

Consumers Energy Memorandum

To: Operating Record
Environmental Quality & Sustainability Department

From: Harold D. Register, Jr. 
Environmental Quality & Sustainability Department

Date: July 25, 2025

Subject: DE Karn Lined Coal Ash Impoundment
Closure by Removal Certification
40 CFR 257.102(c);

CC: Heather Prentice, Risk Management
File, Environmental Quality & Sustainability Department

1.0 INTRODUCTION

CEC prepared a “[Notification of Intent to Initiate Closure](#)” for the DE Karn Lined Coal Ash Impoundment (Karn Lined Impoundment) on July 21, 2023 to comply with the requirements of §257.102(g). This correspondence was subsequently placed into the operating record per §257.105(i)(7), noticed to the State Director per §257.106(i)(7) and posted to the publicly accessible website per §257.107(i)(7). Prior to the “Notification of Intent to Initiate Closure,” a [Closure Plan](#) (Golder, 2018) was developed for the Karn Lined Impoundment per the requirements of §257.102(b)(1)-(2). Compliance documents required pursuant to §257.107 can be publicly accessed at:

<https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals>

Closure of the Karn Lined Impoundment was conducted in accordance with §257.102(c), which states:

Closure by removal of CCR. *An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.*

This technical memorandum has been prepared to document the closure activities at the Karn Lined Impoundment and provide certification from a qualified professional engineer that closure of the surface impoundment has been successfully completed, per §257.102(f)(3).

2.0 COAL COMBUSTION RESIDUALS (CCR) REMOVAL

In addition to the closure details in the Karn Lined Impoundment Closure Plan, removal and documentation procedures implemented for CCR Removal are described in greater detail in the *Consumers Energy D.E. Karn Generating Facility Karn Lined Impoundment Closure Work Plan*

MEMORANDUM

July 25, 2025

Page 2

(Closure Work Plan) (Golder, 2023) submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 7, 2023. EGLE concurred with the Closure Work Plan in a letter dated October 25, 2023. The procedures and detail of this Closure Work Plan were necessary for acceptance by state regulators to ensure that the procedural and performance elements required to close the lined impoundment under state rule and statute would align with those from the federal CCR rule.

As described in the Closure Work Plan, the multiple lines of evidence approach used to document CCR removal provided a predictable and reliable means to objectively measure concentrations of CCR based on physical sample properties. CCR removal was documented based on three lines of evidence:

- First line of evidence: comparison of grades where the liner system was constructed relative to interim excavation termination grades from previous site characterizations and engineering records;
- Second line of evidence: photographic documentation including periodic photographs of CCR removal progression and photographs of excavated areas at random grid nodes; and
- Third line of evidence: microscopic quantification of CCR at random grid nodes to confirm removal.

This approach took advantage of the clear visible distinction between the color of the CCR and the color of the underlying sand drainage layer and embankment fill sand. This visible color difference was confirmed during the CCR removal activities and documented within each of the removal verification reports.

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 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 (Figure 3 of Attachment B).
- 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.

3.0 COMPLIANCE WITH GROUNDWATER PROTECTION STANDARDS

Per §257.102(c), closure of a CCR impoundment is not deemed complete until groundwater monitoring concentrations associated with the unit do not exceed the groundwater protection standards (GWPSs) established pursuant to §257.95(h) for Appendix IV constituents. GWPS were established and comparison of post-removal groundwater data were compared to the GWPS in

ATTACHMENT A: TRC. July 2025. Closure Completion: Statistical Groundwater Evaluation, Karn Lined Impoundment

The two rounds of post-removal groundwater data confirmed that groundwater monitoring concentrations associated with the unit do not exceed the GWPSs.

4.0 POST-CLOSURE CARE REQUIREMENTS

The post-closure care section in the CCR rule states the following: “An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by §257.102(c) is not subject to the post-closure care criteria under this section.” (§257.104(a)(2)).

5.0 CONCLUSIONS

This technical memorandum presents the summary of documented observations and data collected during the field work completed for the Karn Lined Impoundment closure as further detailed in:

ATTACHMENT B: WSP USA Inc. October 2024. D.E. Karn Generating Facility Karn Lined Impoundment Decommissioning Report

As of the certification date of this report (see Section 6.0), the Karn Lined Impoundment will be deemed a closed CCR unit under 40 CFR §257. Accordingly, the CCR unit is not subject to post-closure care requirements or any other requirements under 40 CFR §257 of the CCR rule.

6.0 CLOSURE CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I hereby certify in accordance with §257.102(f)(3) that the DE Karn Lined Coal Ash Impoundment (Karn Lined Impoundment) was closed in accordance with the requirements of §257.102(c) of the CCR rule and the written Closure Work Plan as developed under §257.102(b). To the best of my knowledge, information, and belief, the information contained herein is true and correct and this document has been prepared in accordance with generally accepted good engineering practices.

Harold D. Register, Jr.
Signature

July 25, 2025

Date of Certification

Harold D. Register, Jr., P.E.
Name

6201056266

Professional Engineer Certification Number



07/25/2025

7.0 REFERENCES

Consumers Energy Company. July 2023. Notification of Intent to Initiate Closure for DE Karn Lined Coal Ash Impoundment.

Golder Associates, Inc. June 2018. D.E. Karn Generating Facility Karn Lined Impoundment Closure Plan Essexville, Michigan Pursuant to 40 CFR 257.102.

TRC Environmental Corporation. January 2025. 2024 Annual Groundwater Monitoring and Corrective Action Report DE Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit.

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.

Attachment A
TRC. July 2025. Closure Completion: Statistical Groundwater
Evaluation, Karn Lined Impoundment

Technical Memorandum

Date: July 25, 2025

To: JR Register, Consumers Energy

From: Darby Litz, TRC
Kristin Lowery, TRC

cc: Graham Crockford, TRC

Project No.: 634695.0000.0000 Phase 3

Subject: Closure Completion: Statistical Groundwater Evaluation
Karn Lined Impoundment, Consumers Energy Company, Essexville, Michigan

Pursuant to the Federal CCR Rule¹, 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 (2018 Amendment) 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.

Consumers Energy has removed CCR from the Karn Lined Impoundment as documented in the *D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report*². In accordance with the Closure Plan, § 257.102(c), and Michigan Part 115 Solid Waste Management rules, groundwater monitoring was conducted post-CCR removal to evaluate groundwater concentrations. In accordance with Section 11519b(9) of PA 640 (MCL 324.11519b(9)), closure by removal of coal ash is complete when either of the following requirements are met:

- (a) The owner or operator certifies compliance with the requirements of 40 CFR 257.102(c), which consists of:
- *Closure by removal of CCR.* An owner or operator may elect to close a CCR unit by removing CCR and removing or decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit do not exceed the groundwater protection standard established pursuant to 40 CFR 257.95(h) for constituents listed in 40 CFR Appendix IV to Subpart D of Part 257.

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended.

² WSP. 2024. D.E. Karn Generating Facility, Karn Lined Impoundment Decommissioning Report. October 30.

- (b) The owner or operator certifies that testing confirms that constituent concentrations remaining in the coal ash impoundment or landfill unit and any concentrations of soil or groundwater affected by releases therefrom do not exceed the less of the applicable standards adopted by the department pursuant to section 20120a or the groundwater protection standards established pursuant to 40 CFR 257.95(h) and the department accepts the certification or, if the constituent concentrations do exceed those standards, the department has approved a remedy consistent with R 299.4444 and R 299.4445 of the part 115 rules.

On behalf of Consumers Energy, TRC has prepared this evaluation of concentrations in groundwater following removal of CCR from the Karn Lined Impoundment to document that groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in 40 CFR Appendix IV to Subpart D of Part 257.

Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site), north of the former JC Weadock Power Plant, east of the Saginaw River, and 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. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond and the Karn Landfill. The former Karn Bottom Ash Pond was formerly used for wet ash dewatering and was the primary settling/detention structure for the National Pollutant Discharge Elimination System (NPDES) treatment system prior to discharge. It was closed by removal as a CCR unit, beginning by ceasing the storage of bottom ash and NPDES treatment residues in June 2018, completing CCR removal in April through July 2019, and obtaining certification of closure in November 2020³. Groundwater conditions post-CCR removal continue to be monitored. The Karn Landfill is a 171-acre Type III low hazard industrial waste landfill. The Landfill was issued a construction permit in 1986 as a vertical expansion and operated as a landfill until it was certified closed in 2020 by constructing a final cover system. The landfill is currently in post-closure care under Part 115⁴. Consumers Energy is in the process of implementing a Remedial Action Plan (RAP)⁵ for the Landfill to address concentrations in groundwater relative to the groundwater surface water (GSI) pathway. The RAP was approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 27, 2023. The Landfill continues to be monitored in accordance with the Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area, dated December 19, 2017 as remedial actions proceed. CCR unit locations are shown in Figure 1.

Karn Lined Impoundment 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 served a twofold purpose for treatment pursuant to NPDES Permit

³ EGLE. 2020. Closure Certification, Consumers Energy DE Karn Bottom Ash Pond (DE Karn), Bay County, Waste Data System Number 392503. November 30.

⁴ EGLE. 2020. Final Closure Certification, DE Karn Landfill, Bay County; Waste Data Systems Number 395457 letter to Consumers Energy. June 23.

⁵ Barr. 2023. Remedial Action Plan, Groundwater Impacts from the D.E. Karn Landfill. February,

N0. MI0001678 and as temporary storage for bottom ash prior to its removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill). On July 7, 2023, Consumers Energy submitted a Closure Work Plan for the Karn Lined Impoundment⁶ 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 MCL 324.11519b(9). 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. The Karn Lined Impoundment area is shown on Figure 2.

Geology and Hydrogeology

The Karn Lined Impoundment area primarily consists of surficial CCR and sand fill, developed by reclaiming lowlands through perimeter dikes and ash filling. The surficial fill, 5 to 15 feet thick, is a mix of ash, sand, and clay-rich material, underlain by native alluvium and lacustrine soils. A well-graded sand layer extends 10 to 30 feet below ground, overlying a clay till at depths of 25 to 75 feet, which acts as a hydraulic barrier separating shallow groundwater from deeper sandstone at 80 to 90 feet. The site is bordered by the Saginaw River, Saginaw Bay, and a discharge channel, with shallow groundwater flow influenced by surface water elevations. Currently in the Karn Lined Impoundment area, groundwater flow is generally radiating outward from a high point near DEK-MW-18001 toward surrounding water bodies.

Groundwater Monitoring System

A groundwater monitoring system has been re-established for the DE Karn Lined Impoundment CCR Unit to demonstrate the constituents listed in 40 CFR Appendix IV to Subpart D of Part 257 do not exceed groundwater protection standards established pursuant to § 257.95(h) and support a closure by removal of CCR demonstration per §257.102(c)⁷. The downgradient monitoring network accurately represents the quality of groundwater passing the waste boundary and ensures detection of groundwater contamination in the uppermost aquifer based on the groundwater flow regime (Figure 3, Attachment 2).

Downgradient Monitoring Wells:

- OW-10
- DEK-MW-15003
- DEK-MW-18001
- DEK-MW-22003
- DEK-MW-22006

⁶ WSP. 2023. Closure Work Plan, D.E. Karn Generating Facility Karn Lined Impoundment. June.

⁷ Consumers Energy. 2025. Groundwater Monitoring System Certification, §257.91(f), DE Karn Power Plant, Karn Lined Impoundment CCR Unit. February 25.

Establishment of Groundwater Protection Standards

The Karn Lined Impoundment remained in detection monitoring throughout the active life of the unit; therefore, groundwater protection standards (GWPSs) had not been established for the Karn Lined Impoundment. Per §257.102(c) and MCL 324.11519b(9), groundwater concentrations must be compared to the GWPSs or the applicable Part 201 criteria to determine that closure is complete. The following text presents the background/baseline⁸ statistical limits and GWPSs derived pursuant to §257.95(h) for the purpose of comparison to post-CCR removal groundwater concentrations.

The GWPS will be set at the lowest of the EPA maximum contaminant level (MCL), the EPA Regional Screening Level (RSL), or the applicable Michigan Part 201 criteria, unless the background concentration is greater than the MCL or RSL or Part 201 criteria, in which case, the statistically-determined background value becomes the GWPS.

Groundwater data for the Karn Lined Impoundment are maintained within a database accessible through the Sanitas™ statistical software package. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in U.S. EPA's Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (Unified Guidance; UG). Tolerance limits were selected to perform the statistical calculation for background concentrations within the Sanitas™ statistical software package, as tolerance limits are recommended by the UG and are an acceptable approach under the CCR rule to establish background-based groundwater protection standards for assessment monitoring. Upper tolerance limits (UTLs) were calculated for each of the detection and assessment monitoring constituents, with both an upper and lower tolerance limit calculated for pH. The following narrative describes the methods employed and the results obtained and the Sanitas™ output files are included as an attachment.

The background evaluation included the following steps:

- Evaluation of appropriate background/baseline monitoring location(s);
- Graphical representation of the baseline data as time versus concentration;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of percentage of non-detects for each well-constituent (w/c) pair;
- Distribution of the data;
- Calculation of the UTL for each constituent (upper and lower confidence limits calculated for pH); and
- Establishment of GWPS as the lowest of the MCL, RSL, or Part 201 criteria, or the statistical limit if the statistical limit is higher than the MCL/RSL/Part 201 criteria for each constituent.

The results of these evaluations are presented and discussed below. Sanitas output files are included in Attachment 1.

