>		<b>KARN LINED IMPOUNDMENT CLOSURE WORK PLAN</b>	
SCALE: AS SHOWN	DRAWING NO.	FIGURE	REV.
JOB: GL21489845		<b>4</b>	<b>B</b>



# **Attachment B**

## **Pre-Existing Groundwater Conditions**

**Date Start:** 10/12/15  
**Date Finish:** 10/12/15  
**Drilling Company:** Stock Drilling  
**Driller's Name:** Austin Goldsmith  
**Drilling Method:** Hydrovac/Sonic  
**Sampling Method:** Continuous  
**Rig Type:** Sonic  
**Water Level Start (ft. bgs.):** 7.0  
**Water Level Finish (ft. btoc.):** 12.08

**Northing:** 783112.8  
**Easting:** 13263202.1  
**Casing Elevation:** 602.79  
**Borehole Depth (ft. bgs.):** 29.0  
**Surface Elevation:** 599.9  
**Descriptions By:** L. Rogers

**Well/Boring ID:** DEK MW-15003  
**Client:** Consumers Energy  
**Location:** DE Karn Facility  
 2742 Weadock Highway  
 Essexville, MI 48732  
**Weather Conditions:** 60 F Windy

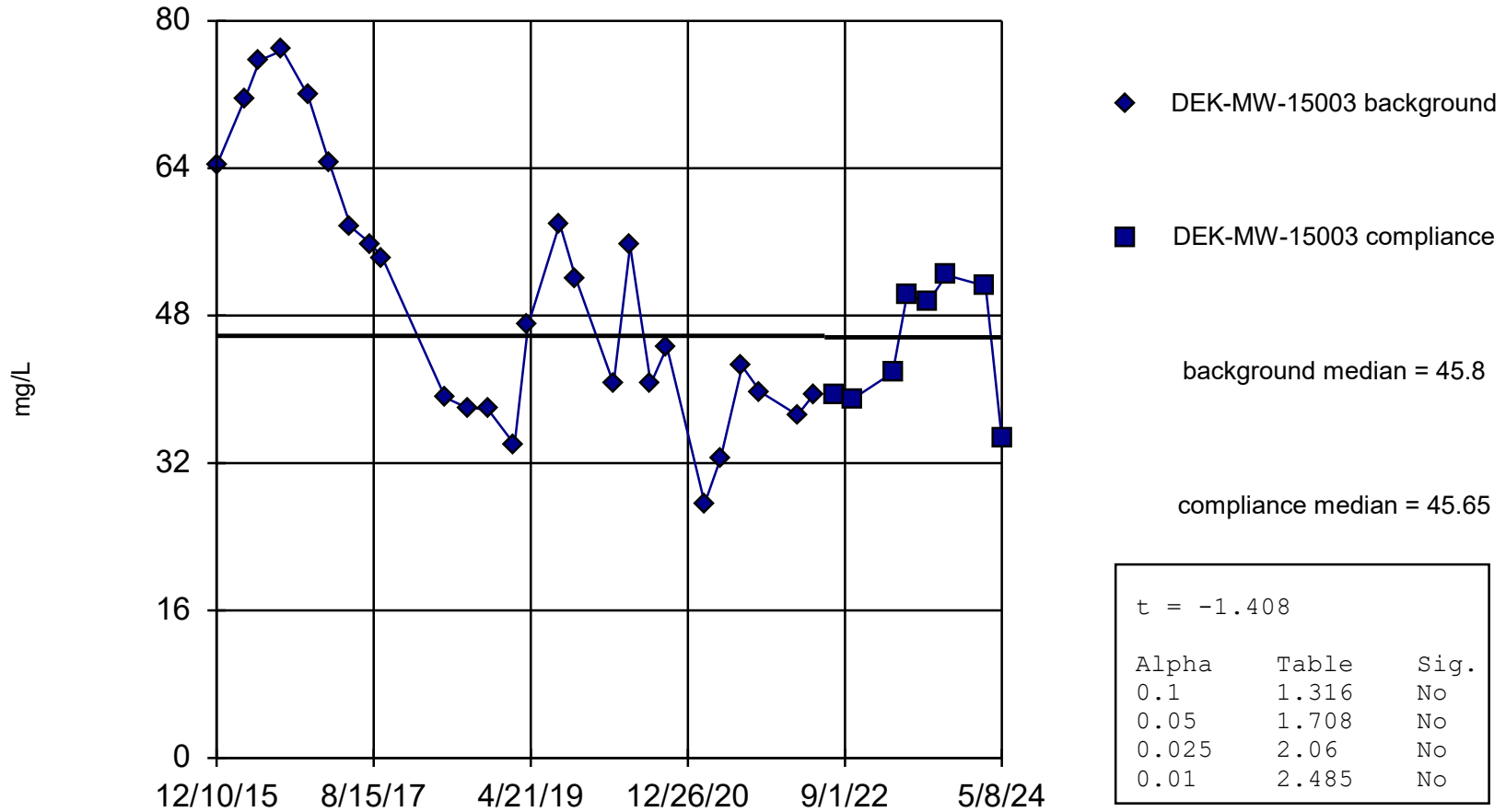
DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	600							(0.0 - 7.0') Hydrovac; no lithology recorded.		TOC Elevation = 602.79 (ft. above msl)
5	595	1	0.0-7.0'	0.0	NA					Concrete (0.0-1.5' bgs)
		2	7.0-9.0'	2.0	NA	X	X	(7.0 - 8.0') Fly ASH; wet; black (10YR 2/1). NOTE: Fill material.		
						X	X	(8.0 - 9.5') PEAT and ASH; little roots; little organics; wet; black (10YR 2/1).		2" PVC Well Casing (-3.0-21.0' bgs)
10	590					X	X	(9.5 - 19.5') ASH, mix of bottom and fly; wet; black (10YR 2/1). NOTE: Fill material.		Bentonite Pellets (1.5-20.0' bgs)
15	585	3	9.0-19.0'	7.5	NA	X	X			
						X	X	NOTE: Trace clay from 16.0' to 19.5' bgs.		
20	580					X	X	(19.5 - 21.0') SAND, very fine to fine; little silt and clay; trace medium sand; well sorted; moist to wet; dark olive gray (5Y 3/2).		
						X	X	(21.0 - 25.0') SAND, very fine to medium; trace coarse sand; trace silt; well sorted; moist to wet; dark gray (10YR 4/1).		Sand Pack K&E WP00 (20.0-29.0' bgs)
25	575	4	19.0-29.0'	10.3	NA	X	X	(25.0 - 29.0') CLAY, medium to low plasticity; little granule to large cobbles, subrounded to subangular; trace silt; dry; stiff to very stiff; brown (10YR 4/7). NOTE: Till.		2" PVC 10 Slot Well Screen (21.0-25.0' bgs)
30	570							End of boring 29.0' bgs.		

**Remarks:** bgs = below ground surface      btoc = below top of casing  
 Hydrovac to 7.0' bgs.  
 Groundwater encountered at 7.0' bgs during drilling.  
 Water level at development was 12.08' btoc.  
 No odor or staining observed.  
 Groundwater elevation measured on December 8, 2015 was 588.82 feet above mean sea level.



# Sulfate

DEK-MW-15003



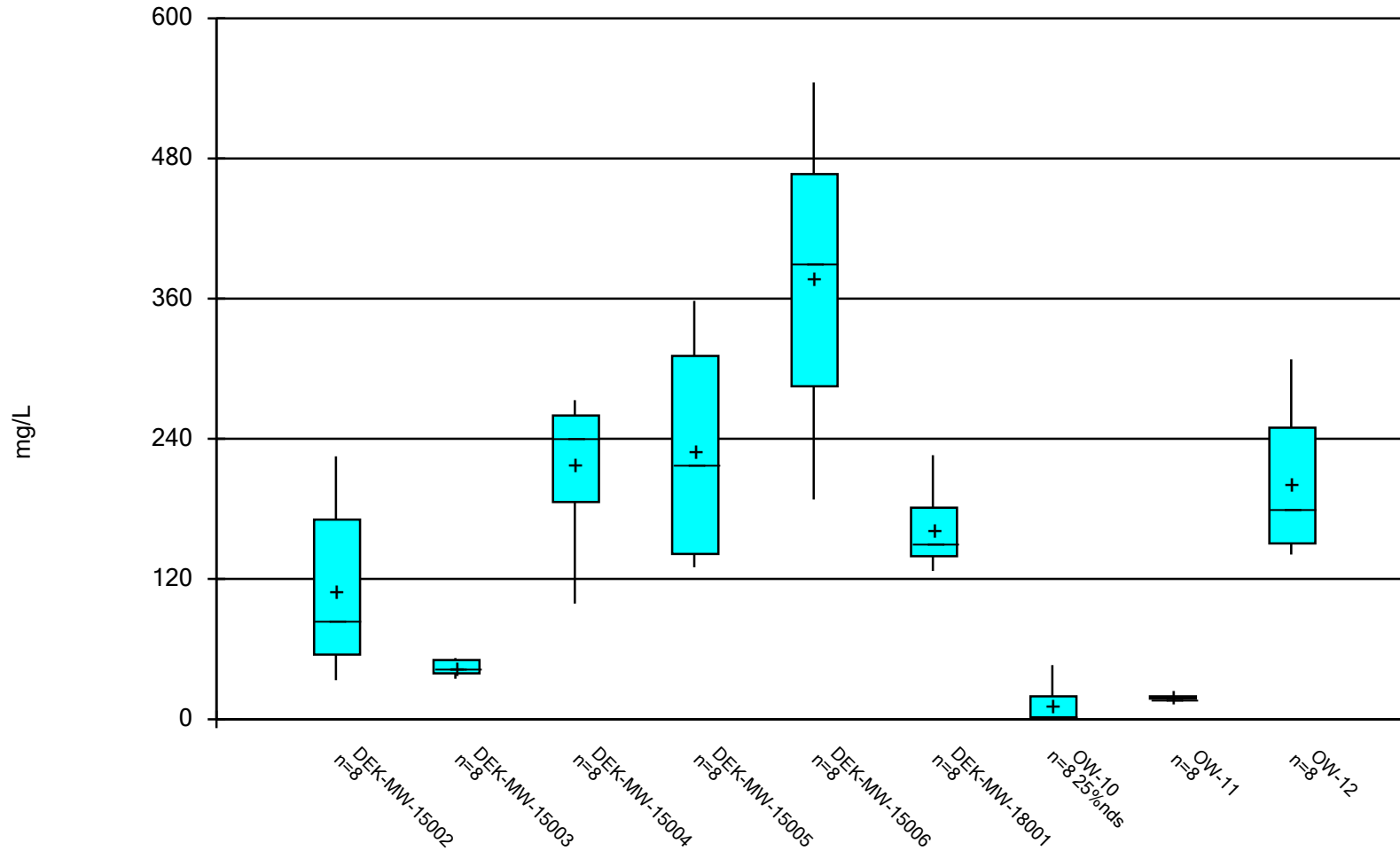
Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9288, critical = 0.92.

Welch's t-test Analysis Run 6/26/2024 12:47 PM

Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

# Sulfate

8 Most Recent Events (July 2022 - May 2024)



Box & Whiskers Plot Analysis Run 7/22/2024 12:51 AM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

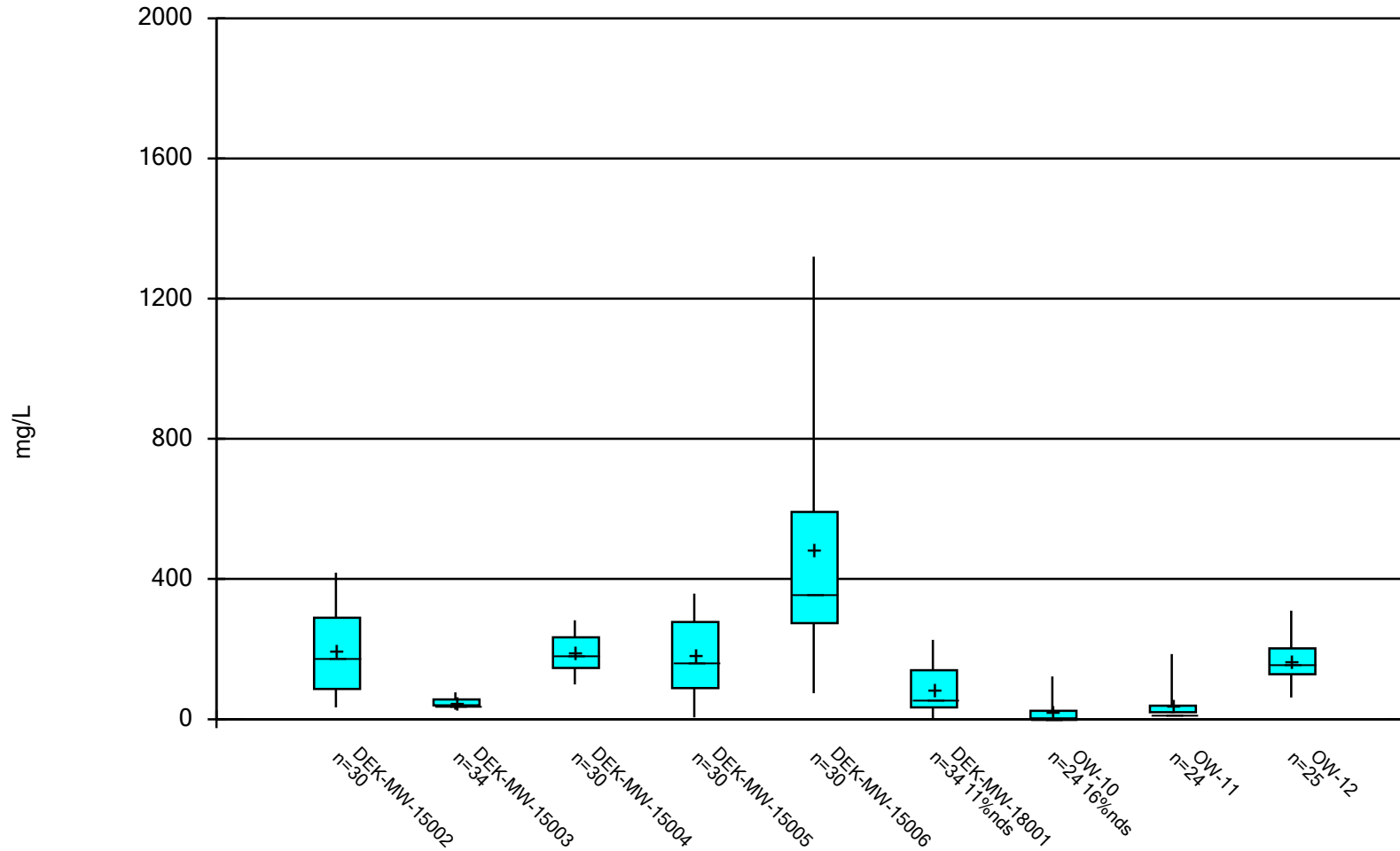
# Box & Whiskers Plot

Constituent: Sulfate (mg/L)    Analysis Run 7/22/2024 12:52 AM  
 Client: Consumers Energy    Data: DEK\_HMPCCR\_Sanitas\_24Q2

	DEK-MW-15002	DEK-MW-15003	DEK-MW-15004	DEK-MW-15005	DEK-MW-15006	DEK-MW-18001	OW-10	OW-11	OW-12
7/26/2022	93.3	39.3		130 (D)	188	127	2.67	19.9	169.5 (D)
7/27/2022			245.5 (D)						
10/4/2022	33.45 (D)	39		130	254	140	46.4	19.3	150 (D)
10/6/2022			98.9						
3/7/2023			267	153	316	161			
3/8/2023	158 (D)	41.8					11.3	17.4	141 (D)
5/2/2023	225	50.2		189 (D)	385		7.035 (D)	17.6	265
5/3/2023			273			148			
7/25/2023			253						
7/26/2023	183.5 (D)	49.5		251	401	139	27.7 (D)	18.5	151
10/3/2023			241						
10/4/2023	50.2 (D)	52.4				158	2.66	17.9	197.5 (D)
10/5/2023				290	446				
3/4/2024						201			
3/5/2024	80.1	51.2 (D)			487		<1	20	234
3/6/2024				332 (D)					
3/11/2024			198						
5/8/2024		34.6 (D)				226	<1	19.4	
5/9/2024	60.45 (D)		174	358	545				308
Median	86.7	45.65	243.3	220	393	153	4.853	18.9	183.5
LowerQ.	55.33	39.15	186	141.5	285	139.5	1.58	17.75	150.5
UpperQ.	170.8	50.7	260	311	466.5	181	19.5	19.65	249.5
Min	33.45	34.6	98.9	130	188	127	0.5	17.4	141
Max	225	52.4	273	358	545	226	46.4	20	308
Mean	110.5	44.75	218.8	229.1	377.8	162.5	12.35	18.75	202

# Sulfate

December 2015 - May 2024



Box & Whiskers Plot Analysis Run 7/22/2024 12:50 AM  
Client: Consumers Energy Data: DEK\_HMPCCR\_Sanitas\_24Q2

# Box & Whiskers Plot

Constituent: Sulfate (mg/L)    Analysis Run 7/22/2024 12:53 AM  
 Client: Consumers Energy    Data: DEK\_HMPCCR\_Sanitas\_24Q2

	DEK-MW-15002	DEK-MW-15003	DEK-MW-15004	DEK-MW-15005	DEK-MW-15006	DEK-MW-18001	OW-10	OW-11	OW-12
12/10/2015	275	64.3	213	223	1320	72.4			
3/30/2016	418	71.6	188	251	1130	53.3			
5/25/2016					917				
5/26/2016	291	75.7	184	269		64.9			
8/24/2016	384	76.8	198	355	1160	37.4			
12/1/2016	326	71.9	215	329	886	52.7			
2/23/2017	289	64.5	211	281	636	53.4			
5/18/2017	299	57.6	220	263	513	59.9			
8/3/2017	256		259.5 (D)	300	547	66.3			
8/4/2017		55.8							
9/18/2017	290	54.3		273	886	36.2			
9/19/2017			282 (D)						
4/19/2018									62.3 (D)
5/23/2018	263	39.1	177 (D)			30.6			
5/24/2018				182	401				
8/16/2018		38					10.3	185.5 (D)	91.8
8/17/2018						<2			
11/5/2018	77.2				342.5 (D)				
11/6/2018		37.8	168	160		<2	<2	118	
11/7/2018									114
2/18/2019		34				<2 (D)	4.1		
2/19/2019								81	77
4/9/2019									69
4/10/2019						<2	8.2 (D)		
4/11/2019	45	47	150	140 (D)	320			72	
8/13/2019		58					9		
8/14/2019						20		58	230 (D)
10/15/2019	150	52	160	5.1 (D)	74	31	31		310 (D)
10/16/2019								52	
3/9/2020						25.9			
3/11/2020		40.6 (D)					20.6	24.9	
3/12/2020									177
5/13/2020	367			18.9 (D)	316				
5/14/2020		55.6	125			51.1	9.71 (D)	25.7	169
8/3/2020	289	40.6		66.1 (D)		66.6			192
8/4/2020			123		286		45.05 (D)	24.4 (D)	
10/6/2020	140.5 (D)	44.6				91.9			
10/7/2020			136	102	296				
10/8/2020							11.6 (D)	25.9	153
3/1/2021	191								
3/2/2021		27.6	144	75.65 (D)	281	115	2.37 (D)	25.4	165
5/3/2021	216	32.5	143	50.5 (D)	324	121			
5/4/2021							<1	25.6	140 (D)
7/27/2021		42.5				112	122	25.8	117.5 (D)
7/28/2021	134.5 (D)		148	44.6	268				
10/4/2021	58.3		143	57.2	202.5 (D)				
10/7/2021		39.7				118	70.2	23.9	173
2/28/2022		37.2					3.51		149 (D)
3/1/2022	99.15 (D)			116	172	193		22	
3/14/2022			226						
5/3/2022	172	39.45 (D)		151	170.5 (D)	187	2.32	20.7	206
5/4/2022			220 (D)						

# Box & Whiskers Plot

Constituent: Sulfate (mg/L)    Analysis Run 7/22/2024 12:53 AM  
 Client: Consumers Energy    Data: DEK\_HMPCCR\_Sanitas\_24Q2

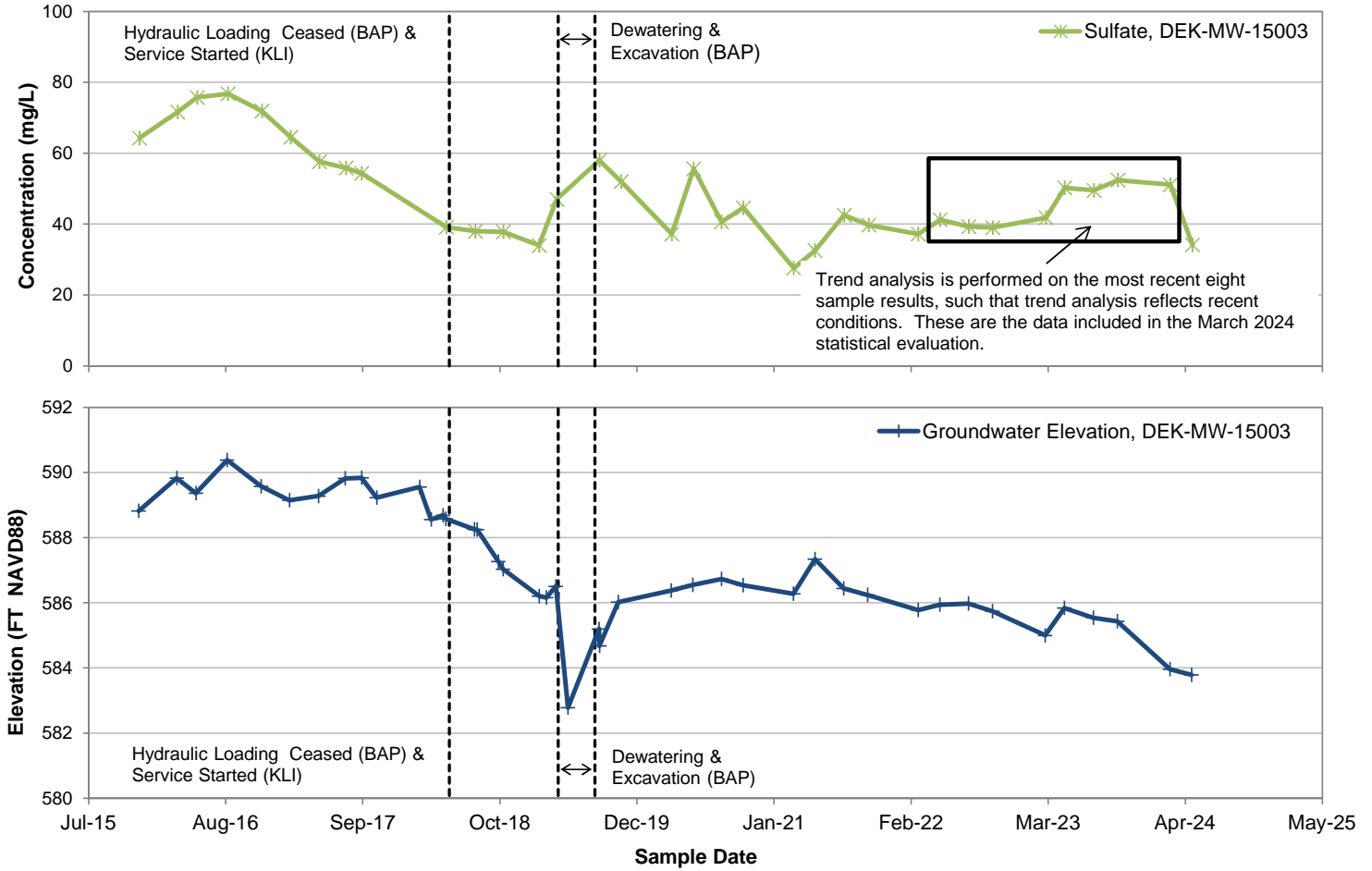
	DEK-MW-15002	DEK-MW-15003	DEK-MW-15004	DEK-MW-15005	DEK-MW-15006	DEK-MW-18001	OW-10	OW-11	OW-12
7/26/2022	93.3	39.3		130 (D)	188	127	2.67	19.9	169.5 (D)
7/27/2022			245.5 (D)						
10/4/2022	33.45 (D)	39		130	254	140	46.4	19.3	150 (D)
10/6/2022			98.9						
3/7/2023			267	153	316	161			
3/8/2023	158 (D)	41.8					11.3	17.4	141 (D)
5/2/2023	225	50.2		189 (D)	385		7.035 (D)	17.6	265
5/3/2023			273			148			
7/25/2023			253						
7/26/2023	183.5 (D)	49.5		251	401	139	27.7 (D)	18.5	151
10/3/2023			241						
10/4/2023	50.2 (D)	52.4				158	2.66	17.9	197.5 (D)
10/5/2023				290	446				
3/4/2024						201			
3/5/2024	80.1	51.2 (D)			487		<1	20	234
3/6/2024				332 (D)					
3/11/2024			198						
5/8/2024		34.6 (D)				226	<1	19.4	
5/9/2024	60.45 (D)		174	358	545				308
Median	187.3	45.8	193	171	363.8	66.45	8.6	24.65	165
LowerQ.	86.7	39.05	146	88.83	274.5	33.6	2.515	19.65	128.8
UpperQ.	289.5	56.7	233.5	277	591.5	139.5	24.15	38.95	201.8
Min	33.45	27.6	98.9	5.1	74	1	0.5	17.4	62.3
Max	418	76.8	282	358	1320	226	122	185.5	310
Mean	197.2	48.73	192.8	184.9	482.4	87.16	18.76	40.03	168.5



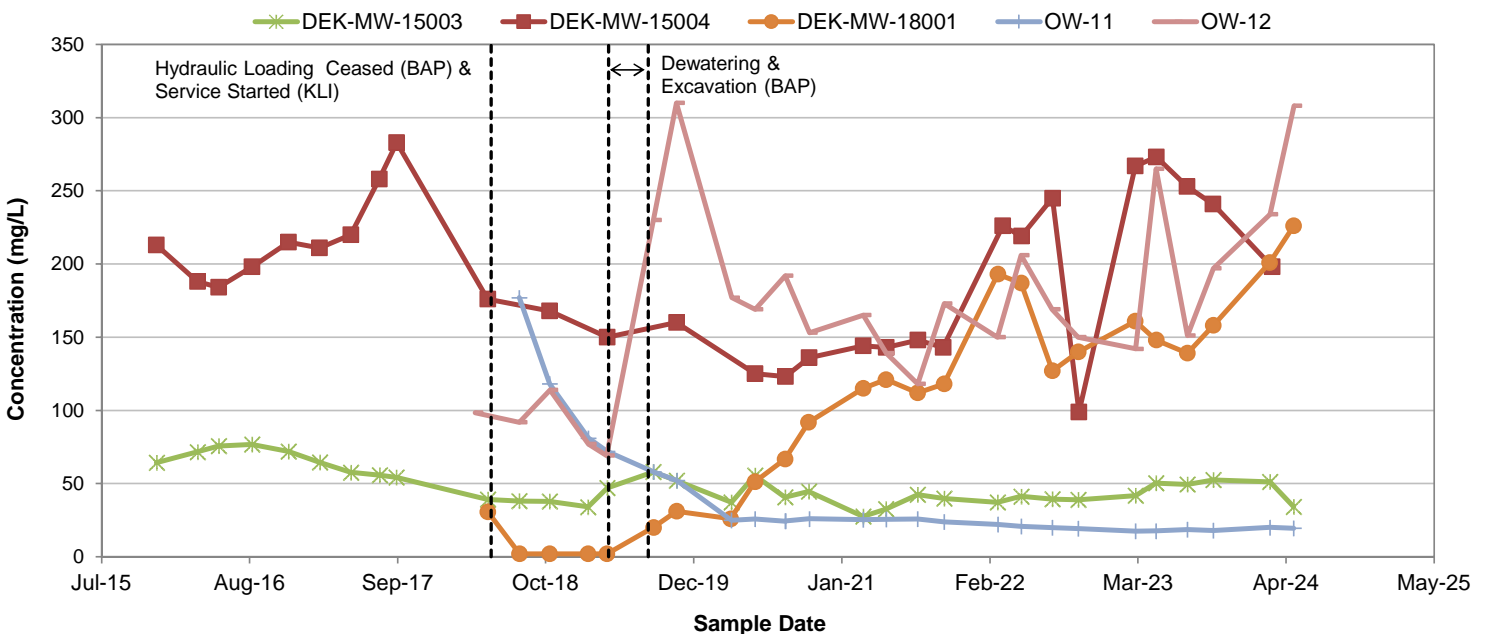
# **Attachment C**

## **Regional Groundwater Quality Changes**

**Chart 1: Sulfate Concentrations versus Groundwater Elevations at DEK-MW-15003**

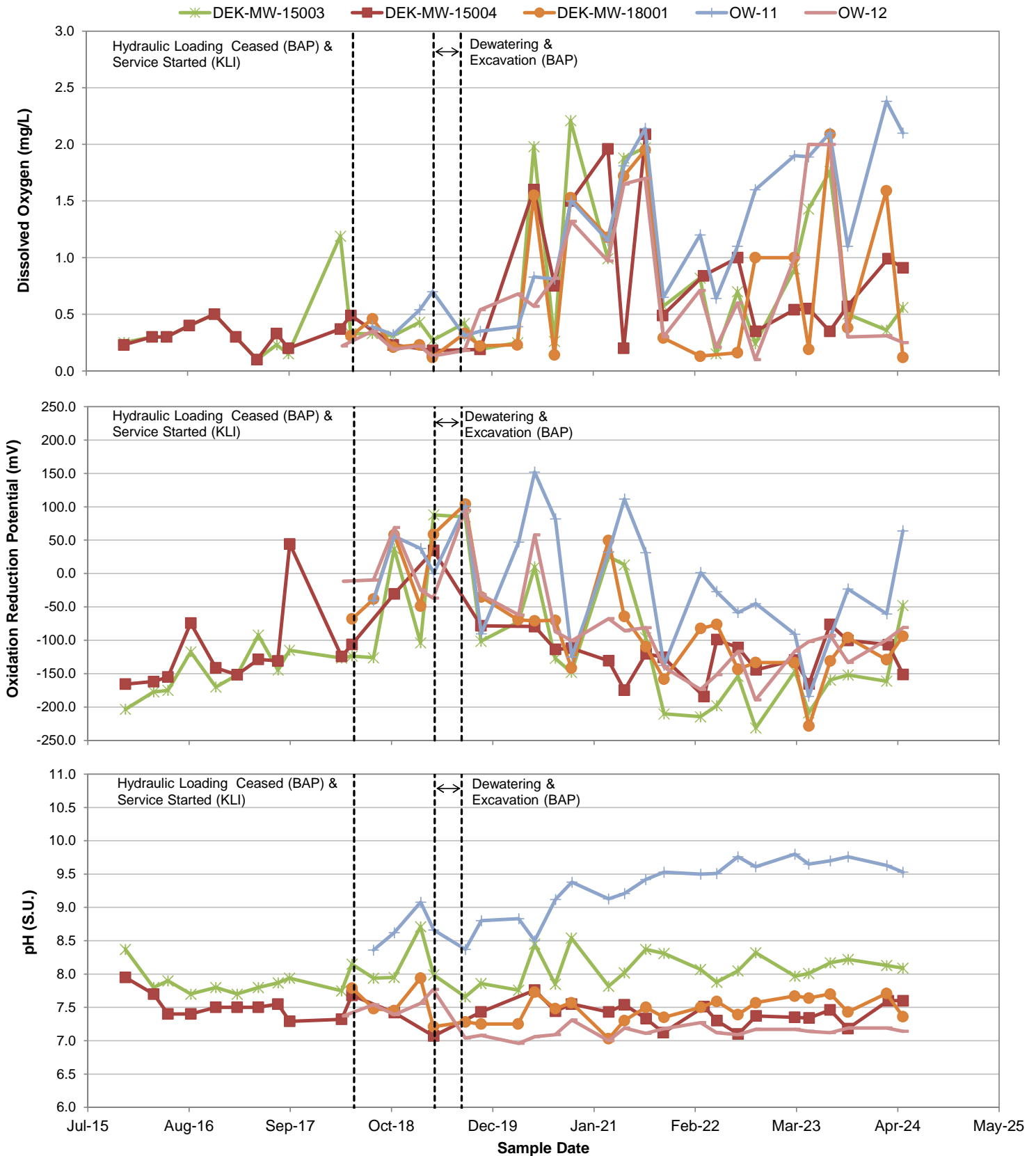


**Chart 2: Sulfate Concentrations in Karn Lined Impoundment Area Wells**



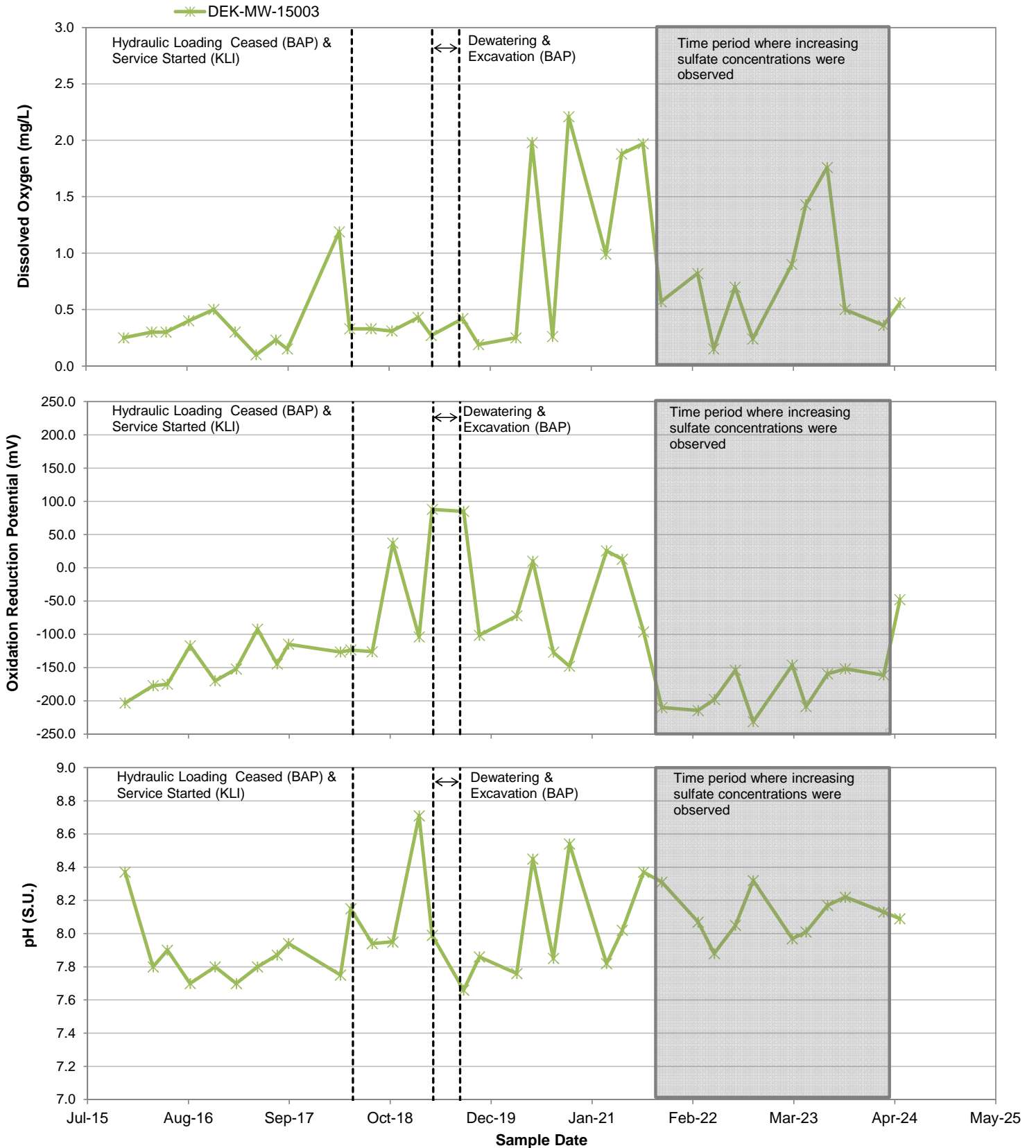
**Notes:**  
 BAP = Bottom Ash Pond; KLI = Karn Lined Impoundment

**Chart 3: Field Data Comparison in Karn Lined Impoundment Area Wells**



**Notes:**  
 BAP = Bottom Ash Pond; KLI = Karn Lined Impoundment

**Chart 4: Field Data Comparison in DEK-MW-15003**



**Notes:**  
 BAP = Bottom Ash Pond; KLI = Karn Lined Impoundment





**LEGEND**

- BACKGROUND MONITORING WELL
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
- DEK BOTTOM ASH POND MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- JCW BOTTOM ASH POND MONITORING WELL
- JCW LANDFILL MONITORING WELL
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
- SLURRY WALL (APPROXIMATE)
- (580.85) GROUNDWATER ELEVATION (FEET, MSL)
- GROUNDWATER FLOW DIRECTION (APPROXIMATE)

- NOTES**
1. BASE MAP IMAGERY FROM USDA – NATIONAL AGRICULTURE IMAGERY PROGRAM, 7/10/2016.
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).

N

0 1,000 2,000  
Feet

1" = 1,000'  
1:12,000

<b>PROJECT:</b>	
CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
<b>TITLE:</b>	
SHALLOW GROUNDWATER CONTOUR MAP MAY 2018	
DRAWN BY: S. MAJOR	PROJ NO.: 290805-001
CHECKED BY: D. LITZ	<b>FIGURE 4</b>
APPROVED BY: G. CROCKFORD	
DATE: JANUARY 2019	

1540 Eisenhower Place  
Ann Arbor, MI 48108-3284  
Phone: 734.971.7080  
www.trcsolutions.com

FILE NO.: 290805-001-019.mxd

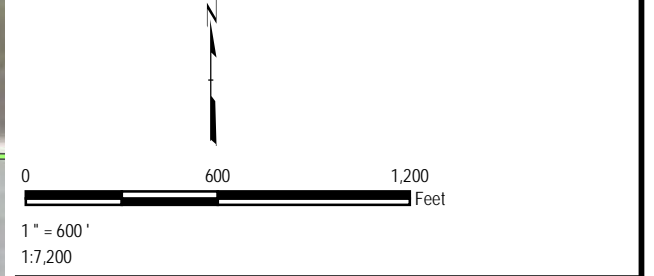




### LEGEND

- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
- DEK BOTTOM ASH POND MONITORING WELL
- DEK LINED IMPOUNDMENT MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- MONITORING WELL (STATIC ONLY)
- SURFACE WATER GAUGING STATION
- NATURE AND EXTENT WELL
- SLURRY WALL (APPROXIMATE)
- EXTENT OF GEOSYNTHETICS (KARN LINED IMPOUNDMENT)
- GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
- (580.50) GROUNDWATER ELEVATION (FEET)
- (NM) NOT MEASURED
- GROUNDWATER FLOW DIRECTION (APPROXIMATE)

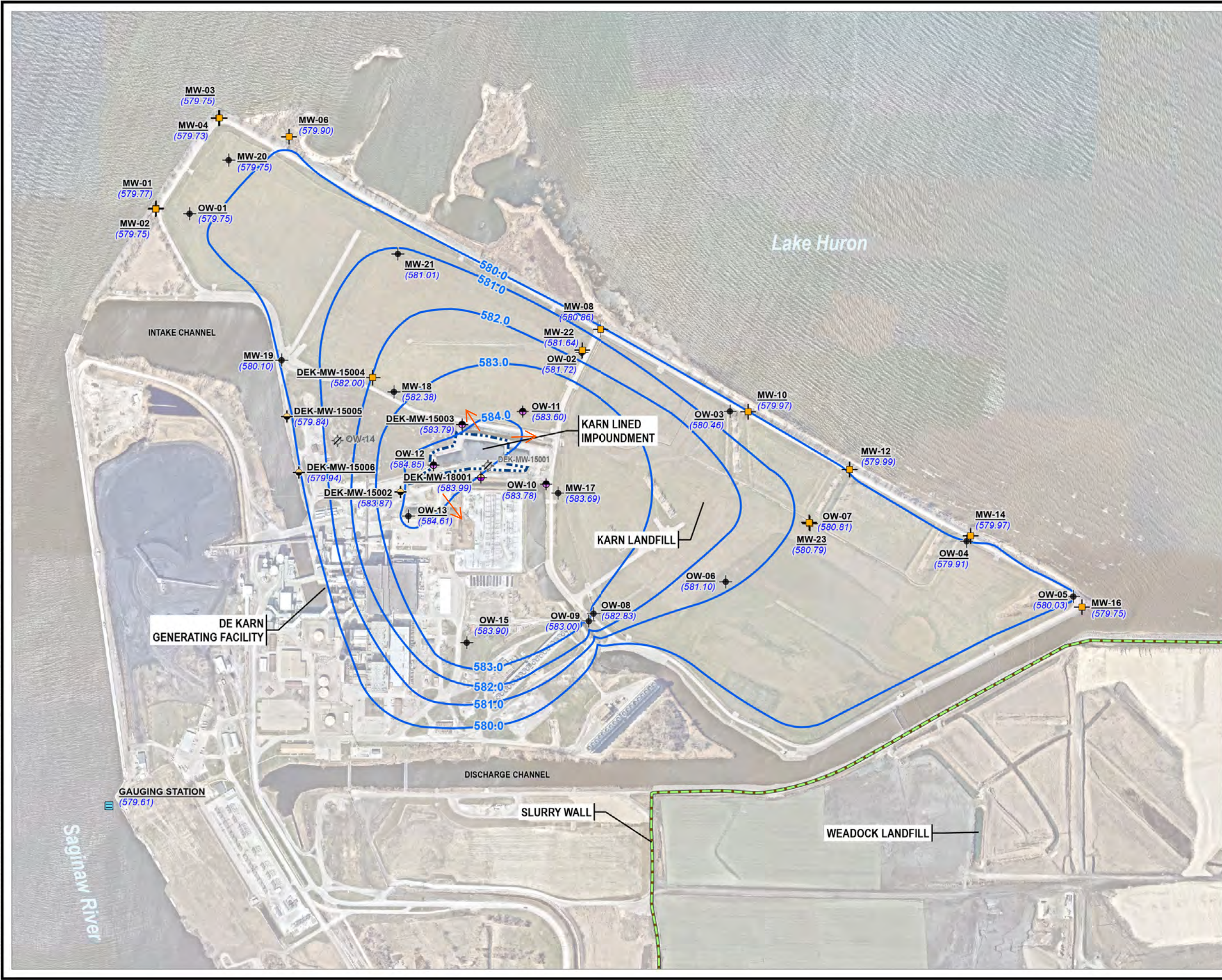
- ### NOTES
1. BASE MAP IMAGERY FROM GOOGLE EARTH PRO, 2018.
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. GROUNDWATER ELEVATION DATA RECORDED MARCH 11, 2019.
  5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
  6. DATA FROM APRIL 7, 2019. NO DATA RECORDED AT NOAA GAUGING STATION ON APRIL 8, 2019.