⁸ Per §257.91(a)(1), background groundwater quality is intended to be representative of hydraulically upgradient groundwater not affected by leakage from a CCR unit. However, non-upgradient data, i.e. baseline data, can be used in place of background groundwater data if other wells provide an indication of groundwater quality that is as or more representative than upgradient background wells.

Background/Baseline Monitoring

Prior to operation of the Karn Lined Impoundment in June 2018, groundwater flowed radially from the Karn Bottom Ash Pond and was 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, resulting in a primarily southern groundwater flow direction through the area that later became the 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. During the active life of the Karn Lined Impoundment, groundwater flow was radial from the CCR Unit; therefore, intra-well statistical procedures were used during detection monitoring due to the lack of a hydraulically upgradient monitoring location (Figures 1 and 2, Attachment 2).

Per §257.91(a)(1) and Part 115 R299.4906(1)(a), determination of background quality may include wells that are not hydraulically upgradient of the CCR unit if a hydraulically upgradient location cannot be determined or if sampling at other wells provides an indication of background that is as or more representative of background water quality. Due to the hydrogeologic conditions described above, there was not a hydraulically upgradient location during operation of the Karn Lined Impoundment, and the hydraulically upgradient area prior to operation was affected by historical operation of the Karn Bottom Ash Pond. Therefore, there is not a location hydraulically upgradient of the Karn Lined Impoundment that is unaffected by *any* CCR unit operation. However, monitoring well DEK-MW-15003, located to the northwest of the Karn Lined Impoundment, has been monitored since 2015 as part of the Karn Bottom Ash Pond monitoring program and was hydraulically upgradient of the Karn Lined Impoundment prior to operation (Attachment 2). Groundwater monitoring data collected at DEK-MW-15003 from December 2015 - June 2018, although affected by the Bottom Ash Pond operation, represents local baseline groundwater quality, unaffected by the operation of the Karn Lined Impoundment.

Note that additional detection (iron) and assessment (copper, nickel, silver, vanadium, zinc) monitoring parameters were added to the monitoring program for DEK-MW-15003 in 2018 in response to the 2018 amendment to the Michigan Part 115 Solid Waste Management rules. Because 2018 amendment did not go into effect until after operation of the Karn Lined Impoundment began, there is no baseline data for these constituents from prior to Karn Lined Impoundment operation. Therefore, the initial eight data points for these constituents were used to establish baseline conditions, which includes data collected between November 2018 and August 2020.

Time v. Concentration Graphs

The time versus concentration graphs show potential outliers (single detection) for copper and selenium (Attachment 1). While variations in results are present, the graphs do not suggest that data sets as a whole likely have overall trending or seasonality.

Outlier Testing

The time versus concentration graphs indicated potential outliers for copper in August 2019 and selenium in May 2016. Copper was detected at DEK-MW-15003 in August 2019 at a

concentration of 3.9 µg/L and selenium was detected at DEK-MW-15003 in May 2016 at a concentration of 2 µg/L. These are the only detections of copper and selenium at this location and have not been confirmed. Therefore, the single detections were classified as outliers per the Double Quantification Rule as outlined in the Unified Guidance and removed from the baseline data set.

Percentage of Non-Detects

Table 1 summarizes the percentage of results below the reporting limit, i.e., non-detects, for each constituent. Consistent with the procedures in the Unified Guidance, non-detects are evaluated differently, depending upon the percentage of non-detects to the reported concentrations as follows:

- For data that is less than 15% non-detects, one-half the value of the reporting limit will be substituted for the non-detect result.
- If more than 15% but less than 50% of the overall data are less than the reporting limit, an adjustment (Aitchison's adjustment, Cohen's adjustment, or Kaplan Meijer adjustment) will be applied to the non-detect data.
- For data sets that contain greater than 50% non-detects, non-parametric statistical limits will be used.

Distribution of the Data Sets

The distribution of the data sets is determined by the Sanitas™ software during calculation of the tolerance limits using the Shapiro-Wilks normality test for samples sizes less than 50. If the data appear to be non-normal, mathematical transformations of the data may be utilized such that the transformed data follow a normal distribution (e.g., lognormal distribution). Alternatively, non-parametric tests are utilized when data cannot be normalized. Table 1 summarizes the distributions determined by the Sanitas™ software.

Upper Tolerance Limits

Table 1 presents the calculated UTLs for the background/baseline data sets. For data sets with normal distributions or distributions normalized by transformation, UTLs are calculated for 95 percent coverage and 95 percent confidence using parametric tolerance limits. For non-normal datasets, a non-parametric tolerance limit is utilized, resulting in the highest value from the background dataset as the UTL. For datasets that are 100% non-detect, the UTL is set at the standard reporting limit.

The calculated GWPSs are provided in Table 1.

Comparison of Groundwater Concentrations to Applicable Standards

Following decommissioning of the Karn Lined Impoundment CCR Unit, two groundwater sampling events were conducted at the five wells included in the certified monitoring system to support a closure by removal of CCR demonstration per §257.102(c). The post-CCR removal data are included in Attachment 3. 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 post-CCR removal data are summarized in Attachment 3. A comparison of post-CCR removal groundwater concentrations to the GWPS is provided in Table 2.

Concentrations of Appendix IV constituents, with the exception of lithium, are below the GWPS for all post-closure samples. The lithium concentrations observed at DEK-MW-22006 exceed the GWPS but remain below the Part 201 criteria. Arsenic concentrations at four of the five monitoring locations are above Part 201 DWC; however, arsenic concentrations are below the background level based on pre-existing groundwater conditions. The vanadium concentration at OW-10 also exceeds the GWPS, set at the residential Part 201 DWC, in one of the two post-CCR removal samples.

Concentrations of several detection monitoring constituents, including boron, calcium, sulfate, total dissolved solids (TDS), and iron, were above the GWPS. For these constituents, there are no applicable health-based criteria; Part 201 DWC for boron, sulfate, total dissolved solids, and iron are established based on aesthetic effects. There are no Part 201 criteria for calcium.

Alternate Source Demonstration

There are several lines of evidence to demonstrate that concentrations of arsenic, boron, calcium, lithium, sulfate, total dissolved solids, iron, and vanadium are attributable to other sources onsite and not related to the operation of the Karn Lined Impoundment, as detailed in Attachment 4.

Conclusions

The double composite liner system construction of the Karn Lined Impoundment and the SCS flow rate monitoring for leak detection operated as designed throughout the operational life of the CCR Unit. SCS flow rate monitoring in conjunction with the groundwater detection monitoring program and observations made during the decommissioning of the Karn Lined Impoundment all support that wet ash dewatering liquids managed within the unit did not migrate past the liner system and affect groundwater quality.

Based on the post-CCR groundwater monitoring results and the lines of evidence presented in the ASD, residual concentrations observed in groundwater in the vicinity of the Karn Lined Impoundment are not a result of a release from the unit. Therefore, the decommissioning activities have effectively removed CCR and any affected media from the Karn Lined Impoundment, indicating that performance standards to certify that the unit has been closed have been satisfied.

As documented above, Consumers Energy is aware of pre-existing conditions resulting from historical CCR management in the vicinity of the Karn Lined Impoundment. Consumers Energy has consistently communicated with EGLE regarding this historical ash management and continues to pursue actions that protect human health and the environment. The former Karn Bottom Ash Pond was closed in June 2018 by ceasing the storage of bottom ash and NPDES treatment residues; certification of that closure that was accepted by the EGLE in November 2020. Residual arsenic groundwater contamination is still under assessment for the selection of a final remedy. As described in the RAP, a permeable reactive barrier (PRB) employing zero-valent iron (ZVI) and located where groundwater from the Karn Landfill enters the bay along the northern perimeter embankment dike has been selected as the preferred remedy for the GSI pathway. Activities related to implementation of the RAP are included in the RAP

Annual Report.⁹ Additionally, 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.

Attachments

Table 1 Summary of Groundwater Protection Standard Calculations
Table 2 Summary of Post-CCR Removal Groundwater Sampling Results

Figure 1 Site Layout Map
Figure 2 Karn Lined Impoundment Area

Attachment 1 Statistical Evaluation
Attachment 2 Groundwater Contour Maps
Attachment 3 Attainment Monitoring Data
Attachment 4 Alternate Source Demonstration

⁹ Consumers 2024. Energy. DE Karn Remedial Action Plan Annual Report. October.

Tables

Table 1
Summary of Groundwater Protection Standard Calculation
Karn Lined Impoundment
Essexville, Michigan

Units		Percent Non-Detect Data	Normality	UTL	EPA MCL	RSL	Residential DWC*	Non-Residential DWC*	GWPS
Appendix III									
Boron	ug/L	0	Normal	1,400	NC	NA	500	500	1,400
Calcium	mg/L	0	Normal	94	NC	NA	NC	NC	94
Chloride	mg/L	0	Normal	68	NC	NA	250 ^E	250 ^E	250
Fluoride	ug/L	100	n/a - 100% non-detect	1,000	4,000	NA	NC	NC	4,000
pH	SU	0	Normal	7.2-8.6	NC	NA	6.5-8.5 ^E	6.5-8.5 ^E	6.5 - 8.6
Sulfate	mg/L	0	Normal	97	NC	NA	250 ^E	250 ^E	250
Total Dissolved Solids	mg/L	0	Normal	540	NC	NA	500 ^E	500 ^E	540
Appendix IV									
Antimony	ug/L	100	n/a - 100% non-detect	1	6	NA	6	6	6
Arsenic	ug/L	0	Normal	630	10	NA	10	10	630
Barium	ug/L	0	Normalized by natural log transformation	100	2,000	NA	2,000	2,000	2,000
Beryllium	ug/L	100	n/a - 100% non-detect	1	4	NA	4	4	4
Cadmium	ug/L	100	n/a - 100% non-detect	0.2	5	NA	5	5	5
Chromium	ug/L	60	n/a - >50% non-detect	2	100	NA	100	100	100
Cobalt	ug/L	100	n/a - 100% non-detect	15	NC	6	40	100	15
Fluoride	ug/L	100	n/a - 100% non-detect	1,000	4,000	NA	NC	NC	4,000
Lead	ug/L	100	n/a - 100% non-detect	1	NC	15	4	4	4
Lithium	ug/L	0	Normal	46	NC	40	170	350	46
Mercury	ug/L	100	n/a - 100% non-detect	0.2	2	NA	2	2	2
Molybdenum	ug/L	10	Non-Normal	8	NC	100	73	210	73
Radium 226/228	pCi/L	80	n/a - >50% non-detect	1.63	5	NA	NC	NC	5
Selenium	ug/L	100	n/a - 100% non-detect	1	50	NA	50	50	50
Thallium	ug/L	100	n/a - 100% non-detect	2	2	NA	2	2	2
Michigan Part 115									
Iron	ug/L	0	Normal	750	NC	NA	300 ^E	300 ^E	750
Copper	ug/L	100	n/a - 100% non-detect	1	NC	NA	1,000 ^E	1,000 ^E	1,000
Nickel	ug/L	100	n/a - 100% non-detect	2	NC	NA	100	100	100
Silver	ug/L	100	n/a - 100% non-detect	0.2	NC	NA	34	98	34
Vanadium	ug/L	100	n/a - 100% non-detect	2	NC	NA	4.5	62	4.5
Zinc	ug/L	100	n/a - 100% non-detect	10	NC	NA	2,400	5,000 ^E	2,400

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.

RSL - Regional Screening Level from 83 FR 36435.

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

GWPS - Groundwater Protection Standard.

NA - not applicable.

NC - no criteria.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria (DWC), December 30, 2013, updated October 12, 2023.

E - Criterion is the aesthetic drinking water value per footnote {E}.

Table 2
Summary of Post-CCR Removal Groundwater Sampling Results
DE Karn Lined Impoundment
Essexville, Michigan

Sample Location: Sample Date:			DEK-MW-15003		DEK-MW-18001		OW-10		DEK-MW-22003		DEK-MW-22006	
			10/3/2024	3/4/2025	10/3/2024	3/4/2025	10/3/2024	3/4/2025	9/30/2024	3/4/2025	9/30/2024	3/4/2025
Constituent	Unit	GWPS										
Appendix III ⁽¹⁾												
Boron	ug/L	1,400	666	729	953	973	1,310	1,610	779	737	675	429
Calcium	mg/L	94	35.0	32.3	58.5	55.3	139	193	172	147	193	196
Chloride	mg/L	250	63.6	60.2	78.1	71.5	87.9	97.6	143	116	33.6	23.4
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250	37.9	37	207	182	< 1.00	< 1.00	471	353	652	581
Total Dissolved Solids	mg/L	540	304	290	624	618	650	930	1,140	1,010	1,440	1,400
pH, Field	SU	6.5 - 8.6	8.1	8.5	8.1	7.4	7.3	7.4	7.5	7.4	7.4	7.3
Appendix IV ⁽¹⁾												
Antimony	ug/L	6	< 1	< 1	< 1	< 1	< 1	< 1	2	< 1	< 1	< 1
Arsenic	ug/L	630	382	358	495	393	5	2	26	32	3	2
Barium	ug/L	2,000	46	47	148	147	339	218	99	88	98	91
Beryllium	ug/L	4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	5	1	< 1	2	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4	< 1	< 1	< 1	< 1	4	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	46	21	21	18	17	34	40	28	28	51	60
Mercury	ug/L	2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	22	23	10	8	< 5	< 5	12	12	< 5	< 5
Radium-226/228	pCi/L	5	< 0.753	< 0.472	1.13	0.717	< 1.21	0.839	--	0.723	--	< 0.628
Selenium	ug/L	50	2	2	1	2	2	2	2	1	1	1
Thallium	ug/L	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 115 ⁽²⁾												
Iron	ug/L	750	215	138	763	716	5,370	5,410	3,780	2,470	6,170	8,480
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	4	2	1	2	4	2
Nickel	ug/L	100	< 2	< 2	< 2	2	8	6	5	5	6	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	4.5	3	2	2	< 2	15	3	3	2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	17	< 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.

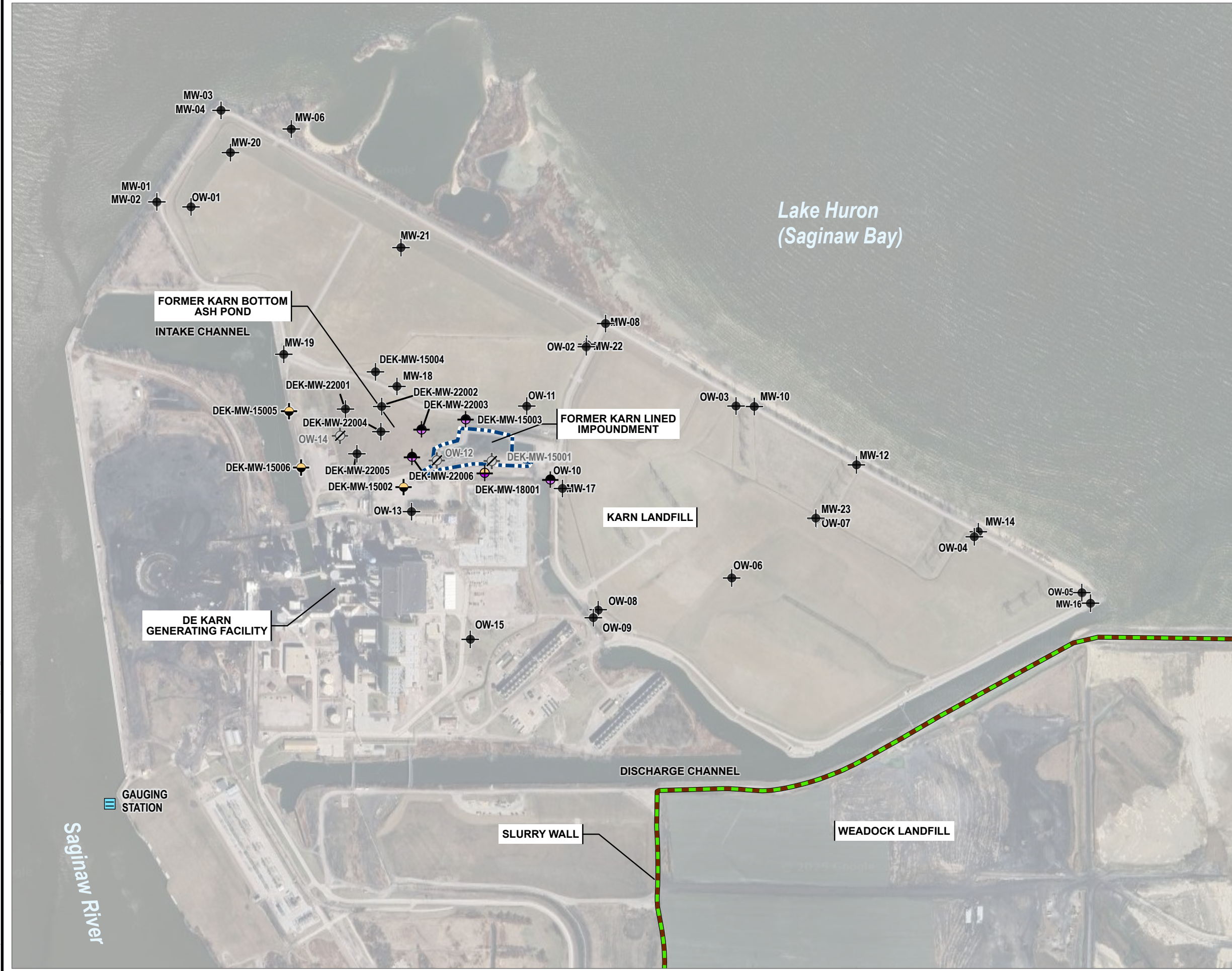
BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Figures

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Int; Map Rotation: 0
-- Saved By: AADAIR on 6/13/2025 08:29:33 AM - File Path: T:\H-PROJECTS\Consumers_Energy\464095_DEKARN.aprx - Layout Name: KL-Closure-2025June



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
- SLURRY WALL (APPROXIMATE)
- LINED IMPOUNDMENT (COVENANT BOUNDARY)

- NOTES**
1. BASE MAP IMAGERY FROM GOOGLE SATELLITE IMAGERY, (04/05/2024).
 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.

Scale and Orientation

1:7,200
1" = 600'
0 600 1,200 FEET

PROJECT: CONSUMERS ENERGY COMPANY
DE KARN POWER PLANT
ESSEXVILLE, MICHIGAN

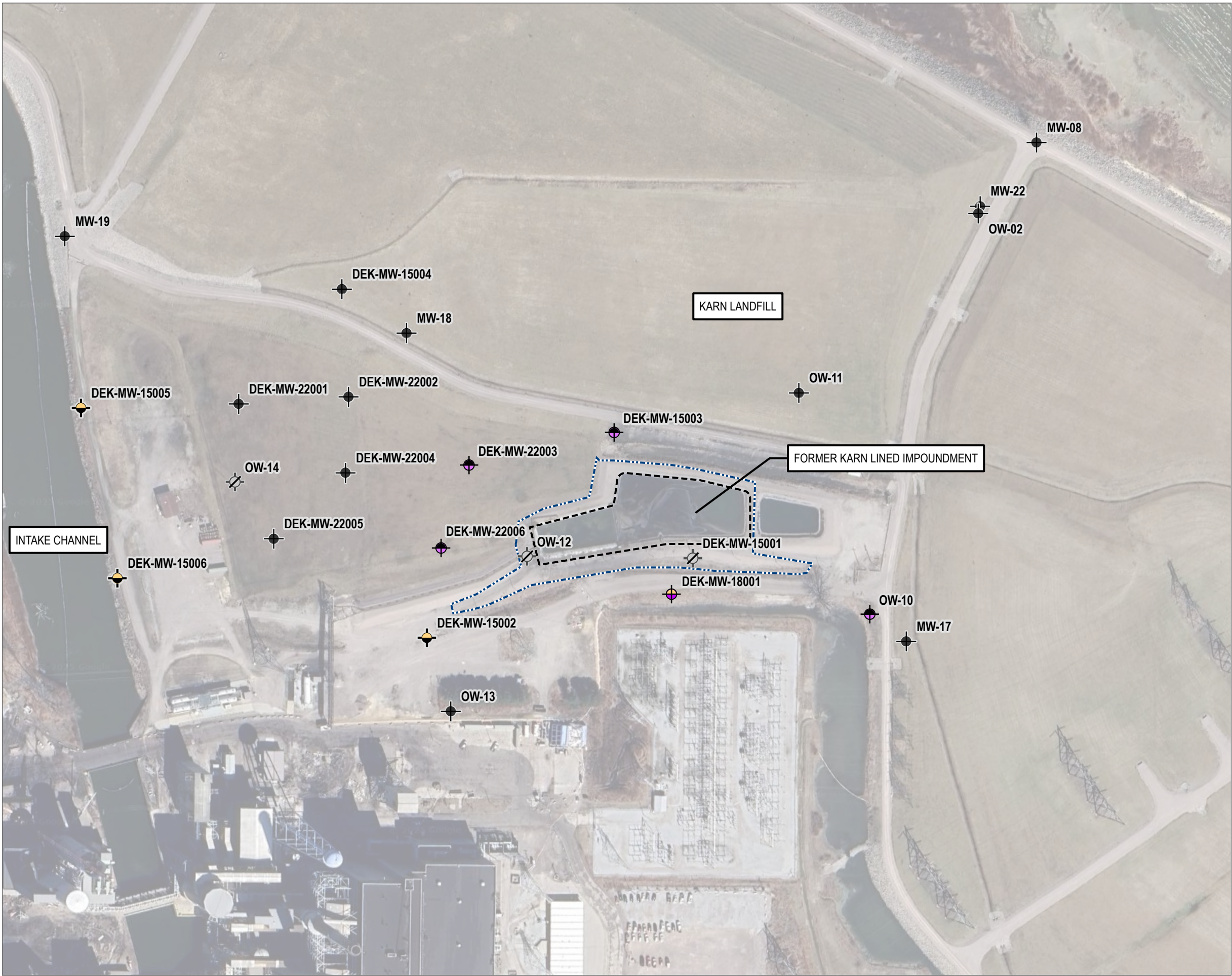
TITLE: SITE LAYOUT MAP

DRAWN BY:	A. ADAIR	PROJ. NO.:	634695.0000
CHECKED BY:	K. LOWERY	FIGURE 1	
APPROVED BY:	D. LITZ		
DATE:	JUNE 2025		

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

FILE: 464095_DEKARN.aprx

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Int; Map Rotation: 0
-- Saved By: ADAIR on 6/13/2025 09:00:38 AM. File Path: T:\H-PROJECTS\Consumers_Energy\464095_DEKARN\2-APR\XG34695_Dekarn.aprx; Layout Name: 634695-WellNetwork_20250605



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)
- EXTENT OF GEOSYNTHETICS
- LINED IMPOUNDMENT (COVENANT BOUNDARY)

NOTES

1. BASE MAP IMAGERY FROM GOOGLE SATELLITE, (4/5/2024).
2. SECONDARY CONTAINMENT SUMP LOCATION BASED ON DRAWINGS 695-1278-120-REV-A.DWG DATED 11/27/19, PROVIDED BY CONSUMERS ENERGY.



1:2,400
1" = 200'

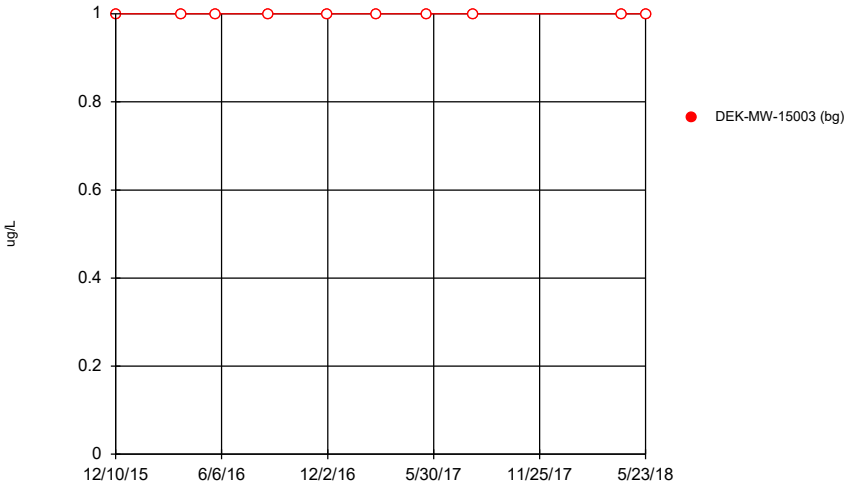
0 200 400 FEET

PROJECT: CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN		
TITLE: KARN LINED IMPOUNDMENT AREA		
DRAWN BY: A. ADAIR	PROJ. NO.: 634695	FIGURE 2
CHECKED BY: K. LOWERY		
APPROVED BY: D. LITZ		
DATE: JUNE 2025		
		1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080
FILE:	634695_Dekam.aprx	

Attachment 1

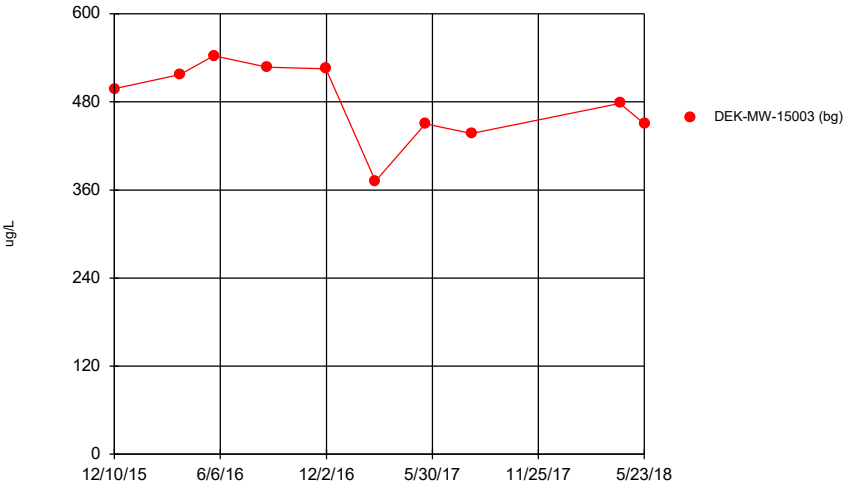
Statistical Evaluation

Antimony, Total



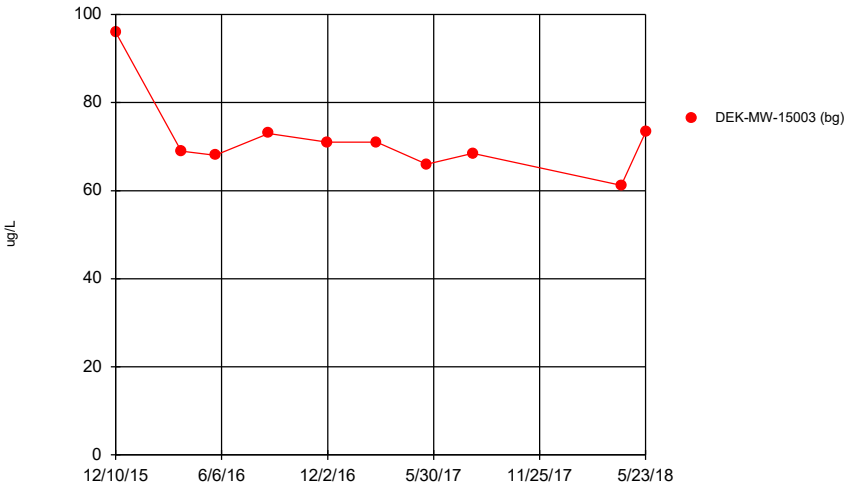
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Arsenic, Total