PROJECT:		<b>CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN</b>	
TITLE:		<b>SHALLOW GROUNDWATER CONTOUR MAP APRIL 2019</b>	
DRAWN BY:	S. MAJOR	PROJ NO.:	322173-001
CHECKED BY:	J. KRENZ	<b>FIGURE 3</b>	
APPROVED BY:	D. LITZ		
DATE:	JANUARY 2020		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trccompanies.com	
FILE NO.:		322172_3-004-02.mxd	

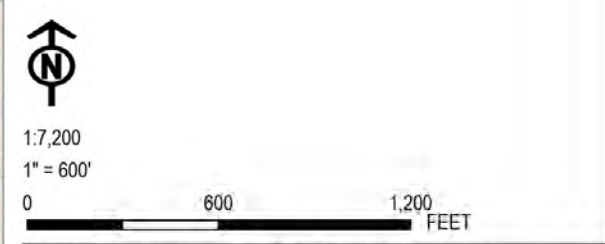


Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0  
 Saved By: AAD/afcm 7/10/2024 09:55:11 AM; File Path: T:\L\PROJ\ECIS\Consumers\_Energy\64095\_DEKARN.aprx; Layer Name: 553814\_SGW-K03-2024-02



- LEGEND**
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOM ASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - EXTENT OF GEOSYNTHETICS
  - SLURRY WALL (APPROXIMATE)
  - GROUNDWATER ELEVATION CONTOUR (1' INTERVAL, DASHED WHERE INFERRED)
  - (580.21) GROUNDWATER ELEVATION (FEET)
  - (NM) NOT MEASURED
  - (NU) NOT USED
  - GROUNDWATER FLOW DIRECTION (APPROXIMATE)

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
  3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.
  5. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH-AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SHALLOW GROUNDWATER CONTOUR MAP MAY 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553814.0001
CHECKED BY: J. KRENZ	<b>FIGURE 3</b>
APPROVED BY: D. LITZ	
DATE: JULY 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx



## **Enclosure 7**

**Alternate Source Demonstration: July 2024 Detection  
Monitoring Sampling Event, Karn Lined Impoundment Coal  
Combustion Residuals (CCR) Unit, Essexville, Michigan. (TRC;  
January 28, 2025)**



A CMS Energy Company

Date: January 28, 2025


To: Operating Record

From: Harold D. Register, Jr., P.E. 

RE: Alternate Source Demonstration Professional Engineer Certification, §257.94(e)2  
DE Karn Lined Impoundment CCR Unit

Professional Engineer Certification Statement [40 CFR 257.94(e)2]

I hereby certify that the alternative source demonstration presented within this January 28, 2025 letter report has been prepared to meet the requirements of Title 40 CFR §257.94(e)2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e)2.



Signature

January 28, 2025

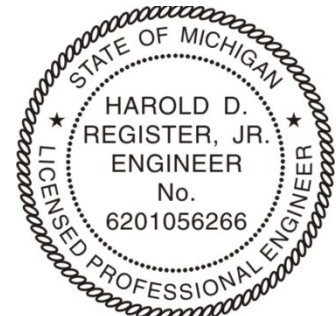
Date of Certification

Harold D. Register, Jr., P.E.

Name

6201056266

Professional Engineer Certification Number



01/28/2025

## ENCLOSURES

TRC (January 2025). Alternate Source Demonstration: July 2024 Detection Monitoring Sampling Event Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan

January 28, 2025

Harold D. Register, Jr., P.E.  
Risk Management – Environmental Quality & Sustainability  
Consumers Energy  
1945 W. Parnall Road  
Jackson, MI 49201

Subject: Alternate Source Demonstration: July 2024 Detection Monitoring Sampling Event  
Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan

Dear Mr. Register:

TRC was retained by Consumers Energy to conduct routine groundwater monitoring activities at the DE Karn Lined Impoundment coal combustion residual (CCR) unit, located in Essexville, Michigan (the Site). Routine groundwater monitoring at the DE Karn Lined Impoundment CCR unit is conducted in accordance with the Michigan Department of Environment, Great Lakes, and Energy (EGLE)-approved Karn Lined Impoundment Hydrogeological Monitoring Plan (HMP),<sup>1</sup> which was written to comply with the requirements of the State of Michigan's Part 115, Rule 299.4905 and the United States Environmental Protection Agency (USEPA) final rule for the regulation and management of CCR under the Resource Conservation and Recovery Act (RCRA), as amended (the CCR Rule) (USEPA, April 2015). The detection monitoring indicator parameters are evaluated quarterly to identify potential statistically significant increases (SSIs) above background levels. Per the HMP and the CCR Rule, an SSI occurs when a statistically significant increasing trend is observed over two consecutive sampling events.

As detailed in *Second Quarter 2024 Hydrogeologic Monitoring Report*,<sup>2</sup> an initial statistically significant increasing trend was observed for total dissolved solids (TDS) at DEK-MW-18001 as of the May 2024 detection monitoring event. Subsequently, the statistical evaluation of the July 2024 TDS data at DEK-MW-18001 also showed a statistically significant increasing trend,<sup>3</sup> indicating an SSI over background for:

- TDS at DEK-MW-18001

All other detection monitoring indicator parameters indicated stable or decreasing trends, i.e., no additional confirmed increasing trends or SSIs are currently observed within the Karn Lined Impoundment monitoring well network.

---

<sup>1</sup> TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan. Prepared for Consumers Energy Company. August.

<sup>2</sup> TRC. 2024. Second Quarter 2024 Hydrogeologic Monitoring Report – DE Karn Lined Impoundment. Prepared for Consumers Energy Company. July 30.

<sup>3</sup> TRC. 2024. Third Quarter 2024 Hydrogeologic Monitoring Report – DE Karn Lined Impoundment. Prepared for Consumers Energy Company. October 30.

In accordance with §257.94(e)(2), Consumers Energy may demonstrate that a source other than the CCR unit caused the SSI or that the SSI resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. This Alternate Source Demonstration (ASD) has been prepared to address the SSI identified in the July 2024 detection monitoring event. The results of this ASD show that the TDS SSI at DEK-MW-18001 is attributable to other onsite sources and is not due to a release from the Karn Lined Impoundment.

## **Background**

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay. Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Consumers Energy permanently ceased the operation of Karn Units 1 & 2 in May 2023 and has commenced decommissioning activities for both coal-fired generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled and will continue to operate. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal under the CCR Rule and the Karn Landfill that was certified closed by constructing a final cover system and is currently in post-closure care under P115.

## **CCR Unit Description**

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn Units 1 & 2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit N0. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment to the EGLE that details a process for closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023. In August and September 2024, the Karn Lined Impoundment was dewatered and hydraulic structures were removed. The remaining CCR, the geosynthetic liner systems, and all areas within the limits of the Karn Lined Impoundment that were in contact with CCR were removed.

## **Geology/Hydrogeology**

Most of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. 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 the construction of perimeter dikes and subsequent ash filling.<sup>4</sup>

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<sup>4</sup> AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. October 30.

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 Site is bounded by several surface water features (Figures 1 and 2): 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. Near the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a current potentiometric high point near OW-12, flowing outward toward the surrounding surface water bodies.

### ***Monitoring Well Network***

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit.<sup>5</sup> Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring, as described in the HMP and in accordance with the “Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance” (USEPA, 2009). The detection monitoring well network for the Karn Lined Impoundment CCR Unit consists of five monitoring wells (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12) that are screened in the uppermost aquifer. Note that DEK-MW-18001 was installed in 2018 to replace one of the downgradient compliance wells for the Karn Bottom Ash Pond, DEK-MW-15001, that was decommissioned due to Karn Lined Impoundment construction. DEK-MW-18001 continues to be monitored and evaluated with regards to both the Karn Bottom Ash Pond and Karn Lined Impoundment.

### **Alternate Source Demonstration: Total Dissolved Solids at DEK-MW-18001**

As discussed above, the statistical evaluation of the July 2024 detection monitoring indicator parameters showed a confirmed increasing trend for TDS at DEK-MW-18001, indicating an SSI over background. All other detection monitoring constituents indicated stable or decreasing trends, i.e., no additional increasing trends or SSIs are currently observed within the Karn Lined Impoundment monitoring well network. There are several lines of evidence to demonstrate that the increase in TDS at DEK-MW-18001 is attributable to other sources onsite and is not related to the operation of the Karn Lined Impoundment, as outlined further below.

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<sup>5</sup> TRC. 2018. Groundwater Monitoring System Summary Report – Consumers Energy, DE Karn Lined Impoundment (KLI). Prepared for Consumers Energy Company. June.

### ***Karn Lined Impoundment Unit Construction***

The liner system for the Karn Lined Impoundment was designed as a double composite liner system, with the primary and secondary composite liners each consisting of 60-mil high-density polyethylene (HDPE) geomembrane (GM) overlaying a 236-mil geosynthetic clay liner (GCL). This liner system was constructed consistent with the liner design requirements of §257.70 and §257.72.<sup>6</sup> The secondary collection system (SCS) serves as a leak detection system, and the SCS flow rate data is used to demonstrate compliance under Michigan's 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 flow rate is calculated each time the SCS is evacuated. Since early 2021, the SCS flow rate has been below the state-established response action flow of 25 gallons per acre per day (GPAD) and the action flow rate of 5 GPAD, indicating that the liner is not leaking. Consumers Energy continues to document this information in their operating record.

The double composite liner system construction of the Karn Lined Impoundment and the SCS flow rate monitoring for leak detection are operating as designed and indicate that wet ash dewatering liquids managed within the unit have not migrated past the liner system and affected groundwater quality. Attachment A contains figures that illustrate the Karn Lined Impoundment as-built construction.

### ***Pre-Existing Groundwater Conditions***

The footprint of the Karn Lined Impoundment is immediately adjacent to the pre-existing Karn Bottom Ash Pond. As reported in the 2017 Annual Groundwater Monitoring Report: DE Karn Bottom Ash Pond CCR Unit,<sup>7</sup> potential SSIs over background limits were noted for boron, fluoride, pH, and sulfate in one or more downgradient wells during the September 2017 detection monitoring event. Although the CCR material associated with the operation of the Karn Bottom Ash Pond has been removed;<sup>8</sup> the groundwater in the vicinity of the Karn Lined Impoundment is documented to have been affected by CCR prior to the existence of the Karn Lined Impoundment due to the pre-existing Karn Bottom Ash Pond.

Additionally, as noted in the Geology/Hydrogeology section, the site development included reclaiming low-lands with ash fill. Although the soil boring log for DEK-MW-18001 did not note ash, the presence of ash is documented in the boring logs for the other Karn Lined Impoundment and Karn Bottom Ash Pond monitoring wells, including decommissioned monitoring well DEK-MW-15001 located approximately 80 ft northeast of DEK-MW-18001 (Attachment B). Ash fill present in this area of the Site provides an additional influence on groundwater quality that is unrelated to the operation of the Karn Lined Impoundment as the presence of ash fill pre-dates construction and operation of the impoundment.

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<sup>6</sup> Golder Associates, Inc. 2018. D. E. Karn Generating Facility Bottom Ash Lined Impoundment Liner System Design Certification Report. April.

<sup>7</sup> TRC. 2018. Annual Groundwater Monitoring Report – DE Karn Power Plant Bottom Ash Pond CCR Unit. January.

<sup>8</sup> Consumers Energy. 2019. D.E. Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report. October 30.

The magnitude of the TDS concentrations currently observed at DEK-MW-18001 are lower than the concentrations observed in the unaffected background wells from the Karn Bottom Ash Pond certified well network (Figure 2), as evidenced by the Box and Whisker Plots included in Attachment B. Additionally, TDS concentrations at DEK-MW-18001 are consistent with concentrations at monitoring well DEK-MW-15001 which reflects conditions prior to the construction of the Karn Lined Impoundment (Attachment C, Chart 2).

### ***Challenges with Total Dissolved Solids as an Indicator Parameter***

TDS is a detection monitoring constituent listed in Appendix III to Part 257 as a CCR indicator parameter. Although TDS can be used to assess groundwater quality, TDS concentrations reflect the total amount of dissolved substances in water and are strongly influenced by common ions, including calcium, chloride, iron, magnesium, potassium, sodium, and sulfate. Since changes in TDS are not necessarily tied to a single constituent, the lack of specificity can make determining a specific source causing changes in TDS a challenge. The expression of TDS concentration is also highly variable temporally and spatially given the influence by rainfall events and the influence of the geologic medium that precipitation, surface runoff, and/or groundwater come into contact with along the flow path.

TDS at DEK-MW-18001 was the only confirmed statistically significant increase in a detection monitoring constituent identified in statistical evaluation the July 2024 groundwater data. A confirmed increasing trend of TDS provides a *potential indication* that a release may be coming from the monitored unit. When this indicator trend is evaluated with other co-monitored conditions and parameters at the Karn Lined Impoundment which do not indicate statistical increases, the increasing trend for TDS observed at a single well does not demonstrate a new release from operation of the Karn Lined Impoundment has occurred.

### ***Regional Groundwater Quality Changes: Sulfate***

Sulfate concentrations, one of the common ions that contribute to overall TDS, are increasing in several wells in the vicinity of the Karn Bottom Ash Pond and Lined Impoundment (e.g., DEK-MW-18001, DEK-MW-15003, DEK-MW-15004, and OW-12), following the CCR removal and pond closure activities at the Karn Bottom Ash Pond, as discussed in detail in the *Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event*<sup>9</sup>. Visual increases can be observed for sulfate over the past 2 years that mirror the trend in TDS at DEK-MW-18001 (Attachment C, Charts 1 & 2). Changes in groundwater elevations have resulted in variability in the groundwater flow direction, as well as changes in redox conditions, both of which affect contaminant transport and contribute to changes in groundwater quality for redox sensitive conditions, such as sulfate. As a result, these changes affect the concentrations of TDS. Field data and constituent concentration variability are observed in the groundwater quality as a result of both groundwater flow direction changes and redox condition changes following closure activities. These regional groundwater quality changes will continue to be monitored.

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<sup>9</sup> TRC. 2024. Alternate Source Demonstration: March 2024 Detection Monitoring Sampling Event Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit, Essexville, Michigan. July 30





## Conclusions and Recommendations

Based on the multiple lines of evidence presented above, the TDS SSI at DEK-MW-18001 first observed in the May 2024 sampling event and confirmed following the July 2024 sampling event is not attributed to the Karn Lined Impoundment. The information provided in this technical memorandum serves as the ASD for the Karn Lined Impoundment. This ASD was prepared in accordance with 40 CFR 257.94(e)(2) of the CCR Rule and the 2020 HMP and demonstrates that the TDS SSI at DEK-MW-18001 determined based on the July 2024 detection monitoring event are due to pre-existing groundwater conditions and regional changes in geochemistry. Although there is a confirmed increasing trend of one indicator parameter at one compliance groundwater well, the construction of the Karn Lined Impoundment unit and the measured SCS flow rates demonstrate that there has not been a release from the unit. Therefore, based on the information provided in this ASD, Consumers Energy will not trigger the initiation of assessment monitoring in accordance with 40 CFR 257.95 at the Karn Lined Impoundment CCR unit. As discussed above, closure by removal activities at the Karn Lined Impoundment have been completed and the unit post-excavation groundwater monitoring has commenced.

Sincerely,

TRC

  
Darby Litz, P.G.  
Project Manager/Sr. Hydrogeologist

  
Kristin Lowery  
Project Engineer

Attachments

Figures

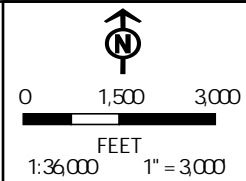
Attachment A Karn Lined Impoundment Unit Construction  
Attachment B Pre-Existing Groundwater Conditions  
Attachment C Total Dissolved Solids and Sulfate Time-Series Charts

cc: Sarah B. Holmstrom, TRC  
Graham Crockford, TRC

# Figures



COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH FIPS 2113 FEET, MAP ROTATION: 0  
 - SAVED BY: WDAVIS ON 12/16/2024, 11:05:17 AM - FILE PATH: T:\V-PROJECTS\CONSUMERS ENERGY\464095 DEKARN\2-APR\464095 DEKARN.APRX - LAYOUT NAME: 553814-TOPO-KO1-202-402



PROJECT: CONSUMERS ENERGY COMPANY  
 DE KARN AND JC WEADOCK POWER PLANTS  
 ESSEXVILLE, MICHIGAN

TITLE: SITE LOCATION MAP

DRAWN BY:	A. ADAIR	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	FIGURE 1	
APPROVED BY:	D. LITZ		
DATE:	JANUARY 2025		

1540 EISENHOWER PLACE  
 ANN ARBOR, MI 48108-3284  
 PHONE: 734.971.7080

FILE: DEKARN

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

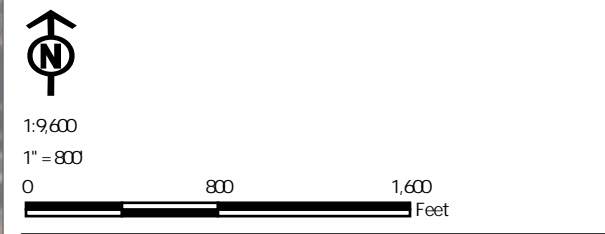


Coordinate System: NAD 1983 UTM Zone 10N; Map Rotation: 0  
 -- Saved By: W.DAVIS on 12/20/2024, 10:26:14 AM; File Path: T:\PROJECTS\Consumers\_Energy\46-0095\_DEKARN\2-APPROX\46-0095\_DEKARN.aprx; Layout Name: 553814-SL-202-202-402



- LEGEND**
- DEK BOTTOMASH POND & LINED IMPOUNDMENT MONITORING WELL
  - DEK BOTTOMASH POND MONITORING WELL
  - DEK LINED IMPOUNDMENT MONITORING WELL
  - DECOMMISSIONED MONITORING WELL
  - MONITORING WELL (STATIC WATER LEVEL ONLY)
  - NATURE AND EXTENT WELL
  - SURFACE WATER GAUGING STATION
  - BACKGROUND MONITORING WELL
  - SLURRY WALL (APPROXIMATE)
  - LINED IMPOUNDMENT (COVENANT BOUNDARY)

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (4/5/2024).
  2. WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015
  3. NOAA NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
  4. A SINGLE WELL SYMBOL IS SHOWN FOR WELL PAIRS MW-01/MW-02 AND MW-03/MW-04 AS THE WELLS ARE LOCATED WITHIN 3-FT OF EACH OTHER.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LAYOUT MAP	
DRAWN BY:	H. DAVIS	PROJ. NO.:	553814.0001
CHECKED BY:	A. WHALEY	<b>FIGURE 2</b>	
APPROVED BY:	D. LITZ		
DATE:	JANUARY 2025		
		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7030 www.trccompanies.com	
FILE:	464095_DEKARN.aprx		



# **Attachment A**

## **Karn Lined Impoundment Unit Construction**



A

B

C

D



0 150 300  
1" = 150' FEET

Saginaw Bay

KARN LANDFILL

KARN SOLID WASTE DISPOSAL AREA

KARN BOTTOM ASH POND

KARN LINED IMPOUNDMENT CCR UNIT

POWER PLANT AND SUPPORTING INFRASTRUCTURE

Consumers Energy  
D.E. Karn Generating Facility


Saginaw River

INTAKE CHANNEL

- REFERENCES**
1. AERIAL IMAGE PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE AUGUST 14, 2021.
  2. HORIZONTAL DATUM AND COORDINATES SHOWN BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), SOUTH ZONE, INTERNATIONAL FOOT.

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
									B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
									A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE
NAME
MICHIGAN P.E. No.



**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

<b>GENERAL SITE PLAN</b>			
<b>KARN LINED IMPOUNDMENT CLOSURE WORK PLAN</b>			
SCALE: AS SHOWN	DRAWING NO.	FIGURE	REV.
JOB: GL21489845		<b>2</b>	<b>B</b>

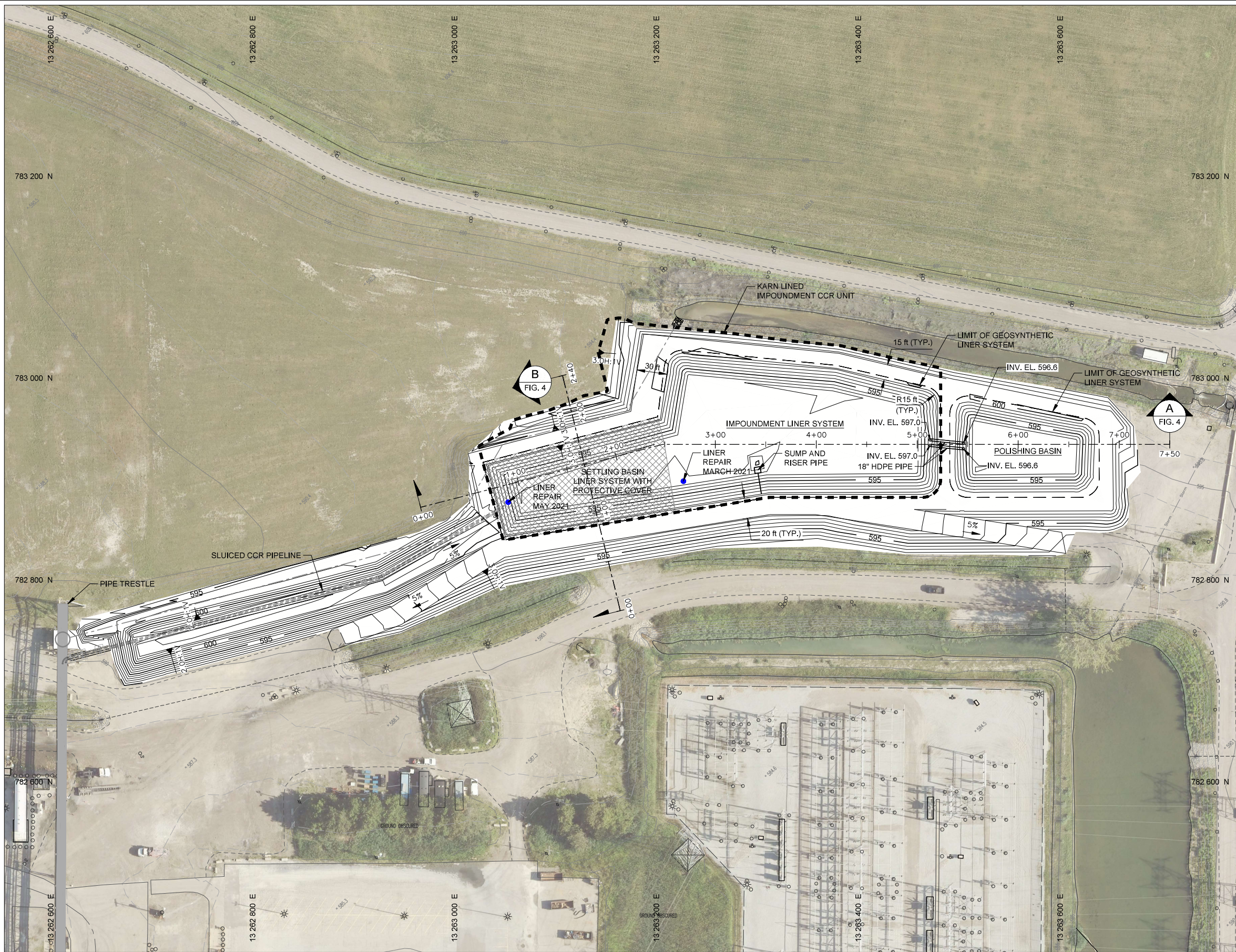
A

B

C

D



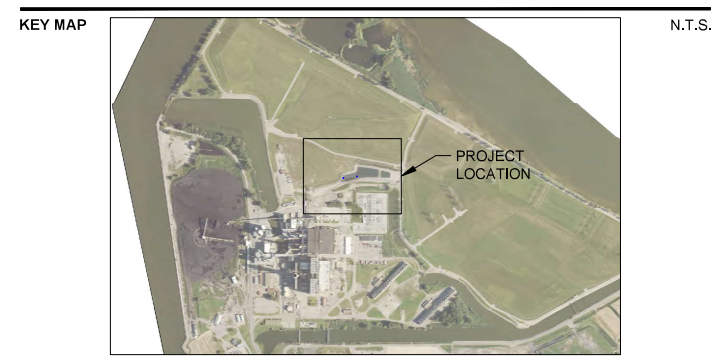


**LEGEND**

	EXISTING GROUND TOPOGRAPHY
	AS-BUILT GRADES (TOP OF EMBANKMENT FILL), SEE REFERENCE NOTE 5
	EXISTING PROCESS WATER PIPE
	EXISTING CULVERT
	LIMIT OF GEOSYNTHETIC LINER SYSTEM
	LIMIT OF KARN LINED IMPOUNDMENT CCR UNIT
	EXISTING ASH TRESTLE
	PROTECTIVE COVER
	LINER REPAIR LOCATION

- NOTES**
- EXISTING FEATURES OUTSIDE OF THE PROJECT AREA MAY NOT BE SHOWN FOR CLARITY.
  - EXISTING CONDITIONS IN THE BOTTOM ASH POND AND ASH LANDFILL MAY VARY FROM THOSE SHOWN DUE TO ONGOING ASH DISPOSAL OPERATIONS.

- REFERENCES**
- AERIAL IMAGE PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE AUGUST 14, 2021.
  - HORIZONTAL COORDINATE SYSTEM: MICHIGAN STATE PLANE, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (1994 ADJUSTMENT), INTERNATIONAL SURVEY FOOT.
  - VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  - EXISTING SITE TOPOGRAPHY PROVIDED IN APRIL 2016 BY ENGINEERING & ENVIRONMENTAL SOLUTIONS, L.L.C. AUGMENTED WITH DESIGN GRADES FOR PROCESS WATER MODIFICATIONS IMPLEMENTED IN FALL 2017.
  - AS-BUILT IMPOUNDMENT GRADES SHOWN BASED ON RECORD DRAWINGS, DRAWING NO. 695-1278 - SHEET 102, "KARN BOTTOM ASH IMPOUNDMENT GRADING PLAN (TOP OF EMBANKMENT FILL), ISSUED FOR RECORD DATE DECEMBER 04, 2018.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
									B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
									A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE

NAME

MICHIGAN P.E. No.

**Consumers Energy**

**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

**LINED IMPOUNDMENT AS-BUILT SITE PLAN**

**KARN LINED IMPOUNDMENT CLOSURE WORK PLAN**

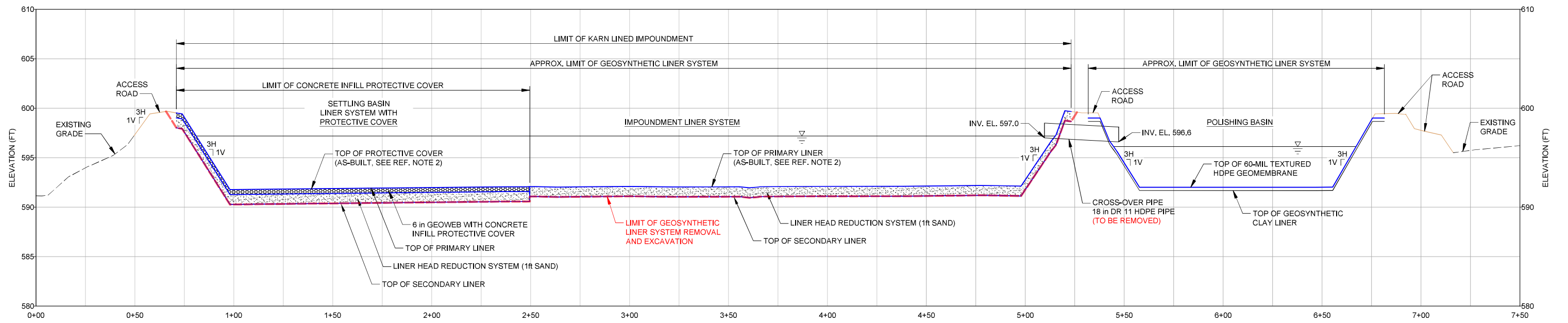
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JOB: GL21489845

DRAWING NO.

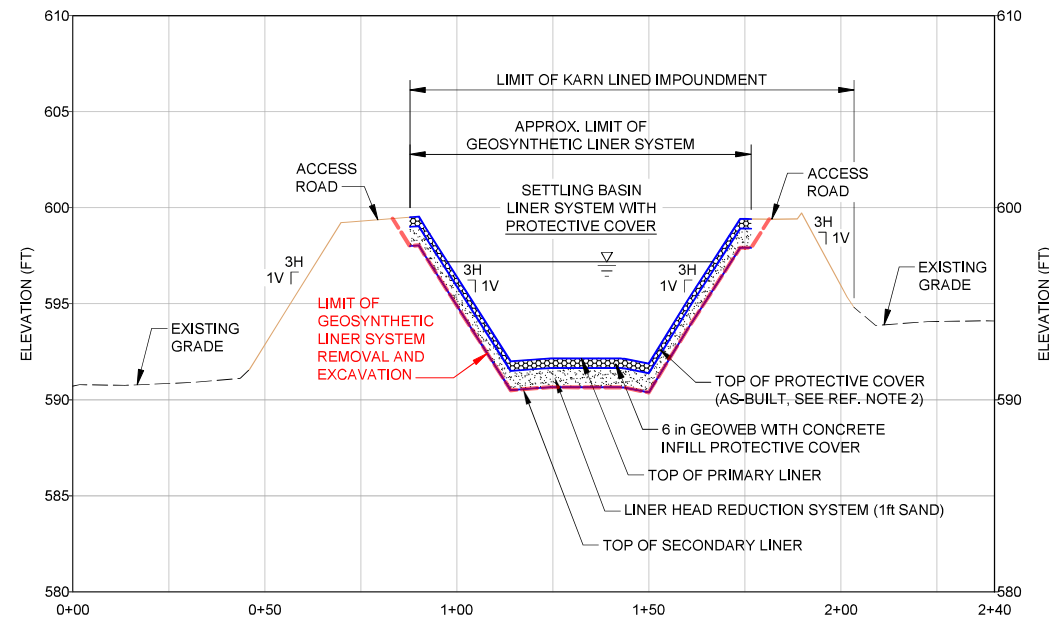
FIGURE **3**

REV. **B**



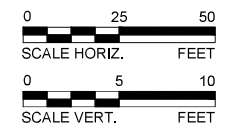


SCALE 1" = 25'  
5X VERT. **A** SECTION A  
FIG. 4



SCALE 1" = 25'  
5X VERT. **B** SECTION B  
FIG. 4

- REFERENCES**
- VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  - AS-BUILT IMPOUNDMENT GRADES SHOWN BASED ON RECORD DRAWINGS, DRAWING NO. 695-1278 - SHEET 102, "KARN BOTTOM ASH IMPOUNDMENT GRADING PLAN (TOP OF EMBANKMENT FILL), ISSUED FOR RECORD DATE DECEMBER 04, 2018.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO

REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
B	2023-06-14	ISSUED FOR PERMIT	JDP	SDA	MAB	JDP	
A	2023-05-22	ISSUED FOR REVIEW	JDP	SDA	MAB	JDP	

SIGNATURE
NAME
MICHIGAN P.E. No.

**Consumers Energy**

**D.E. KARN GENERATING FACILITY**  
ESSEXVILLE, MI

<b>LINED IMPOUNDMENT AS-BUILT CROSS SECTIONS A &amp; B</b>		<b>KARN LINED IMPOUNDMENT CLOSURE WORK PLAN</b>	
SCALE: AS SHOWN	DRAWING NO.	FIGURE	REV.
JOB: GL21489845		<b>4</b>	<b>B</b>

# **Attachment B**

## **Pre-Existing Groundwater Conditions**

<b>Date Start:</b> 10/09/15 <b>Date Finish:</b> 10/09/15 <b>Drilling Company:</b> Stock Drilling <b>Driller's Name:</b> Austin Goldsmith <b>Drilling Method:</b> Hydrovac/Sonic <b>Sampling Method:</b> Continuous <b>Rig Type:</b> Sonic <b>Water Level Start (ft. bgs.):</b> 11.0 <b>Water Level Finish (ft. btoc.):</b> 8.78	<b>Northing:</b> 782854 <b>Eastings:</b> 13263363.7 <b>Casing Elevation:</b> 594.64  <b>Borehole Depth (ft. bgs.):</b> 19.0 <b>Surface Elevation:</b> 592.1  <b>Descriptions By:</b> L. Rogers	<b>Well/Boring ID:</b> DEK MW-15001  <b>Client:</b> Consumers Energy  <b>Location:</b> DE Karn Facility 2742 Weadock Highway Essexville, MI 48732  <b>Weather Conditions:</b> 57 F Sunny
---	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
595										TOC Elevation = 594.64 (ft. above msl)
0								(0.0 - 6.0') Hydrovac; no lithology recorded.		Concrete (0.0-1.5' bgs)
590		1	0.0-6.0'	0.0	NA					
585		2	6.0-9.0'	3.0	NA	X X X X		(6.0 - 9.0') ASH; wet; black (10YR 2/1). NOTE: Fill material.		2" PVC Well Casing (-3.0-16.0' bgs)
580						X X		(9.0 - 11.0') CLAY, medium plasticity; little fine sand to very large pebbles, subrounded to subangular; moist to wet; soft; brown (10YR 5/3).		Bentonite Pellets (1.5-15.5' bgs)
						X		(11.0 - 12.5') ASH; wet; soft; black (10YR 2/1).		
575		3	9.0-19.0'	9.6	NA			(12.5 - 17.0') SAND, very fine to fine; little medium sand; trace ash; well sorted; wet; very dark grayish brown (10YR 3/2).  NOTE: Trace shell fragments at 15.0' bgs. NOTE: Lose trace ash at 15.5' bgs.		Sand Pack K&E WP00 (15.5-19.0' bgs)
								(17.0 - 19.0') CLAY, medium to low plasticity; trace silt; trace fine to medium sand; trace granule to large pebbles, subrounded to subangular; dry; stiff to very stiff; dark grayish brown (10YR 4/2).		2" PVC 10 Slot Well Screen (16.0-17.0' bgs)
20								End of boring 19.0' bgs.		

**Remarks:** bgs = below ground surface      btoc = below top of casing

Hydrovac to 6.0' bgs.  
 Groundwater encountered at 11.0' bgs during drilling.  
 Water level at development was 8.78' btoc.  
 No odor or staining observed.  
 Groundwater elevation measured on December 8, 2015 was 585.97 feet above mean sea level.







**WELL CONSTRUCTION LOG**

**WELL NO. DEK-MW-18001**

Facility/Project Name: <b>Consumers Energy DE Karn CCR Monitoring</b>		Date Drilling Started: <b>5/21/18</b>	Date Drilling Completed: <b>5/21/18</b>	Project Number: <b>290804.0000</b>
Drilling Firm: <b>Stearns Drilling</b>	Drilling Method: <b>Hollow Stem Auger</b>	Surface Elev. (ft) <b>590.7</b>	TOC Elevation (ft) <b>593.47</b>	Total Depth (ft bgs) <b>18.0</b>
Boring Location: Approximately 70 feet south and 30 feet west of decommissioned monitoring well DEK-MW-15001. N: 782780.00 E: 13263320.00		Personnel Logged By - Jacob Krenz Driller - Gary Geerligns		Drilling Equipment: <b>CME LC 60</b>
Civil Town/City/or Village: <b>Essexville</b>	County: <b>Bay County</b>	State: <b>Michigan</b>	Water Level Observations: While Drilling: Date/Time <b>5/21/18 00:00</b> Depth (ft bgs) <b>7.0</b> After Drilling: Date/Time <b>5/22/18 07:08</b> Depth (ft bgs) <b>5.49</b>	

SAMPLE NUMBER AND TYPE	RECOVERY (%)	BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
1 SS	100	3		<b>TOPSOIL</b> black (10YR 2/1).				
		5						
2 SS	100	1	5	<b>CLAY WITH SAND</b> mostly clay, few to little fine to medium sand, trace fine gravel, low plasticity, yellowish brown (10YR 5/4), stiff, moist.	CL			
		2	5	<b>SAND</b> mostly medium sand, yellowish brown (10YR 5/6), dry, loose.	SP			
		3	5	<b>CLAY WITH SAND</b> mostly clay, few to little fine to medium sand, trace fine gravel, low plasticity, yellowish brown (10YR 5/4), stiff, moist.	CL			
		4	6	<b>SAND</b> mostly fine to medium sand, pale brown (10YR 6/3), dry, loose.	SP			
		5	7	<b>CLAY WITH SAND</b> mostly clay, few to little fine to medium sand, trace fine gravel, low plasticity, yellowish brown (10YR 5/4), stiff, moist.	CL			
		6	4	<b>SAND</b> mostly fine to medium sand, dark yellowish brown (10YR 4/4), moist, loose.	SP			
3 SS	80	3	3	<b>CLAY WITH SAND</b> mostly clay, few to little fine to medium sand, trace fine gravel, low plasticity, yellowish brown (10YR 5/4), stiff, moist.	CL			
		4	4	<b>SAND</b> mostly fine to medium sand, dark yellowish brown (10YR 3/6), moist, loose.	SP			
		5	4	<b>CLAY WITH SAND</b> mostly clay, trace fine sand, trace silt, low to medium plasticity, gray (10YR 5/1), moist, medium stiff.	CL			
4 SS	80	6	1	<b>SAND</b> mostly medium to coarse sand, very dark gray (10YR 3/1), saturated, loose.				
		7	1					
		8	1					
		9	1					
5 SS	80	1	0					
		2	1					
		4	2	Change to fine to medium sand, trace silt at 9.0 feet.				