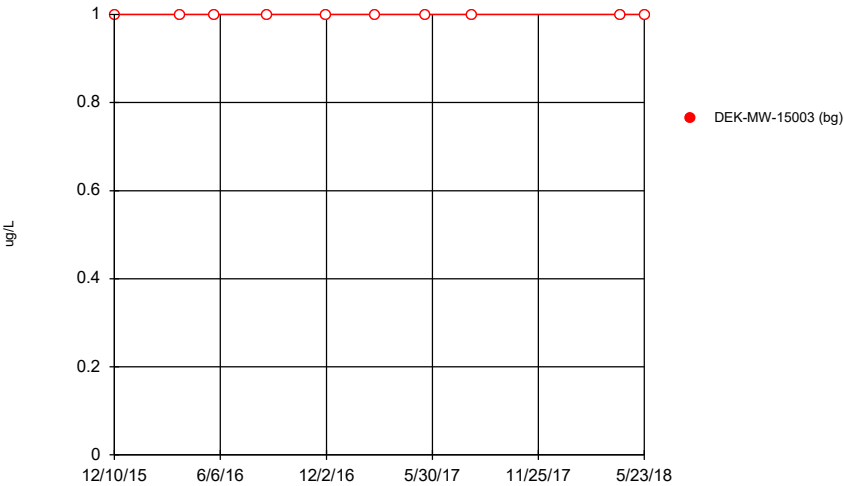
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Barium, Total



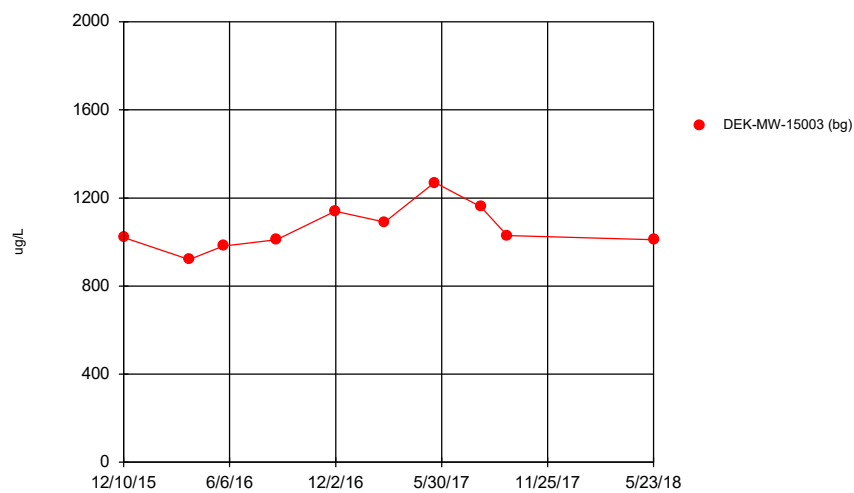
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Beryllium, Total



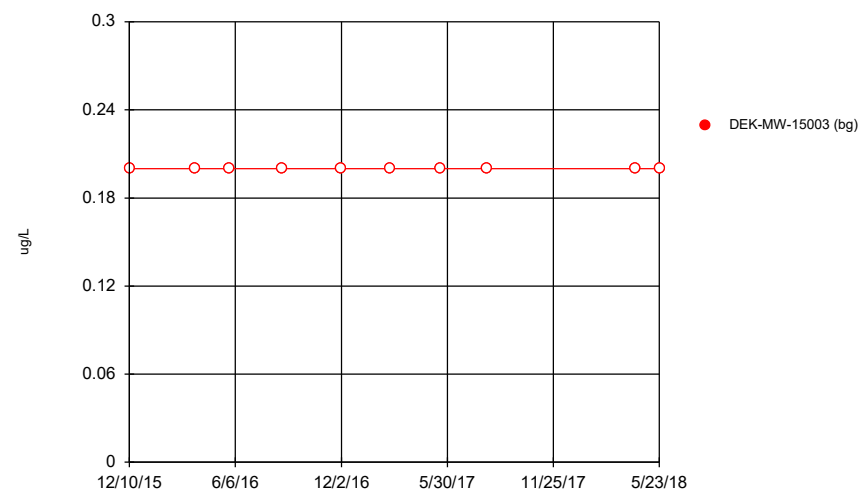
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Boron, Total



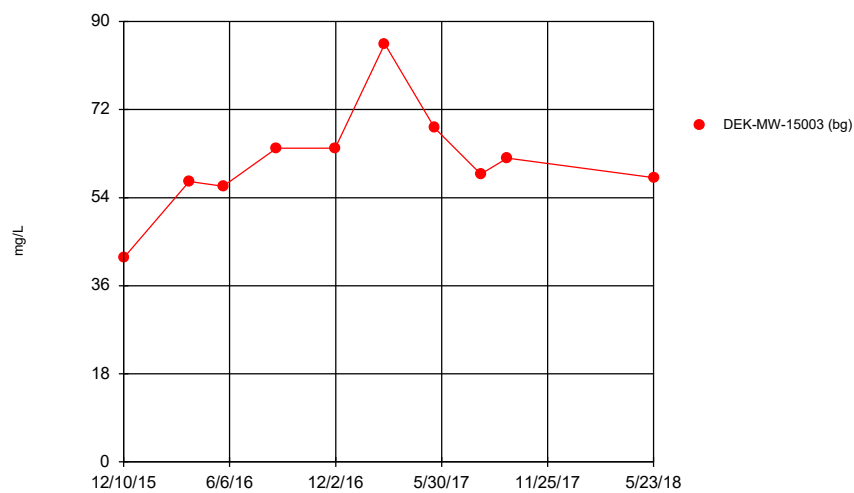
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Cadmium, Total



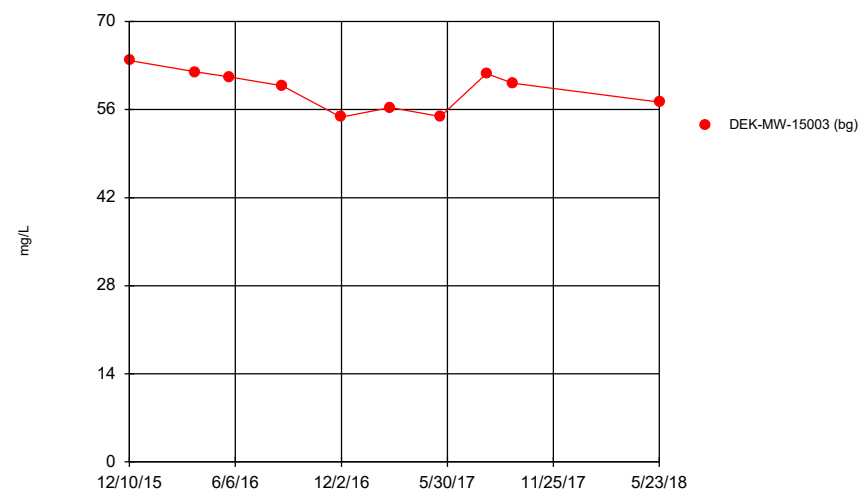
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Calcium, Total



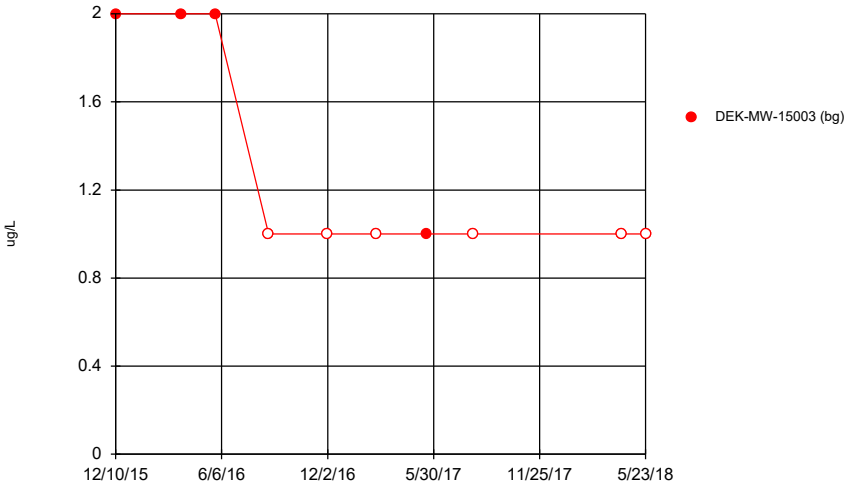
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Chloride



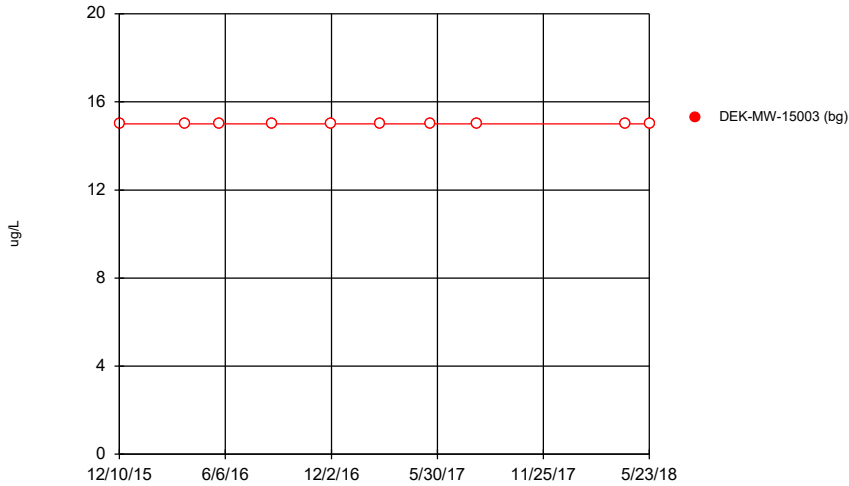
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Chromium, Total



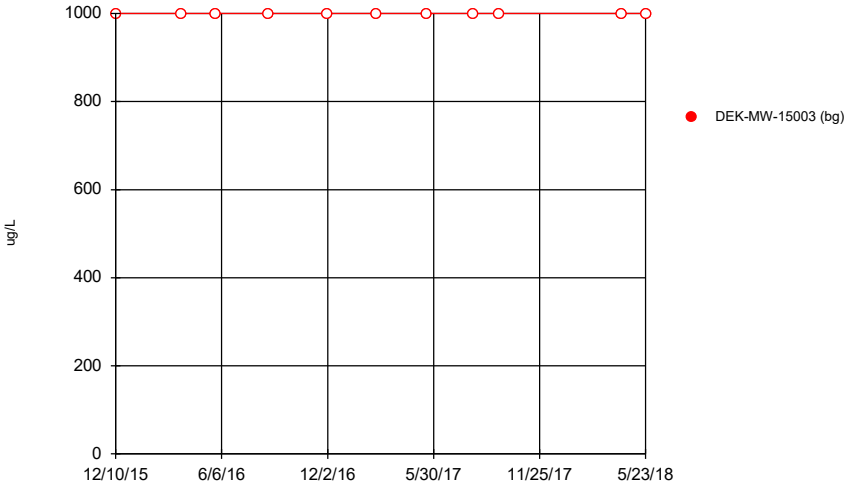
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Cobalt, Total



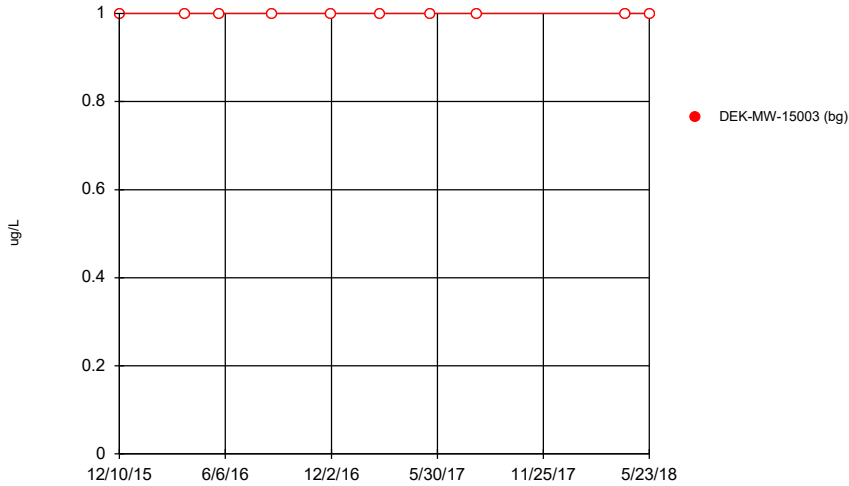
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Fluoride



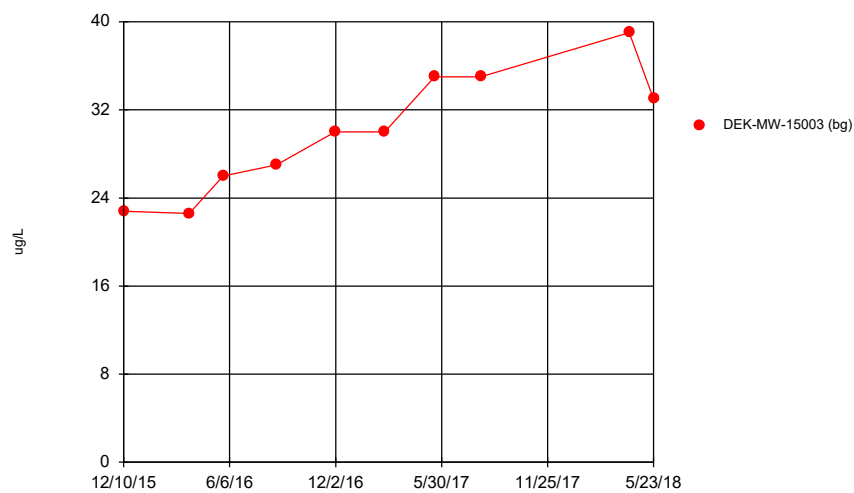
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Lead, Total



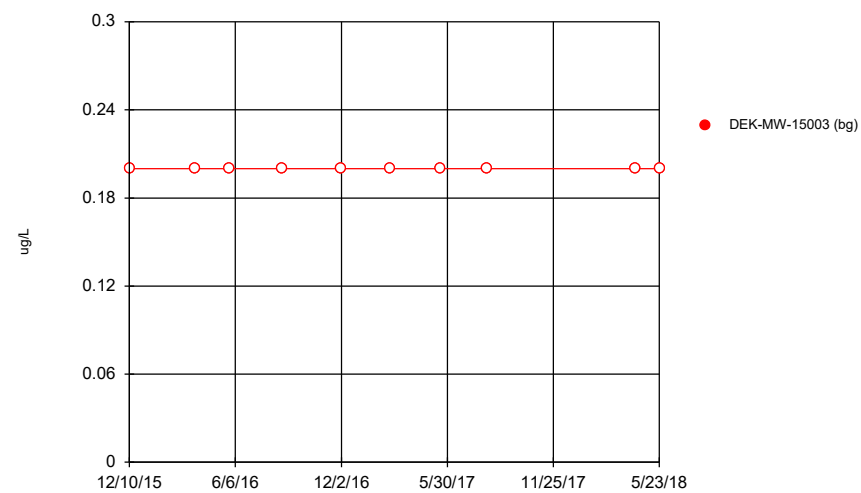
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Lithium, Total



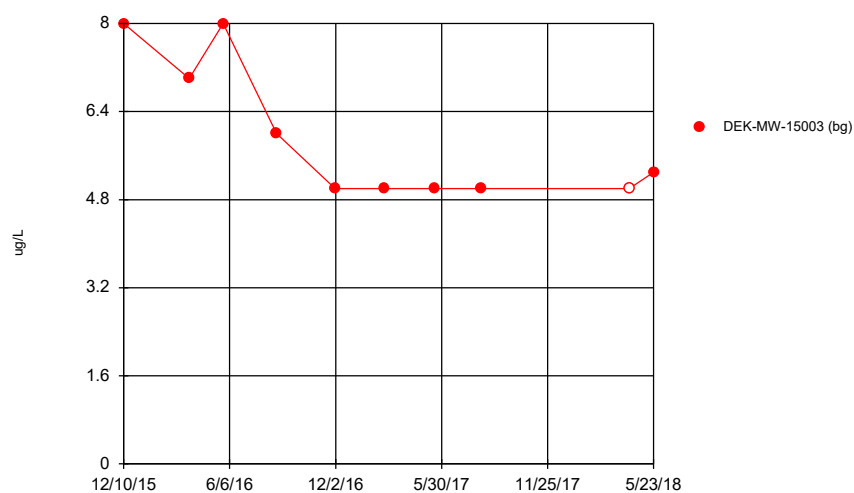
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Mercury, Total



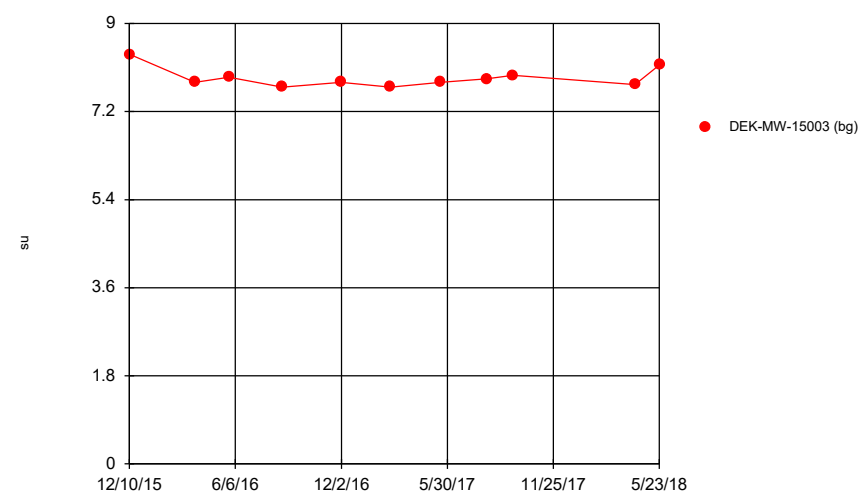
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Molybdenum, Total



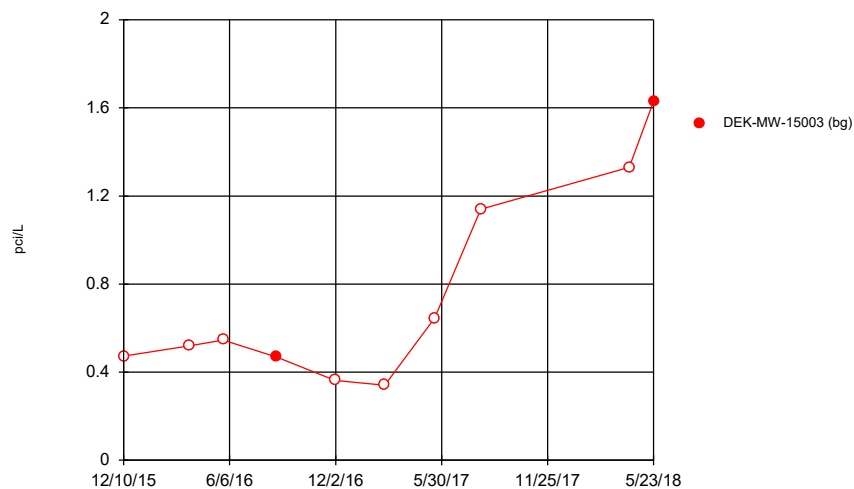
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

pH, Field



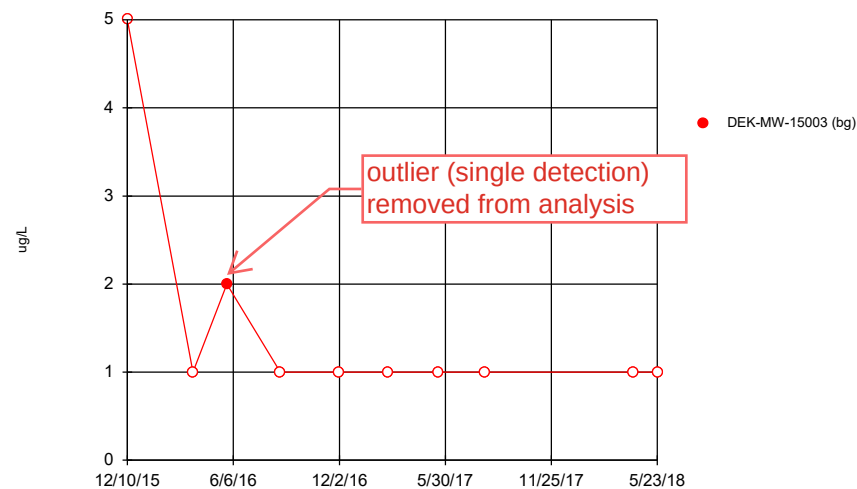
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Radium-226/228



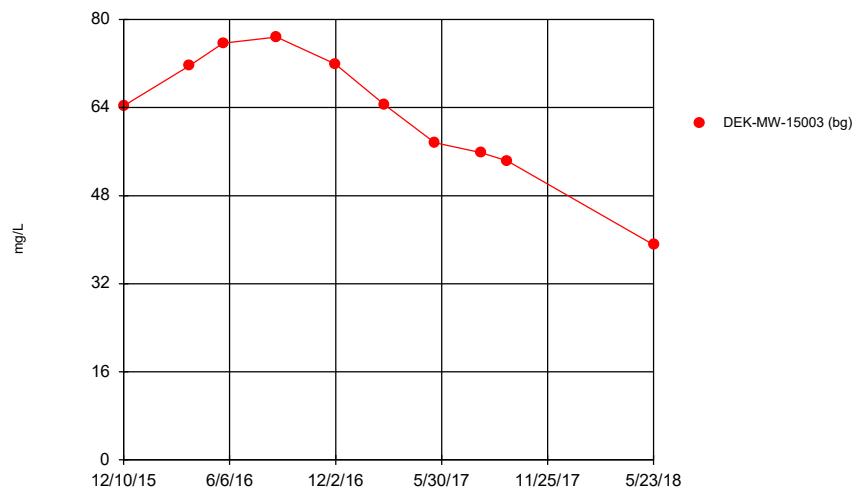
Time Series Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Selenium, Total



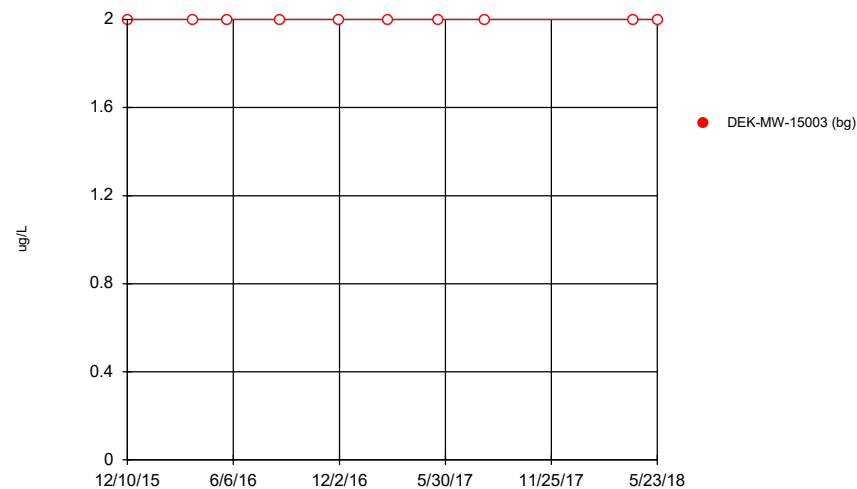
Time Series Analysis Run 5/5/2025 12:16 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Sulfate



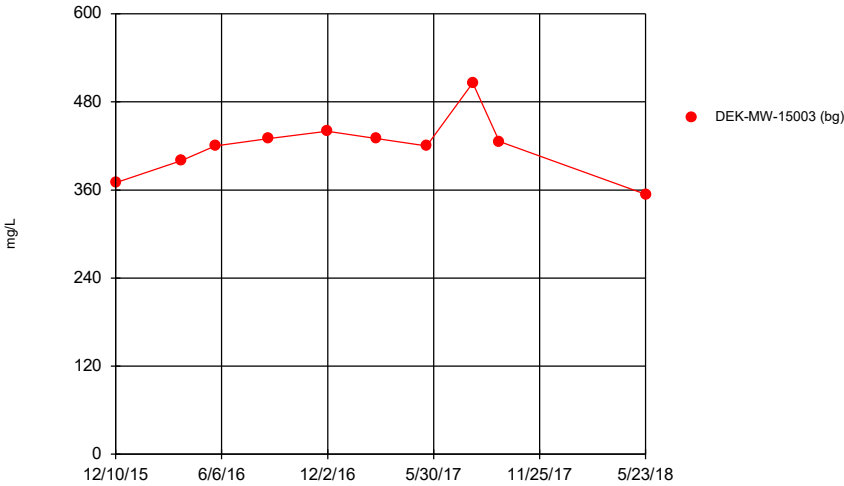
Time Series Analysis Run 5/5/2025 12:16 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Thallium, Total