SOIL BORING WELL CONSTRUCTION LOG 290804P1T6.CEC.FLUORIDEASSESSMENT.GPJ TRC\_CORP.GDT 290804.0000 1/22/19

Signature:  Firm: TRC Environmental Corporation 1540 Eisenhower Place Ann Arbor, MI 48108 734-971-7080 Fax 734-971-9022



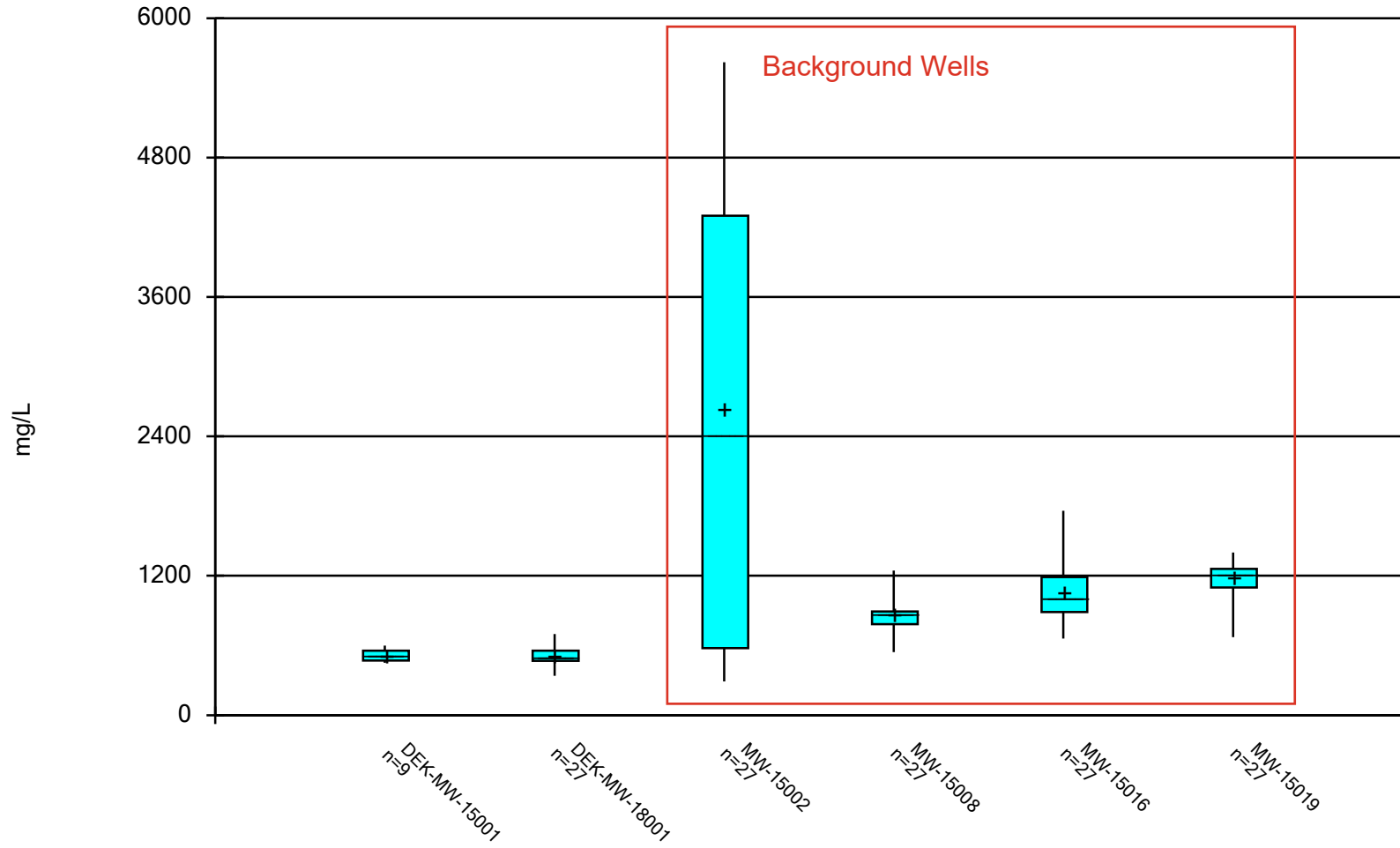
WELL CONSTRUCTION LOG

WELL NO. DEK-MW-18001

SOIL BORING WELL CONSTRUCTION LOG 290804P1T6.CEC.FLUORIDEASSESSMENT.GPJ TRC\_CORP.GDT\_290804.0000 1/22/19

SAMPLE		BLOW COUNTS	DEPTH IN FEET	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
NUMBER AND TYPE	RECOVERY (%)							
6 SS	70	5	9	Change to mostly fine sand, trace ash at 11.0 feet.	SP			
		7	6					
		11	12					
		12	4					
7 SS	60	6	9	Change to mostly medium sand, saturated, trace shell fragments, no ash at 13.0 feet.	SP			
		13	7					
		14	5					
		14	5					
8 SS	60	5	5		SP			
		15	9					
		16	7					
		16	5					
9 SS	75	5	9	<b>CLAY</b> mostly clay, trace to few sand, trace gravel, low plasticity, gray (10YR 5/1), moist, very stiff.	CL			
		17	12					
		17	14					
			18	End of boring at 18.0 feet below ground surface.				
			19					
			20					
			21					
			22					
			23					

### Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 1/27/2025 10:29 AM

Client: Consumers Energy Data: DEK Background KLI

# Box & Whiskers Plot

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/28/2025 3:14 PM

Client: Consumers Energy Data: DEK Background KLI

	DEK-MW-15001	DEK-MW-18001	MW-15002	MW-15008	MW-15016	MW-15019
12/8/2015			2400		670	
12/9/2015				860		1400
12/10/2015	600 (D)					
3/28/2016			1700			
3/29/2016				720	1000	1100
3/30/2016	470 (D)					
5/23/2016			4500			
5/24/2016				880	900	1300
5/26/2016	510 (D)					
8/22/2016			1300		920	
8/23/2016				730		1300
8/24/2016	480 (D)					
11/30/2016			980	790	840	1100
12/1/2016	470 (D)					
2/22/2017			3100	760	1700	1200
2/23/2017	450 (D)					
5/16/2017						1100
5/17/2017			4300	840	1100	
5/18/2017	510 (D)					
8/1/2017			4600		1090	
8/2/2017				866		1250
8/3/2017	516 (D)					
9/18/2017	594 (D)					
9/19/2017			4280	848	756	1200
5/22/2018			3810	744	1230	1100 (D)
5/23/2018		434 (D)				
8/17/2018		356 (D)				
11/6/2018		340 (D)				
11/8/2018			1230	882	791 (D)	1080
2/18/2019		355 (D)				
4/8/2019			4700	875 (D)		1200
4/9/2019					970	
4/10/2019		360 (D)				
8/14/2019		480 (D)				
10/15/2019		500 (D)		890		
10/16/2019			700		1000 (D)	1000
3/9/2020		458 (D)				
5/14/2020		484 (D)		1100 (D)		
5/15/2020			577		922	1190
8/3/2020		498 (D)				
10/6/2020		476 (D)				
10/13/2020			466	866 (D)	1150	1180
3/2/2021		495 (D)				
5/3/2021		486 (D)	5360 (D)	822	979	1160
7/27/2021		467 (D)				
10/6/2021				810		
10/7/2021		494 (D)	290		1140	1175 (D)
3/1/2022		589 (D)				
5/2/2022			4240	784.5 (D)		1200
5/3/2022		555 (D)			1390	
7/26/2022		532 (D)				
10/4/2022		551 (D)		893 (D)		1190

# Box & Whiskers Plot

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/28/2025 3:14 PM

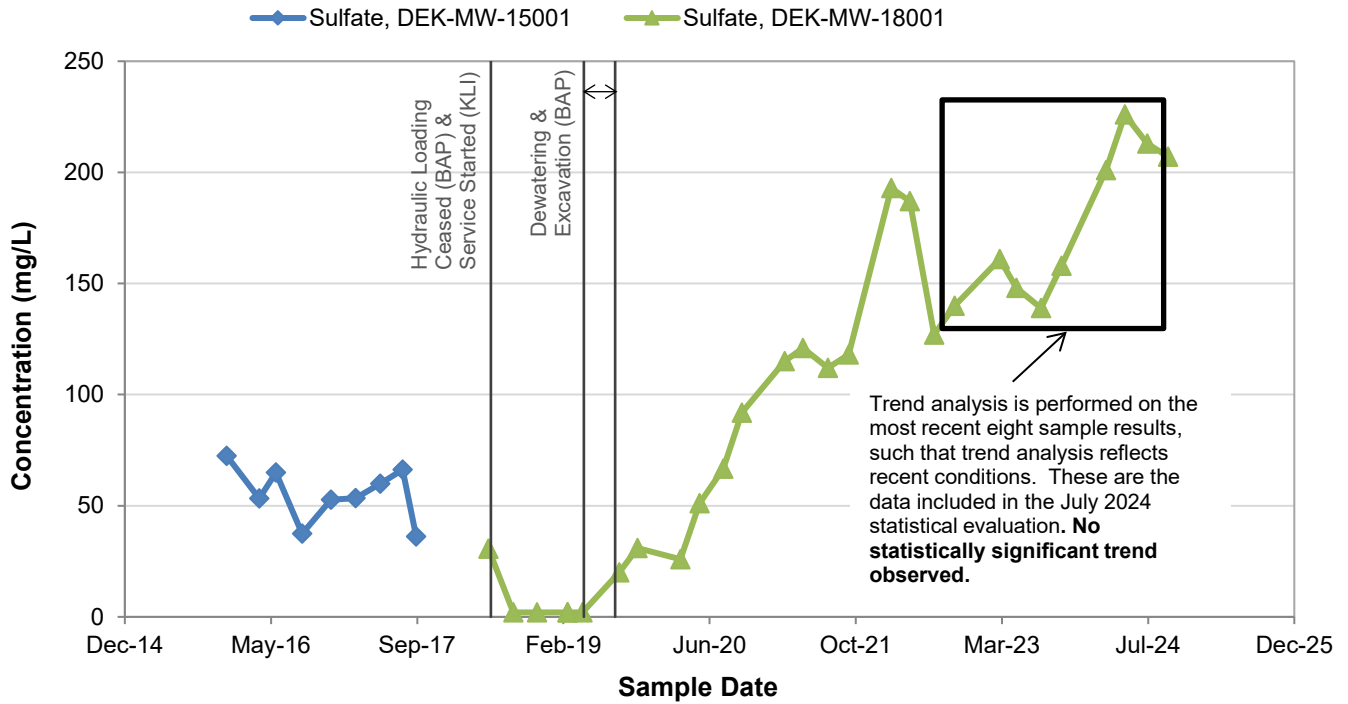
Client: Consumers Energy Data: DEK Background KLI

	DEK-MW-15001	DEK-MW-18001	MW-15002	MW-15008	MW-15016	MW-15019
10/5/2022			4210		1760	
3/7/2023		534 (D)	572.5 (D)	743	673	1200
5/1/2023			351	877		1170 (D)
5/2/2023					889	
5/3/2023		575 (D)				
7/24/2023				542.5 (D)		671
7/26/2023		548 (D)	2100		660	
10/2/2023				1190 (D)		1400
10/4/2023		551 (D)	5430		1340	
3/4/2024		598 (D)				
3/5/2024			3300	1020 (D)	1090	1220
5/8/2024		670 (D)	358	1245 (D)	1190	1340
7/24/2024		698 (D)	422	1039 (D)	1170	1310
10/2/2024				1020 (D)		1260
10/3/2024		624 (D)	5620		1300	
Median	510	498	2400	866	1000	1200
LowerQ.	470	467	577	784.5	889	1100
UpperQ.	555	555	4300	893	1190	1260
Min	450	340	290	542.5	660	671
Max	600	698	5620	1245	1760	1400
Mean	511.1	507.7	2626	875.4	1060	1185

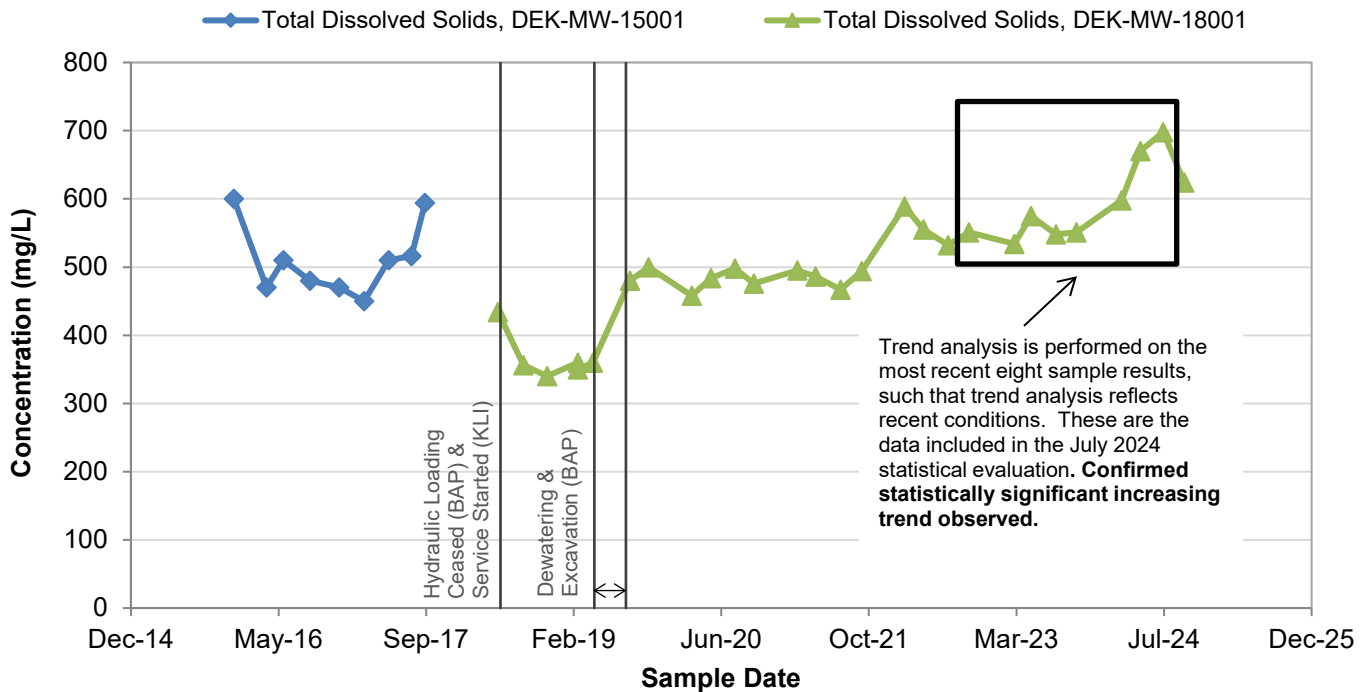
# **Attachment C**

## **Regional Groundwater Quality Changes**

**Chart 1: Sulfate Concentrations at DEK-MW-15001 and DEK-MW-18001**



**Chart 2: TDS Concentrations at DEK-MW-15001 and DEK-MW-18001**



Notes:  
BAP = Bottom Ash Pond; KLI = Karn Lined Impoundment

## **Enclosure 8**

**D.E. Karn Generating Facility, Karn Lined Impoundment  
Decommissioning Report, (WSP USA, Inc., October 30, 2024)**



December 20, 2024

**TRANSMITTAL VIA EMAIL 12/20/2024**

Mr. Mike Quigg and 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

**TRANSMITTAL OF D.E. KARN GENERATING FACILITY ; KARN LINED IMPOUNDMENT  
DECOMMISSIONING REPORT, ESSEXVILLE, MICHIGAN; WASTE DATA SYSTEM NUMBER 392503**

Dear Mr. Quigg and Ms. Babcock,

Please find the enclosed the decommissioning report for the DE Karn Lined Impoundment that commenced after a Notice of Intent to Initiate Closure was provided on July 21, 2023. This report documents the field work conducted to remove the remaining coal combustion residuals (CCRs) located within the Karn Impoundment, examination and removal of the liner system, and the statistically-derived three lines of evidence approach that decontamination had been achieved by testing the sand layer above the primary composite liner. Also included is a monitoring well decommissioning log for monitoring well OW-12 that was located within the limits of decommissioning. Consumers Energy is currently evaluating options for a replacement well, along with other wells that will better characterization groundwater quality within the area of the former lined impoundment.

Due to the presence of historically-placed bottom ash to improve the ground surface for load-bearing applications within the area inclusive of the former Karn Lined Impoundment, the media immediately underlying the secondary composite liner system was unable to be evaluated for verification that all CCRs had been removed. However, with the work documented in this report, removal of CCRs and decontamination of the unit and any releases that were documented to be from this unit were addressed as part of the overall decommissioning activities that proceeded from July 2024 to September 2024. In order to document the decontamination performance standard for the unit has been validated including any releases documented from the unit also remediated, a minimum of two additional groundwater sampling events must be completed to verify that the Groundwater Protection Standard (GWPS) had been attained.

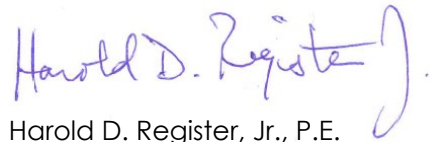
The first of those two sampling events was completed in October during the 4<sup>th</sup> Quarter 2024 sampling event and will be reported by the end of January 2025. The second sampling event will be conducted in March 2026 representing the first quarter sampling event. The results from

this event will be reported by the end of April 2026 accompanied by a formal recommendation to conclude whether criteria for clean closure has been achieved. Consequently, a recommendation will also be presented regarding the status of submitting a renewal solid waste operating license before the Karn Lined Impoundment License expires on December 10, 2025.

Consumers Energy requests review and approval at this time of the decommissioning report documenting field work completed, and quality measures undertaken to verify that Coal Combustion Residuals managed in the Karn Lined Impoundment have been removed. Once the data is collected for the remaining performance measures, Consumers Energy will submit a Closure by Removal certification with the appropriate qualifiers for review and approval.

We appreciate your prompt review of this document!! Don't hesitate to follow-up with any clarifying questions!

Sincerely,



Harold D. Register, Jr., P.E.  
Sr. Principal Environmental Engineer  
Environmental Risk Management  
Phone: (517) 788-2982  
Email: [harold.registerjr@cmsenergy.com](mailto:harold.registerjr@cmsenergy.com)

cc: Mr. Joe Firlit, Consumers Energy  
Mr. Chris Pickelmann, Consumers Energy  
Mr. Steve Thumma, WSP  
Mr. John Puls, WSP  
Ms. Darby Litz, TRC

Enclosures (2)



**REPORT**

**D.E. Karn Generating Facility**

*Karn Lined Impoundment Decommissioning Report*

Submitted to:

**Consumers Energy Company**

1945 W. Parnall Road  
Jackson, Michigan USA 49201

Submitted by:

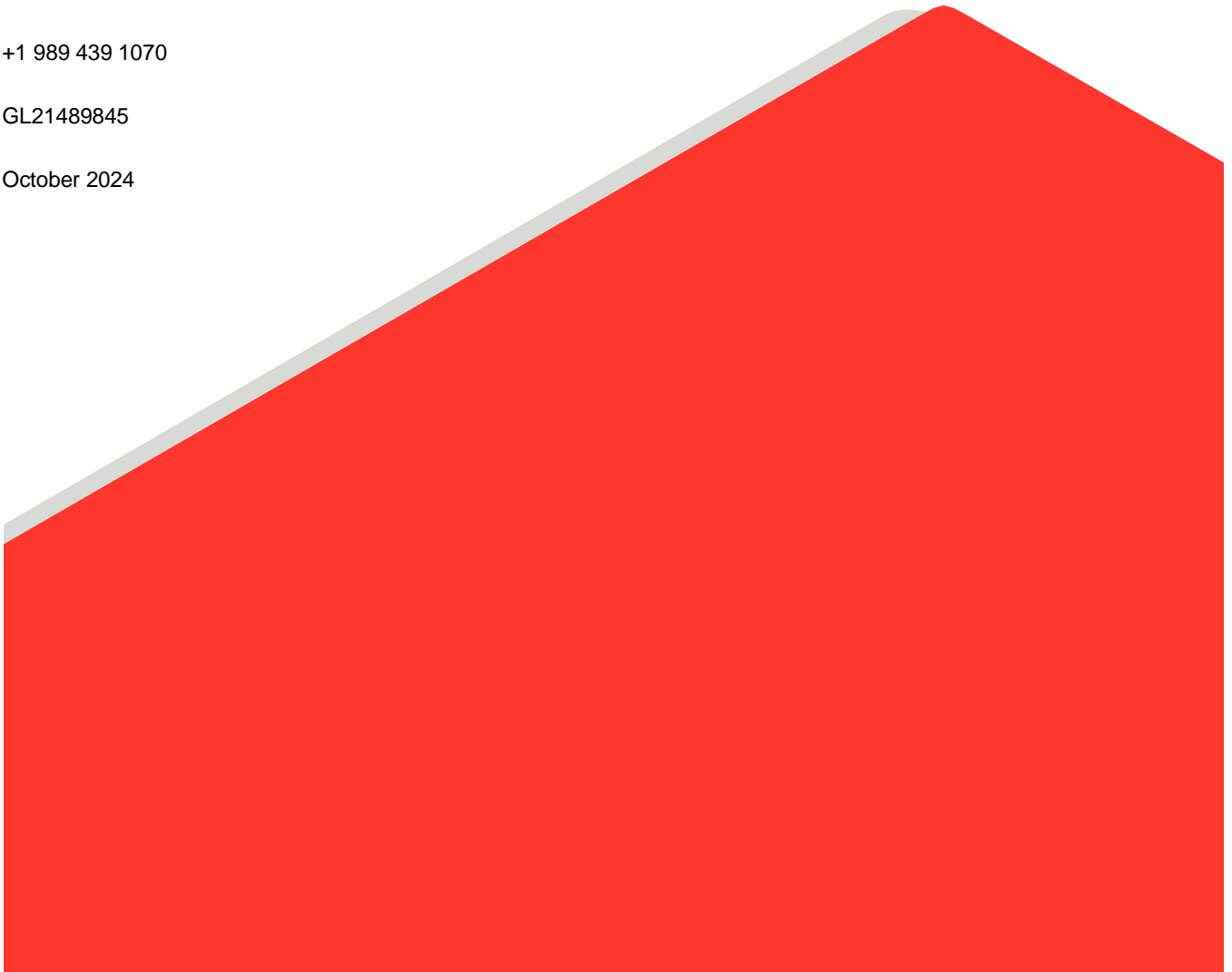
**WSP USA Inc.**

4775 Two Mile Road, Suite A Bay City, Michigan, USA 48706

+1 989 439 1070

GL21489845

October 2024



# CERTIFICATION

## Professional Engineer Certification Statement

I hereby certify, after having reviewed the attached documentation and being familiar with the *Consumers Energy D.E. Karn Generating Facility Karn Lined Impoundment Closure Work Plan* dated June 16, 2023 (Work Plan) submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 7, 2023, that this CCR Removal Documentation Report (Report) is accurate. The work documented herein was completed in general accordance with the requirements of the Work Plan, with the exception of applying the lines of evidence documenting CCR removal at the primary sand drainage layer as further detailed in this Report.

WSP USA Inc.



\_\_\_\_\_  
Signature

10/30/2024

\_\_\_\_\_  
Date of Report Certification

\_\_\_\_\_  
John Puls

Name

\_\_\_\_\_  
6201055778

Professional Engineer Certification Number





## Executive Summary

This Coal Combustion Residuals (CCR) Removal Documentation Report (Report) has been prepared to document the removal of CCR to decommission the D.E. Karn Lined Impoundment (Karn Lined Impoundment) at the Consumers Energy Company (CEC) D.E. Karn Generating Facility, located in Essexville, Michigan. CEC submitted the *Consumers Energy D.E. Karn Generating Facility Karn Lined Impoundment Closure Work Plan* (Work Plan) dated June 16, 2023, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 7, 2023. The Work Plan outlined the extent of the impoundment and the necessary steps to meet the performance objectives of removing the CCR from the site. This Report verifies the CCR removal from the Karn Lined Impoundment as regulated waste under Part 115, Solid Waste Management of the *Natural Resources and Environmental Protection Act*, 1994 PA 451, as amended.

The removal and documentation procedures adhered to those outlined in the Work Plan, with one exception. CCR removal was excavated and certified at the sand drainage layer (below the primary liner) instead of beneath the secondary liner, as initially prescribed. However, CCR removal below the secondary liner was certified specifically for the embankment fill side slopes of the Karn Lined Impoundment. This Report is submitted to EGLE as final certification that all CCR associated with the operation of the Karn Lined Impoundment has been removed. The boundary for removal certification is delineated in **Figure 2**, *CCR Removal Documentation - Excavation Surface*.

The multiple lines of evidence approach outlined in the Work Plan, which verifies CCR removal, provides a reliable method for measuring concentrations of CCR based on physical sample properties. This approach utilizes the visible contrast between the CCR and the underlying sand drainage layer and embankment fill sand.

The following information was gathered to confirm that the CCR removal objective was achieved:

1. **First Line of Evidence** – Comparison of the excavation surface to known elevations of CCR from the engineering construction records.
  - **Appendix A**, *DE Karn Bottom Ash Surface Impoundment Issued for Record Drawings* (Record Drawings), provides the drawings used to establish the proposed excavation surface. **Figure 2**, *CCR Removal Documentation - Excavation Surface*, documents the final excavation surface. Notably, the top of the primary sand layer was generally found at an elevation of 593.0 (NAVD88), rather than the anticipated elevation of 592.0 (NAVD88), suggesting the sand drainage layer was likely installed at a greater thickness than the 1-foot documented in the Record Drawings.
2. **Second Line of Evidence** – Photographic documentation, including periodic photographs of the CCR removal process and photographs of excavated areas at random grid nodes.
  - **Appendix B**, *Daily Field Reports*, and **Appendix C**, *Karn Lined Impoundment Grid Node Photographic Documentation Log*, provide photographic records of CCR removal. Photographed grid node locations are shown in **Figure 4**, *CCR Removal Documentation - Confirmation Grid Nodes*.

3. **Third Line of Evidence** – Microscopic quantification of CCR content at random grid nodes to confirm removal.
  - **Table 1**, *Karn Lined Impoundment Microscopy Results*, documents the confirmation of CCR removal. The sampled grid node locations are also illustrated in **Figure 4**, *CCR Removal Documentation – Confirmation Grid Nodes*.

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## APPENDICES

Appendix A DE Karn Bottom Ash Surface Impoundment Issued for Record Drawings

Appendix B Daily Field Reports

Appendix C Karn Lined Impoundment Grid Node Photographic Documentation Log

Appendix D MJ2 Consulting CCR Removal Microscopy Memorandum



## 1.0 INTRODUCTION

### 1.1 Purpose

Consumers Energy Company (CEC) identified the Karn Lined Impoundment, located at its D.E. Karn Generating Facility in Essexville, Michigan (currently being decommissioned), as an "existing CCR surface impoundment" under the Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule (40 CFR 257 Subpart D), referred to as the "CCR RCRA Rule." The impoundment was still receiving and storing CCR as of the effective date of the rule on October 19, 2015 (see Figure 1, *Site Overview*) based on being put into service in June 2018 according to CEC.

CEC submitted the *Consumers Energy D.E. Karn Generating Facility Karn Lined Impoundment Closure Work Plan* (Work Plan), dated June 16, 2023, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 7, 2023. The Work Plan sought approval for CEC's strategy to close the Karn Lined Impoundment by removing CCR. The Work Plan included the following elements:

- Plans for CCR removal
- Multiple lines of evidence to document the CCR removal, including an objective removal standard to address potential long-term sources of groundwater impacts
- Schedule for work implementation
- Performance monitoring following CCR removal, in accordance with the CCR RCRA Rule

This Report has been prepared to document and certify the removal of CCR from the Karn Lined Impoundment, with the following exception to the Work Plan:

- The Work Plan specified removal grades at the elevation of the secondary liner system, as indicated in the Record Drawings. However, this Report applies the multiple lines of evidence for CCR removal to the top of the primary sand drainage layer due to the historical placement of CCR present below the secondary liner on the Karn Lined Impoundment floor, which is not associated with the construction or operation of the Karn Lined Impoundment. CCR removal below the secondary liner was certified per the Work Plan specifically for the embankment fill side slopes of the Karn Lined Impoundment where historical CCR was not present. A final remedy for the historically placed CCR will be developed in conformance with the self-implementing schedule for Coal Combustion Residual Management Units (CCRMUs) in the Legacy Impoundment and CCRMU rule published in May 2024.

## 2.0 CCR REMOVAL AND DOCUMENTATION

The removal and documentation procedures were carried out as outlined in the Work Plan, with the exception noted in Section 1.0. The Work Plan proposed that CCR removal would be verified using an objective standard of at least 90 percent CCR removal. This means that after CCR excavation, the remaining material left in place on the exposed surface (the primary sand layer) would consist of no more than 10 percent CCR particles by weight. The 90 percent removal criterion is based on chemical analyses demonstrating that this standard is protective of groundwater for non-residential drinking water and groundwater/surface water interface (GSI) protection criteria.

Due to the discovery of historically placed CCR beneath the secondary liner on the Karn Lined Impoundment floor, CEC applied the 90 percent removal criterion to the primary sand layer, which was subsequently removed and disposed of at the J.C. Weadock Landfill. The primary sand layer is present as the first, continuous media

layer between the CCR management and the underlying synthetic liner system that can be evaluated against the three lines of evidence approach to demonstrate that CCR removal, including any CCR that could have migrated into the media has been removed to at least the 90% removal criterion. However, CCR removal below the secondary liner was certified specifically for the embankment fill side slopes of the Karn Lined Impoundment where historically placed CCR was not present.

During excavation, CCR removal was observed and documented using the following three lines of evidence:

- **First line of evidence:** Comparison of the excavation surface to known elevations of CCR from the engineering construction records.
- **Second line of evidence:** Photographic documentation, including periodic photographs of the CCR removal process and photographs of excavated areas at random grid nodes.
- **Third line of evidence:** Microscopic quantification of CCR content at random grid nodes to confirm removal.

## 2.1 Narrative Description of CCR Removal

From August 2024 through September 2024, Fisher Contracting Co. was hired by CEC to perform excavation activities aimed at removing CCR from the Karn Lined Impoundment. Documentation was developed through field observations by WSP USA Inc. (WSP) to establish multiple lines of evidence, confirming the successful removal of CCR as described previously. The following tasks were carried out during the CCR removal and documentation process:

- The Karn Lined Impoundment was dewatered by actively pumping decant water into a water truck, which was then used for dust control along haul routes within the J.C. Weadock Landfill.
- CCR was excavated using a rubber-edged bucket until the primary 60-mil HDPE geomembrane liner was exposed. The primary liner was cleaned by hand using shovels to minimize potential damage and then cut into sections. Any damage observed to the 60-mil HDPE geomembrane liner during excavation was immediately patched and leistered with geomembrane. The primary geosynthetic clay liner (GCL) and primary geocomposite were also removed and hauled to the J.C. Weadock Landfill for disposal.
- A 50-foot grid, containing a total of 52 grid nodes, was established across the Karn Lined Impoundment limits as shown in **Figure 3**.
- Photographic documentation of the general CCR removal operation was conducted.
- Photographs of excavated areas were taken of the primary sand layer and embankment fill at no fewer than 50 percent of the grid nodes.
- Quantitative microscopy analysis was conducted on at least 25 percent of the grid nodes (i.e., 50 percent of the photographed grid nodes) to confirm CCR removal on the primary sand layer and embankment fill.
- The primary sand layer and the underlying 60-mil HDPE secondary liner were removed and hauled to the J.C. Weadock Landfill for disposal.
- Existing inflow and outflow piping was removed from the Karn Lined Impoundment and disposed of off-site.

## 2.2 Documentation of Excavation Grades – First Line of Evidence

The first line of evidence to assess CCR removal was the confirmation that excavations reached the elevation established as the base of the CCR, based on existing information. The proposed CCR excavation limits were determined using the elevation of the top of the primary liner along the impoundment floor and to the bottom of the secondary liner along the embankment side slopes as indicated in the Record Drawings.

During excavation, visual inspections were performed to check for any presence of CCR. Excavation continued until the targeted depth was reached, defined by the top of the primary 60-mil HDPE geomembrane liner. No visible CCR was observed within the primary sand layer following the removal of the primary liner system on the impoundment floor, and no CCR was visible beneath the secondary liner system on the embankment slopes.

## 2.3 Photographic Documentation – Second Line of Evidence

In alignment with EGLE guidance, *Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria (S3TM)*, a 50-foot grid with a total of 52 nodes was established across the Karn Lined Impoundment to assess CCR removal. This grid is shown in **Figure 3, CCR Removal Documentation – Sample Grid Nodes**. Confirmation by visual assessment and photographic documentation was completed for at least 50 percent of the grid nodes, which were randomly selected using a number generator. **Figure 4, CCR Removal Documentation – Confirmation Grid Nodes** illustrates the 28 grid nodes chosen for photographic documentation.

Each selected grid node was visually inspected to confirm whether residual CCR was present on the exposed primary sand layer or embankment fill along the side slopes. When no visible CCR was observed, photographs were taken to document the CCR removal at these selected grid nodes. The photographic procedure was standardized to ensure consistency and included the following elements:

- Photographs were taken during construction to document the general CCR removal process.
- A photograph of a representative area measuring one square foot was taken at each randomly selected grid node to show the primary sand layer and embankment fill.
- Photographs were captured from a standardized height to ensure consistent framing and detail across all images.

The photographs documenting the general CCR removal process are included in **Appendix B, Daily Field Reports**. The photographic documentation of the selected grid nodes is included in **Appendix C, Karn Lined Impoundment Grid Node Photographic Documentation Log**.

## 2.4 Microscopy – Third Line of Evidence

In accordance with the Work Plan, microscopic quantification of CCR content was employed to confirm that the CCR removal objective was achieved. Microscopy analysis was conducted on 50% of the photographic documentation nodes to provide an additional line of evidence for the effectiveness of CCR removal. The results of the microscopy confirmation for each sampled grid node are summarized in **Table 1**.

Additionally, a summary memo prepared by MJ2 Consulting detailing the findings of the microscopical examination of the Karn Lined Impoundment CCR removal samples is provided in **Appendix D, MJ2 Consulting Microscopical Examination of Karn Lined Impoundment CCR Removal Samples - October 25, 2024**.

### 3.0 SUMMARY

CCR removal and documentation procedures were implemented as described in the Work Plan submitted to EGLE on July 7, 2023, with the exception noted in this Report. The multiple lines of evidence indicate that all residuals associated with the treatment and storage of CCR within the Karn Lined Impoundment have been successfully removed at the D.E. Karn Generating Facility.

The multiple lines of evidence approach provided a predictable and reliable means to objectively measure concentrations of CCR based on physical sample properties, confirming that the exposed primary sand and embankment fill layers contained no visually identifiable CCR and documented at least 90 percent CCR removal when tested using microscopic methods.

During excavation operations, CCR removal was documented based on the following three lines of evidence:

- **First line of evidence** – Comparison of the excavation surface to known elevations of CCR from the engineering construction records.
- **Second line of evidence** – photographic documentation including periodic photographs of CCR removal progression and photographs of excavated areas of the primary sand and embankment fill layers at random grid nodes.
- **Third line of evidence** - quantitative microscopy analysis at random grid nodes to confirm CCR removal.

This Report is submitted to EGLE as final certification that all residuals associated with the treatment and storage of CCRs within the Karn Lined Impoundment have been removed. The boundary for removal certification is delineated in **Figure 2, CCR Removal Documentation - Excavation Surface**.

### 4.0 STANDARD OF CARE

WSP has prepared this Report in a manner consistent with the level of care and skill ordinarily exercised by members of the engineering and science professions currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this Report. No other warranty, expressed or implied, is made.

# Signature Page

## WSP USA Inc.



Stephen Thumma, P.E.  
*Lead Consultant*



John Puls, P.E.  
*Assistant Vice President*

SET/JDP/set

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## Tables

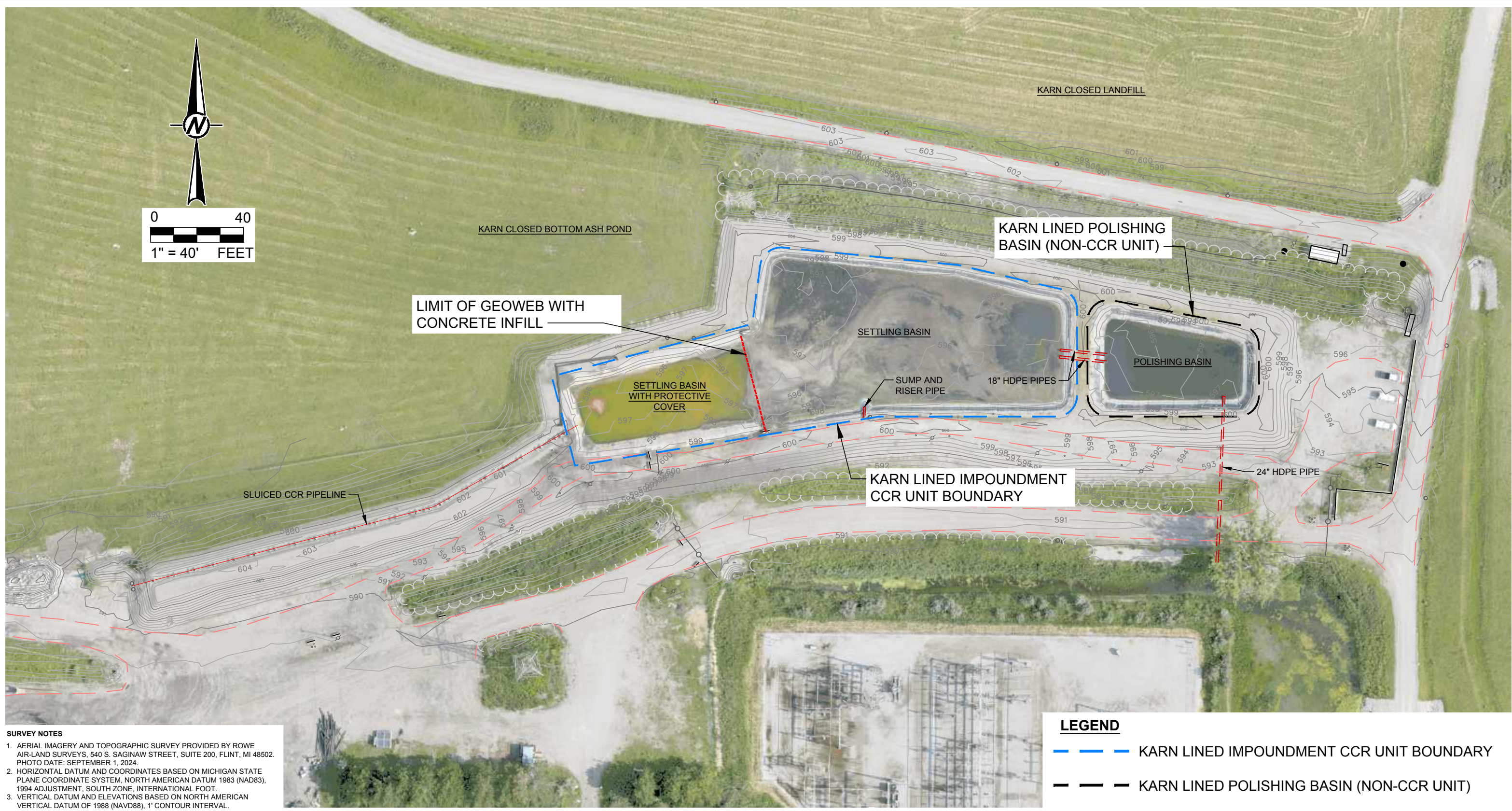
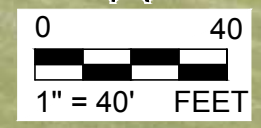


Table 1. Lined Impoundment Microscopy Results						
Grid Node	Northing	Easting	Date Sampled	Soil Description	Microscopic Estimation of CCR (%)	Pass/ Fail (less than 10%)
K-1	783006.90	13263227.43	9/3/2024	2NS Sand	0.5%	Pass
K-3	782999.36	13263303.23	9/3/2024	2NS Sand	0.5%	Pass
K-7	782943.23	13263450.81	9/3/2024	2NS Sand	0.5%	Pass
K-18	782916.30	13263102.30	9/3/2024	2NS Sand	0.5%	Pass
K-22	782893.99	13263082.93	9/3/2024	2NS Sand	0.5%	Pass
K-24	782914.61	13263180.78	9/3/2024	2NS Sand	0.5%	Pass
K-27	782955.35	13263303.66	9/3/2024	2NS Sand	0.5%	Pass
K-29	782948.31	13263401.96	9/3/2024	2NS Sand	0.5%	Pass
K-30	782891.91	13263221.47	9/3/2024	Class II Sand	0.5%	Pass
K-31	782882.45	13263047.79	9/3/2024	Class II Sand	0.5%	Pass
K-34	782941.10	13263150.00	9/9/2024	Class II Sand	0.5%	Pass
K-39	783012.99	13263300.00	9/9/2024	Class II Sand	0.5%	Pass
K-44	782909.69	13263460.10	9/9/2024	Class II Sand	1.5%	Pass
K-47	782900.00	13263300.00	9/9/2024	Class II Sand	1.0%	Pass
K-50	782876.85	13263150.00	9/11/2024	Class II Sand	0.5%	Pass
K-51	782870.13	13263100.00	9/11/2024	Class II Sand	0.5%	Pass

## Figures



P:\ConsumersEnergy\21489845 DEK Demolition Grading\PRODUCTION\ - Lined Imp Closure Cert Report Grid Node Figs\GL21489845 Lined Imp Closure - Existing Conditions Plan - SITE OVERVIEW.dwg Oct 30, 2024 - 8:49am By: USSA700736



**SURVEY NOTES**

1. AERIAL IMAGERY AND TOPOGRAPHIC SURVEY PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE: SEPTEMBER 1, 2024.
2. HORIZONTAL DATUM AND COORDINATES BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), 1994 ADJUSTMENT, SOUTH ZONE, INTERNATIONAL FOOT.
3. VERTICAL DATUM AND ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), 1' CONTOUR INTERVAL.