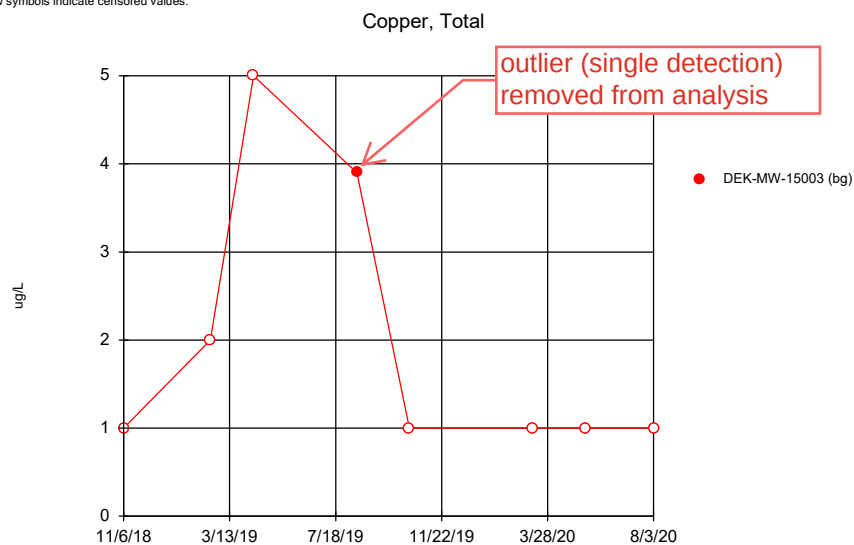


Time Series Analysis Run 5/5/2025 12:16 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

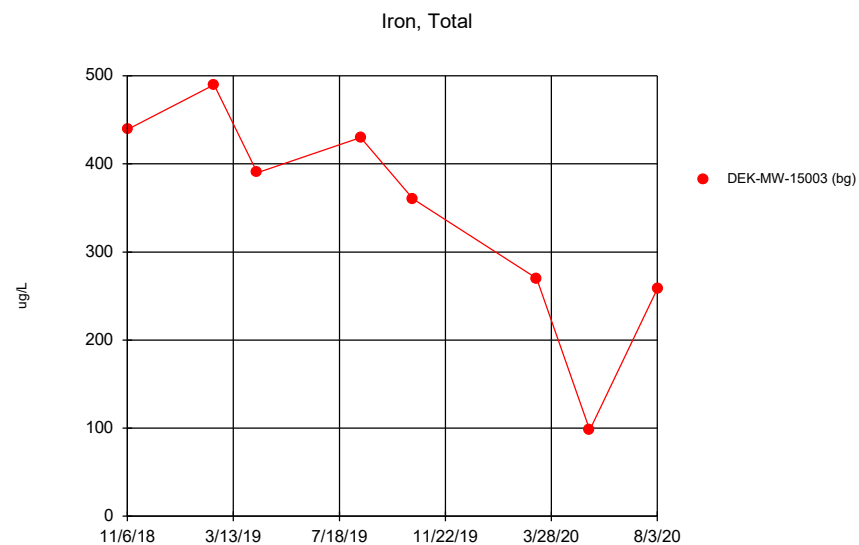
Total Dissolved Solids



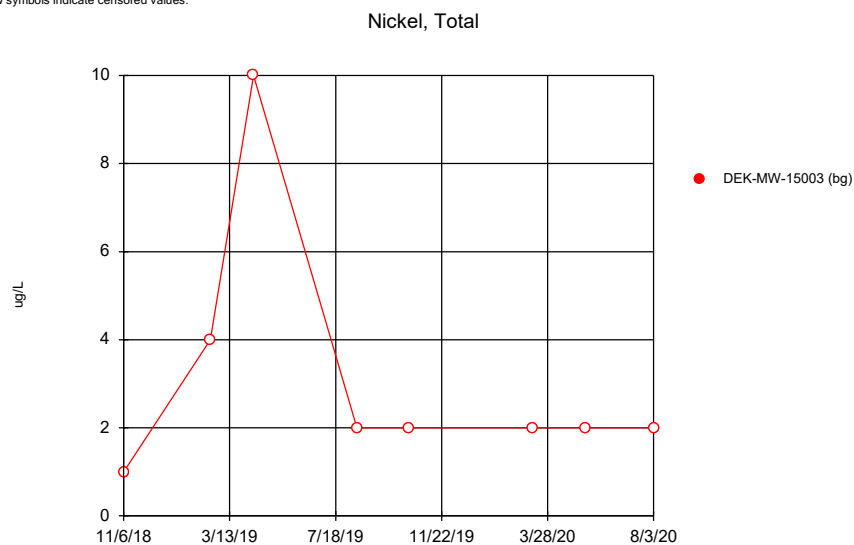
Time Series Analysis Run 5/5/2025 12:16 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



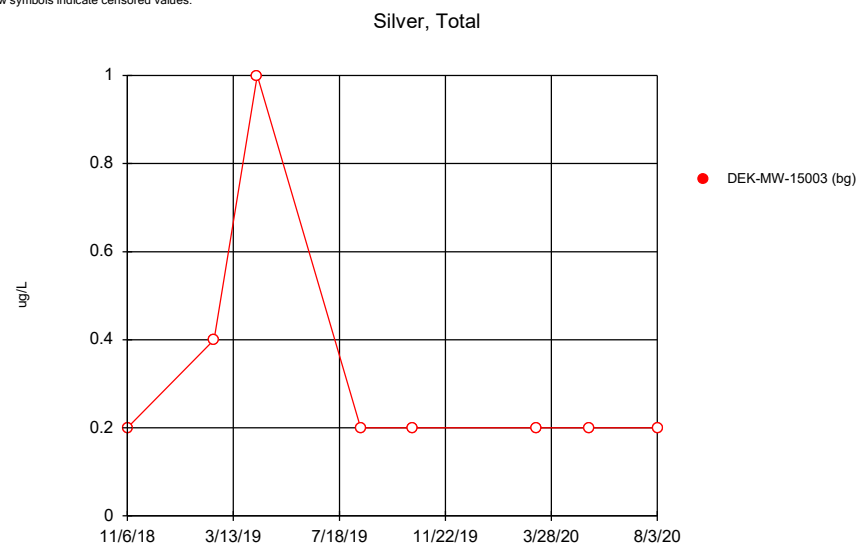
Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

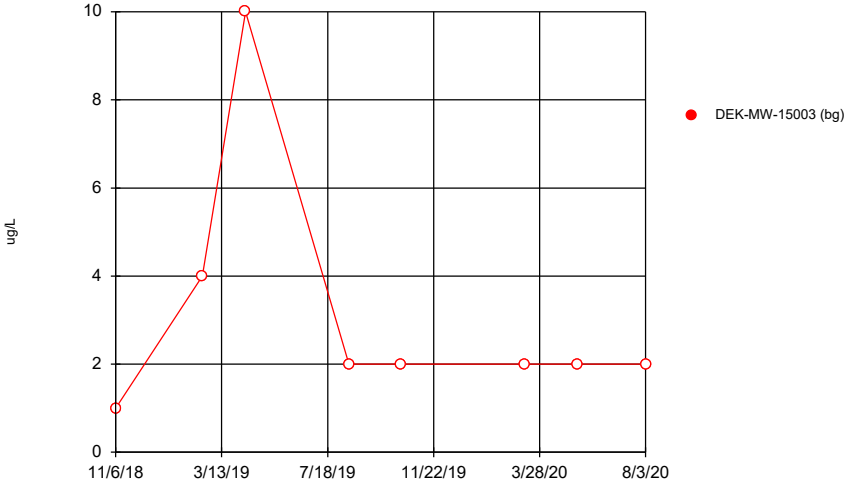


Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4



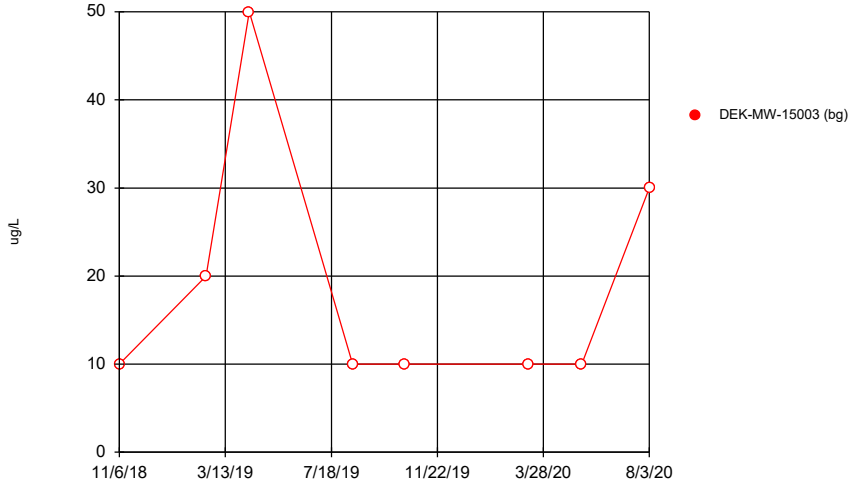
Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Vanadium, Total



Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Zinc, Total



Time Series Analysis Run 5/7/2025 11:10 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Summary Report

Constituent: Boron, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 920
Maximum Value = 1270
Mean Value = 1063
Median Value = 1025
Standard Deviation = 102.5
Coefficient of Variation = 0.09637
Skewness = 0.6896

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	920	1270	1063	1025	102.5	0.09637	0.6896

Summary Report

Constituent: Calcium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 41.7
Maximum Value = 85.4
Mean Value = 61.61
Median Value = 60.45
Standard Deviation = 10.98
Coefficient of Variation = 0.1782
Skewness = 0.4947

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	41.7	85.4	61.61	60.45	10.98	0.1782	0.4947

Summary Report

Constituent: Chloride Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 54.8
Maximum Value = 63.8
Mean Value = 59.19
Median Value = 60
Standard Deviation = 3.178
Coefficient of Variation = 0.05368
Skewness = -0.1834

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	54.8	63.8	59.19	60	3.178	0.05368	-0.1834

Summary Report

Constituent: Fluoride Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 11
NDs = 100%
Wells = 1
Minimum Value = 1000
Maximum Value = 1000
Mean Value = 1000
Median Value = 1000
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	11	100%	1000	1000	1000	1000	0	0	NaN

Summary Report

Constituent: pH, Field Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 11
NDs = 0%
Wells = 1
Minimum Value = 7.7
Maximum Value = 8.37
Mean Value = 7.889
Median Value = 7.8
Standard Deviation = 0.2042
Coefficient of Variation = 0.02589
Skewness = 1.364

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	11	0%	7.7	8.37	7.889	7.8	0.2042	0.02589	1.364

Summary Report

Constituent: Sulfate Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 39.1
Maximum Value = 76.8
Mean Value = 63.16
Median Value = 64.4
Standard Deviation = 11.72
Coefficient of Variation = 0.1856
Skewness = -0.6845

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	39.1	76.8	63.16	64.4	11.72	0.1856	-0.6845

Summary Report

Constituent: Total Dissolved Solids Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 354
Maximum Value = 506
Mean Value = 419.6
Median Value = 423
Standard Deviation = 41.21
Coefficient of Variation = 0.09822
Skewness = 0.4085

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	354	506	419.6	423	41.21	0.09822	0.4085

Summary Report

Constituent: Antimony, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 1
Maximum Value = 1
Mean Value = 1
Median Value = 1
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	1	1	1	1	0	0	NaN

Summary Report

Constituent: Arsenic, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 372
Maximum Value = 543
Mean Value = 479.7
Median Value = 488
Standard Deviation = 52.93
Coefficient of Variation = 0.1103
Skewness = -0.6865

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	372	543	479.7	488	52.93	0.1103	-0.6865

Summary Report

Constituent: Barium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 61.2
Maximum Value = 96
Mean Value = 71.7
Median Value = 70
Standard Deviation = 9.248
Coefficient of Variation = 0.129
Skewness = 1.912

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	61.2	96	71.7	70	9.248	0.129	1.912

Summary Report

Constituent: Beryllium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 1
Maximum Value = 1
Mean Value = 1
Median Value = 1
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	1	1	1	1	0	0	NaN

Summary Report

Constituent: Cadmium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 0.2
Maximum Value = 0.2
Mean Value = 0.2
Median Value = 0.2
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	0.2	0.2	0.2	0.2	0	0	NaN

Summary Report

Constituent: Chromium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 60%
Wells = 1
Minimum Value = 1
Maximum Value = 2
Mean Value = 1.3
Median Value = 1
Standard Deviation = 0.483
Coefficient of Variation = 0.3716
Skewness = 0.8729

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	60%	1	2	1.3	1	0.483	0.3716	0.8729

Summary Report

Constituent: Cobalt, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 15
Maximum Value = 15
Mean Value = 15
Median Value = 15
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	15	15	15	15	0	0	NaN

Summary Report

Constituent: Lead, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 1
Maximum Value = 1
Mean Value = 1
Median Value = 1
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	1	1	1	1	0	0	NaN

Summary Report

Constituent: Lithium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 0%
Wells = 1
Minimum Value = 22.6
Maximum Value = 39
Mean Value = 30.04
Median Value = 30
Standard Deviation = 5.493
Coefficient of Variation = 0.1829
Skewness = 0.07344

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	0%	22.6	39	30.04	30	5.493	0.1829	0.07344

Summary Report

Constituent: Mercury, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 0.2
Maximum Value = 0.2
Mean Value = 0.2
Median Value = 0.2
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	0.2	0.2	0.2	0.2	0	0	NaN

Summary Report

Constituent: Molybdenum, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 10%
Wells = 1
Minimum Value = 5
Maximum Value = 8
Mean Value = 5.93
Median Value = 5.15
Standard Deviation = 1.267
Coefficient of Variation = 0.2136
Skewness = 0.8467

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	10%	5	8	5.93	5.15	1.267	0.2136	0.8467

Summary Report

Constituent: Radium-226/228 Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 80%
Wells = 1
Minimum Value = 0.34
Maximum Value = 1.63
Mean Value = 0.7457
Median Value = 0.533
Standard Deviation = 0.4524
Coefficient of Variation = 0.6066
Skewness = 0.9712

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	80%	0.34	1.63	0.7457	0.533	0.4524	0.6066	0.9712

Summary Report

Constituent: Selenium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 90%
Wells = 1
Minimum Value = 1
Maximum Value = 5
Mean Value = 1.5
Median Value = 1
Standard Deviation = 1.269
Coefficient of Variation = 0.8462
Skewness = 2.405

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	90%	1	5	1.5	1	1.269	0.8462	2.405

Summary Report

Constituent: Thallium, Total Analysis Run 5/5/2025 12:15 PM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 12/10/2015 and 5/23/2018, a summary of the selected data set:

Observations = 10
NDs = 100%
Wells = 1
Minimum Value = 2
Maximum Value = 2
Mean Value = 2
Median Value = 2
Standard Deviation = 0
Coefficient of Variation = 0
Skewness = NaN

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	10	100%	2	2	2	2	0	0	NaN

Summary Report

Constituent: Iron, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 0%
Wells = 1
Minimum Value = 98
Maximum Value = 490
Mean Value = 341.9
Median Value = 375
Standard Deviation = 127.3
Coefficient of Variation = 0.3724
Skewness = -0.7769

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	0%	98	490	341.9	375	127.3	0.3724	-0.7769

Summary Report

Constituent: Copper, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 87%
Wells = 1
Minimum Value = 1
Maximum Value = 5
Mean Value = 1.988
Median Value = 1
Standard Deviation = 1.586
Coefficient of Variation = 0.798
Skewness = 1.13

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	87%	1	5	1.988	1	1.586	0.798	1.13

Summary Report

Constituent: Nickel, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 100%
Wells = 1
Minimum Value = 1
Maximum Value = 10
Mean Value = 3.125
Median Value = 2
Standard Deviation = 2.9
Coefficient of Variation = 0.928
Skewness = 1.934

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	100%	1	10	3.125	2	2.9	0.928	1.934

Summary Report

Constituent: Silver, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 100%
Wells = 1
Minimum Value = 0.2
Maximum Value = 1
Mean Value = 0.325
Median Value = 0.2
Standard Deviation = 0.2816
Coefficient of Variation = 0.8664
Skewness = 2.027

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	100%	0.2	1	0.325	0.2	0.2816	0.8664	2.027

Summary Report

Constituent: Vanadium, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 100%
Wells = 1
Minimum Value = 1
Maximum Value = 10
Mean Value = 3.125
Median Value = 2
Standard Deviation = 2.9
Coefficient of Variation = 0.928
Skewness = 1.934

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	100%	1	10	3.125	2	2.9	0.928	1.934

Summary Report

Constituent: Zinc, Total Analysis Run 5/7/2025 11:09 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

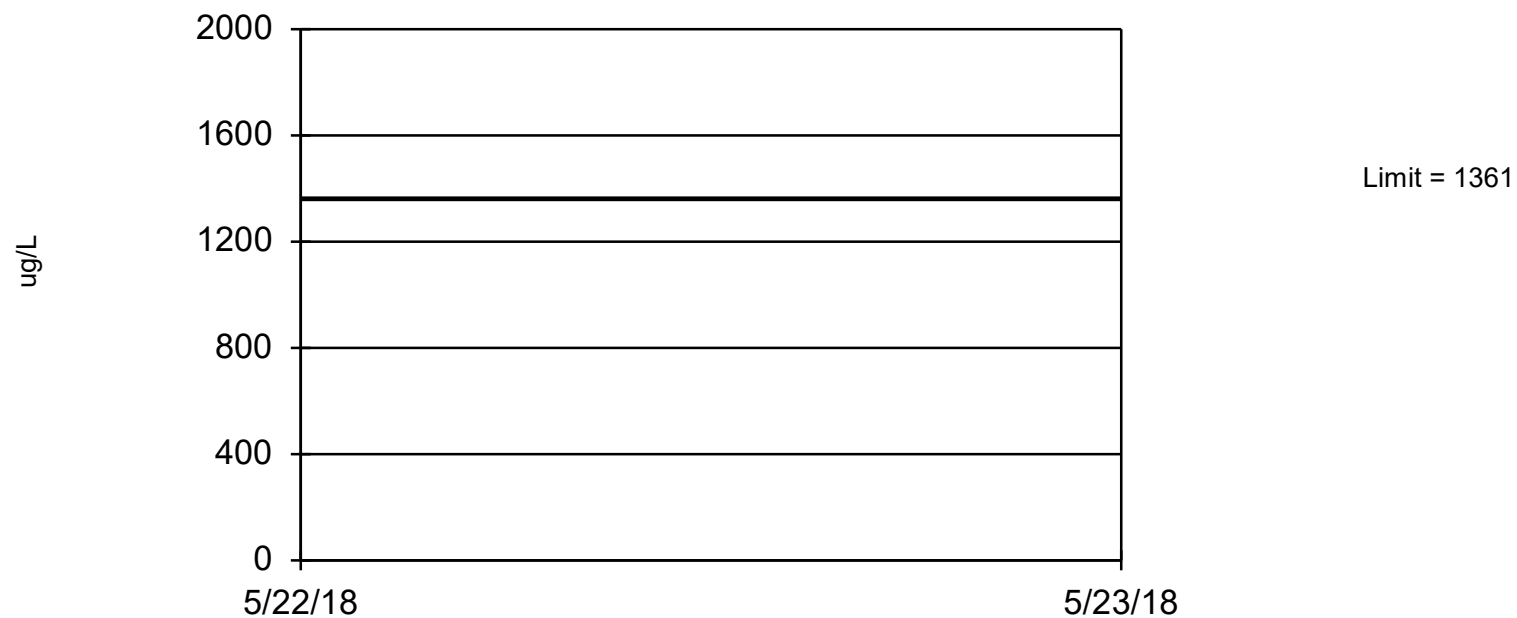
For observations made between 11/6/2018 and 8/3/2020, a summary of the selected data set:

Observations = 8
NDs = 100%
Wells = 1
Minimum Value = 10
Maximum Value = 50
Mean Value = 18.75
Median Value = 10
Standard Deviation = 14.58
Coefficient of Variation = 0.7775
Skewness = 1.41

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
DEK-MW-15003 (bg)	8	100%	10	50	18.75	10	14.58	0.7775	1.41

Boron, Total

Interwell Parametric

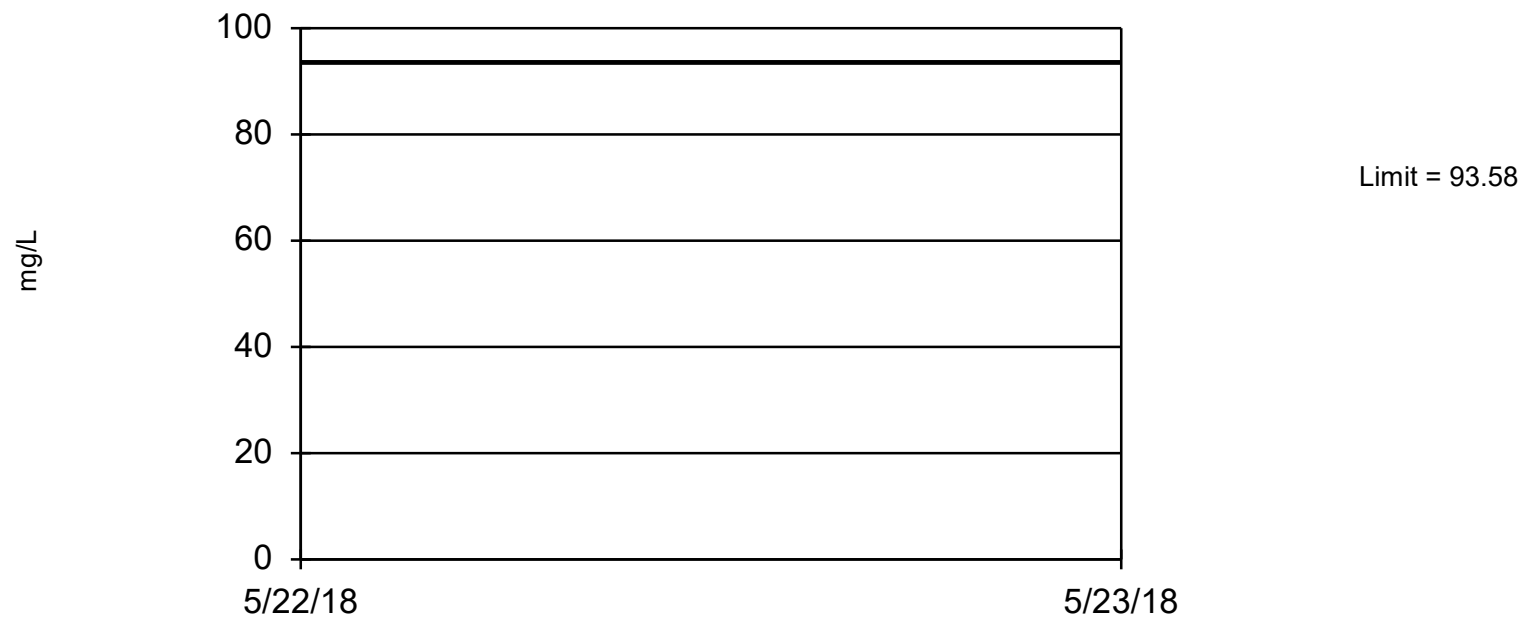


95% coverage. Background Data Summary: Mean=1063, Std. Dev.=102.5, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9366, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Calcium, Total

Interwell Parametric

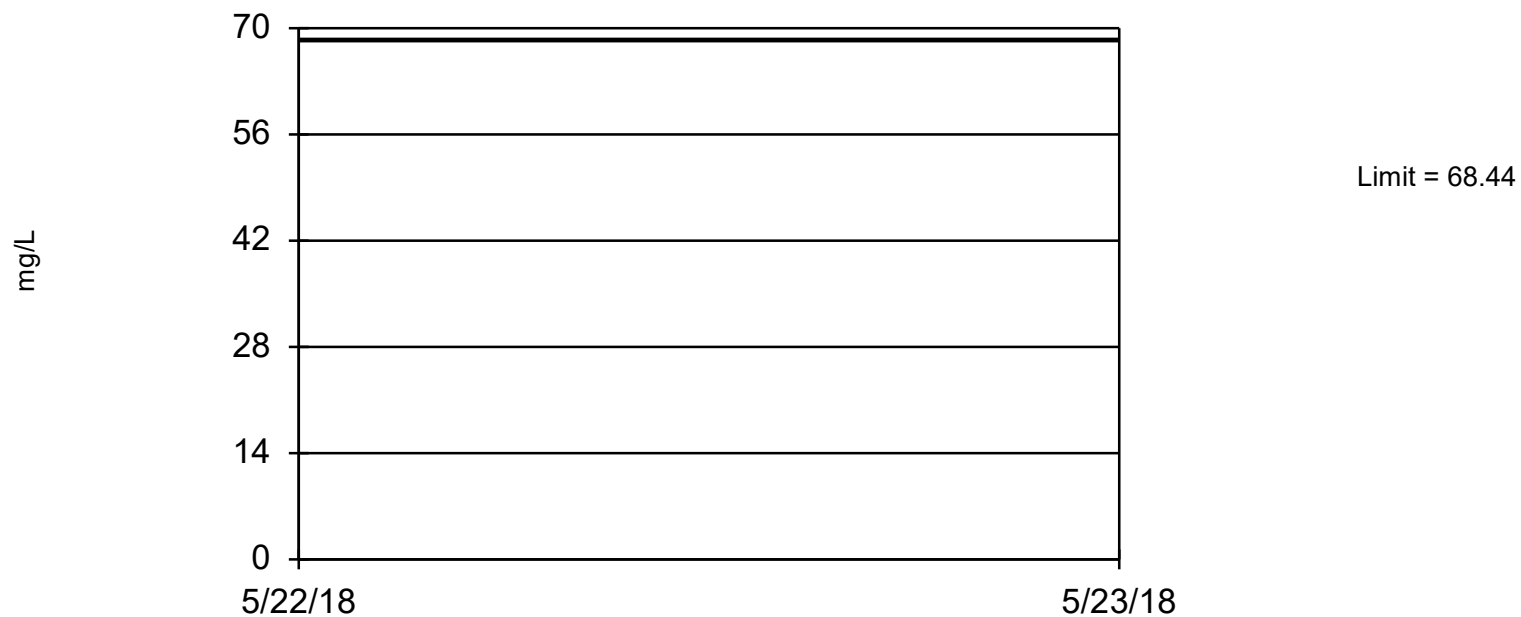


95% coverage. Background Data Summary: Mean=61.61, Std. Dev.=10.98, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9036, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Chloride