LEGEND	
	KARN LINED IMPOUNDMENT CCR UNIT BOUNDARY
	KARN LINED POLISHING BASIN (NON-CCR UNIT)

A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP
REV	DATE	DESCRIPTION	BY	CK	APP

SIGNATURE  
  
 NAME  
 JOHN D. PULS  
 MICHIGAN P.E. No.  
 6201055778

**Consumers Energy**

**D.E. KARN GENERATING FACILITY  
 ESSEXVILLE, MI**

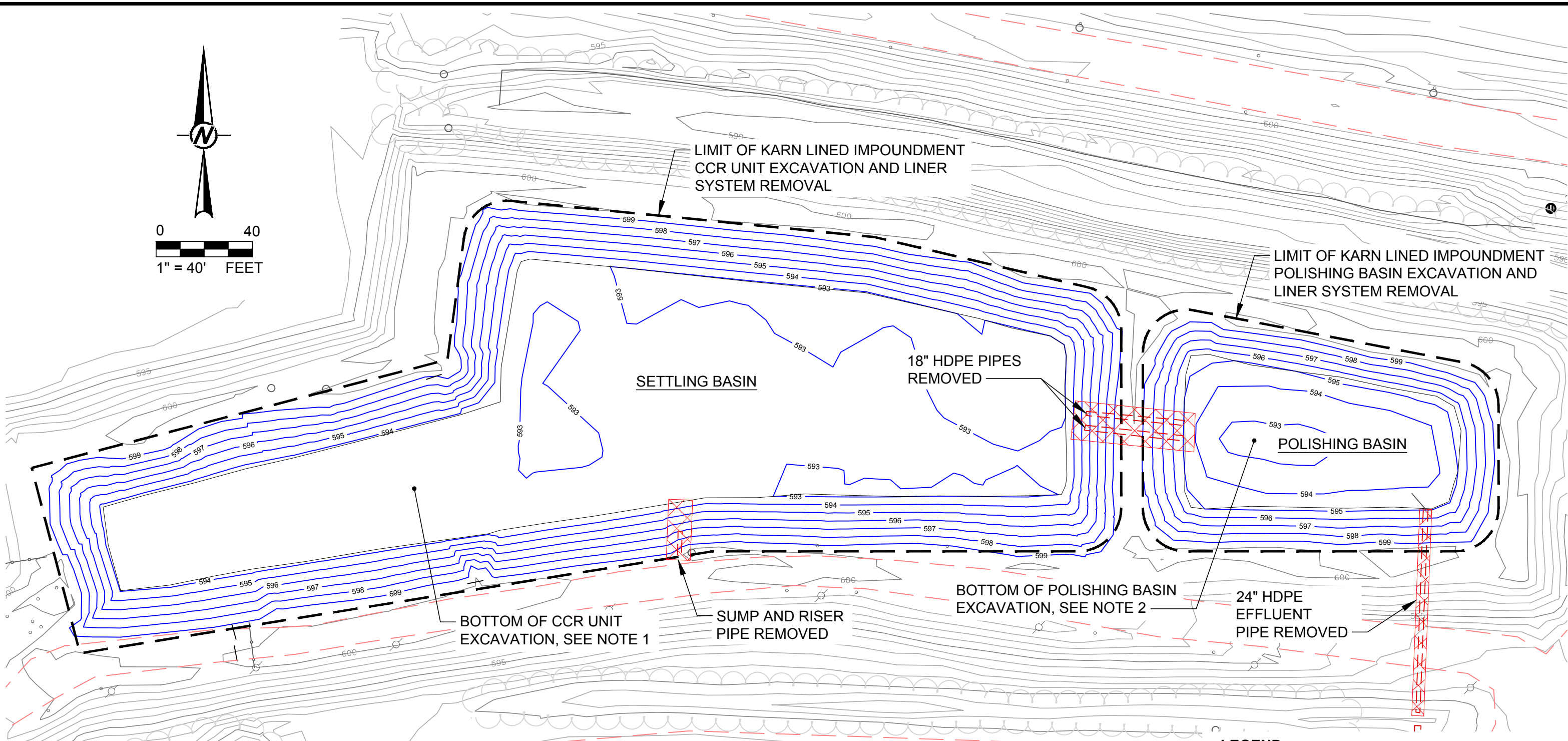
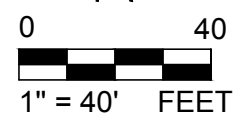
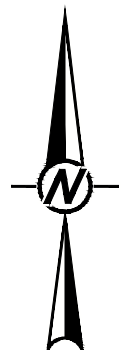
**SITE OVERVIEW**

**LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT**

SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		<b>1</b>	A



P:\ConsumersEnergy\21489845 DEK Demolition\Grading\PRODUCTION V - Lined Imp Closure Cert Report Grid Node Figs\GL21489845 Lined Imp Closure - As-Built Excavation.dwg Oct 30, 2024 - 8:54am By: USSA700736



**SURVEY NOTES**

1. TOPOGRAPHIC SURVEY PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE: SEPTEMBER 1, 2024.
2. HORIZONTAL DATUM AND COORDINATES BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), 1994 ADJUSTMENT, SOUTH ZONE, INTERNATIONAL FOOT.
3. VERTICAL DATUM AND ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), 1' CONTOUR INTERVAL.

**NOTES**

1. SETTLING BASIN CCR UNIT EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-QUANTITIES FOR REMOVAL.TXT".
2. POLISHING BASIN EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-OBSCURED ADD TO BASELINE.TXT".

**LEGEND**

- LIMIT OF LINER SYSTEM AND CCR REMOVAL
- 595— FINAL EXCAVATION GRADE (1ft CONTOUR), SEE NOTES 1 AND 2

A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP	
REV	DATE	DESCRIPTION	BY	CK	APP	

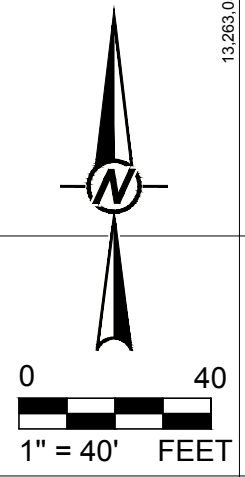
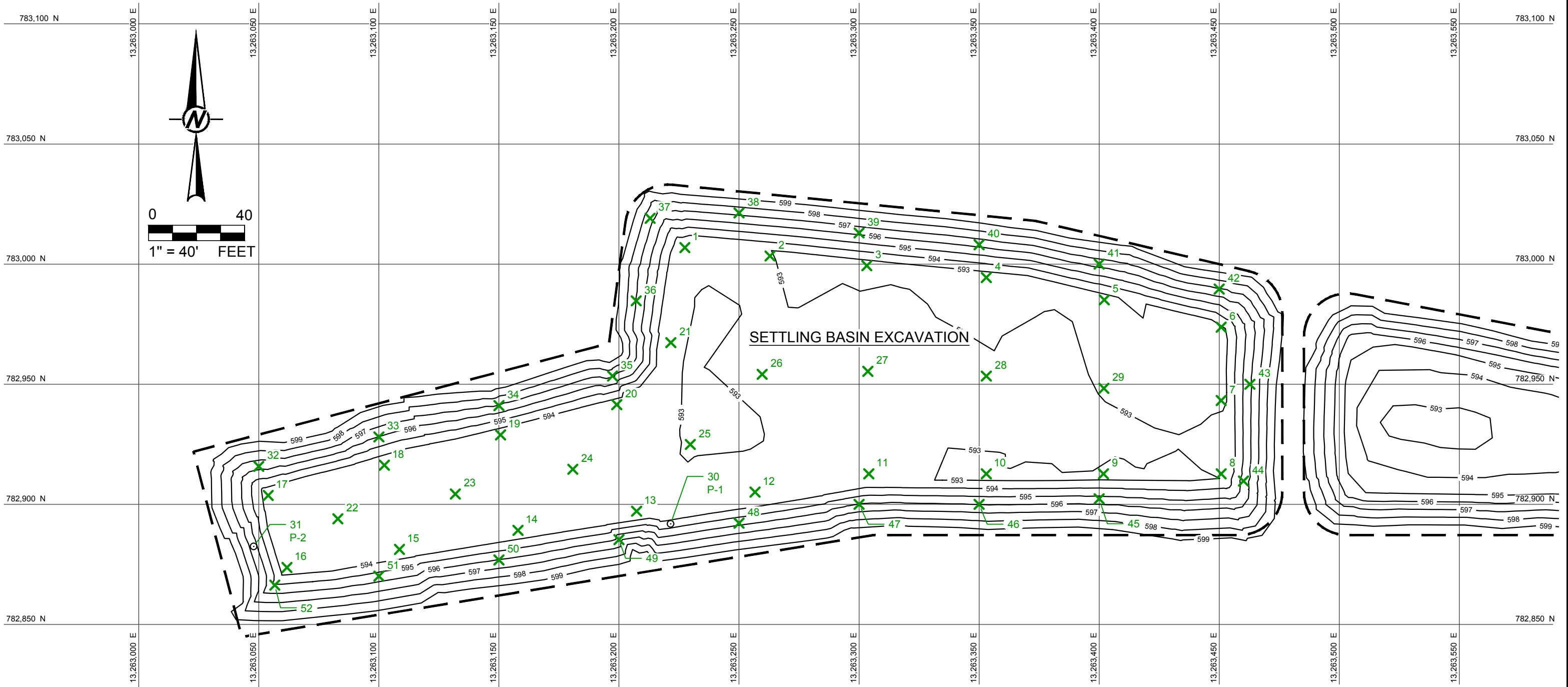
SIGNATURE  
  
 NAME  
 JOHN D. PULS  
 MICHIGAN P.E. No.  
 6201055778

  
**D.E. KARN GENERATING FACILITY**  
**ESSEXVILLE, MI**

**CCR REMOVAL DOCUMENTATION - EXCAVATION SURFACE**  
**LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT**

SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		<b>2</b>	A

P:\ConsumersEnergy\21489845 DEK Demolition Grading\PRODUCTION\ - Lined Imp Closure Cert Report Grid Node Figs\GL21489845 Lined Imp Closure - Prop Excavation - Cert Grid Node Figs.dwg Oct 30, 2024 - 8:57am By: USSA700736



**NOTES**

1. SETTLING BASIN CCR UNIT EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-QUANTITIES FOR REMOVAL.TXT".
2. POLISHING BASIN EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-OBSCURED ADD TO BASELINE.TXT".

**LEGEND**

- LIMIT OF LINER SYSTEM AND CCR REMOVAL
- FINAL EXCAVATION GRADE (1ft CONTOUR), SEE NOTES 1 AND 2

- CCR REMOVAL CERTIFICATION GRID NODE AND ID
- 2021 LINER REPAIR / PUNCTURE LOCATION

**SURVEY NOTES**

1. AERIAL IMAGERY AND TOPOGRAPHIC SURVEY PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE: AUGUST 14, 2021.
2. HORIZONTAL DATUM AND COORDINATES SHOWN BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), 1994 ADJUSTMENT, SOUTH ZONE, INTERNATIONAL FOOT.
3. VERTICAL DATUM AND ELEVATIONS SHOWN BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), 1' CONTOUR INTERVAL.

A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP	
REV	DATE	DESCRIPTION	BY	CK	APP	

SIGNATURE  
  
 NAME  
 JOHN D. PULS  
 MICHIGAN P.E. No.  
 6201055778

**Consumers Energy**

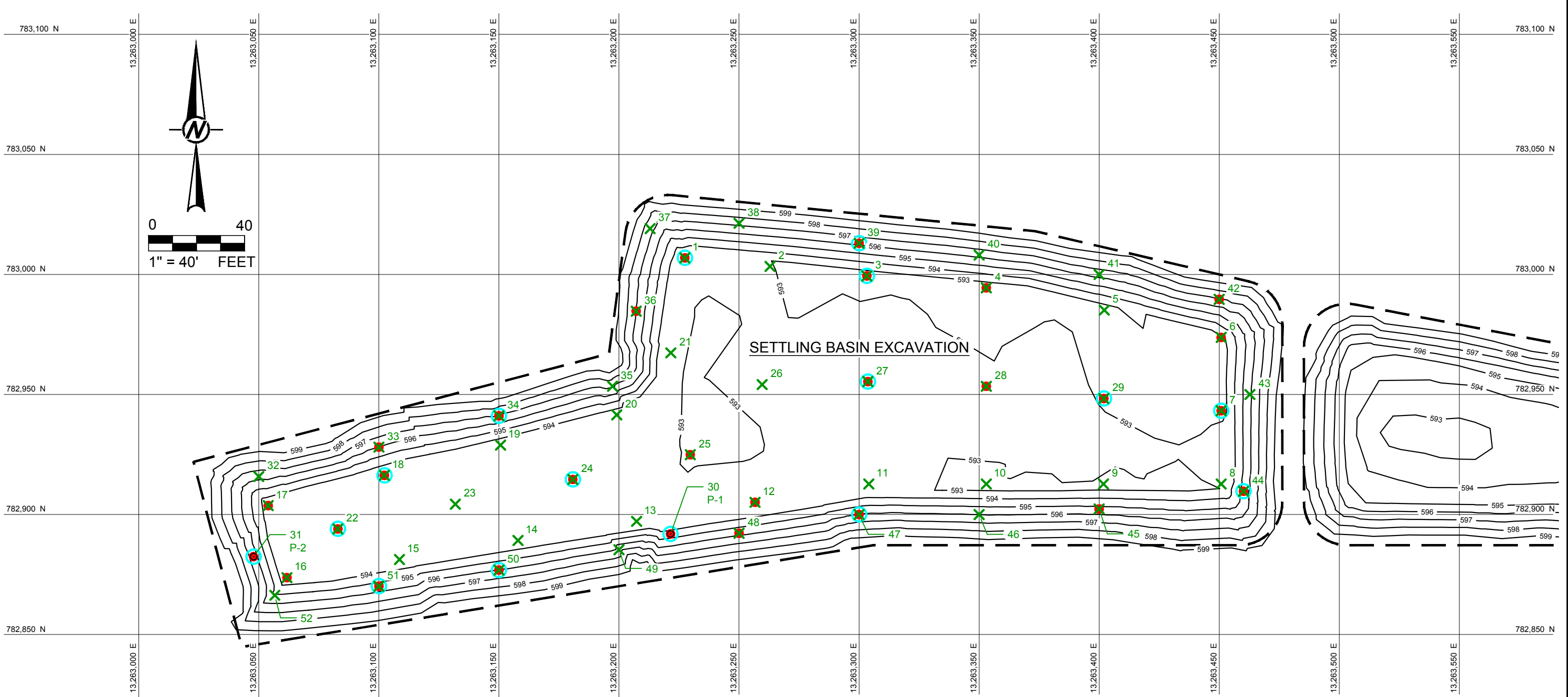
**D.E. KARN GENERATING FACILITY  
 ESSEXVILLE, MI**

**CCR REMOVAL DOCUMENTATION -  
 SAMPLE GRID NODES**

**LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT**

SCALE: 1" = 40'	DRAWING NO.	FIGURE <b>3</b>	REV. A
JOB: GL21489845.0003			

P:\ConsumersEnergy\21489845 DEK Demolition Grading\PRODUCTION V - Lined Imp Closure Cert Report Grid Node Figs\GL21489845 Lined Imp Closure - Prop Excavation - Cert Grid Node Figs.dwg Oct 30, 2024 - 8:56am By: USSA700736



**SURVEY NOTES**

- AERIAL IMAGERY AND TOPOGRAPHIC SURVEY PROVIDED BY ROWE AIR-LAND SURVEYS, 540 S. SAGINAW STREET, SUITE 200, FLINT, MI 48502. PHOTO DATE: AUGUST 14, 2021.
- HORIZONTAL DATUM AND COORDINATES SHOWN BASED ON MICHIGAN STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD83), 1994 ADJUSTMENT, SOUTH ZONE, INTERNATIONAL FOOT.
- VERTICAL DATUM AND ELEVATIONS SHOWN BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), 1' CONTOUR INTERVAL.

**NOTES**

- SETTLING BASIN CCR UNIT EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-QUANTITIES FOR REMOVAL.TXT".
- POLISHING BASIN EXCAVATION BOTTOM BASED ON GROUND SURVEY PERFORMED AUGUST 2024 BY ROWE PROFESSIONAL SERVICES COMPANY, 540 S. SAGINAW STREET, STE. 200, FLINT, MI 48502. SURVEY RECEIVED VIA EMAIL FROM JASON PLUMMER, SEPTEMBER 9, 2024 AS POINTS FILE "2400542-20240821-OBSCURED ADD TO BASELINE.TXT".

**LEGEND**

- LIMIT OF LINER SYSTEM AND CCR REMOVAL
- 595 — FINAL EXCAVATION GRADE (1ft CONTOUR), SEE NOTES 1 AND 2

- X 1 CCR REMOVAL CERTIFICATION GRID NODE AND ID
- 30 P-1 2021 LINER REPAIR / PUNCTURE LOCATION
- X PHOTO DOCUMENTATION LOCATION
- PHOTO & MICROSCOPY DOCUMENTATION LOCATION

REV	DATE	DESCRIPTION	BY	CK	APP
A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP

SIGNATURE  
  
 NAME  
 JOHN D. PULS  
 MICHIGAN P.E. No.  
 6201055778

**Consumers Energy**

**D.E. KARN GENERATING FACILITY  
 ESSEXVILLE, MI**

**CCR REMOVAL DOCUMENTATION -  
 CONFIRMATION GRID NODES**

**LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT**

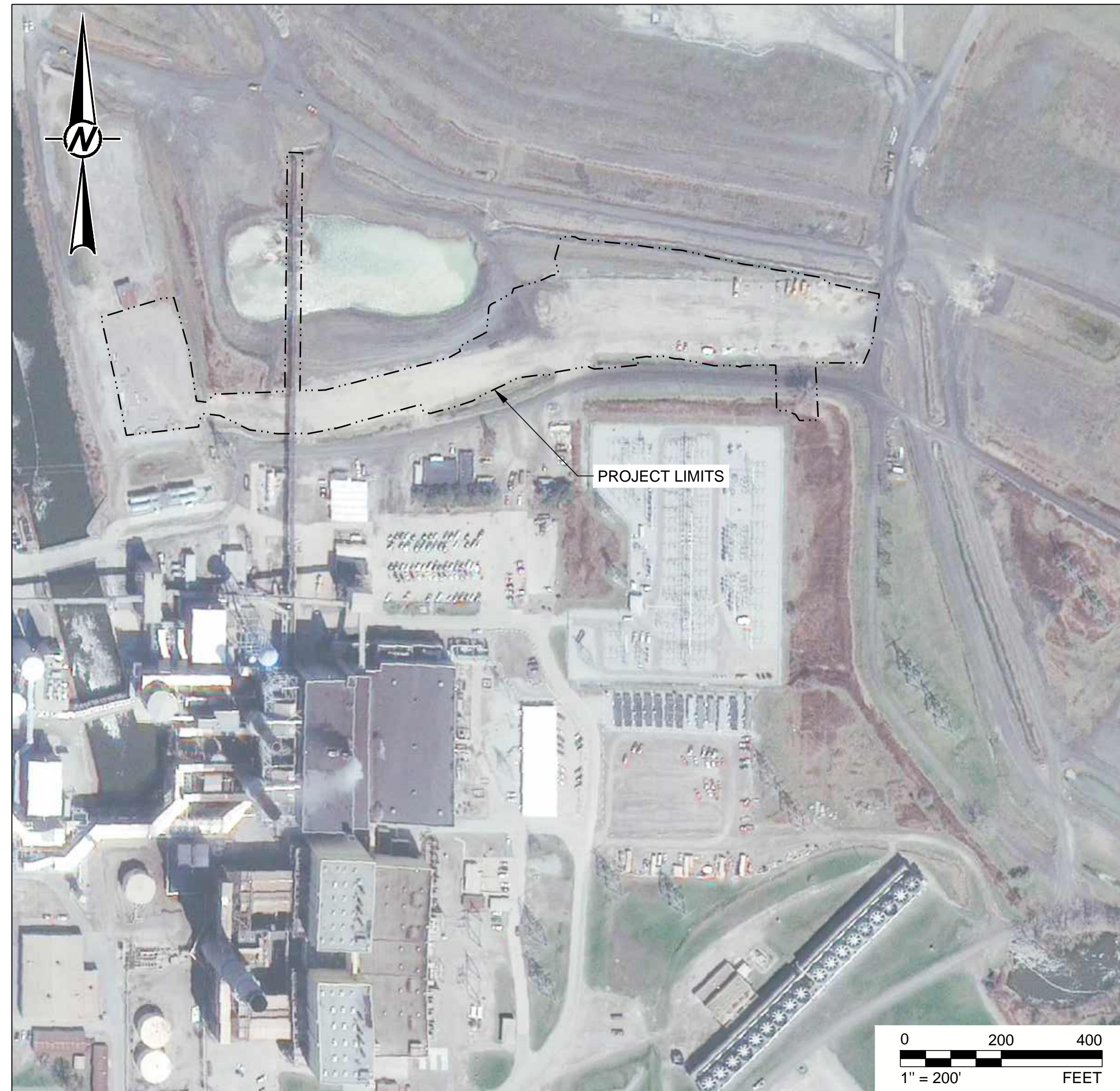
SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		<b>4</b>	A

**APPENDIX A**

**DE Karn Bottom Ash Surface  
Impoundment Issued for Record  
Drawings**



# CONSUMERS ENERGY COMPANY DE KARN GENERATING PLANT BOTTOM ASH SURFACE IMPOUNDMENT



REFERENCE: AERIAL IMAGE: © CNES 2016, DISTRIBUTION AIRBUS DS GEO SA/AIRBUS DS GEO INC.

Prepared for:



Consumers Energy Company  
DE Karn Generating Plant  
2742 N. Weadock Hwy.  
Essexville, MI 48732

Prepared by:



SHEET LIST		
SHEET NUMBER	SHEET TITLE	REV.
<b>GENERAL</b>		
1278-093	COVER SHEET	0
1278-094	GENERAL NOTES	0
1278-095	EXISTING CONDITIONS	0
1278-096	PROJECT OVERVIEW	0
1278-097	DEMOLITION	0
1278-098	TRAFFIC CONTROL	0
<b>CIVIL AND PIPING</b>		
1278-099	GENERAL CIVIL AND PIPING NOTES	0
1278-100	EROSION CONTROL	0
1278-101	EXCAVATION PLAN	0
1278-102	GRADING PLAN (TOP OF EMBANKMENT FILL)	0
1278-103	GRADING SECTIONS	0
1278-104	BOTTOM ASH PIPELINE EXTENSIONS PLAN AND PROFILE	0
1278-105	CIVIL AND PIPING SECTIONS AND DETAILS (1 OF 4)	0
1278-106	CIVIL AND PIPING SECTIONS AND DETAILS (2 OF 4)	0
1278-107	CIVIL AND PIPING SECTIONS AND DETAILS (3 OF 4)	0
1278-107A	CIVIL AND PIPING SECTIONS AND DETAILS (4 OF 4)	0

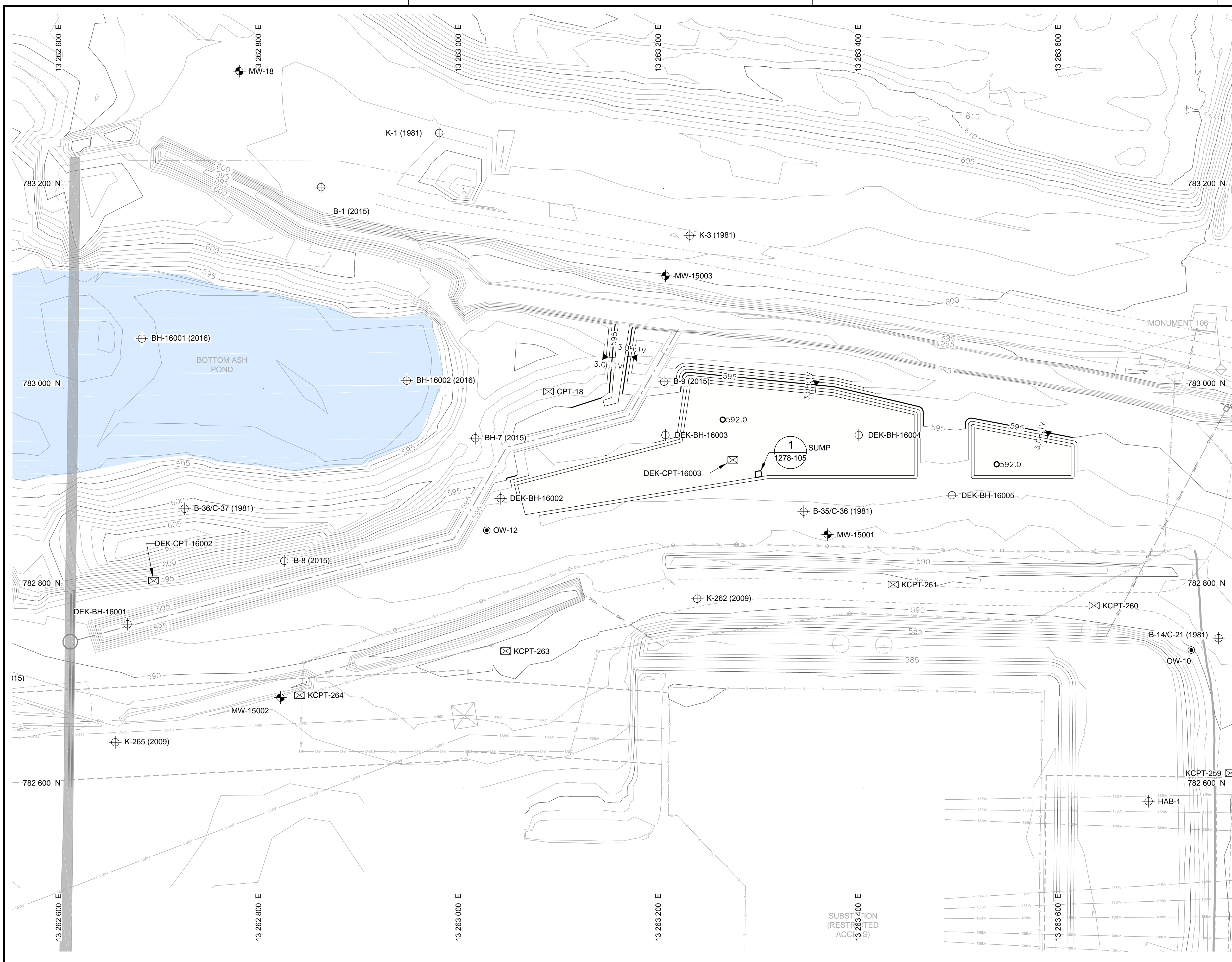
SHEET LIST		
SHEET NUMBER	SHEET TITLE	REV.
<b>STRUCTURAL</b>		
1278-108	GENERAL STRUCTURAL NOTES	0
1278-108A	GENERAL STRUCTURAL NOTES AND ABBREVIATIONS	0
1278-109	TYPICAL STRUCTURAL FOUNDATION SECTIONS AND DETAILS	0
1278-110	FOUNDATION LOCATION PLAN	0
1278-111	EXISTING TRESTLE REINFORCEMENT FOUNDATION PLAN AND ELEVATIONS	0
1278-111A	EXISTING TRESTLE REINFORCEMENT FOUNDATION SECTIONS AND DETAILS	0
1278-112	STRUCTURAL FOUNDATION PLANS	0
1278-112A	STRUCTURAL FOUNDATION PLANS	0
1278-113	STRUCTURAL PLAN	0
1278-114	STRUCTURAL ELEVATIONS	0
1278-115	STRUCTURAL STEEL DETAILS	0
<b>PROCESS</b>		
1278-116	PROCESS FLOW DIAGRAM	0
1278-117	PIPING & INSTRUMENTATION DIAGRAM	0

										 DE KARN GENERATING PLANT			KARN BOTTOM ASH IMPOUNDMENT COVER SHEET			
										JASON OBERMEYER MICHIGAN P.E. No. 6201063841			UNITS #1 & 2 SCALE AS SHOWN DRAWING NO. SHEET REV. JOB PT-01787 695-1278 093 0			
REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	DESCRIPTION	BY	CHK	APP				
							0	11/16/18	ISSUED FOR RECORD - PT-01787 BOTTOM ASH IMPOUNDMENT	DCH	DBS	JEO				









- LEGEND**
- EXISTING GROUND TOPOGRAPHY
  - PROPOSED EXCAVATION GRADES
  - EXISTING CULVERT
  - EXISTING PROCESS WATER PIPE
  - EXISTING EDGE OF GRAVEL ROAD
  - EXISTING FENCE
  - SOLID WASTE BOUNDARY
  - EXISTING 4160V UNDERGROUND WIRE
  - EXISTING OVERHEAD SHIELD WIRE
  - EXISTING OVERHEAD 138KV WIRE
  - EXISTING OVERHEAD 345KV WIRE
  - EXISTING OVERHEAD DISTRIBUTION LINE
  - METC EASEMENT
  - EXISTING ASH TRESTLE
  - EXISTING BUILDING
  - EXISTING TOWER STRUCTURE
  - EXISTING LAMP POST
  - EXISTING TREE
  - MONITORING WELL LOCATION
  - OBSERVATION WELL LOCATION
  - CONE PENETRATION TEST LOCATION
  - BOREHOLE LOCATION

- NOTE(S)**
1. EXISTING FEATURES OUTSIDE OF THE PROJECT AREA MAY NOT BE SHOWN FOR CLARITY.
  2. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES AND FEATURES.
  3. EXISTING CONDITIONS IN THE BOTTOM ASH POND AND ASH LANDFILL MAY VARY FROM THOSE SHOWN DUE TO ONGOING ASH DISPOSAL AND CONSTRUCTION OPERATIONS.
  4. EXCAVATIONS THAT ARE INCIDENTAL TO INSTALLATION OF PIPING AND FOUNDATIONS ARE NOT SHOWN.
  5. CONTRACTOR IS RESPONSIBLE FOR DEWATERING IN ACCORDANCE WITH THE SPECIFICATIONS (REFER TO SECTION 310000 - EARTHWORKS).

- REFERENCE(S)**
1. AERIAL IMAGE: © CNES 2016, DISTRIBUTION AIRBUS DS GEO SA/AIRBUS DS GEO INC.
  2. HORIZONTAL COORDINATE SYSTEM: MICHIGAN STATE PLANE, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (1994 ADJUSTMENT), INTERNATIONAL SURVEY FOOT.
  3. VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  4. EXISTING SITE TOPOGRAPHY PROVIDED IN APRIL 2016 BY ENGINEERING & ENVIRONMENTAL SOLUTIONS, L.L.C. AUGMENTED WITH DESIGN GRADES FOR PROCESS WATER MODIFICATIONS IMPLEMENTED IN FALL 2017.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	DESCRIPTION	BY	CHK	APP
							0	12/05/18	ISSUED FOR RECORD - PT-01787 BOTTOM ASH IMPOUNDMENT	DCH	DBS	JEO

SIGNATURE

NAME

JASON OBERMEYER

MICHIGAN P.E. No.

6201063841

**Consumers Energy**

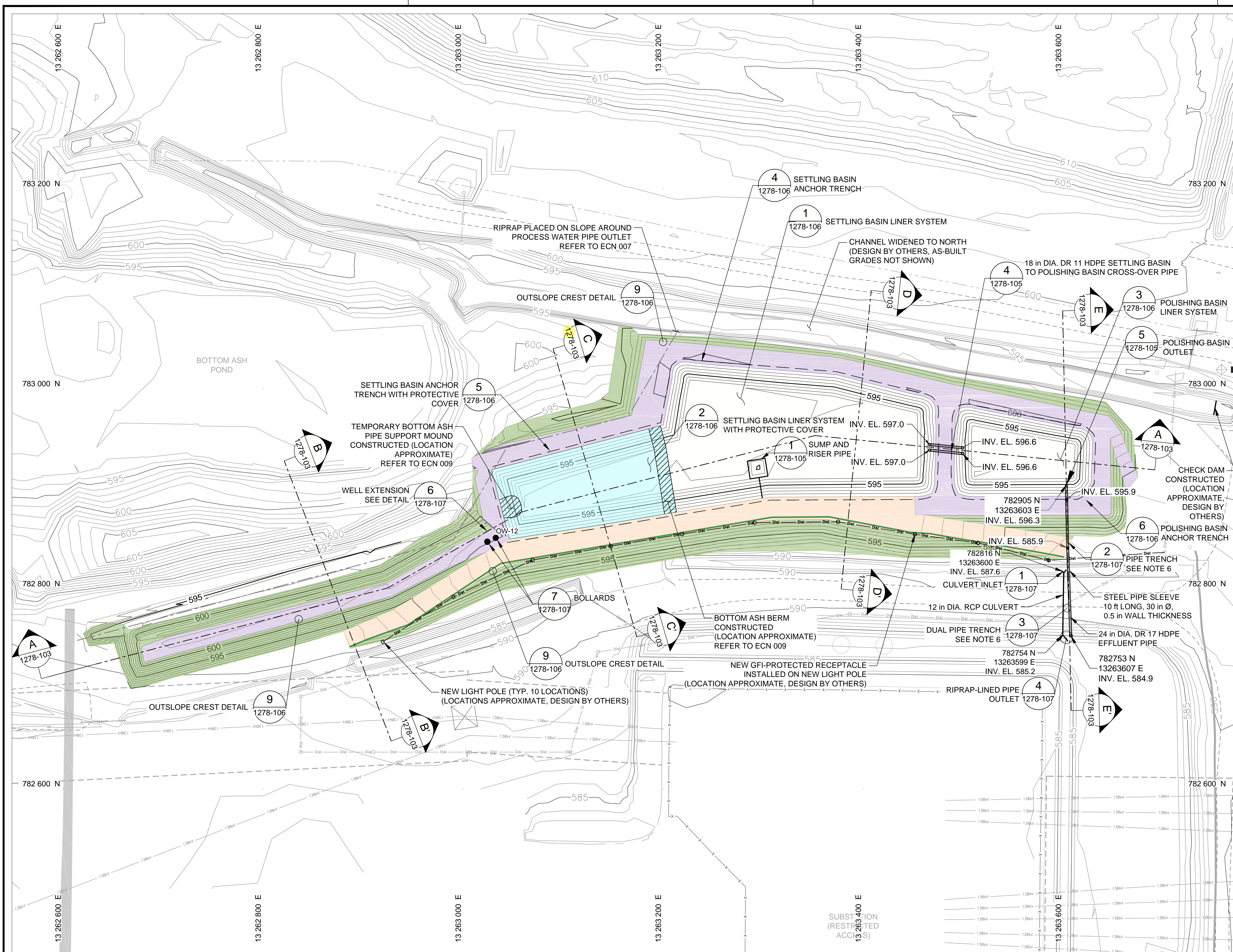
**DE KARN GENERATING PLANT**

695-1278-101-REV-0.dwg

**KARN BOTTOM ASH IMPOUNDMENT EXCAVATION PLAN**

SCALE	AS SHOWN	DRAWING NO.	SHEET	UNITS #1 & 2
JOB	PT-01787	695-1278	101	REV. 0



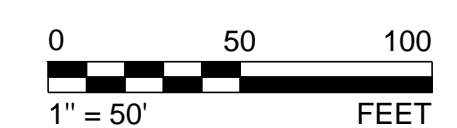


**LEGEND**

	EXISTING GROUND TOPOGRAPHY
	AS-BUILT GRADES (TOP OF EMBANKMENT FILL)
	EXISTING PROCESS WATER PIPE
	EXISTING CULVERT
	NEW CULVERT
	NEW HDPE PIPE
	NEW OVERHEAD DISTRIBUTION LINE (LOCATIONS APPROXIMATE, DESIGN BY OTHERS)
	EDGE EXISTING OF GRAVEL ROAD
	EXISTING FENCE
	SOLID WASTE BOUNDARY
	EXISTING 4160V UNDERGROUND WIRE
	EXISTING OVERHEAD 138KV WIRE
	EXISTING OVERHEAD DISTRIBUTION LINE
	DELINEATORS (SEE NOTE 5)
	LIMIT OF GEOSYNTHETICS (SEE SHEET 1278-106)
	METC EASEMENT
	EXISTING ASH TRESTLE
	EXISTING BUILDING
	EXISTING TOWER STRUCTURE
	OBSERVATION WELL
	12 in. HAUL ROAD AGGREGATE (SEE NOTE 4)
	12 in. SURFACING AGGREGATE (SEE NOTE 4)
	6 in. SURFACING AGGREGATE (SEE NOTE 4)
	PROTECTIVE COVER (SEE NOTE 4)

- NOTE(S)**
- EXISTING FEATURES OUTSIDE OF THE PROJECT AREA MAY NOT BE SHOWN FOR CLARITY.
  - CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING EXISTING UTILITIES AND FEATURES.
  - EXISTING CONDITIONS IN THE BOTTOM ASH POND AND ASH LANDFILL MAY VARY FROM THOSE SHOWN DUE TO ONGOING ASH DISPOSAL OPERATIONS.
  - CONTRACTOR SHALL ESTABLISH SMOOTH TRANSITIONS BETWEEN SURFACING TYPES. REFER TO SHEETS 1278-105 AND 1278-106 FOR MINIMUM LAYER THICKNESSES. GRADES SHOWN ON THIS DRAWING DO NOT ACCOUNT FOR THE THICKNESSES OF THE AGGREGATE LAYERS, LHRS SAND, OR PROTECTIVE COVER.
  - DELINEATORS SHALL BE INSTALLED 2 ft FROM THE EDGE OF ROAD ON MINIMUM 30 ft CENTERS AND SHALL BE MDOT-APPROVED DELINEATORS ACCEPTABLE TO OWNER AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
  - CONTRACTOR IS RESPONSIBLE FOR DEWATERING IN ACCORDANCE WITH THE SPECIFICATIONS (REFER TO SECTION 310000 - EARTHWORKS).

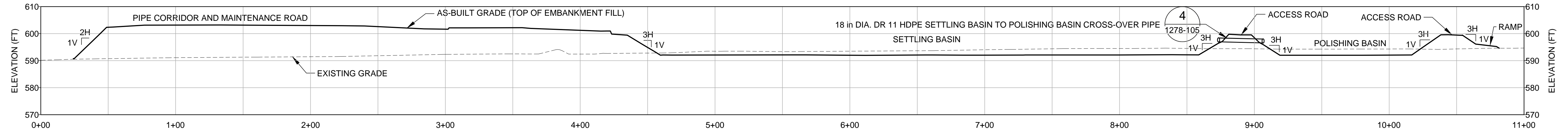
- REFERENCE(S)**
- AERIAL IMAGE: © CNES 2016, DISTRIBUTION AIRBUS DS GEO SA/AIRBUS DS GEO INC.
  - HORIZONTAL COORDINATE SYSTEM: MICHIGAN STATE PLANE, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (1994 ADJUSTMENT), INTERNATIONAL SURVEY FOOT.
  - VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
  - EXISTING SITE TOPOGRAPHY PROVIDED IN APRIL 2016 BY ENGINEERING & ENVIRONMENTAL SOLUTIONS, L.L.C. AUGMENTED WITH DESIGN GRADES FOR PROCESS WATER MODIFICATIONS IMPLEMENTED IN FALL 2017.



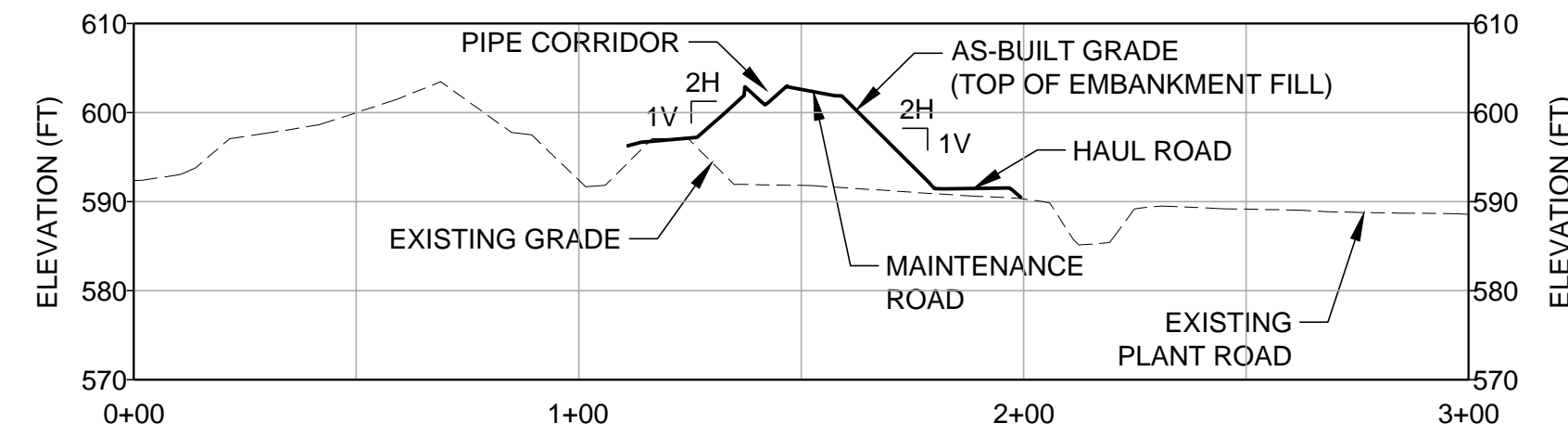
REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	DESCRIPTION	BY	CHK	APP	SIGNATURE	 <b>DE KARN GENERATING PLANT</b>
							0	12/04/18	ISSUED FOR RECORD - PT-01787 BOTTOM ASH IMPOUNDMENT	DCH	DBS	JEO	NAME	
													MICHIGAN P.E. No.	
													6201063841	695-1278-102-REV-0.dwg

KARN BOTTOM ASH IMPOUNDMENT GRADING PLAN (TOP OF EMBANKMENT FILL)		UNITS #1 & 2
SCALE AS SHOWN	DRAWING NO. 695-1278	SHEET 102
JOB PT-01787		REV. 0

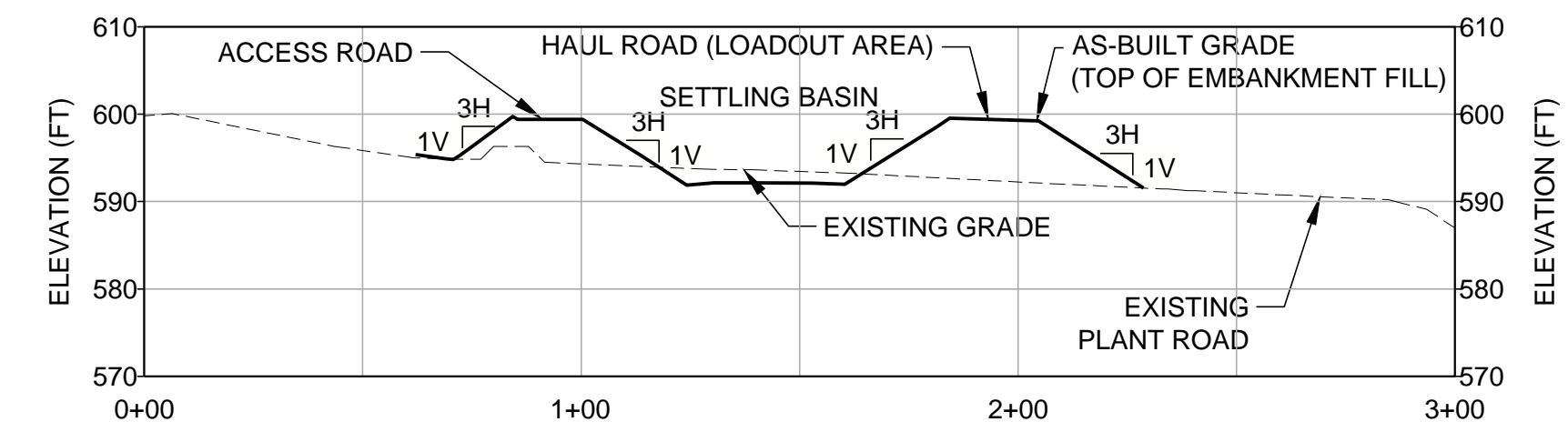




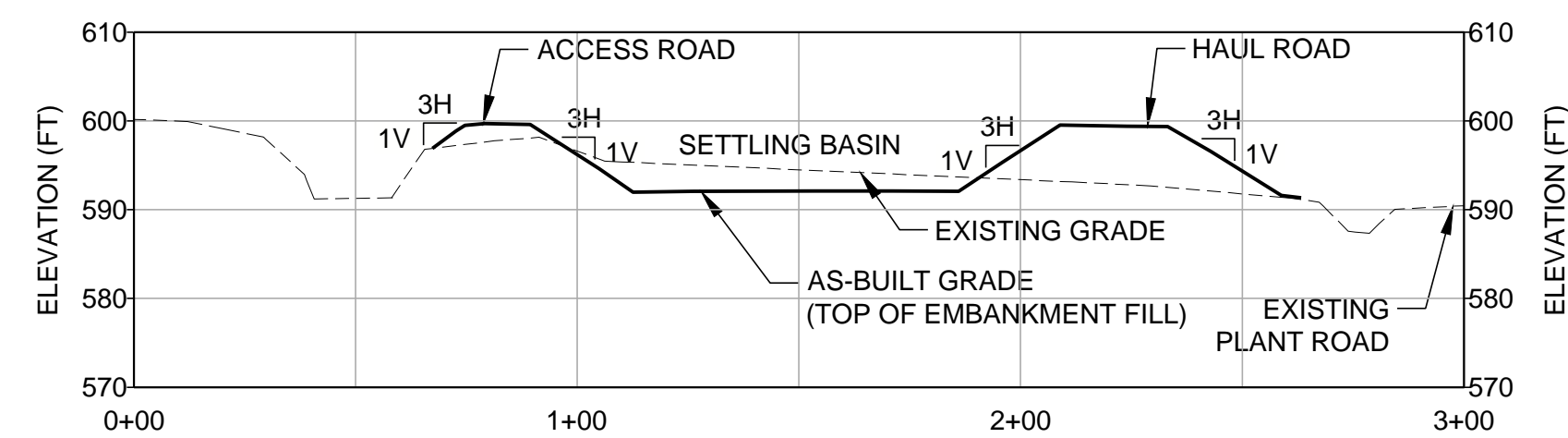
SCALE 1" = 40'  
2X VERT. SECTION A-A'  
1278-103



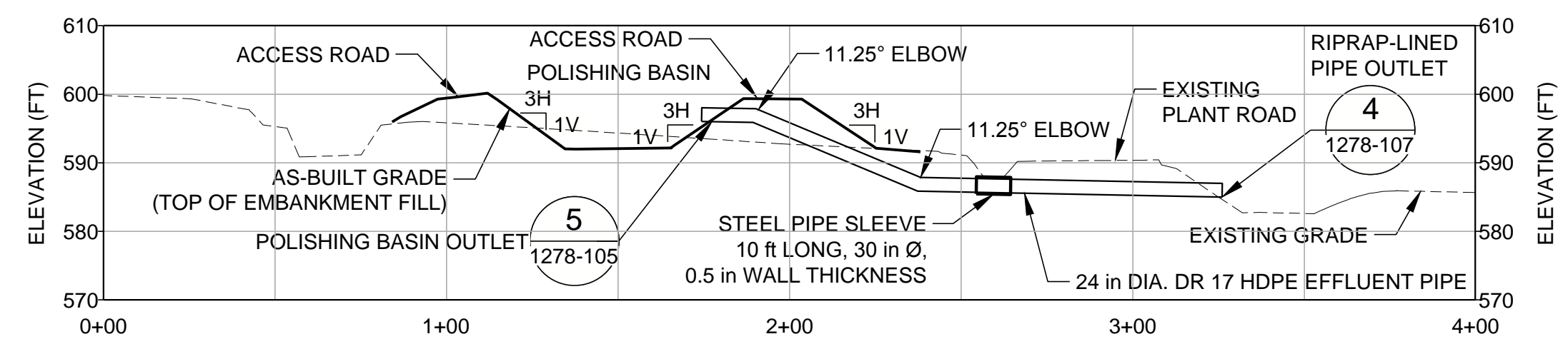
SCALE 1" = 40'  
2X VERT. SECTION B-B'  
1278-103



SCALE 1" = 40'  
2X VERT. SECTION C-C'  
1278-103



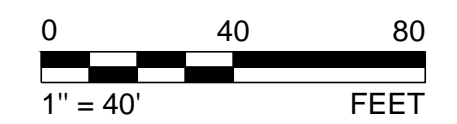
SCALE 1" = 40'  
2X VERT. SECTION D-D'  
1278-103




SCALE 1" = 40'  
2X VERT. SECTION E-E'  
1278-103

**NOTE(S)**

1. TOP OF EMBANKMENT FILL IS SHOWN. THICKNESSES OF AGGREGATE LAYERS, LHRS SAND, AND PROTECTIVE COVER ARE NOT REPRESENTED. REFER TO THE CIVIL AND PIPING SECTIONS AND DETAILS (SHEETS 1278-105 THROUGH 1278-107A).



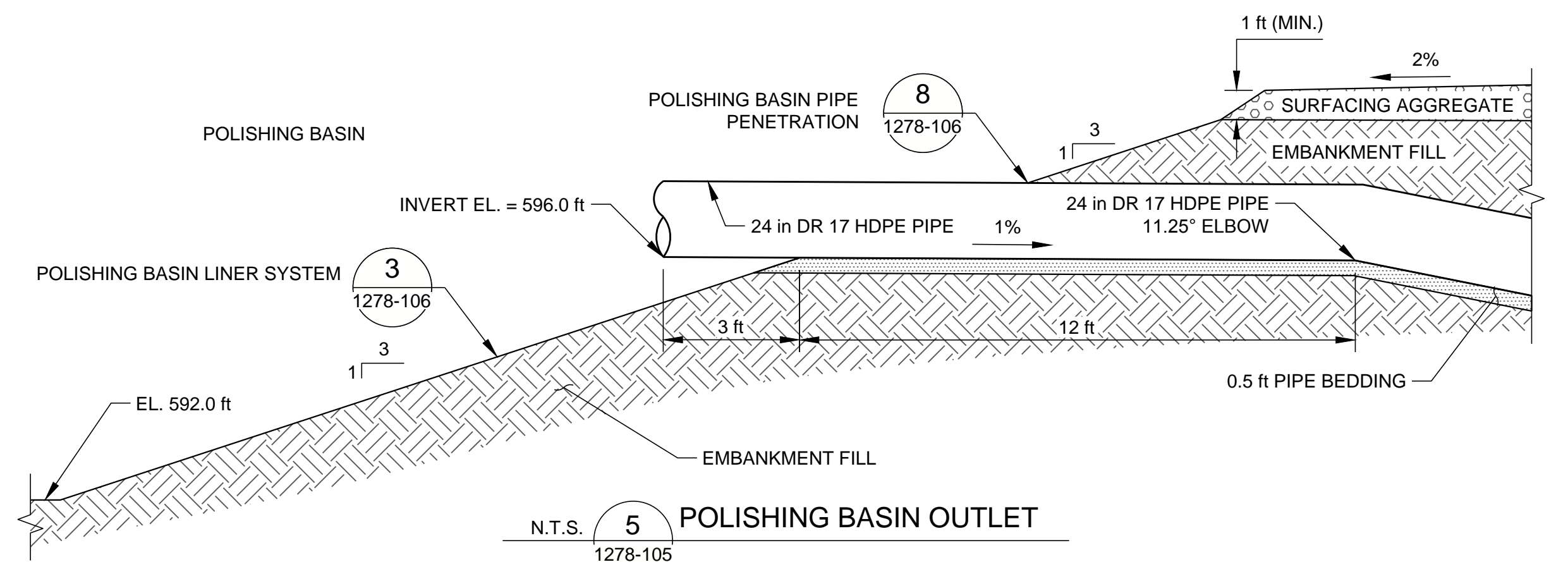
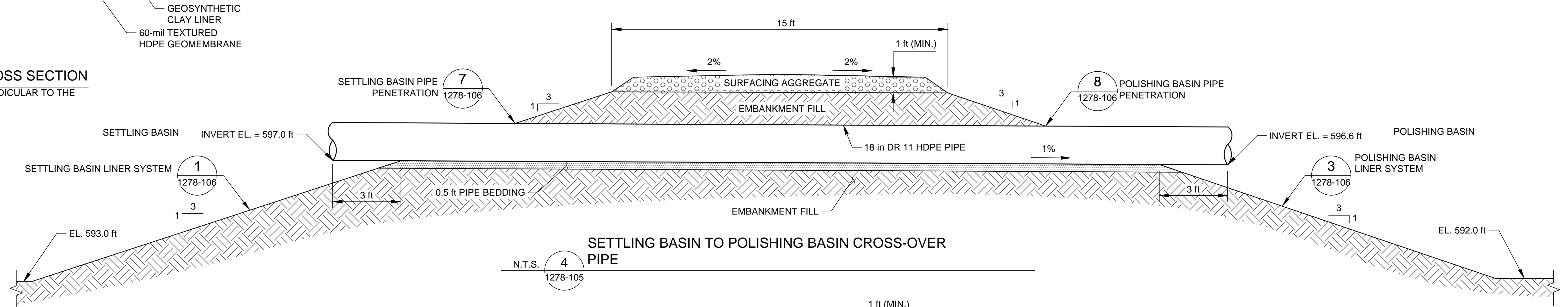
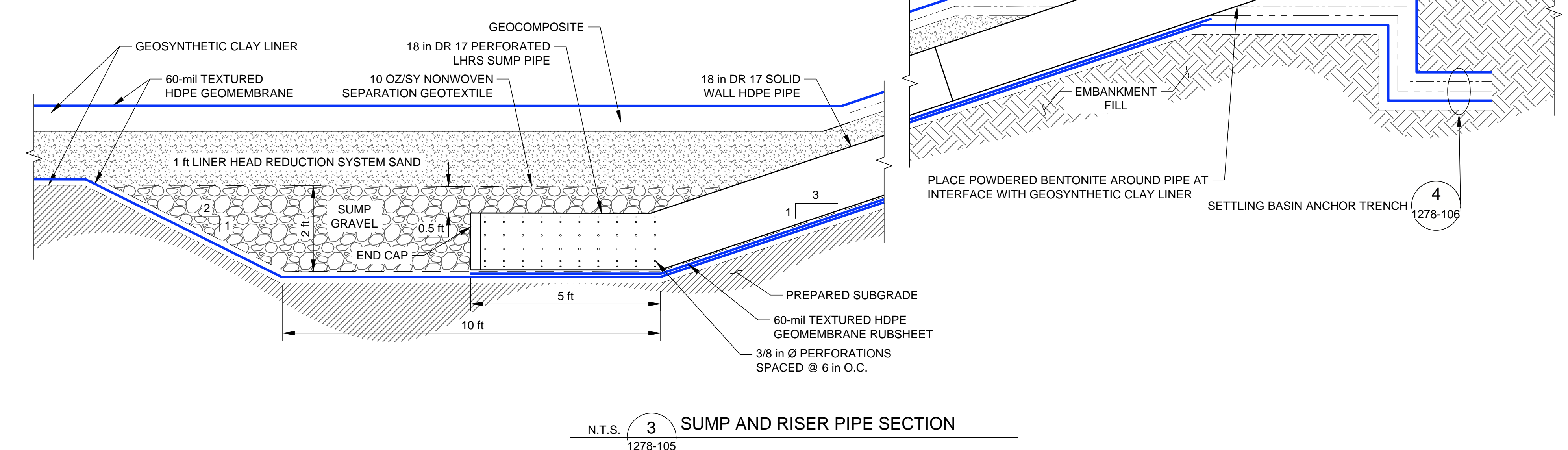
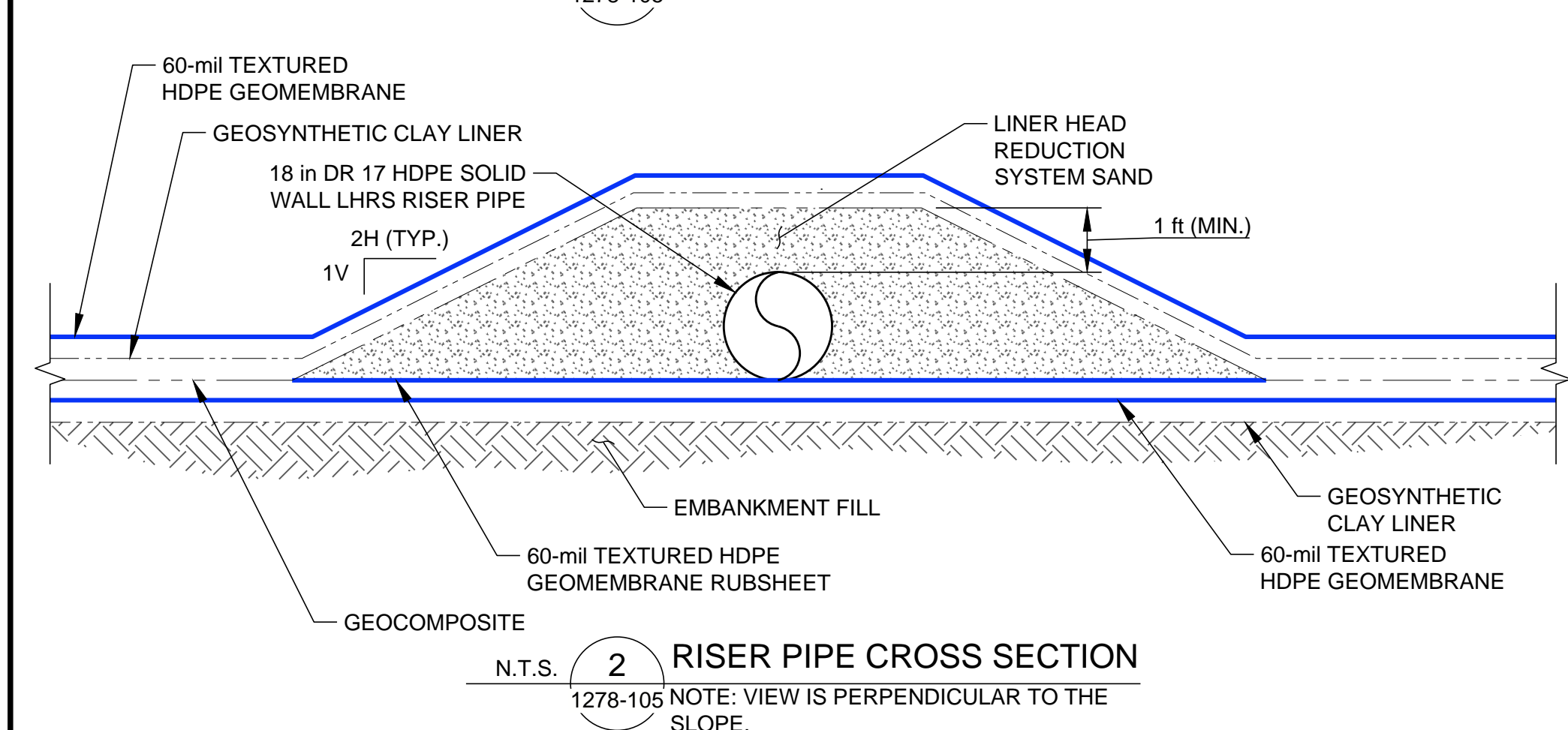
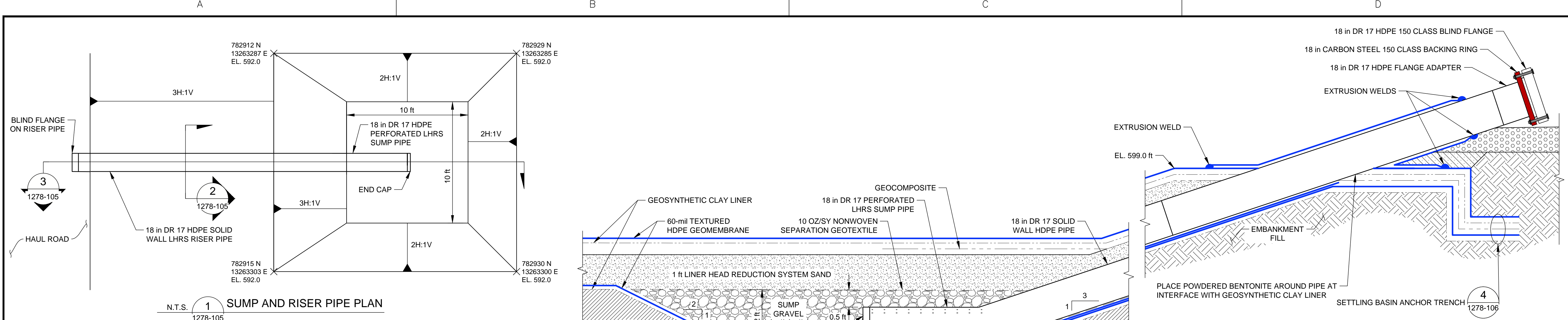
										SIGNATURE			 <b>DE KARN GENERATING PLANT</b>		<b>KARN BOTTOM ASH IMPOUNDMENT GRADING SECTIONS</b>				UNITS #1 & 2	
										NAME									SCALE	AS SHOWN
										JASON OBERMEYER					695-1278-103-REV-0.dwg		695-1278		103	0
										MICHIGAN P.E. No.					JOB		PT-01787		895-1278	
REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	DESCRIPTION	BY	CHK	APP	6201063841							

A

B

C

D



										SIGNATURE			 <b>DE KARN GENERATING PLANT</b>			<b>KARN BOTTOM ASH IMPOUNDMENT CIVIL AND PIPING SECTIONS AND DETAILS (1 OF 4)</b>			UNITS #1 & 2				
										NAME									SCALE	AS SHOWN	DRAWING NO.	SHEET	REV.
										JASON OBERMEYER									JOB	PT-01787	695-1278	105	0
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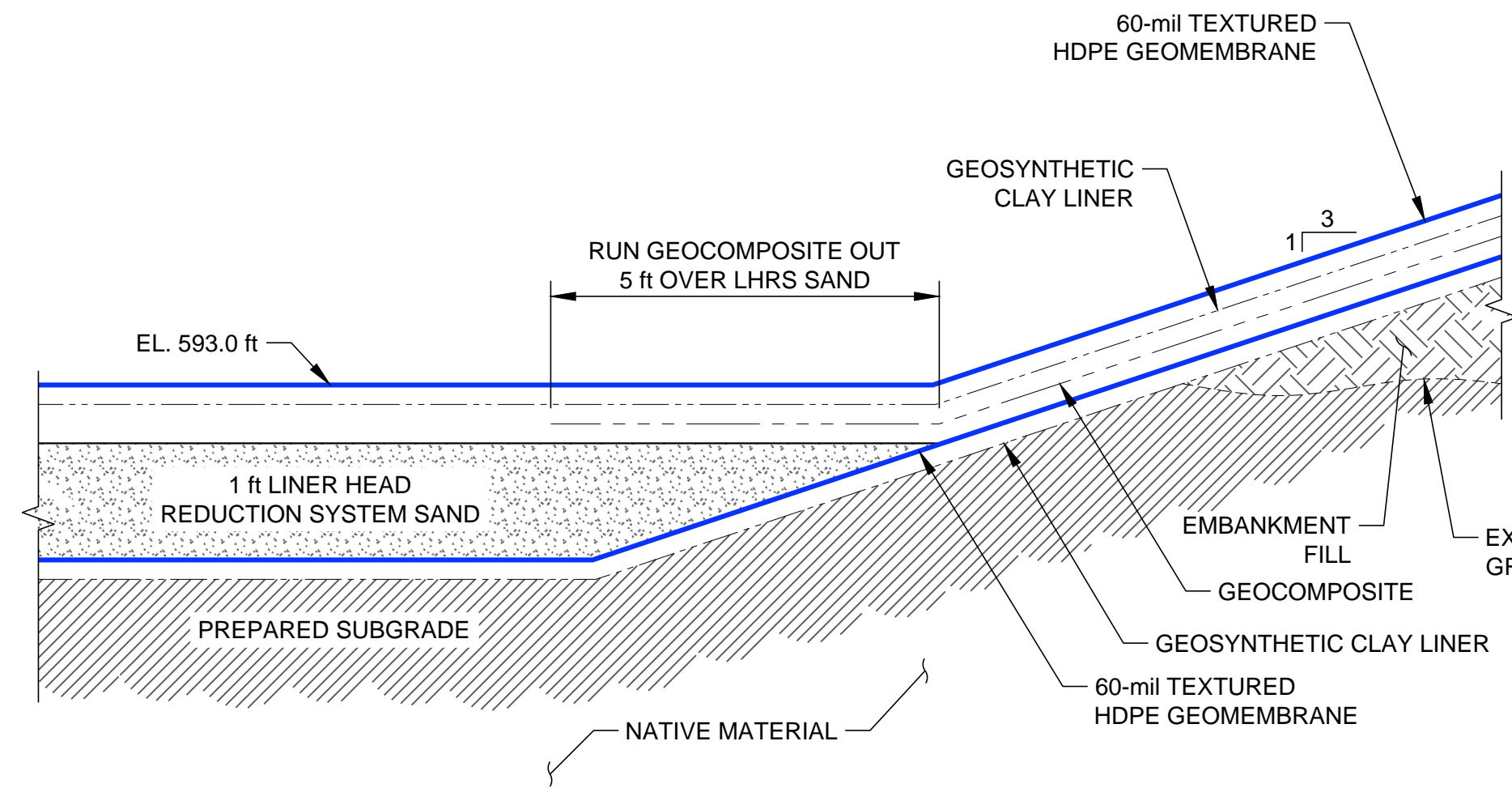


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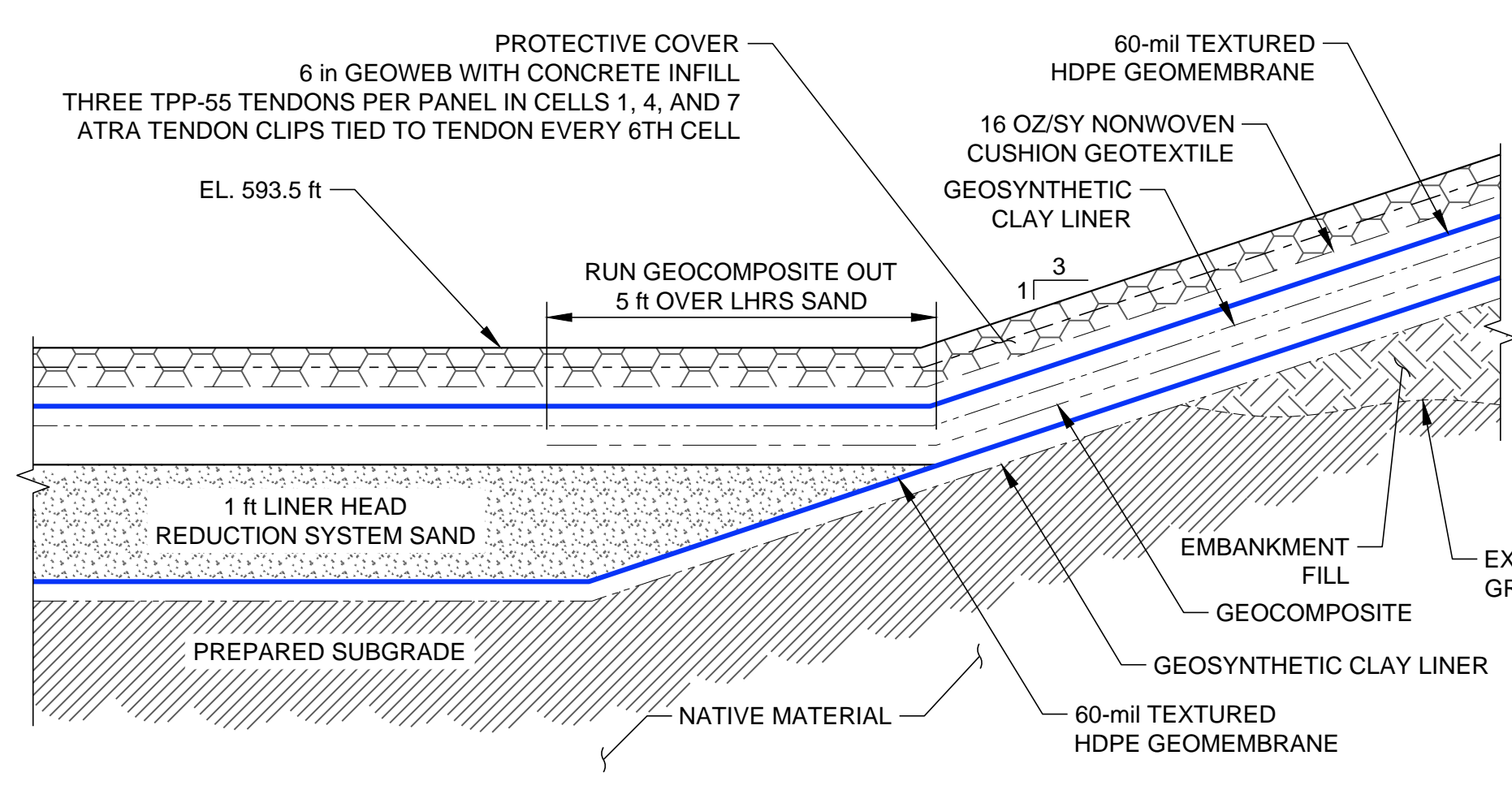
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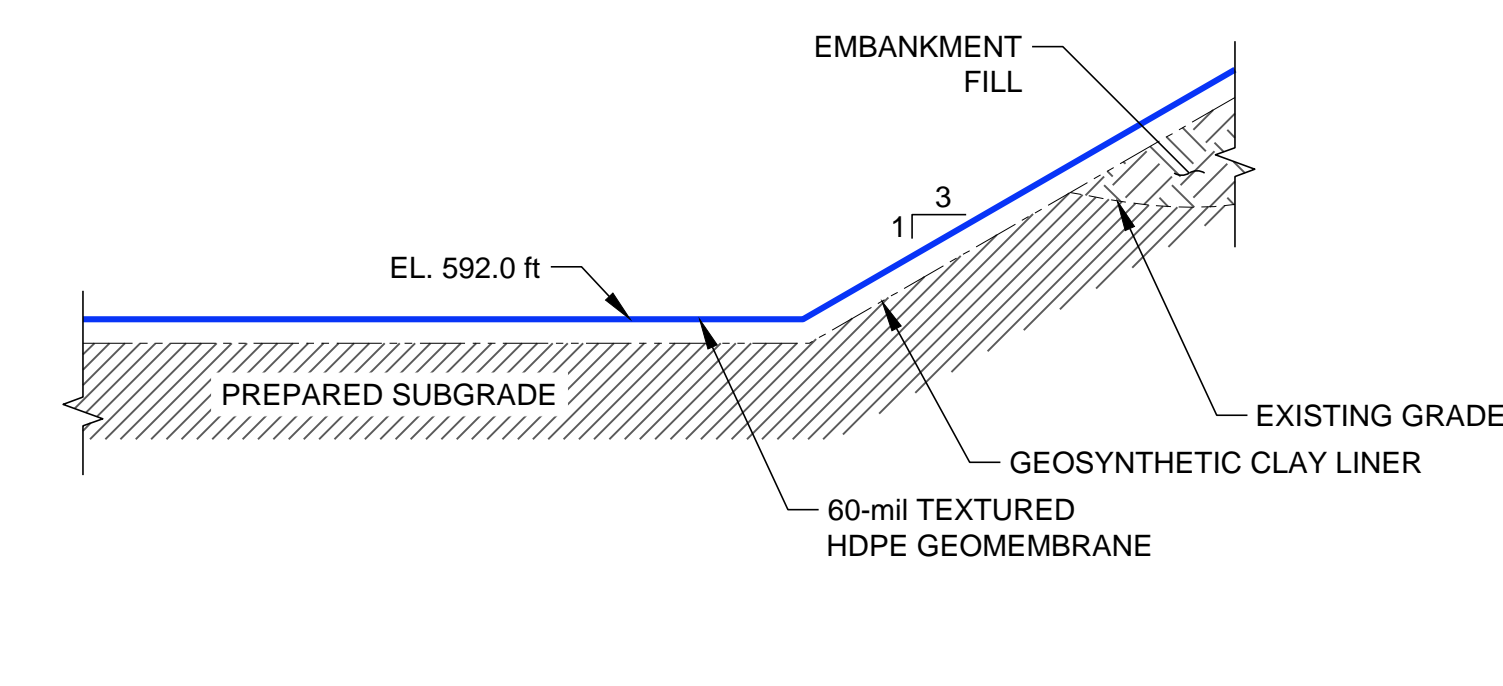
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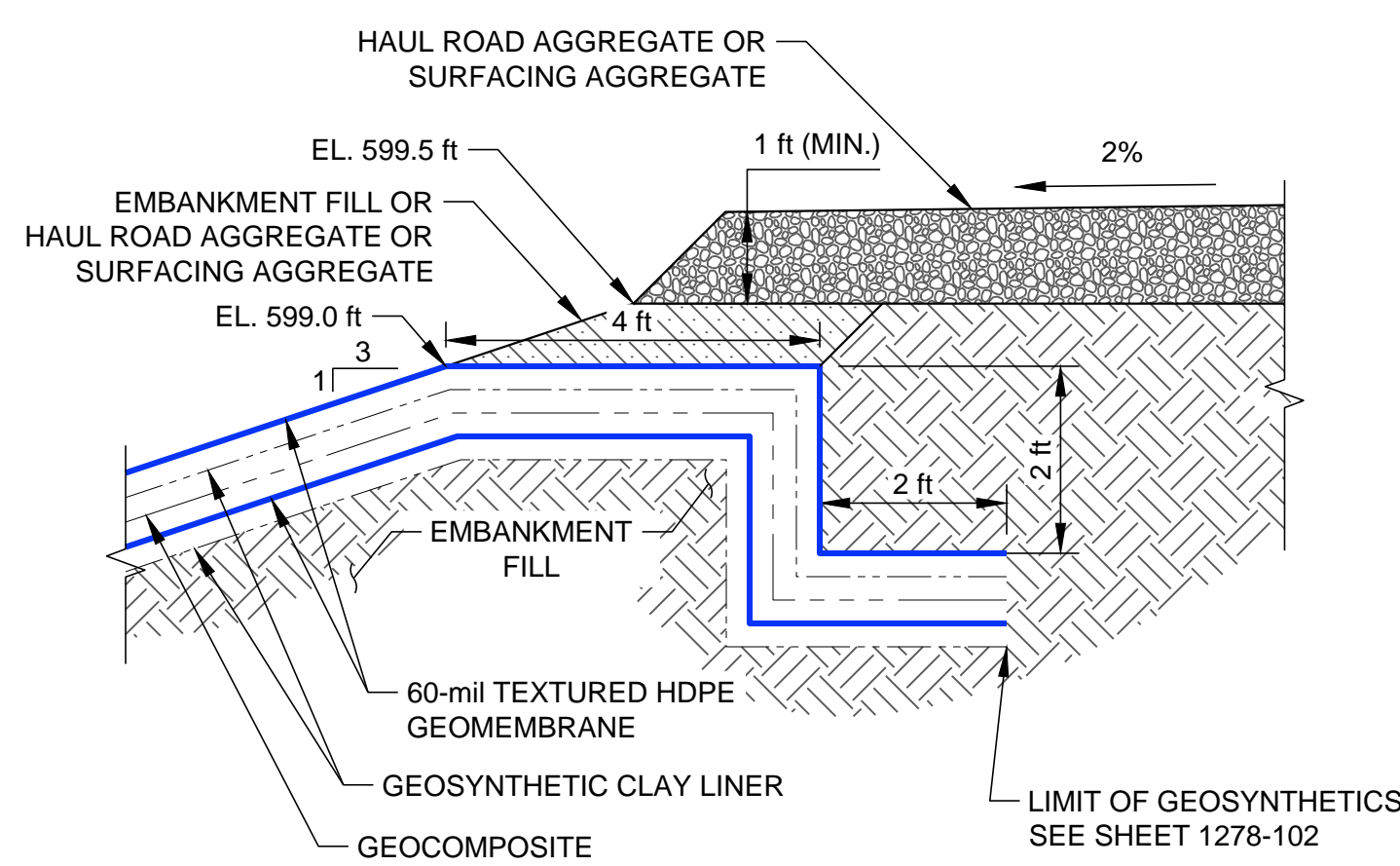
N.T.S. **1** SETTLING BASIN LINER SYSTEM  
1278-106



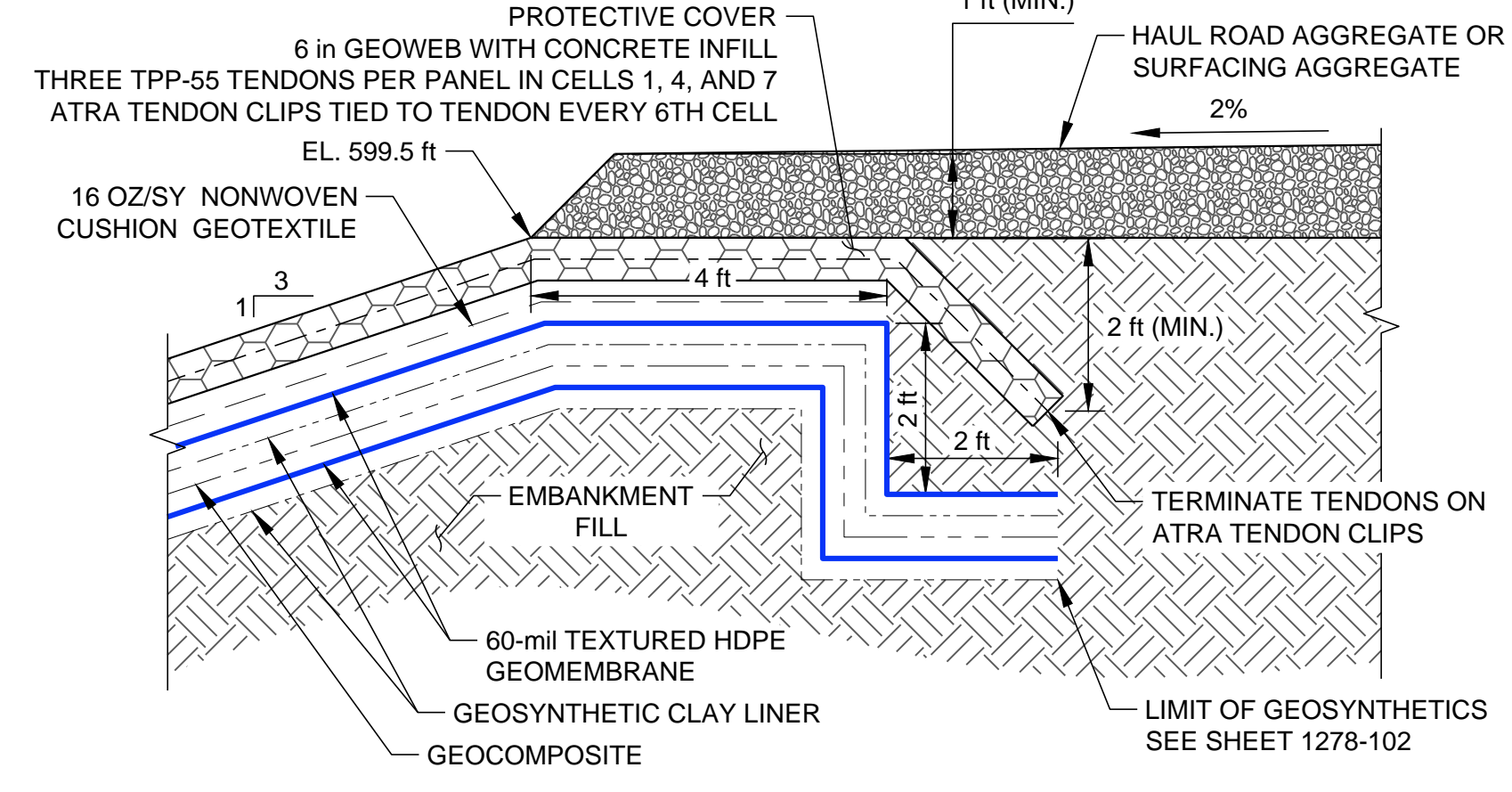
N.T.S. **2** SETTLING BASIN LINER SYSTEM WITH PROTECTIVE COVER  
1278-106



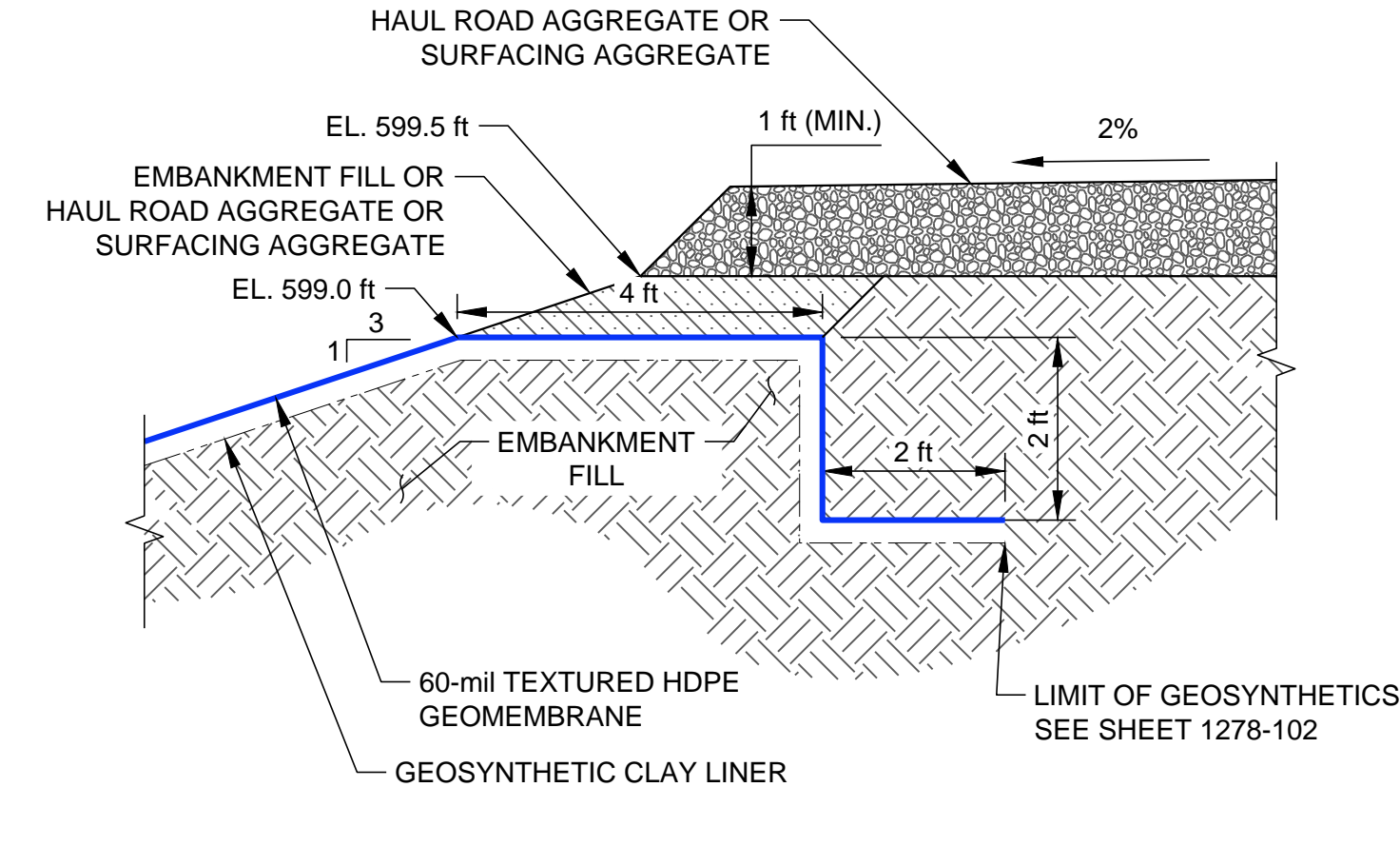
N.T.S. **3** POLISHING BASIN LINER SYSTEM  
1278-106



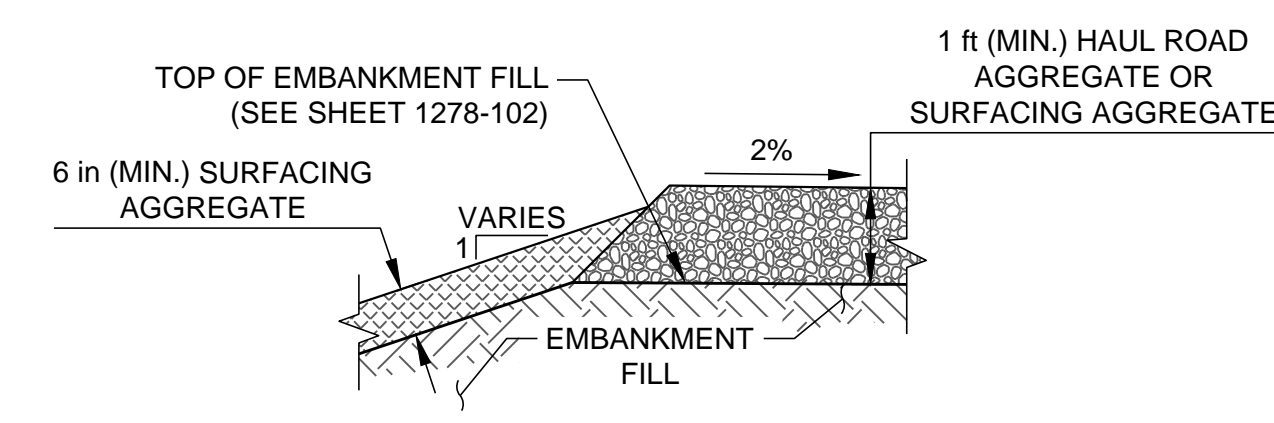
N.T.S. **4** SETTLING BASIN ANCHOR TRENCH  
1278-106



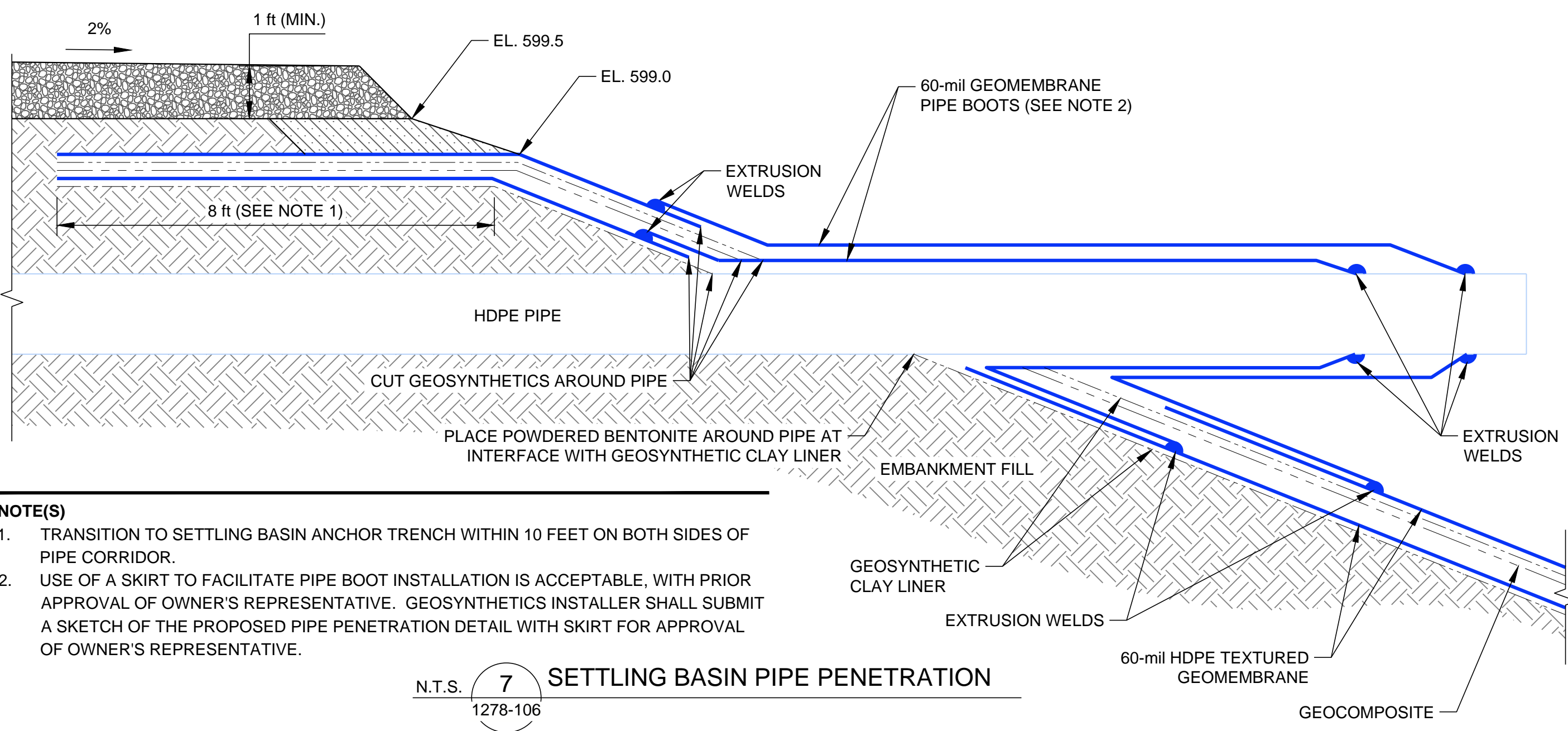
N.T.S. **5** SETTLING BASIN ANCHOR TRENCH WITH PROTECTIVE COVER  
1278-106



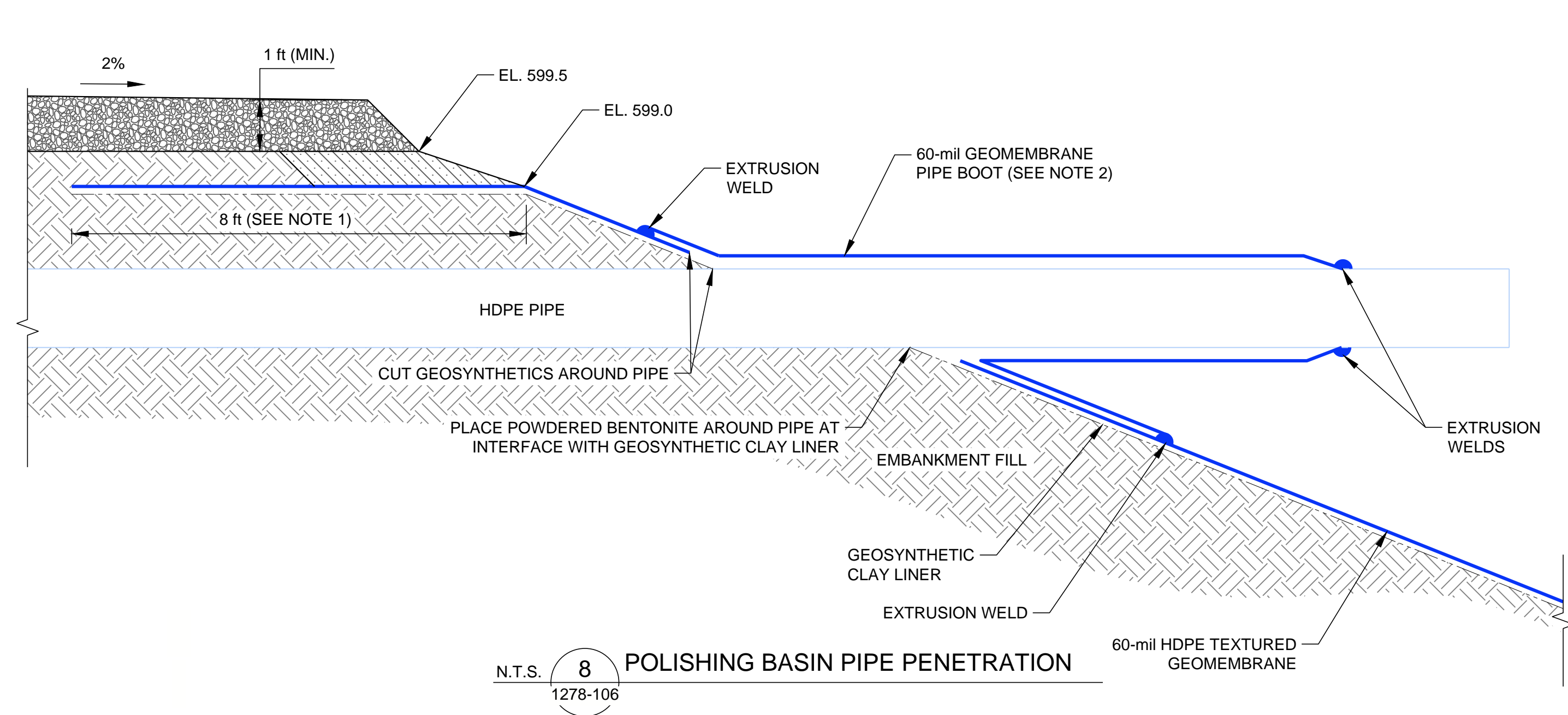
N.T.S. **6** POLISHING BASIN ANCHOR TRENCH  
1278-106



N.T.S. **9** OUTSLOPE CREST DETAIL  
1278-106



N.T.S. **7** SETTLING BASIN PIPE PENETRATION  
1278-106



N.T.S. **8** POLISHING BASIN PIPE PENETRATION  
1278-106

- NOTE(S)**
1. TRANSITION TO SETTLING BASIN ANCHOR TRENCH WITHIN 10 FEET ON BOTH SIDES OF PIPE CORRIDOR.
  2. USE OF A SKIRT TO FACILITATE PIPE BOOT INSTALLATION IS ACCEPTABLE, WITH PRIOR APPROVAL OF OWNER'S REPRESENTATIVE. GEOSYNTHETICS INSTALLER SHALL SUBMIT A SKETCH OF THE PROPOSED PIPE PENETRATION DETAIL WITH SKIRT FOR APPROVAL OF OWNER'S REPRESENTATIVE.

										SIGNATURE			 <b>DE KARN GENERATING PLANT</b>				<b>KARN BOTTOM ASH IMPOUNDMENT</b> <b>CIVIL AND PIPING SECTIONS AND</b> <b>DETAILS (2 OF 4)</b>			
										NAME										
										JASON OBERMEYER										
										MICHIGAN P.E. No.										
REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	BY	CHK	APP	REV	DATE	DESCRIPTION	BY	CHK	APP	6201063841	SCALE	AS SHOWN	DRAWING NO.	SHEET	REV.		
							0	11/16/18	ISSUED FOR RECORD - PT-01787 BOTTOM ASH IMPOUNDMENT	DCH	DBS	JEO		JOB	PT-01787	695-1278	106	0		

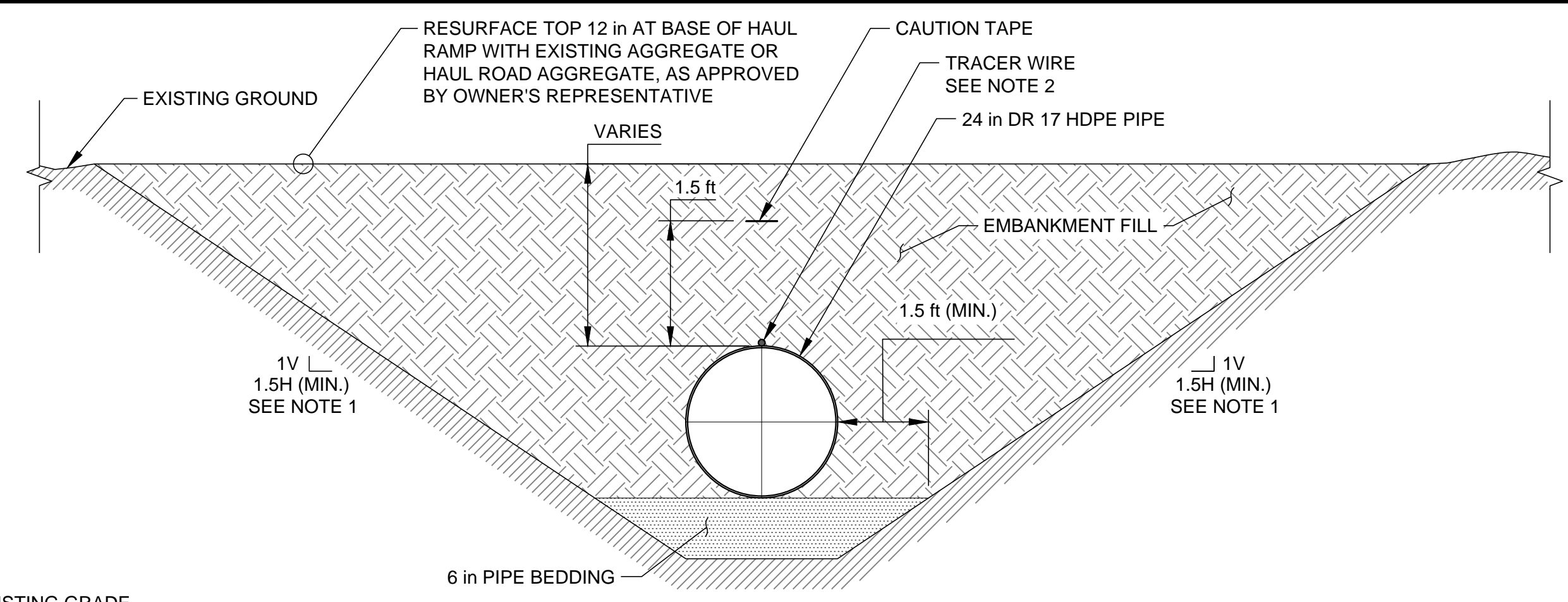
A

B

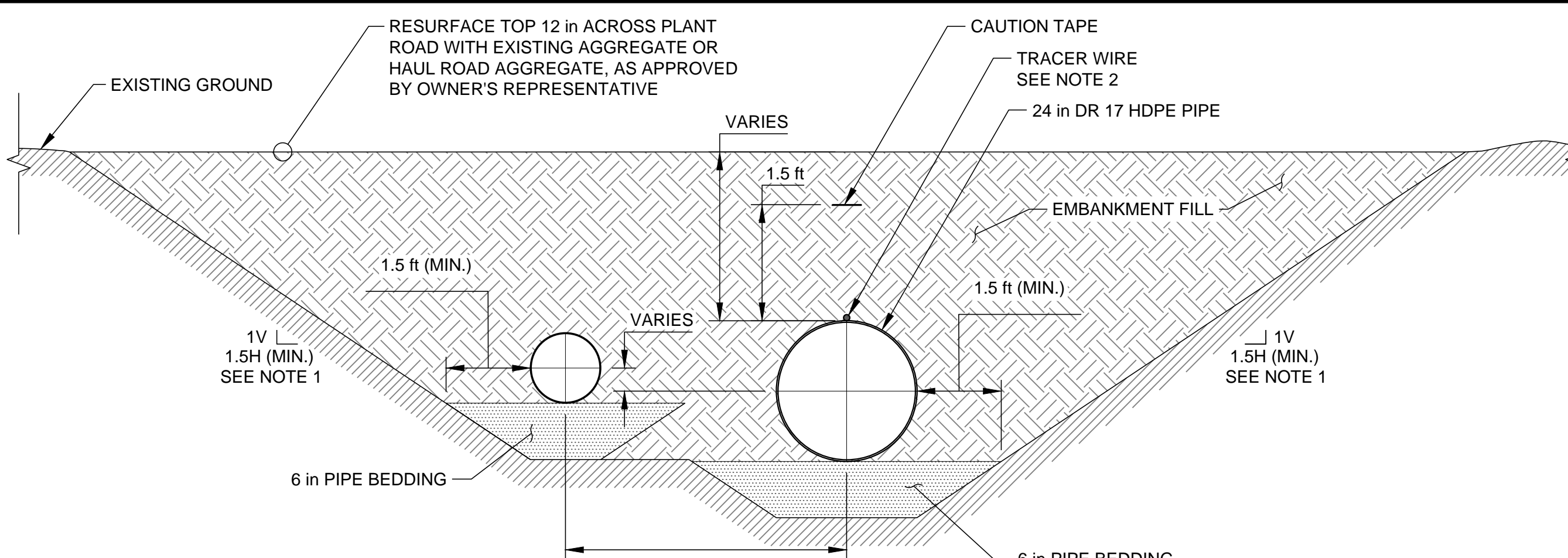
C

D

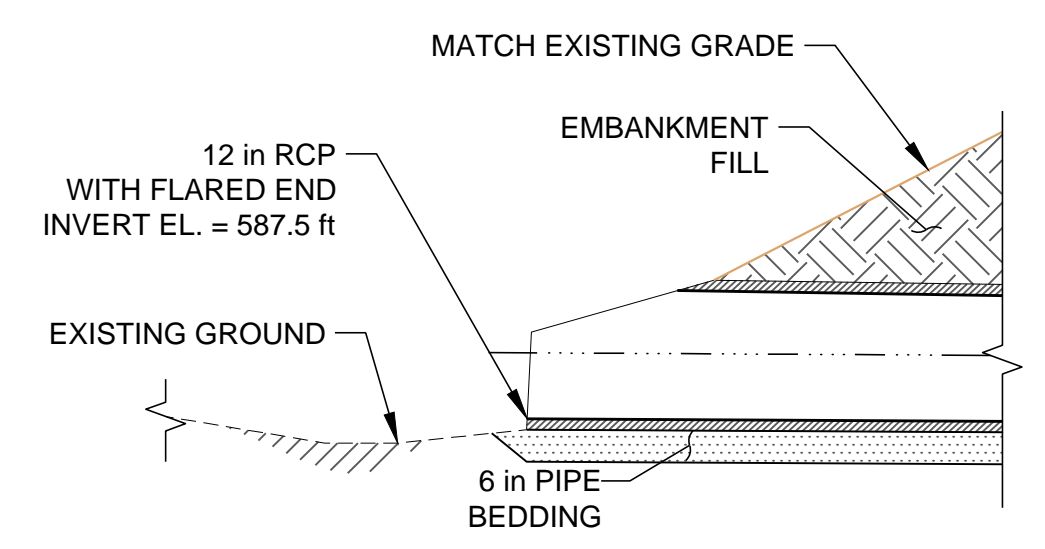




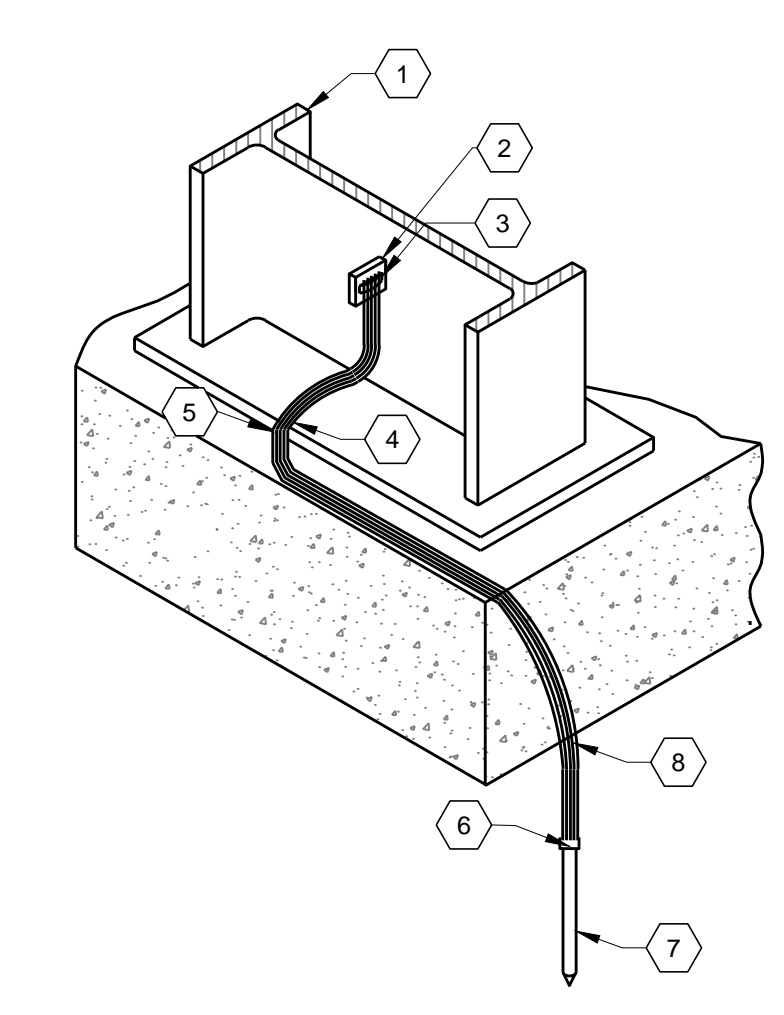
N.T.S. **2** PIPE TRENCH  
1278-107



N.T.S. **3** DUAL PIPE TRENCH  
1278-107



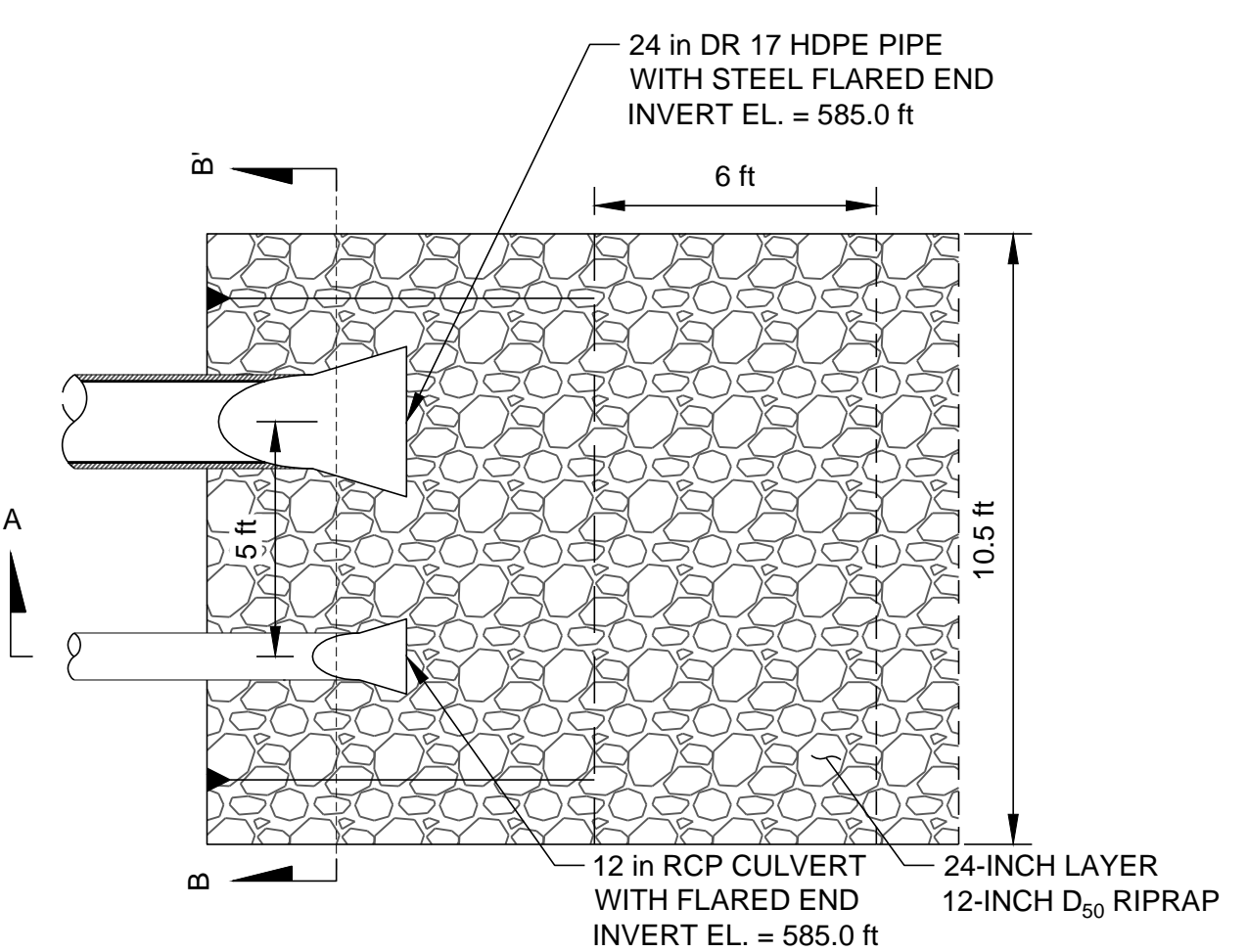
N.T.S. **1** CULVERT INLET  
1278-107



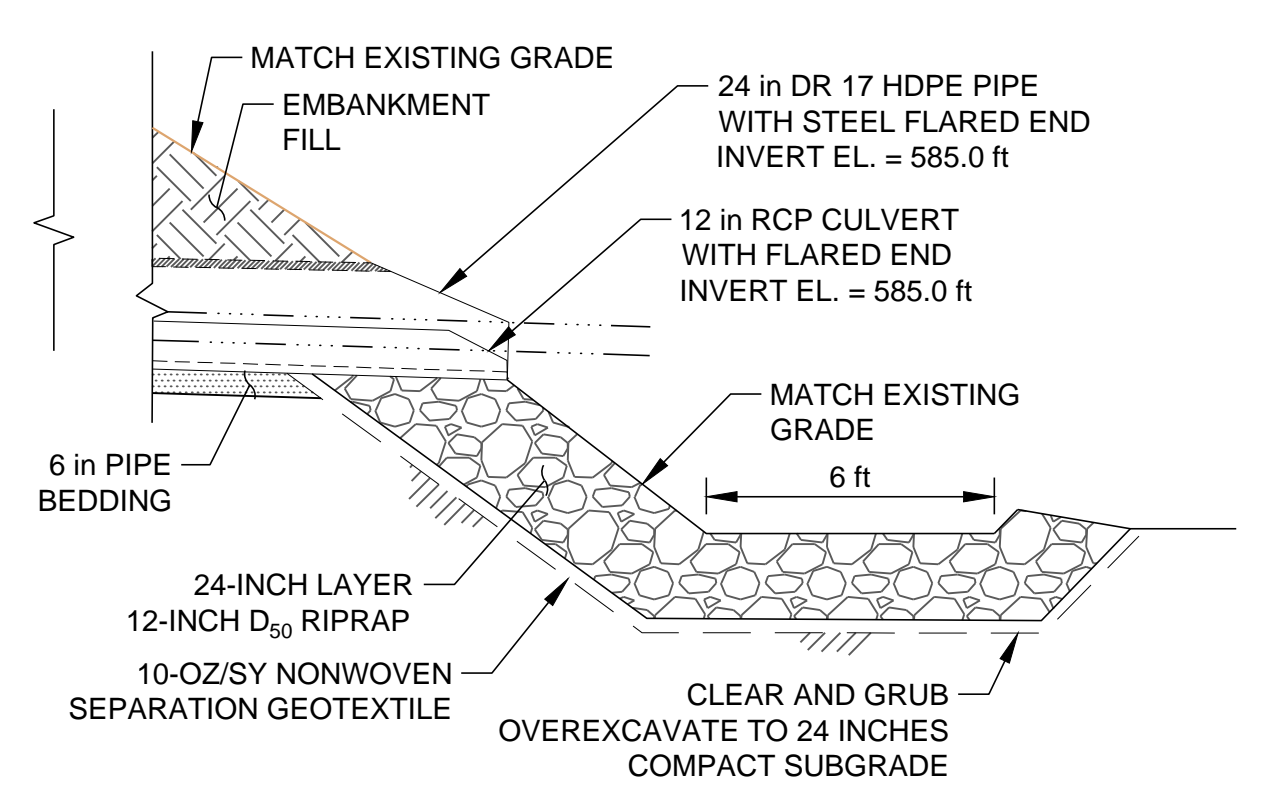
N.T.S. **5** STRUCTURAL STEEL GROUNDING  
1278-107

- 1 STRUCTURAL STEEL (CONFIGURATION VARIES). PROVIDE GROUND CONNECTION AT EACH PIPE RACK FOUNDATION (4 LOCATIONS) AND AT PIER NEAREST THE SURFACE IMPOUNDMENT (1 LOCATION).
- 2 WELD METALLIC TAB TO STRUCTURAL STEEL.
- 3 ATTACH BURNDY BAR TAP CONNECTOR TO METALLIC TAB.
- 4 #4/0 AWG COPPER CONDUCTOR.
- 5 ROUTE WITH RADIUS OF BEND NOT LESS THAN 8 INCHES AND INCLUDED ANGLE OF BEND NOT LESS THAN 90 DEGREES, TYPICAL.
- 6 PROVIDE EXOTHERMIC WELD BOND BELOW GRADE, UNLESS OTHERWISE SPECIFIED OR SHOWN.
- 7 GROUND ROD, 5/8 INCH DIAMETER BY 10 FEET (MIN.) LONG. DRIVE GROUND ROD TO A DEPTH OF AT LEAST 12 ft. BOND TO THE GROUND ROD AT A POINT NOT LESS THAN 24 INCHES BELOW FINISHED GRADE AND AT LEAST 24 INCHES AWAY FROM FOOTING OR PIER.
- 8 PROVIDE AT LEAST 12 INCHES OF ADDITIONAL WIRE SLACK TO ACCOMMODATE GROUND MOVEMENT.

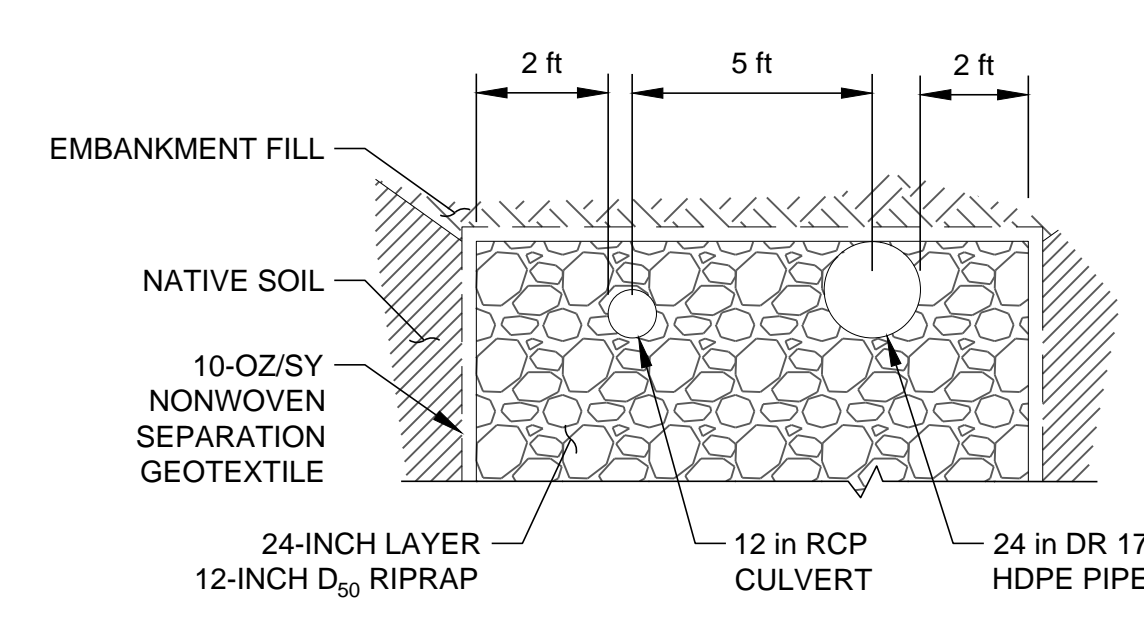
- NOTE(S)**
1. SHORING MAY BE USED IN ACCORDANCE WITH APPLICABLE REGULATIONS INSTEAD OF SLOPING. MINIMUM WIDTH OF EMBANKMENT FILL ON EACH SIDE OF PIPE SHALL BE 1.5 ft.
  2. TAPE COPPER-CLAD STEEL TRACER WIRE TO THE TOP OF PIPE ON APPROXIMATE 10-FOOT CENTERS. USE COPPERHEAD SNAKEBITE CONNECTORS OR OWNER-APPROVED EQUIVALENT. TERMINATE ENDS ABOVE GROUND AS DIRECTED BY OWNER'S REPRESENTATIVE.
  3. TOP OF EXISTING STANDPIPE IS AT EL. 594.2. COUPLING SHALL BE APPROVED BY OWNER'S REPRESENTATIVE. NO SOLVENTS OR OTHER CHEMICALS SHALL BE USED IN JOINING THE STANDPIPES. IF SCREWS ARE USED TO SECURE THE COUPLING, THEY SHALL BE STAINLESS STEEL AND SHALL NOT PENETRATE THE INTERIOR OF THE STANDPIPE.



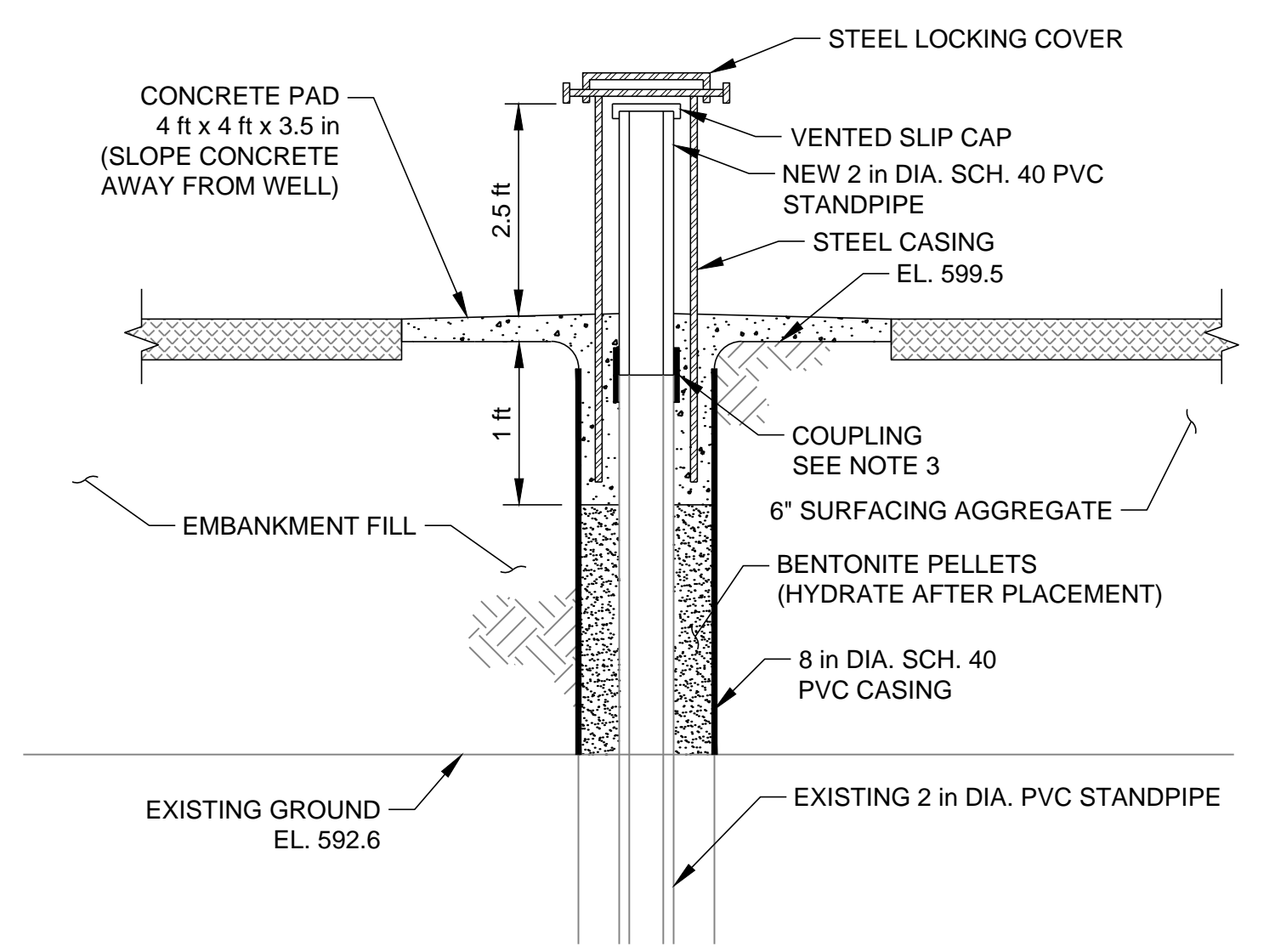
N.T.S. **4** RIPRAP-LINED PIPE OUTLET  
1278-107



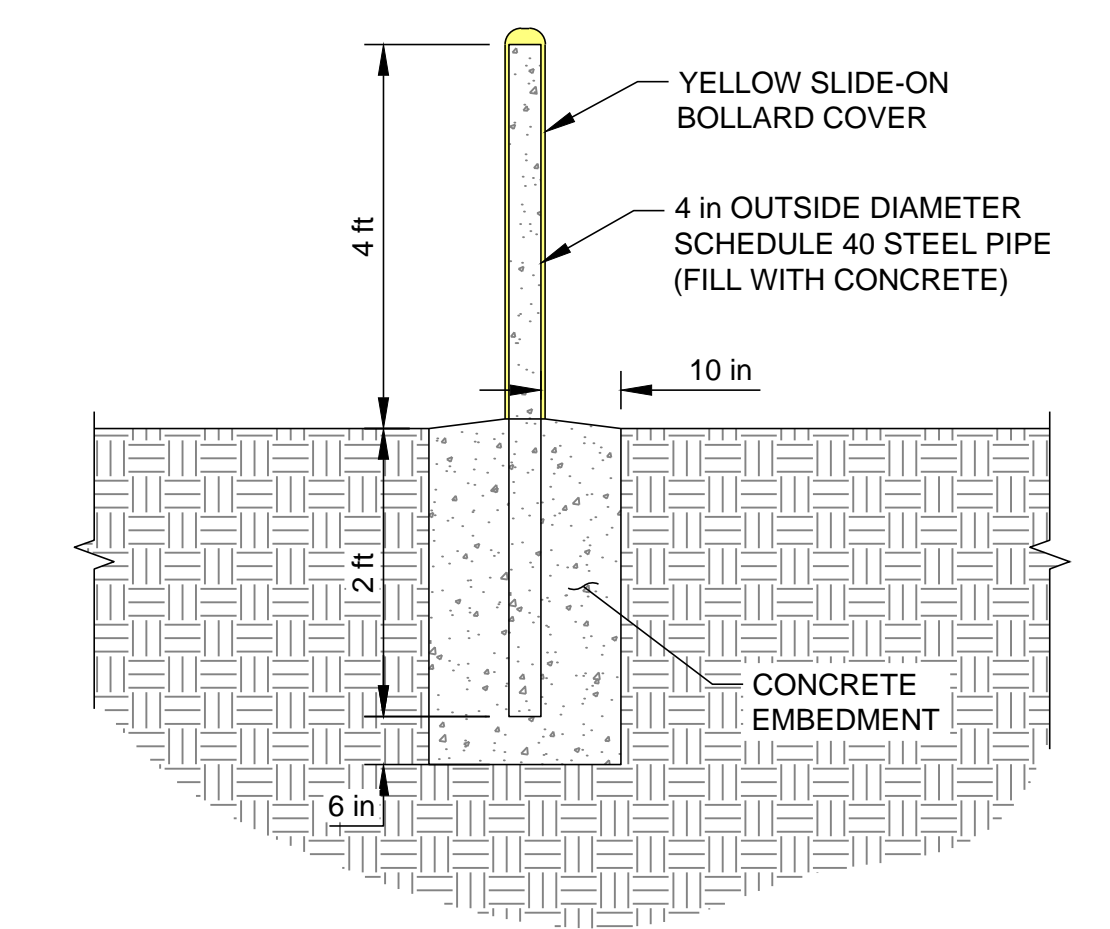
SECTION A-A'



SECTION B-B'



N.T.S. **6** WELL EXTENSION  
1278-107



N.T.S. **7** BOLLARD DETAIL  
1278-107

										SIGNATURE			 <b>DE KARN GENERATING PLANT</b>				<b>KARN BOTTOM ASH IMPOUNDMENT</b> <b>CIVIL AND PIPING SECTIONS AND</b> <b>DETAILS (3 OF 4)</b>																												
										NAME																																			
										JASON OBERMEYER																																			
										MICHIGAN P.E. No.																																			
										6201063841			SCALE AS SHOWN				DRAWING NO. 695-1278				SHEET 107		REV. 0																						
REFERENCE DRAWINGS										REV		DATE		DESCRIPTION				BY		CHK		APP		REV		DATE		DESCRIPTION				BY		CHK		APP		REV		DATE		DESCRIPTION			

**APPENDIX B**

**Daily Field Reports**



## DAILY FIELD REPORT

<b>Date:</b>	August 05, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1600
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	69 °F	<b>High Temp:</b>	75 °F
		<b>Wind:</b>	0 - 10 MPH NE
<b>Cloud Cover:</b>	Mostly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (5 people)	Various Personal
Jason O'Dell (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (not used)
- (1) Komat'Su 61PXi Dozer (not used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (not used)
- (1) Water Truck AT40 8,000 gallons (not used)
- (2) CAT Offroad Truck 740 GC (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher completed their orientation and mobilizing of equipment to their lay down area located on the south side of the Lined Impoundment.
- Fisher used an excavator to remove the 10 light poles located on the south side of the Lined Impoundment.
- Fisher used a frontend loader to unload a pump and other miscellaneous equipment.
- Fisher installed a dewatering pump in the west end of the settling basin.

**Signature:** Stephen Thumma, P.E.

## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used a dozer to assist with the installation of the silt fence along the south edge of the Project Site.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: Power/Light poles Fisher removed from the south side of the Lined Impoundment.



## DAILY FIELD REPORT

<b>Date:</b>	August 07, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1600
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	56 °F	<b>High Temp:</b>	77 °F
		<b>Wind:</b>	0 - 10 MPH N to E
<b>Cloud Cover:</b>	Partly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (6 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (not used)
- (1) Water Truck AT40 8,000 gallons (not used)
- (2) CAT Offroad Truck 740 GC (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher started cutting the bolts on the pipe brackets on the concrete pedestals west of the Lined Impoundment.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher started dewatering the west end of the settling basin. They used the water for dust control within the J.C. Weadock Landfill.

### 4.0 FIELD LAB TESTING ACTIVITIES

- None.

### 5.0 MEETINGS AND DISCUSSIONS

- None

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 07, 2024

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 07, 2024

## 9.0 PHOTOGRAPHS

N/A



## DAILY FIELD REPORT

<b>Date:</b>	August 08, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	58 °F	<b>High Temp:</b>	84 °F
		<b>Wind:</b>	0 - 5 MPH Calm
<b>Cloud Cover:</b>	Mostly Sunny	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (6 people)	Various Personal
Jon Giffel/Joe Kusmierz (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (used)
- (1) Water Truck AT40 8,000 gallons (used)
- (2) CAT Offroad Truck 740 GC (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher finished cutting the bolts on the pipe brackets on the concrete pedestals west of the Lined Impoundment.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher finished dewatering the west end of the settling basin and started dewatering the Polishing Basin. They used the water for dust control within the J.C. Weadock Landfill.
- Fisher started building access points in the settling basin using sand from the west end of the impoundment.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 08, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- Rowe is scheduled for Monday, August 12<sup>th</sup> to survey the west end of the settling basin and the polishing basin.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher installing sand fingers into the Settling Basin for access.



# DAILY FIELD REPORT

Project: GL21489845

Date: August 08, 2024



Photo 2: Fisher pumping ponded water out of the Polishing Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 09, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1700		
<b>Project:</b>	Lined Impoundment Demolition				
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	63 °F	<b>High Temp:</b>	78 °F	<b>Wind:</b>	5 - 15 MPH W gusts to 20
<b>Cloud Cover:</b>	Partly Cloudy		<b>Precipitation</b>	None.	

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (6 people)	Various Personal
Joe Kusmierz (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (used)
- (1) Water Truck AT40 8,000 gallons (used)
- (2) CAT Offroad Truck 740 GC (used)

### 2.0 CONSTRUCTION ACTIVITIES

- None.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued dewatering the Polishing Basin. They used the water for dust control within the J.C. Weadock Landfill.
- Fisher continued building sand access points in the Settling Basin using sand from the west end of the impoundment.

### 4.0 FIELD LAB TESTING ACTIVITIES

- None.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 09, 2024

## 5.0 MEETINGS AND DISCUSSIONS

- None

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 09, 2024

## 9.0 PHOTOGRAPHS

N/A



## DAILY FIELD REPORT

<b>Date:</b>	August 12, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	53 °F	<b>High Temp:</b>	80 °F
		<b>Wind:</b>	0 - 10 MPH variable Westerly
<b>Cloud Cover:</b>	Mostly Sunny	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (6 people)	Various Personal
Jason O'Dell (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (used)
- (1) Water Truck AT40 8,000 gallons (used)
- (2) CAT Offroad Truck 740 GC (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used the water truck and clean water to wet the haul roads for dust control.
- Fisher continued dewatering the Polishing Basin. They used the water for dust control within the J.C. Weadock Landfill.
- Fisher finished building sand access points in the Settling Basin using sand from the west end of the impoundment.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the northwest corner of the Settling Basin. They hauled the excavated material to a depression near the north/south road in the Weadock Landfill.

### 4.0 FIELD LAB TESTING ACTIVITIES

- None.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 12, 2024

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- Fisher damaged the geomembrane on the west edge of the northwest corner of the Settling Basin. They cleaned the liner and leistered a patch over the penetration.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: Fisher excavating material from the Settling Basin.



Photo 2: Fisher placing excavated material in the JCW Landfill.





## DAILY FIELD REPORT

<b>Date:</b>	August 13, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	59 °F	<b>High Temp:</b>	81 °F
		<b>Wind:</b>	0 - 5 MPH NE
<b>Cloud Cover:</b>	Sunny	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (used)
- (1) Water Truck AT40 8,000 gallons (used)
- (2) CAT Offroad Truck 740 GC (used)
- (1) Elgin Crosswind Streetsweeper (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the north edge of the Settling Basin. They hauled the excavated material to a depression near the north/south road in the Weadock Landfill.

### 4.0 FIELD LAB TESTING ACTIVITIES

- None.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 13, 2024

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher excavating material from the Settling Basin and loading trucks.



Photo 2: Fisher applying water for dust control within the J.C Weadock Landfill.



## DAILY FIELD REPORT

<b>Date:</b>	August 14, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	59 °F	<b>High Temp:</b>	81 °F
		<b>Wind:</b>	0 - 5 MPH W
<b>Cloud Cover:</b>	Sunny	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) John Deere 345LC Excavator (used)
- (1) Komat'Su 61PXi Dozer (used)
- (1) John Deere 700 Dozer (not used)
- (1) Ingersoll Rand Pro Pac Series 100 Compactor (not used)
- (1) Hyundai HL757 Front End Loader (used)
- (1) Water Truck AT40 8,000 gallons (used)
- (2) CAT Offroad Truck 740 GC (used)
- (1) CAT Offroad Truck 730 (used)
- (1) Elgin Crosswind Streetsweeper (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the north edge of the Settling Basin. Fisher is working their way back and forth from the north edge to the south edge of the impoundment. Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 14, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- Fisher had several small holes from a cinder on the bottom about a third of the way down (from the west end) the north edge of the Settling Basin. They covered it with sand as soon as they discovered it and then proceed to leister a patch to the geomembrane.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: The repair of the perforations through the primary geomembrane.



Photo 2: Progress on removal of the ash from the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 15, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	59 °F	<b>High Temp:</b>	81 °F
		<b>Wind:</b>	0 - 5 MPH S
<b>Cloud Cover:</b>	Partly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Komat'su 61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the north edge of the Settling Basin. Fisher is working their way back and forth from the north edge to the south edge of the impoundment. Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

**Signature:** Stephen Thumma, P.E.



# DAILY FIELD REPORT

Project: GL21489845

Date: August 15, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- N/A

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher's progress on ash removal from the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 16, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	66 °F	<b>High Temp:</b>	76 °F
		<b>Wind:</b>	0 - 5 MPH S
<b>Cloud Cover:</b>	Overcast	<b>Precipitation</b>	Rain 1030 – 1330 0.5"

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Komatsu 61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used the street sweeper to clean the roads on the haul route.
- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the north edge of the Settling Basin. Fisher is working their way back and forth from the north edge to the south edge of the impoundment. Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 16, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- Fisher had a tear in the floor of the excavation near the middle on the west end of the Settling Basin and fixed the breach with a leistered geomembrane patch.
- At 1615 the excavator broke down and they will not have the part until Monday. Fisher is not working tomorrow.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher starts mixing sand in with the ash in the concrete-lined portion of the Settling Basin.



Photo 2: Fisher completes a repair to the primary geomembrane liner system in the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 19, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730		
<b>Project:</b>	Lined Impoundment Demolition				
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	57 °F	<b>High Temp:</b>	67 °F	<b>Wind:</b>	10 - 20 MPH N gust to 26
<b>Cloud Cover:</b>	Partly to Mostly Cloudy		<b>Precipitation</b>	None.	

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (not used)
- (1) Hyundai 380L Excavator (used)
- (1) Komat'su 61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.
- Fisher used the street sweeper to clean the roads on the haul route.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the west end of the Settling Basin on the protective concrete geoweb cover. Fisher used a dozer to push material to be loaded out from the

**Signature:** Stephen Thumma, P.E.



# DAILY FIELD REPORT

Project: GL21489845

Date: August 19, 2024

Settling Basin. Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: Fisher is mixing sand into the ash in the concrete-lined portion of the Settling Basin.



Photo 2: Fisher removing ash from the west end of the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 20, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	51 °F	<b>High Temp:</b>	70 °F
		<b>Wind:</b>	6 - 12 MPH N gust to 25
<b>Cloud Cover:</b>	Partly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personal (9 people)	Various Personal
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai 380L Excavator (used)
- (1) Komat'su 61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.
- Fisher used the street sweeper to clean the roads on the haul route.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the west end of the concrete-lined portion of the Settling Basin. Fisher used a dozer to push material to be loaded out from the concrete-lined

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 20, 2024

end of the Settling Basin. Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



## 9.0 PHOTOGRAPHS



Photo 1: Fisher's progress on ash removal from the Settling Basin.



Photo 2: Fisher removing ash from the concrete-lined portion of the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 21, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1730
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	48 °F	<b>High Temp:</b>	74 °F	<b>Wind:</b>	5 - 13 MPH variable		
<b>Cloud Cover:</b>	Sunny			<b>Precipitation</b>	None.		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (not used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.
- Fisher used the street sweeper to clean the roads on the haul route.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the central and east end of the Settling Basin.
- Fisher used a dozer to mix sand and ash material in the concrete-lined portion of the Settling Basin.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 21, 2024

- Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- Rowe was on-site today to survey the ash levels at the bottom of the Settling Basin. They also collected points from the exposed primary geomembrane in the Settling Basin and collected some extra shots from the south ditch and in the vicinity of the discharge to the pond to the south.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher cleaning the ash/sand mix in the concrete-lined portion of the Settling Basin.





Photo 2: Fisher loading out ash/sand mix above the primary liner of the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 22, 2024			<b>On Site:</b> 0700	<b>Off Site:</b> 1730
<b>Project:</b>	Lined Impoundment Demolition				
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	51 °F	<b>High Temp:</b>	78 °F	<b>Wind:</b>	0 - 10 MPH S to W
<b>Cloud Cover:</b>	Sunny			<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Badger Personnel (3 people)	Various Personnel
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (2) CAT 740 Off-Road Truck (used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (not used)
- (1) Water Truck TA40 8,000 gallons (used)
- (1) Elgin Streetsweeper LOR39 (used)
- (2) Vacuum Trucks (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher pumped water from the Settling Basin and the Polishing Basin into the water truck to wet the haul roads for dust control within the Weadock Landfill.
- Badger had two vac trucks on-site today to remove water/ash from the Polishing Basin. Badger dumped the water/ash mix in a depression west of the north/south haul road of the Weadock Landfill.
- Fisher used the street sweeper to clean the roads on the haul route.

**Signature:** Stephen Thumma, P.E.

## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the concrete-lined portion of the Settling Basin and worked their way east along the south side of the Settling Basin. The concrete-lined portion of the Settling Basin has all the ash removed.
- Fisher used an excavator to start removing the concrete on the northeast corner of the concrete-lined area of the Settling Basin.
- Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- When Fisher removed the concrete liner at the west end of the Settling Basin portions of the geomembrane were torn due to the concrete and fabric “sticking” to the geomembrane. This activity was discontinued, and the area was cleaned of debris and covered with Visqueen to protect it from precipitation. The top of the Visqueen was placed in an anchor trench to minimize water flowing under it. The edges of the Visqueen were anchored down to minimize infiltration under the Visqueen. No additional geoweb, concrete, and geomembrane will be removed from this area until it's prepared for visual photographic documentation and microscopy samples to be taken.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Badger cleaning the ash and water from the Polishing Basin.



Photo 2: Fisher's progress on the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 23, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1200
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	55 °F	<b>High Temp:</b>	76 °F
		<b>Wind:</b>	5 - 10 MPH SW
<b>Cloud Cover:</b>	Partly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Badger Personnel (2 people)	Various Personnel
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (not used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (1 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher brought the water truck from a local borrow to wet the haul roads for dust control.
- Badger had one vac trucks on-site today to removed water/ash from the Polishing Basin. Badger disposed the water/ash mix in a depression west of the north/south haul road within the Weadock Landfill. The Polishing Basin has all of the ash and associated water removed.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 23, 2024

- Fisher used the street sweeper to clean the roads on the haul route.
- Fisher also pumped water from the Settling Basin to two 250-gallon poly tanks staged on the edge of the Settling Basin.

## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove materials from the east end of the Settling Basin.
- Fisher used 2 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: Polishing Basin after Badger finished cleaning and dewatering it.



Photo 2: Fisher's progress exposing the primary geomembrane on the Settling Basin.





## DAILY FIELD REPORT

<b>Date:</b>	August 26, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1500
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	70 °F	<b>High Temp:</b>	92 °F
		<b>Wind:</b>	5 - 10 MPH S to SW
<b>Cloud Cover:</b>	Mostly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (not used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (used)
- (1) Hitachi HL757 TM-7A Front End Loader (not used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher brought the water truck from a local borrow to wet the haul roads for dust control.
- Fisher started cutting up liner in the Polishing Basin today.
- Fisher used the street sweeper to clean the roads on the haul route.
- Fisher also pumped water from the Settling Basin to two 250-gallon poly tanks staged on the edge of the Settling Basin.

**Signature:** Stephen Thumma, P.E.

- Fisher cut some of the embankment sand and started placing it into the east end of the north ditch. They rolled the lifts as they filled.

### **3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES**

- Fisher used an excavator to remove materials from the east end of the Settling Basin. They finished removing ash from the Settling Basin.
- Fisher used 3 off-road trucks to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

### **4.0 FIELD LAB TESTING ACTIVITIES**

- None.

### **5.0 MEETINGS AND DISCUSSIONS**

- Rowe will be on-site on Wednesday to finish surveying the Settling Basin and to place the sampling points for verification sampling.

### **6.0 SAFETY MEETING**

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

### **7.0 PROBLEMS AND RESOLUTIONS**

- Fisher had three nicks in the south face of the primary geomembrane liner of the Settling Basin. They repaired them with leistered geomembrane patches and sandbags to keep the water out of the breaches.

### **8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES**

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher started removing the geomembrane liner from the Polishing Basin.



## DAILY FIELD REPORT

<b>Date:</b>	August 28, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1500
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	69 °F	<b>High Temp:</b>	72 °F	<b>Wind:</b>	5 - 15 MPH NE		
<b>Cloud Cover:</b>	Cloudy			<b>Precipitation</b>	None. (1.12" rain previous day)		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Steve Fournier (Rowe)	Survey
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (not used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (1 used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher continued cutting up geomembrane liner in the Polishing Basin today.
- Fisher started removing the GCL from under the geomembrane liner in the Polishing Basin today.
- Fisher used the street sweeper to clean the roads on the haul route.

**Signature:** Stephen Thumma, P.E.

- Fisher also pumped water from the Settling Basin to the water truck to wet the haul roads in the landfill.
- Fisher continued cutting the embankment sand and placing it into the east end of the north ditch. They rolled the lifts as they filled.

### **3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES**

- Fisher used an excavator to remove materials from the east end of the Settling Basin. They finished cleaning the upper edge of the Settling Basin.
- Fisher used 1 off-road truck to haul the excavated material to a depression near the north/south road in the Weadock Landfill.

### **4.0 FIELD LAB TESTING ACTIVITIES**

- Rowe was on-site to finish surveying the Settling Basin and to locate the sampling points for verification sampling next Tuesday.

### **5.0 MEETINGS AND DISCUSSIONS**

- None.

### **6.0 SAFETY MEETING**

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

### **7.0 PROBLEMS AND RESOLUTIONS**

- None.

### **8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES**

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher removing geomembrane liner and GCL from the Polishing Basin.



Photo 2: Fisher loading geomembrane liner and GCL for disposal in the JCW Landfill.



## DAILY FIELD REPORT

<b>Date:</b>	August 29, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1500
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	63 °F	<b>High Temp:</b>	73 °F
		<b>Wind:</b>	0 - 10 MPH E
<b>Cloud Cover:</b>	Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher finished cutting up liner in the Polishing Basin today except for a small portion that needs to stay on the east end by the crossovers.
- Fisher finished removing the GCL from under the geomembrane liner in the Polishing Basin.
- Fisher also pumped water from the Settling Basin to the water truck to wet the haul roads in the Weadock Landfill.

**Signature:** Stephen Thumma, P.E.



## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher used an excavator to remove the geomembrane liner and GCL from the Polishing Basin. The geomembrane liner and GCL were disposed of in the Weadock Landfill.
- Fisher continued cutting of the embankment sand from the Polishing Basin. They placed this sand into the north ditch and kept filling to the west. They rolled the lifts as they filled.
- Fisher used 2 off-road trucks to haul the excavated sand material to the north ditch.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: The Settling Basin was cleaned of ash and dewatered.



Photo 2: The Polishing Basin with most of the geomembrane liner and GCL removed.



## DAILY FIELD REPORT

<b>Date:</b>	August 30, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1500
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	65 °F	<b>High Temp:</b>	84 °F
		<b>Wind:</b>	5 - 15 MPH S
<b>Cloud Cover:</b>	Partly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (used)
- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher cut approximately 40 feet of discharge pipe from the Polishing Basin.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued placing excavated embankment sand into the north ditch and kept filling to the west. They rolled the lifts as they filled.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845

Date: August 30, 2024

- Fisher used 2 off-road trucks to haul the excavated sand material to the north ditch.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher excavating excess berm material from the west end of the Lined Impoundment.



## DAILY FIELD REPORT

<b>Date:</b>	September 03, 2024			<b>On Site:</b> 0700	<b>Off Site:</b> 1400
<b>Project:</b>	Lined Impoundment Demolition				
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	49 °F	<b>High Temp:</b>	73 °F	<b>Wind:</b>	3 - 12 MPH SW
<b>Cloud Cover:</b>	Partly Cloudy			<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (4 people)	Various Personnel
Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Deere 345LC Excavator (not used)
- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (not used)
- (1) Deere 700 Dozer (not used)
- (2) CAT 740 Off-Road Truck (not used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Water Truck TA40 8,000 gallons (not used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- N/A, see Earthworks section.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher opened up three locations in the concrete-lined area and 7 locations in the non-concrete-lined area for WSP to complete their closure sampling. The openings in the non-concrete-lined area were patched with geomembrane and leistered until microscopy results will be obtained.

**Signature:** Stephen Thumma, P.E.

## 4.0 FIELD LAB TESTING ACTIVITIES

- WSP completed 10 photos and collected 10 sand samples for closure of the lined impoundment. The samples were submitted to MJ2 Consulting in Chicago, IL for analysis by microscopy. Results are anticipated either late Thursday or Friday. The samples were collected from nodes K-1, K-3, K-7, K-18, K-22, K-24, K-27, K-29, K-30 and K-31.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



9.0 PHOTOGRAPHS

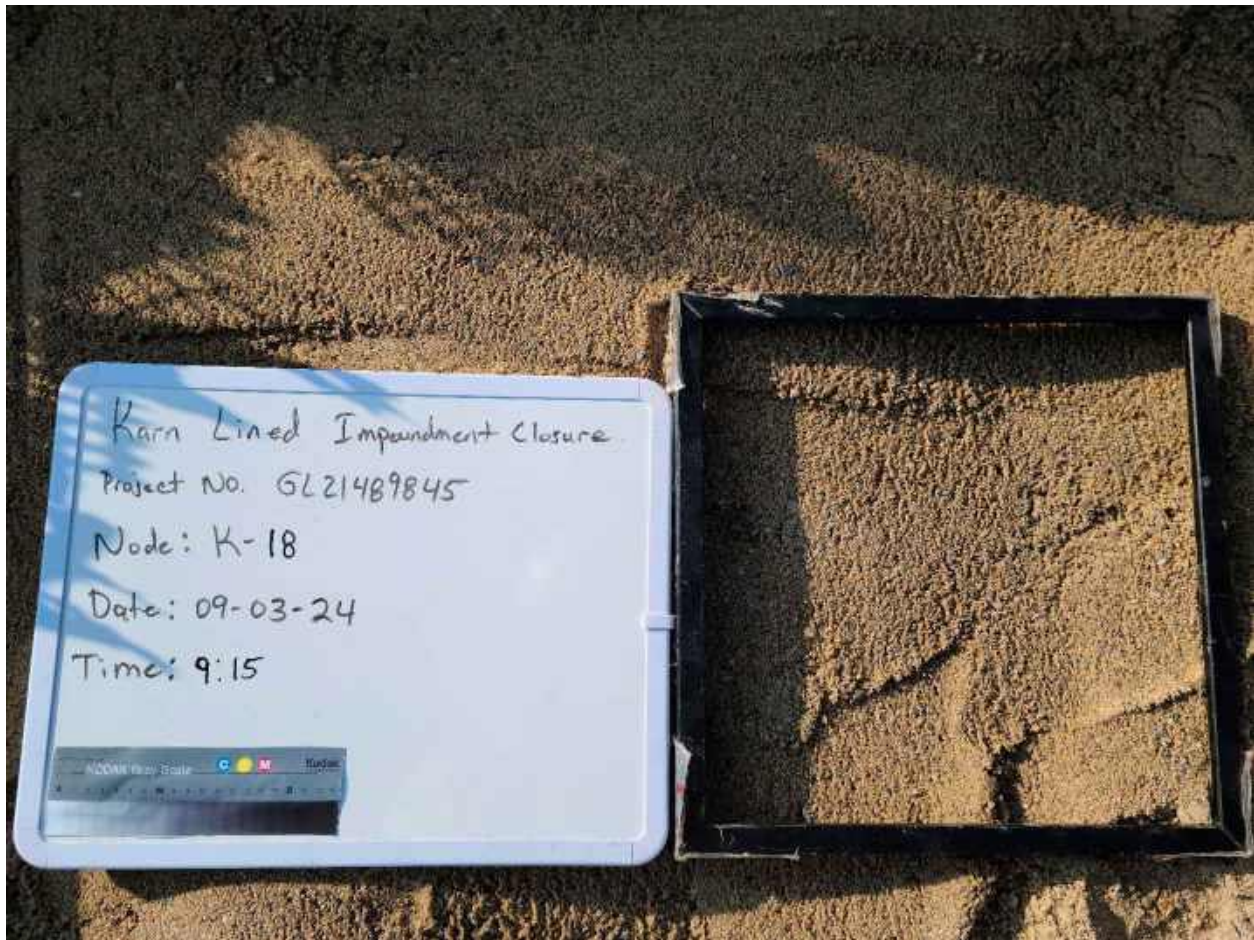


Photo 1: Typical photo documentation from the non-concrete-lined portion of the Settling Basin.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 3, 2024



Photo 2: Typical photo documentation from the concrete-lined portion of the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	September 06, 2024		<b>On Site:</b> 0700	<b>Off Site:</b> 1500
<b>Project:</b>	Lined Impoundment Demolition			
<b>Location:</b>	Essexville, MI		<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company		<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	60 °F	<b>High Temp:</b>	63 °F	<b>Wind:</b> 10 - 20 MPH NW gusts to 23
<b>Cloud Cover:</b>	Cloudy		<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (4 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (not used)
- (1) Deere 700 Dozer (not used)
- (2) CAT 740 Off-Road Truck (not used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher removed the effluent pipe from the Polishing Basin to the pond to the south. They cut the pipe up into manageable pieces.
- Fisher started cutting up the geomembrane liner on the north and east slopes of the Settling Basin. They started stacking it at the bottom of the Settling Basin and secured it with sandbags for the weekend.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued to remove the concrete liner at the west end of the Settling Basin.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 6, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- WSP received the results on the 10 sand samples collected on Tuesday, September 3, 2024. The results reported for all 10 samples were <1% ash by MJ2 Consulting in Chicago, IL.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



## 9.0 PHOTOGRAPHS



Photo 1: Fisher started removing the geomembrane liner from the Settling Basin.



Photo 2: Fisher removed the discharge piping from the Polishing Basin.



## DAILY FIELD REPORT

<b>Date:</b>	September 09, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1700
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	58 °F	<b>High Temp:</b>	72 °F
		<b>Wind:</b>	10 - 20 MPH SW gusts to 25
<b>Cloud Cover:</b>	Mostly Cloudy	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (7 people)	Various Personnel
Jason O'Dell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (not used)
- (2) CAT 740 Off-Road Truck (1 used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher continued cutting up the primary liner/GCL on the north and east slopes of the Settling Basin. They also started removing the geocomposite and secondary geomembrane liner from the Settling Basin.
- Fisher hauled geomembrane liner, GCL and geocomposite to the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued to remove the concrete liner in the west end of the Settling Basin.

**Signature:** Stephen Thumma, P.E.



## 4.0 FIELD LAB TESTING ACTIVITIES

- WSP collected 4 sand samples (K-34, K-39, K-44 and K-47) and photographed 16 nodes to document closure. The 16 nodes photographed today included K-4, K-6, K-12, K-16, K-17, K-25, K-28, K-33, K-34, K-36, K-39, K-42, K-44, K-45, K-47, and K-48).

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher removing the concrete geoweb liner over the west end of the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	September 10, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1700
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	51 °F	<b>High Temp:</b>	81 °F	<b>Wind:</b>	0 - 10 MPH SE		
<b>Cloud Cover:</b>	Partly Cloudy			<b>Precipitation</b>	None. (early morning fog)		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher continued cutting up the primary geomembrane liner/GCL on the slopes of the Settling Basin.
- Fisher also started removing the primary and secondary liner from the Settling Basin floor.
- Fisher hauled concrete geoweb, geomembrane liner, GCL and geocomposite to the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued to remove the concrete liner in the west end of the Settling Basin. They have removed most of the concrete liner from the west end of the basin.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 10, 2024

- Fisher also started cutting through the north berm to allow off-road trucks into the Settling Basin for loading purposes.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: The removal of the primary and secondary liner systems from the Settling Basin.



Photo 2: Fisher grading the concrete and liner/GCL fill in the JCW Landfill.



## DAILY FIELD REPORT

<b>Date:</b>	September 11, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1700
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	59 °F	<b>High Temp:</b>	83 °F	<b>Wind:</b>	0 - 10 MPH S		
<b>Cloud Cover:</b>	Partly Cloudy			<b>Precipitation</b>	None.		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher continued cutting/removing the primary geomembrane liner/GCL/geocomposite on the walls of the Settling Basin. Most of the geomembrane liner/GCL/geocomposite has been removed from the Settling Basin.
- Fisher also continued removing the primary and secondary liner from the Settling Basin floor.
- Fisher hauled concrete geoweb, liner, GCL and geogrid to the Weadock Landfill. Most of these materials have been hauled to the Weadock Landfill.

**Signature:** Stephen Thumma, P.E.

## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher continued to remove the concrete liner in the west end of the Settling Basin. They have finished removing the concrete liner from the west end of the Settling Basin.
- Fisher also hauled sand from the floor and berms of the Settling Basin to the Weadock Landfill.

## 4.0 FIELD LAB TESTING ACTIVITIES

- WSP collected the last two microscopy samples (K-50/K-51) from the south wall of the liner portion of the Settling Basin. These samples were shipped out to MJ2 for analysis.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.



**9.0 PHOTOGRAPHS**



Photo 1: Fisher loading out excess berm materials.



Photo 2: The primary and secondary liner systems have been removed from the Settling Basin.



## DAILY FIELD REPORT

<b>Date:</b>	September 12, 2024		<b>On Site:</b> 0700	<b>Off Site:</b> 1700
<b>Project:</b>	Lined Impoundment Demolition			
<b>Location:</b>	Essexville, MI		<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company		<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	57 °F	<b>High Temp:</b>	83 °F	<b>Wind:</b> 0 - 5 MPH SW
<b>Cloud Cover:</b>	Partly Cloudy		<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (7 people)	Various Personnel
Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher finished removing the primary geomembrane liner/GCL/geocomposite on the walls of the Settling Basin.
- Fisher also finished removing the primary and secondary liner from the Settling Basin floor.
- Fisher finished hauling the liner, geocomposite, and GCL to the Weadock Landfill.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher also hauled sand from the floor and berms of the Settling Basin to the Weadock Landfill.
- Fisher continued fine grading on the northern portion of the restoration area.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 12, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher covering the concrete, liner, and GCL in the JCW Landfill.



Photo 2: Fisher grading the Settling Basin after the liner systems have been removed.





## DAILY FIELD REPORT

<b>Date:</b>	September 13, 2024	<b>On Site:</b> 0700	<b>Off Site:</b> 1700
<b>Project:</b>	Lined Impoundment Demolition		
<b>Location:</b>	Essexville, MI	<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company	<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	57 °F	<b>High Temp:</b>	78 °F
		<b>Wind:</b>	5 - 15 MPH E to NE
<b>Cloud Cover:</b>	Sunny	<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher decommissioned monitoring well OW-12 located on the west end of the Settling Basin. The well as cut off just below the ground surface and was filled with granulated bentonite. The well was covered with sand after decommissioning.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher hauled embankment sand to the Weadock Landfill.
- Fisher placed sand in the Weadock Landfill with a dozer.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 13, 2024

- Fisher continued fine grading on the northern portion of the restoration area.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher excavating the excess berm materials for disposal at the JCW Landfill.



Photo 2: The remaining OW-12 casing was backfilled with granular bentonite.





## DAILY FIELD REPORT

<b>Date:</b>	September 16, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1700
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	55 °F	<b>High Temp:</b>	86 °F	<b>Wind:</b>	0 - 10 MPH SE		
<b>Cloud Cover:</b>	Sunny			<b>Precipitation</b>	None.		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used 6 on-road trucks to haul topsoil from the Monitor Township site to the restoration area.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher hauled embankment sand to the Weadock Landfill.
- Fisher placed sand in the Weadock Landfill with a dozer.
- Fisher started placing topsoil from the Monitor Township site on the northern portion of the restoration.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 16, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher excavating excess berm material for disposal at the JCW Landfill.



Photo 2: Fisher placing topsoil over the northern portion of the restoration.



## DAILY FIELD REPORT

<b>Date:</b>	September 17, 2024		<b>On Site:</b> 0700	<b>Off Site:</b> 1700
<b>Project:</b>	Lined Impoundment Demolition			
<b>Location:</b>	Essexville, MI		<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company		<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	57 °F	<b>High Temp:</b>	83 °F	<b>Wind:</b> 0 - 15 MPH SE
<b>Cloud Cover:</b>	Sunny		<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (8 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used 6 on-road trucks to haul topsoil from the Monitor Township site to the restoration area.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher hauled embankment sand to the Weadock Landfill.
- Fisher placed sand in the Weadock Landfill with a dozer.
- Fisher started placing topsoil from the Monitor Township site on the northern portion of the restoration.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 17, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher excavating excess berm material for disposal at the JCW Landfill.



Photo 2: Fisher placing topsoil on the restoration.





## DAILY FIELD REPORT

<b>Date:</b>	September 18, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1700
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	57 °F	<b>High Temp:</b>	81 °F	<b>Wind:</b>	0 - 10 MPH E		
<b>Cloud Cover:</b>	Partly Cloudy			<b>Precipitation</b>	None.		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (9 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used 6 on-road trucks to haul topsoil from the Monitor Township site to the restoration area.
- Fisher used the water truck for dust control on the haul roads.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher hauled embankment sand to the Weadock Landfill.
- Fisher placed sand in the Weadock Landfill with a dozer.

**Signature:** Stephen Thumma, P.E.



# DAILY FIELD REPORT

Project: GL21489845  
Date: September 18, 2024

- Fisher started placing topsoil from the Monitor Township site on the south and west portions of the restoration.

## 4.0 FIELD LAB TESTING ACTIVITIES

- Rowe was on-site today to complete the base survey and to start the survey of the topsoil.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

## 9.0 PHOTOGRAPHS



Photo 1: Fisher loading out the last of the berm material.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 18, 2024



Photo 2: Fisher covering the placed ash located adjacent to the north/south road in the Weadock Landfill.



## DAILY FIELD REPORT

<b>Date:</b>	September 19, 2024			<b>On Site:</b>	0700	<b>Off Site:</b>	1700
<b>Project:</b>	Lined Impoundment Demolition						
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845		
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)		
<b>Low Temp:</b>	56 °F	<b>High Temp:</b>	80 °F	<b>Wind:</b>	0 - 5 MPH ESE to ENE		
<b>Cloud Cover:</b>	Partly Cloudy			<b>Precipitation</b>	None.		

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (5 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher used 3 on-road trucks to haul one round of topsoil from the Monitor Township site to the restoration area.
- Fisher hauled off-site some of the concrete pedestals from the pipe support system.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher placed seed and fertilizer on the northern portion of the restoration. Fisher prepared the southeast quarter of the restoration for planting tomorrow.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 19, 2024

- Fisher finished placing sand in the Weadock Landfill with a dozer.
- Fisher continued placing topsoil from the Monitor Township site on the south and west portions of the restoration.

## 4.0 FIELD LAB TESTING ACTIVITIES

- Rowe was on-site today to complete the base survey and to start the survey of the topsoil.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher finishing the topsoil placement on the west end of the restoration.



Photo 2: Fisher spreading fertilizer on the north side of the restoration.





## DAILY FIELD REPORT

<b>Date:</b>	September 20, 2024		<b>On Site:</b> 0700	<b>Off Site:</b> 1500
<b>Project:</b>	Lined Impoundment Demolition			
<b>Location:</b>	Essexville, MI		<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company		<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	62 °F	<b>High Temp:</b>	84 °F	<b>Wind:</b> 5 - 10 MPH S
<b>Cloud Cover:</b>	Partly Cloudy		<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (5 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (used)
- (2) CAT 740 Off-Road Truck (2 used)
- (2) Dump Truck (2 used)
- (1) CAT 730 Off-Road Truck (used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher hauled off-site the remaining piping from the impoundment closure.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher placed seed and fertilizer on the remaining portion of the restoration.
- Fisher finished placing topsoil on the western end and cleaned up the south edge of the restoration with a dozer.
- Fisher placed and crimped straw on the northern portion of the restoration.

**Signature:** Stephen Thumma, P.E.



# DAILY FIELD REPORT

Project: GL21489845  
Date: September 20, 2024

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Fisher placing straw mulch in the north end of the restoration.



Photo 2: Fisher crimping in the straw mulch in the east end of the restoration.



## DAILY FIELD REPORT

<b>Date:</b>	September 23, 2024			<b>On Site:</b> 0700	<b>Off Site:</b> 1400
<b>Project:</b>	Lined Impoundment Demolition				
<b>Location:</b>	Essexville, MI			<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company			<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	56 °F	<b>High Temp:</b>	65 °F	<b>Wind:</b>	10 - 15 MPH N
<b>Cloud Cover:</b>	Cloudy			<b>Precipitation</b>	None.

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Fisher Personnel (5 people)	Various Personnel
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager
Terry Foley (Fisher)	Supervisor

### 1.0 EQUIPMENT ON SITE

- (1) Hyundai HX 380L Excavator (not used)
- (1) Komat'su D61PXi Dozer (used)
- (1) Deere 700 Dozer (not used)
- (2) CAT 740 Off-Road Truck (not used)
- (2) Dump Truck (not used)
- (1) CAT 730 Off-Road Truck (not used)
- (1) Pro Pac Series 100 Compactor (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher reinstalled the silt fence on the south edge of the restoration.
- Fisher restored the concrete barricades near the road on the east end of the project.
- Fisher hauled off-site the remaining concrete from the pipe support system.
- Fisher moved their equipment between the cooling towers for demobilization.

**Signature:** Stephen Thumma, P.E.

## 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- Fisher cut the east end of the restoration with a dozer to blend it with the adjoining existing gravel surface.
- Fisher finished placing and crimping straw on the south and west portions of the restoration.

## 4.0 FIELD LAB TESTING ACTIVITIES

- None.

## 5.0 MEETINGS AND DISCUSSIONS

- None.

## 6.0 SAFETY MEETING

- Attended daily safety meeting with Fisher. Discussed the daily activities and went over potential jobsite hazards for the day.

## 7.0 PROBLEMS AND RESOLUTIONS

- None.

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

- None.

**9.0 PHOTOGRAPHS**



Photo 1: Photo of the restoration from the west end looking east.



Photo 2: Photo of the restoration from the east end looking west.





## DAILY FIELD REPORT

<b>Date:</b>	September 24, 2024		<b>On Site:</b> 0700	<b>Off Site:</b> 1700
<b>Project:</b>	Lined Impoundment Demolition			
<b>Location:</b>	Essexville, MI		<b>Job No.:</b>	GL21489845
<b>Owner:</b>	Consumers Energy Company		<b>Contractor:</b>	Fisher Contracting (Fisher)
<b>Low Temp:</b>	58 °F	<b>High Temp:</b>	72 °F	<b>Wind:</b> 0 - 5 MPH NNE
<b>Cloud Cover:</b>	Mostly Cloudy		<b>Precipitation</b>	Rain from 8 to 11 AM. (0.10")

<b>Personnel on Site/Company</b>	<b>Responsibility</b>
Stephen Thumma (WSP)	CQA
Steve Fournier (Rowe)	Survey
Jason Odell/Jon Giffel (Consumers Energy)	Construction Manager

### 1.0 EQUIPMENT ON SITE

- (1) Deere 700 Dozer (not used)
- (1) Hitachi HL757 TM-7A Front End Loader (used)
- (1) Elgin Streetsweeper LOR39 (not used)

### 2.0 CONSTRUCTION ACTIVITIES

- Fisher removed their job trailer in the morning.

### 3.0 EARTHWORKS MONITORING AND FIELD-TESTING ACTIVITIES

- None.

### 4.0 FIELD LAB TESTING ACTIVITIES

- Rowe completed the topsoil survey on the restoration.

### 5.0 MEETINGS AND DISCUSSIONS

- None.

### 6.0 SAFETY MEETING

- Attended daily safety meeting with Rowe. Discussed the daily activities and went over potential jobsite hazards for the day.

### 7.0 PROBLEMS AND RESOLUTIONS

- None.

**Signature:** Stephen Thumma, P.E.

# DAILY FIELD REPORT

Project: GL21489845  
Date: September 24, 2024

## 8.0 SUMMARY OF INCIDENTS/ACCIDENTS/H&S ISSUES

■ None.

## 9.0 PHOTOGRAPHS

No photographs were taken today.



**APPENDIX C**

**Karn Lined Impoundment Grid Node  
Photographic Documentation Log**

**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 1**

**Node Number:** K-1  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 2**

**Node Number:** K-3  
**Microscopy Result:** 0.5 percent CCR



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 3**

**Node Number: K-4**  
**Microscopy Result: N/A**



**PHOTO 4**

**Node Number: K-6**  
**Microscopy Result: N/A**

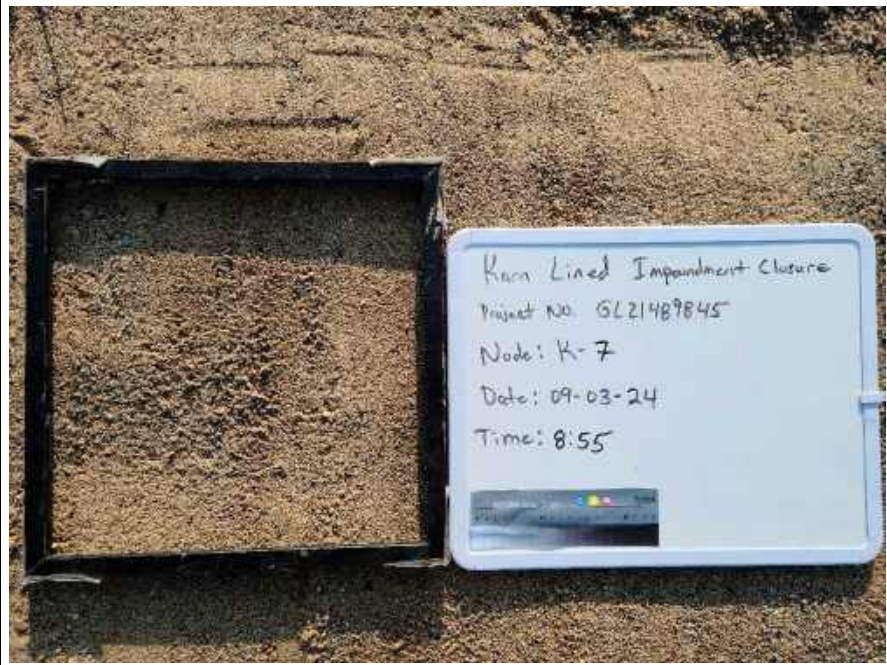




**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 5**

**Node Number:** K-7  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 6**

**Node Number:** K-12  
**Microscopy Result:** N/A



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 7**

**Node Number: K-16**  
**Microscopy Result: N/A**



**PHOTO 8**

**Node Number: K-17**  
**Microscopy Result: N/A**

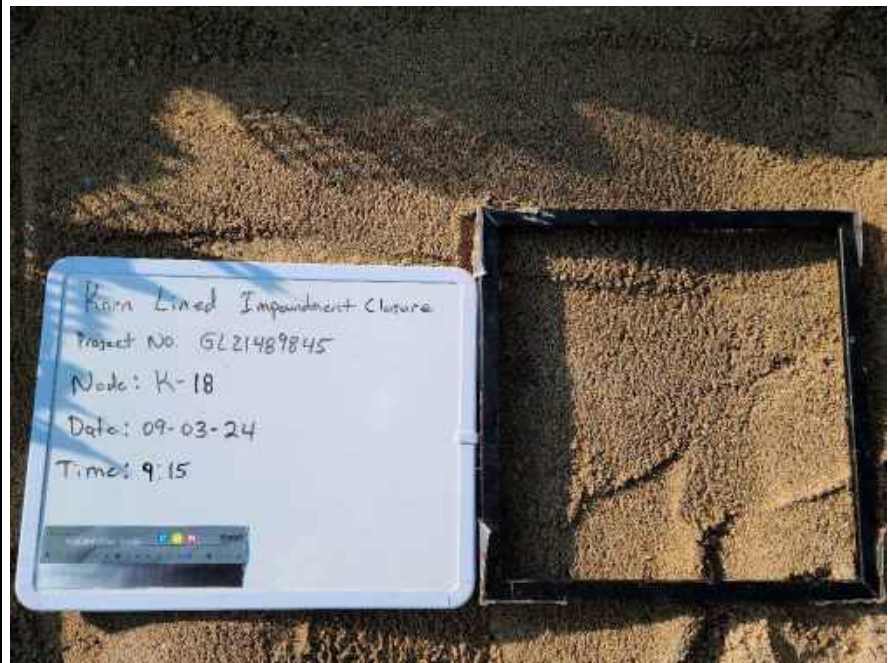




**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 9**

**Node Number:** K-18  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 10**

**Node Number:** K-22  
**Microscopy Result:** 0.5 percent CCR



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 11**

**Node Number:** K-24  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 12**

**Node Number:** K-25  
**Microscopy Result:** N/A

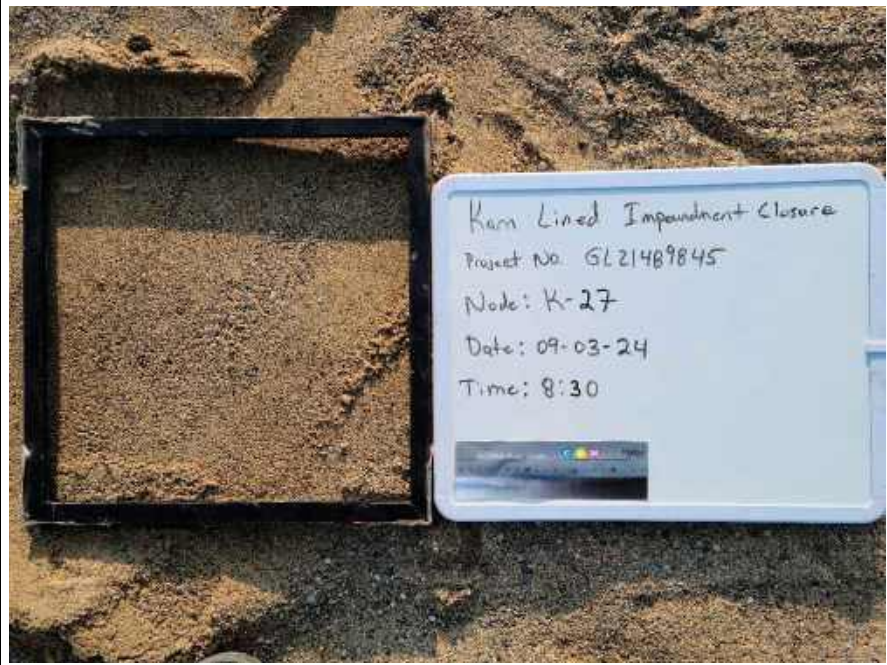




**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 13**

**Node Number:** K-27  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 14**

**Node Number:** K-28  
**Microscopy Result:** N/A



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 15**

**Node Number:** K-29  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 16**

**Node Number:** K-30  
**Microscopy Result:** 0.5 percent CCR





**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 17**

**Node Number:** K-31  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 18**

**Node Number:** K-33  
**Microscopy Result:** N/A



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 19**

**Node Number:** K-34  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 20**

**Node Number:** K-36  
**Microscopy Result:** N/A





**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 21**

**Node Number:** K-39  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 22**

**Node Number:** K-42  
**Microscopy Result:** N/A



**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 23**

**Node Number:** K-44  
**Microscopy Result:** 1.5 percent CCR



**PHOTO 24**

**Node Number:** K-45  
**Microscopy Result:** N/A





**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 25**

**Node Number:** K-47  
**Microscopy Result:** 1.0 percent CCR



**PHOTO 26**

**Node Number:** K-48  
**Microscopy Result:** N/A





**Project Title: DE Karn Lined Impoundment Grid Node Photographic Documentation Log**

**PHOTO 27**

**Node Number:** K-50  
**Microscopy Result:** 0.5 percent CCR



**PHOTO 28**

**Node Number:** K-51  
**Microscopy Result:** 0.5 percent CCR



**APPENDIX D**

**MJ2 Consulting CCR Removal  
Microscopy Memorandum**



October 25, 2024

Mr. Stephen Thumma, PE  
WSP USA Inc.  
4775 Two Mile Road, Suite A  
Bay City, Michigan 48706

Email: stephen.thumma@wsp.com  
Phone: 989-439-1070  
Cell: 989-652-5425

**Laboratory Examination of Soil Samples from Consumers Energy Company (CEC)  
DE Karn Demolition Grading Project, Essexville, Michigan  
MJ2 No. 2024.0119.1**

Dear Mr. Thumma,

MJ2 Consulting, PLLC (MJ2) has examined 16 sand samples from the above-referenced site using visual microscopical analysis to determine the quantity of coal ash within the samples. The threshold value for ash content on this project is 10%. None of the examined samples exceed this value. The samples and examination are further described below. Representative images are presented in the attached figures.

## **Methodology**

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### **Reference Standards**

Two samples of clean sand, identified as "2NS" and "Class II", and a sample of ash were provided to MJ2 by WSP. The materials were individually oven-dried and sieved to pass a No. 16 mesh. Particles initially retained on the No. 16 mesh were crushed using a mortar and pestle and re-sieved. The dried and sieved materials (Figures 1 to 4) were used to prepare reference standards with varying but known ash contents (determined as % ash by total mass). One set of reference standards was prepared for each sand type (Figures 5 to 8).

### **Microscopical Examination**

A total of 16 samples from the site were submitted, as listed in Table 1 on the following page. The sand type represented by each sample was indicated by WSP. Sub-samples of the submitted materials were oven-dried and sieved. Particles initially retained on the No. 16 mesh were crushed using a mortar and pestle and re-sieved.

Optical microscopy of the processed specimens was performed using a stereo-microscope at magnifications up to 45X. The amount of ash in each specimen was visually determined in at least ten fields of view by comparison to the corresponding reference standard set (Figures 9 to 16).

## Examination Results

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Results of the microscopical examination are presented in Table 1 below. Considering the small amounts of ash observed in the samples, and the ash contents of the prepared reference standards, the visually determined values have an accuracy of  $\pm 0.5\%$ .

**Table 1 – Sample information and examination results**

Sample ID	Sand Type	Determined Ash Content	Date Sampled	Date Received
K-1	2NS	0.5%	9/3/2024	9/4/2024
K-3	2NS	0.5%	9/3/2024	9/4/2024
K-7	2NS	0.5%	9/3/2024	9/4/2024
K-18	2NS	0.5%	9/3/2024	9/4/2024
K-22	2NS	0.5%	9/3/2024	9/4/2024
K-24	2NS	0.5%	9/3/2024	9/4/2024
K-27	2NS	0.5%	9/3/2024	9/4/2024
K-29	2NS	0.5%	9/3/2024	9/4/2024
K-30	Class II	0.5%	9/3/2024	9/4/2024
K-31	Class II	0.5%	9/3/2024	9/4/2024
K-34	Class II	0.5%	9/11/2024	9/12/2024
K-39	Class II	0.5%	9/11/2024	9/12/2024
K-44	Class II	1.5%	9/11/2024	9/12/2024
K-47	Class II	1.0%	9/11/2024	9/12/2024
K-50	Class II	0.5%	9/11/2024	9/12/2024
K-51	Class II	0.5%	9/11/2024	9/12/2024

## Closing

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The observations and interpretations presented in this report are based on the performed examination of the submitted samples and information available at the time of the examination. MJ2 reserves the right to modify interpretations if further testing is performed on the samples, additional materials are provided, or other relevant information becomes available at a later date.

The samples will be retained for 60 days and then disposed. If you wish to have the samples returned, please contact me at your earliest convenience to make arrangements.

MJ2 appreciates the opportunity to be of service to you. If you have any questions, please feel free to contact me by phone or email.

Sincerely,

**MJ2 Consulting, PLLC**

A handwritten signature in blue ink that reads "Victoria A. Jennings". The signature is written in a cursive style with a large, looped "J" at the end.

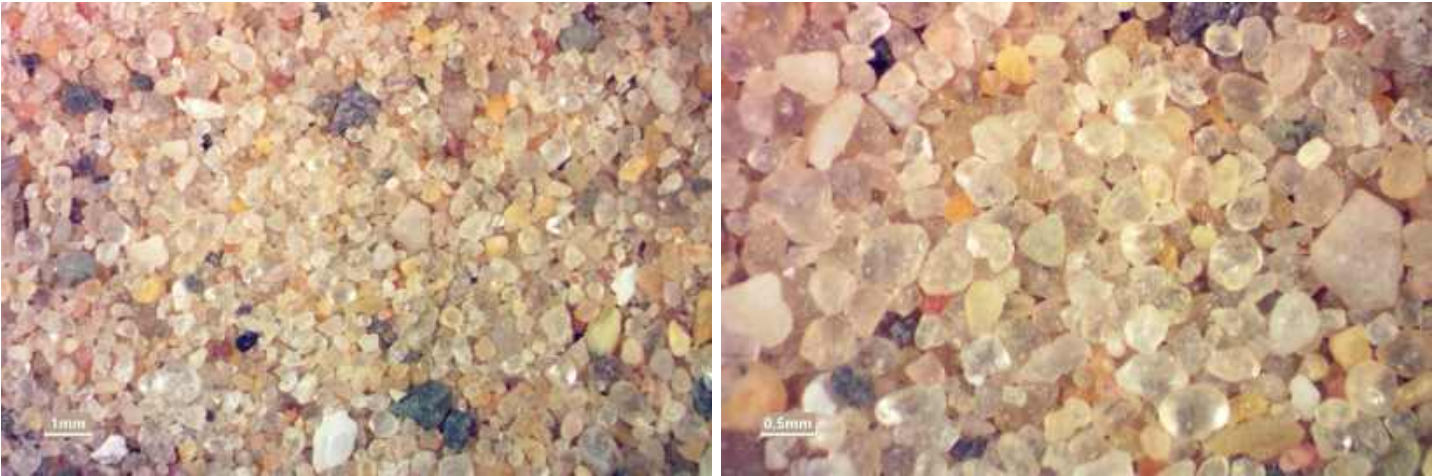
Victoria Jennings  
Senior Petrographer  
[Vicki@MJ2consulting.com](mailto:Vicki@MJ2consulting.com)  
Cell: 773-659-9711

Attachments: Figures

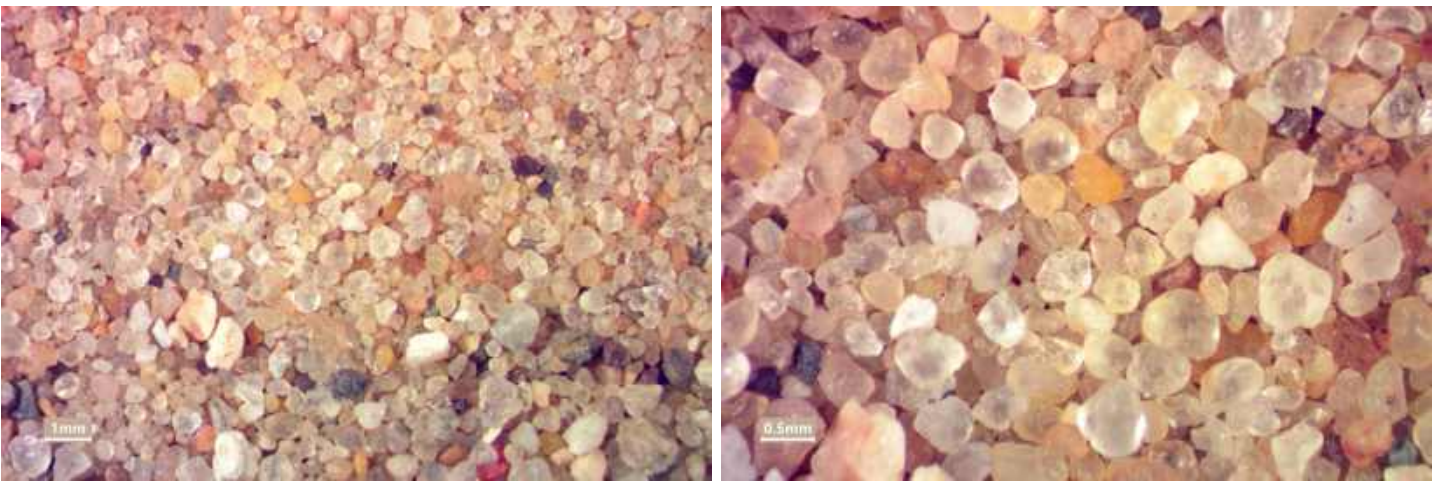


**Figure 1 – Provided reference materials, processed and sieved to pass a No. 16 mesh.**

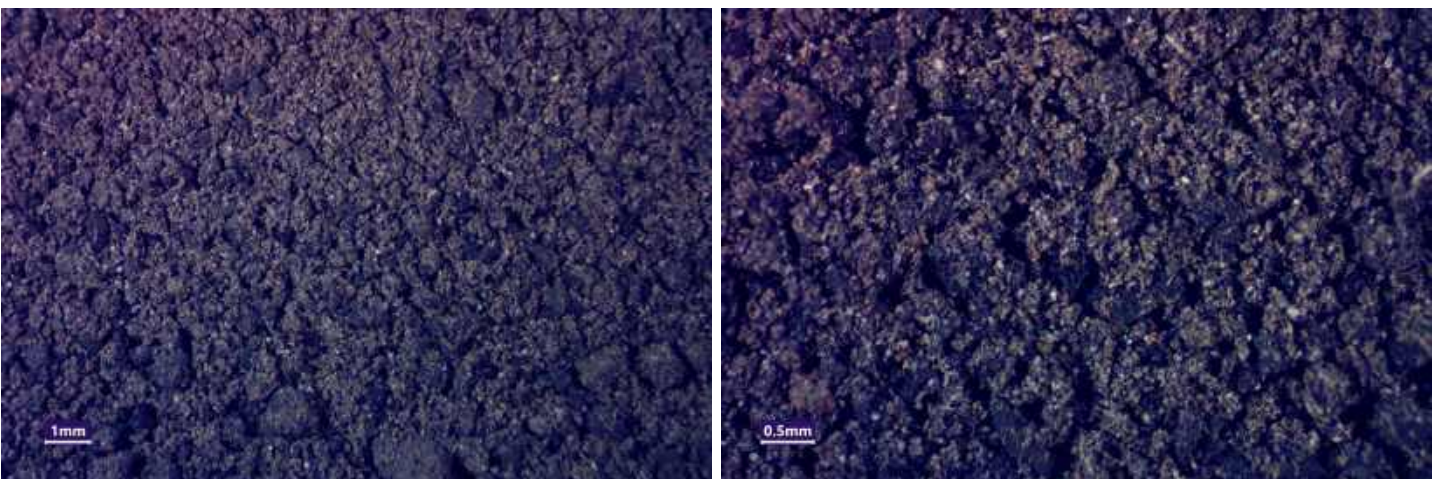




**Figure 2 – Magnified views of processed 2NS reference sand.**



**Figure 3 – Magnified views of processed Class II reference sand.**



**Figure 4 – Magnified views of processed Ash reference sample.**

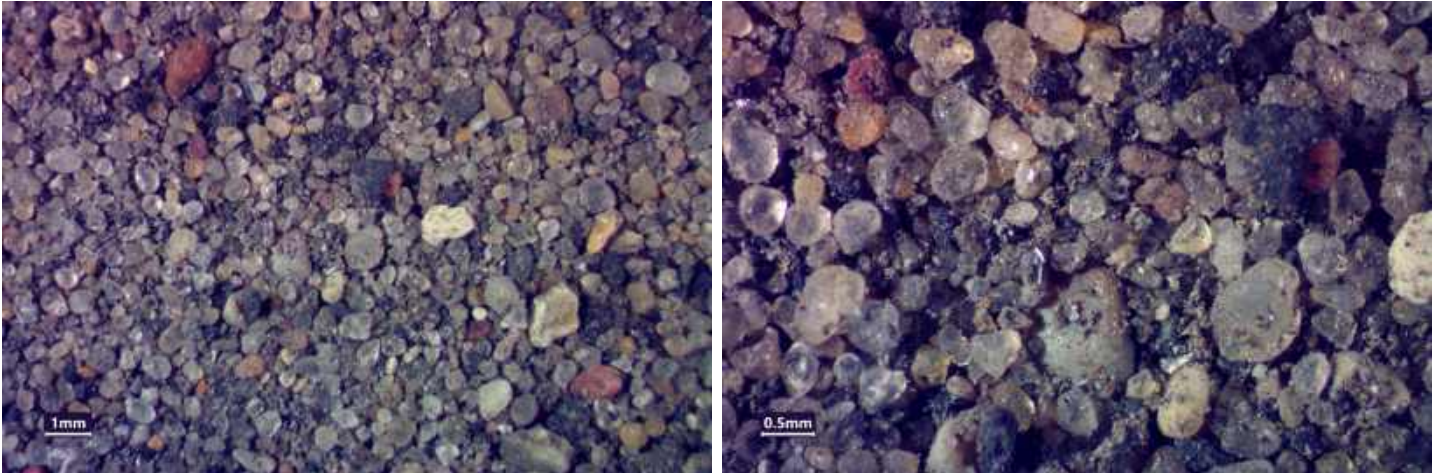




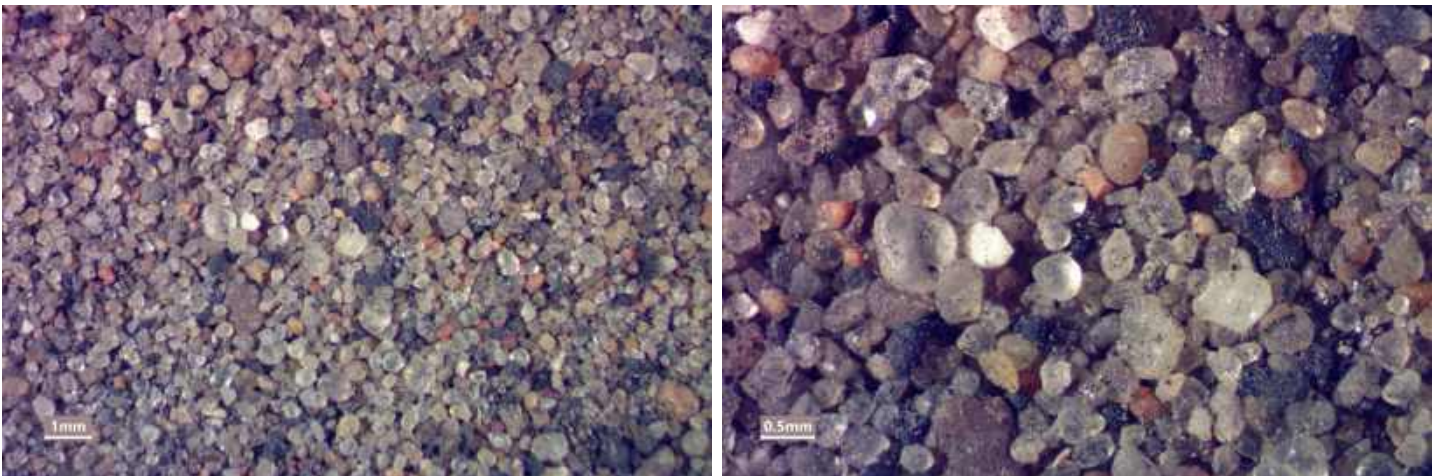
**Figure 5 – Prepared reference standards for 2NS sand type.**



**Figure 6 – Prepared reference standards for Class II sand type.**



**Figure 7 – Magnified views of 10% ash reference standard (threshold ash content) for 2NS sand type.**



**Figure 8 – Magnified views of 10% ash reference standard (threshold ash content) for Class II sand type.**



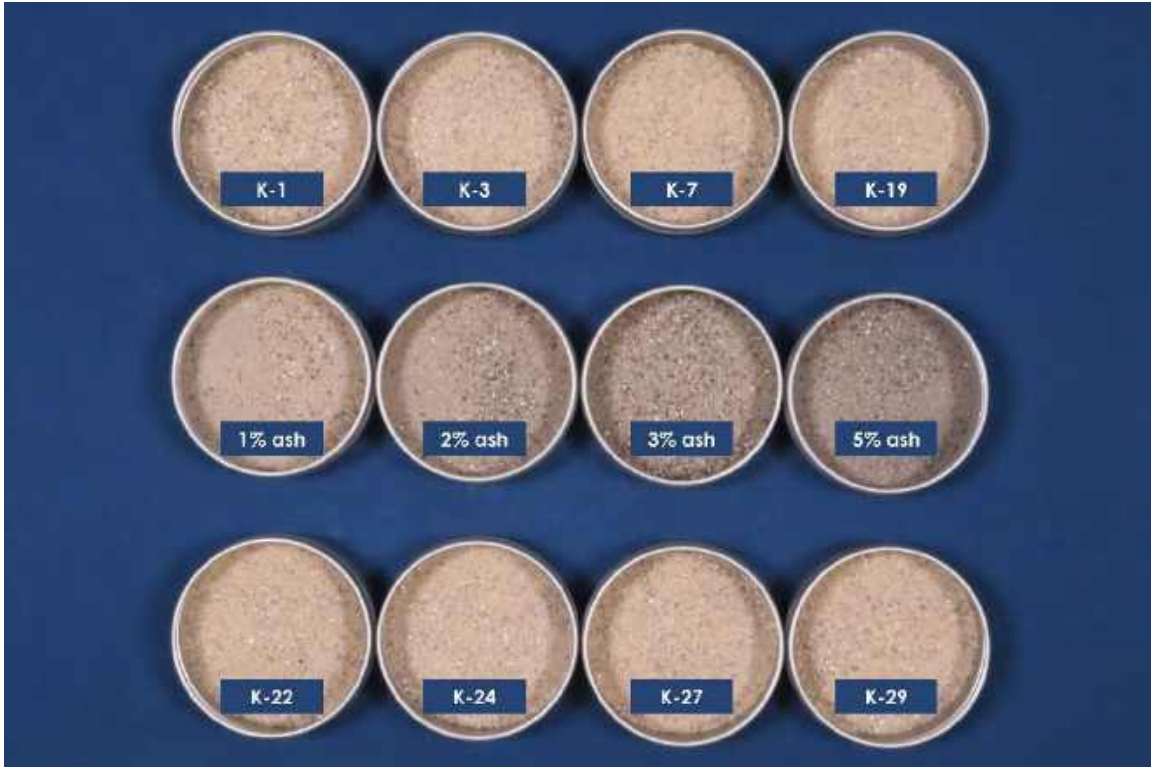
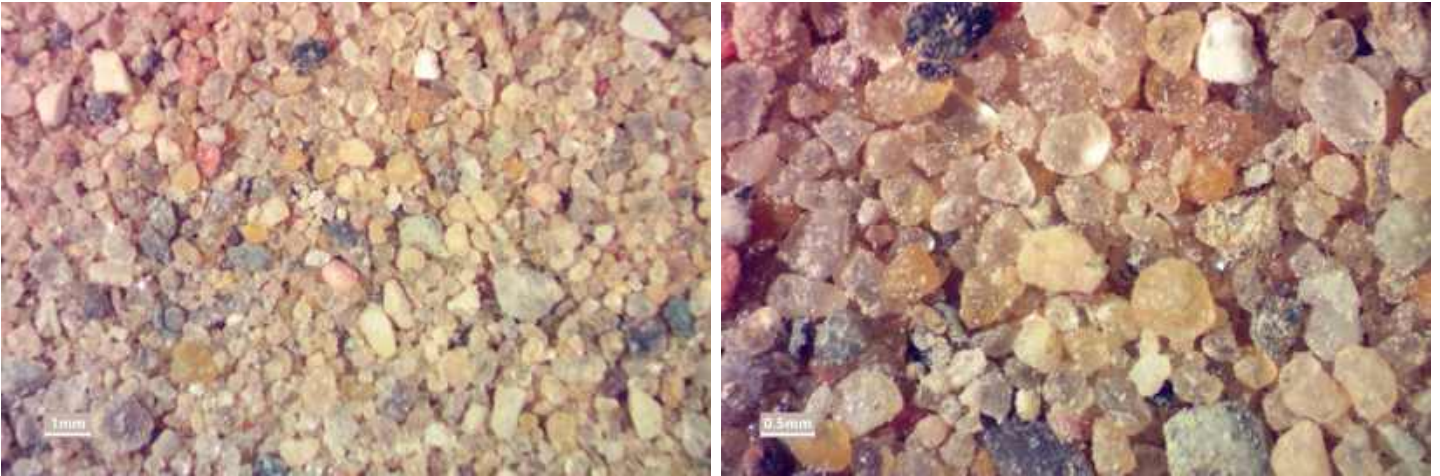


Figure 9 – Comparison of processed 2NS sand type samples to select reference standards (middle row).

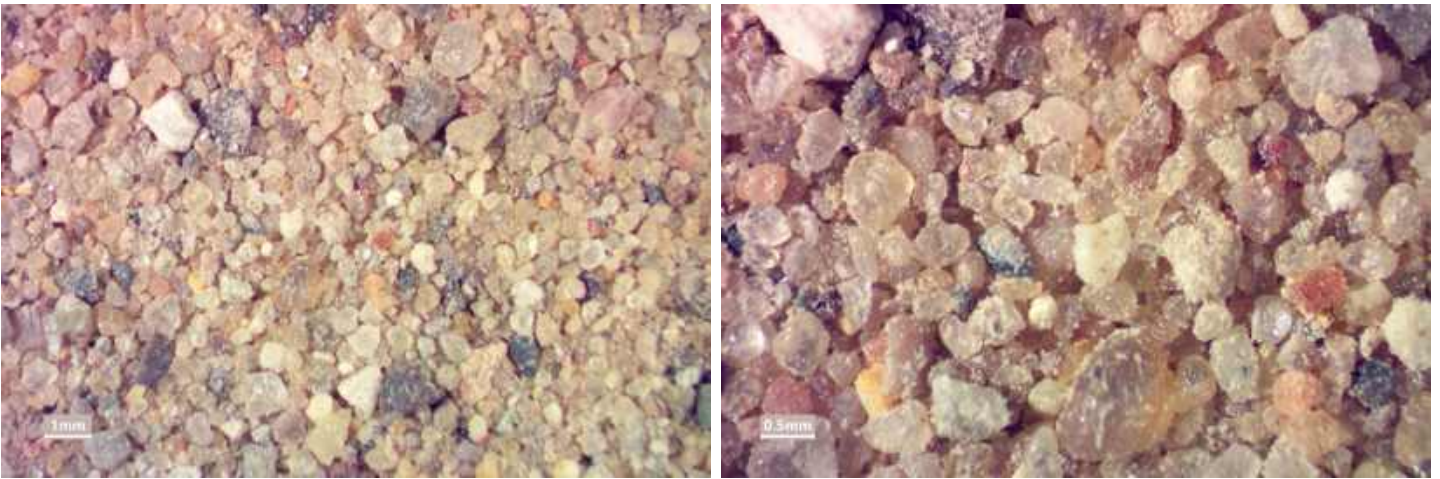


Figure 10 – Comparison of processed Class II sand type samples to select reference standards (middle row).

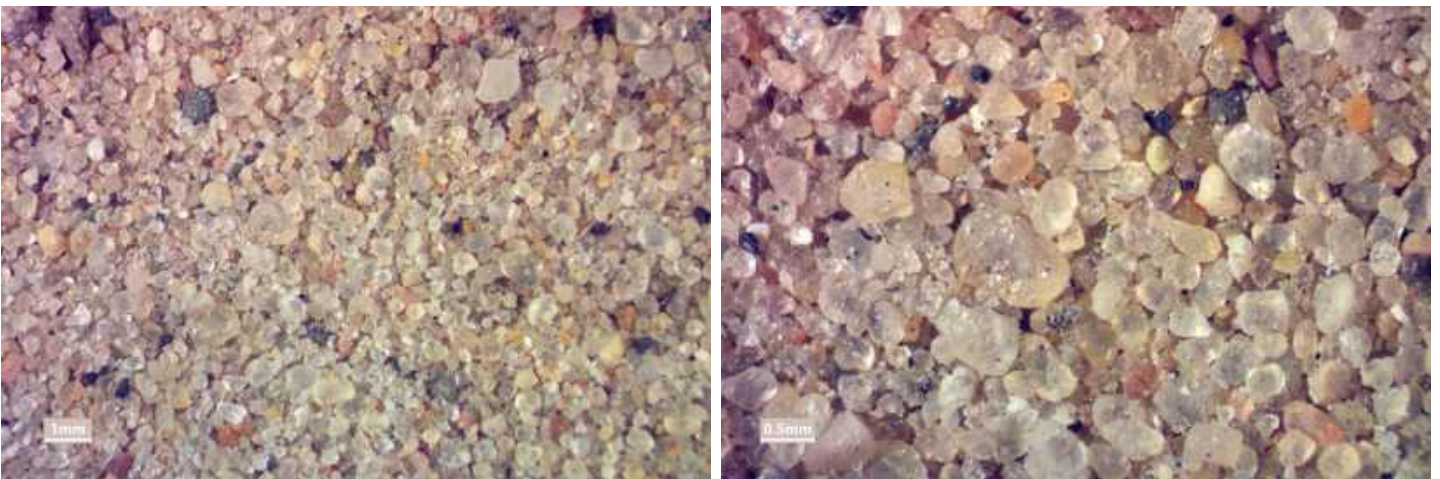




**Figure 11 – Magnified views of processed sample K-7, representative of 2NS sand type.**

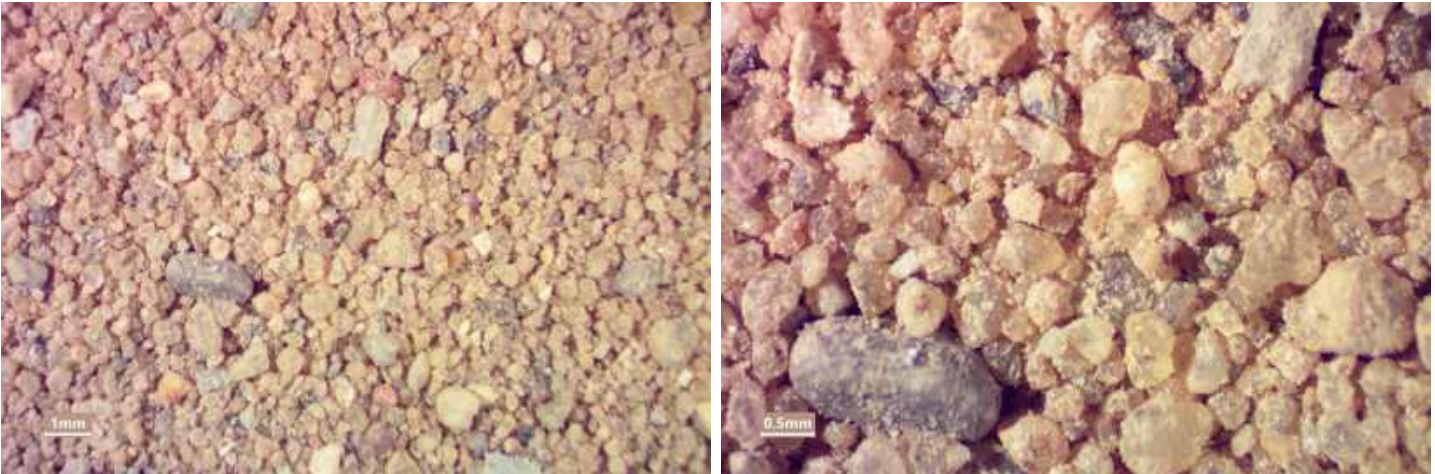


**Figure 12 – Magnified views of processed sample K-24, also representative of 2NS sand type.**

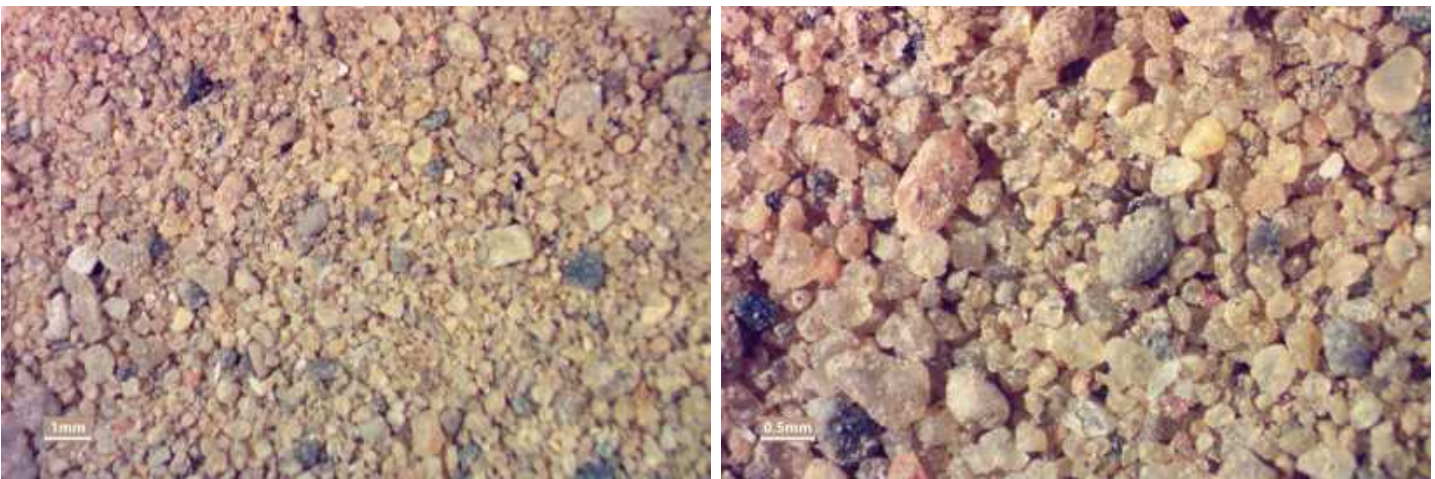


**Figure 13 – Magnified views of 1% ash reference standard for 2NS sand type, for comparison.**

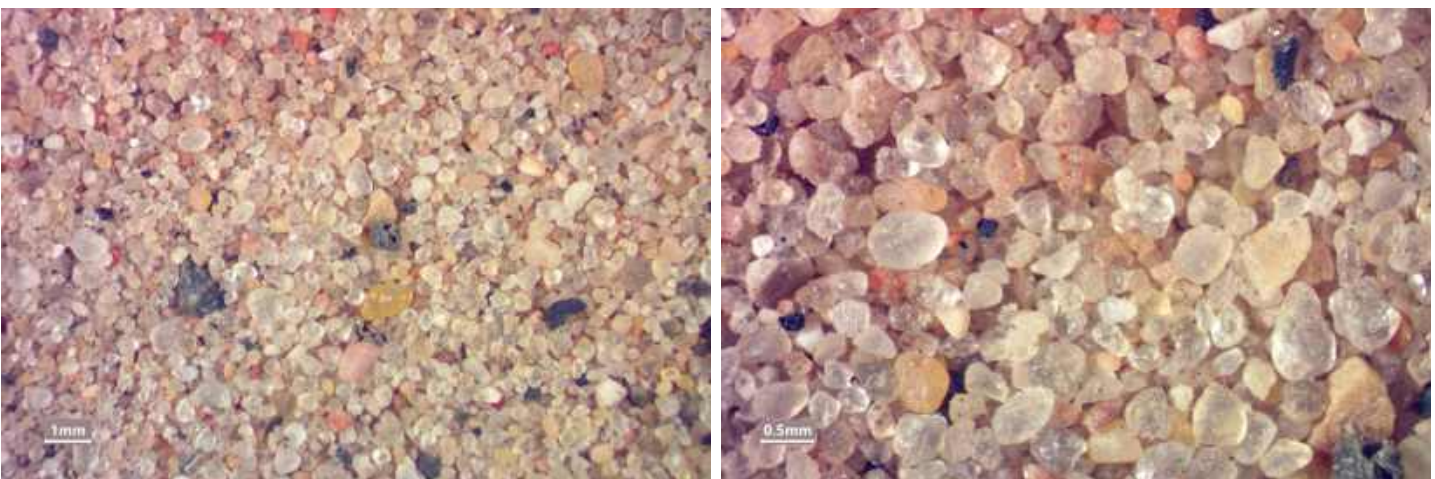




**Figure 14 – Magnified views of processed sample K-31, representative of Class II sand type.**



**Figure 15 – Magnified views of processed sample K-44, also representative of Class II sand type.**



**Figure 16 – Magnified views of 1% ash reference standard for Class II sand type, for comparison.**

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