Interwell Parametric

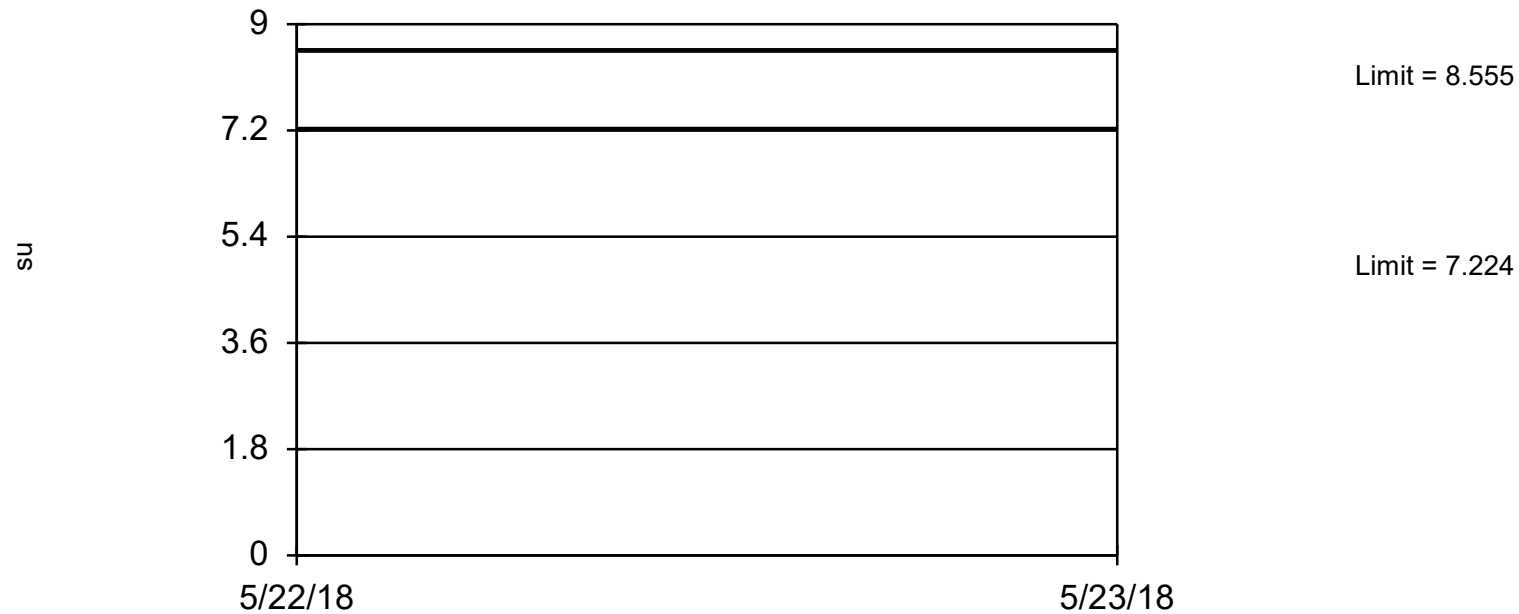


95% coverage. Background Data Summary: Mean=59.19, Std. Dev.=3.178, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9241, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

pH, Field

Interwell Parametric



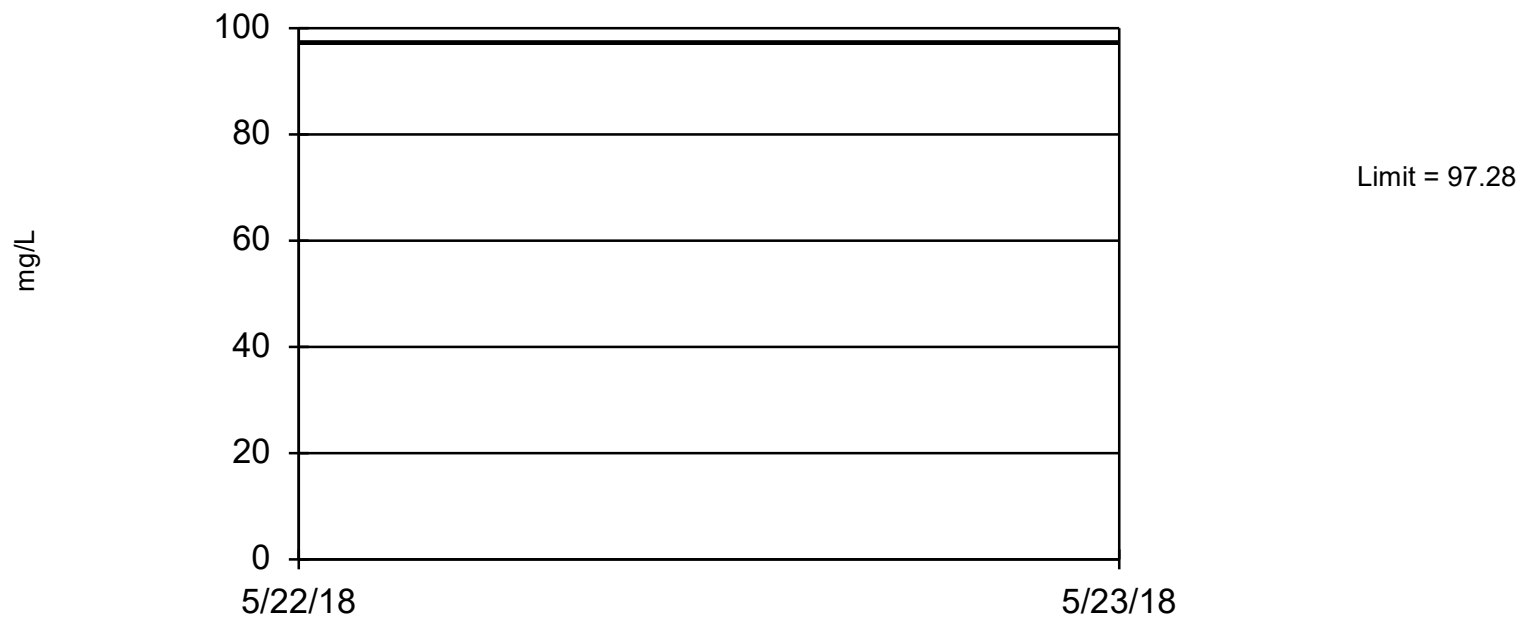
95% coverage. Background Data Summary: Mean=7.889, Std. Dev.=0.2042, n=11. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8248, critical = 0.792. Report alpha = 0.025 per tail.

Tolerance Limit Analysis Run 5/7/2025 11:13 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Sulfate

Interwell Parametric



95% coverage. Background Data Summary: Mean=63.16, Std. Dev.=11.72, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9265, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

Interwell Parametric



95% coverage. Background Data Summary: Mean=419.6, Std. Dev.=41.21, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9133, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Arsenic, Total

Interwell Parametric

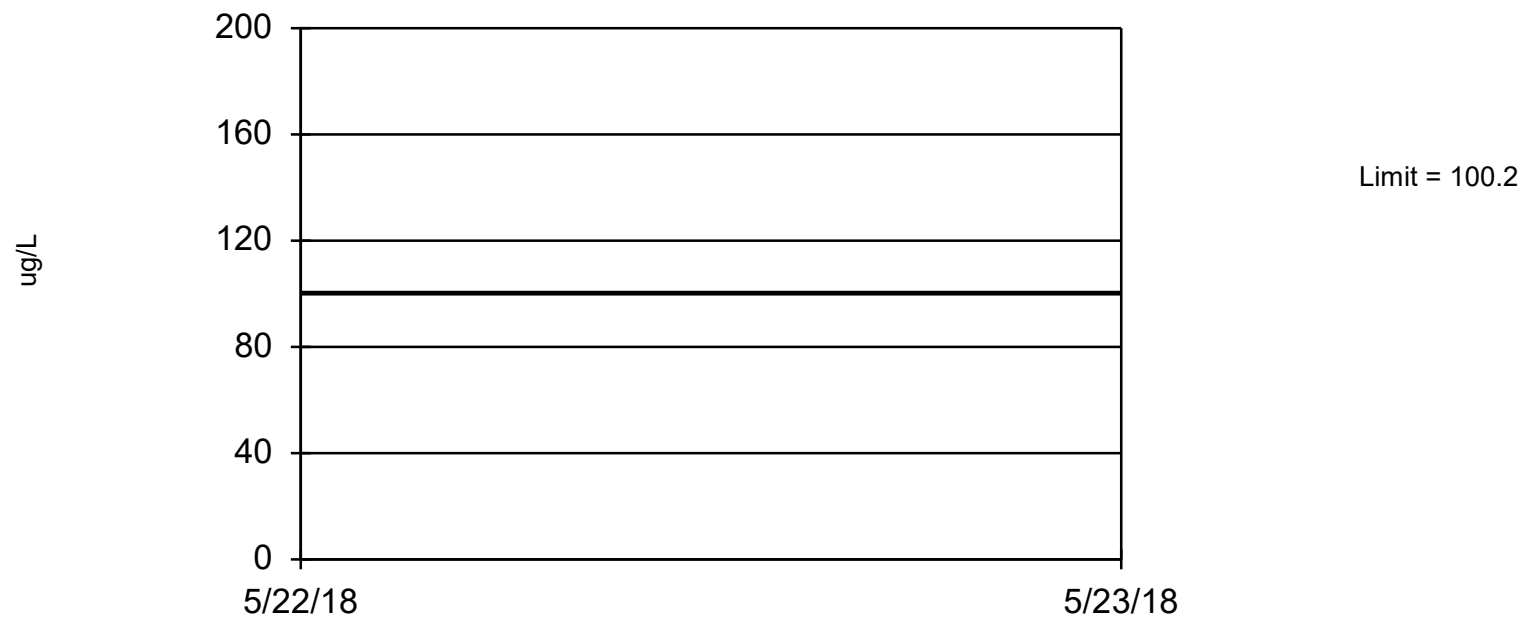


95% coverage. Background Data Summary: Mean=479.7, Std. Dev.=52.93, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9262, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Barium, Total

Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=4.266, Std. Dev.=0.1174, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7929, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Chromium, Total

Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 10 background values. 60% NDs. 63.09% coverage at alpha=0.01; 74.02% coverage at alpha=0.05; 93.16% coverage at alpha=0.5. Report alpha = 0.5987.

Tolerance Limit Analysis Run 5/7/2025 11:15 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Lithium, Total

Interwell Parametric



95% coverage. Background Data Summary: Mean=30.04, Std. Dev.=5.493, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.953, critical = 0.781. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:38 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Molybdenum, Total

Interwell Non-parametric



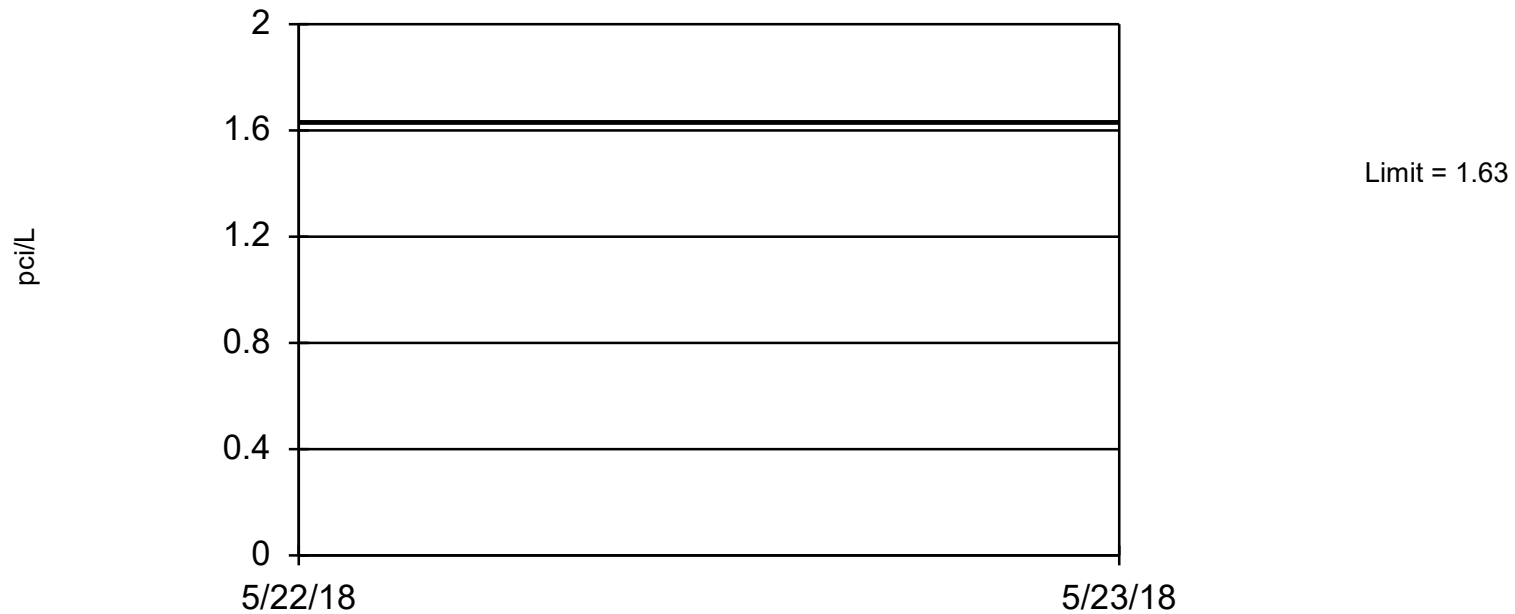
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 10 background values. 10% NDs. 63.09% coverage at alpha=0.01; 74.02% coverage at alpha=0.05; 93.16% coverage at alpha=0.5. Report alpha = 0.5987.

Tolerance Limit Analysis Run 5/7/2025 11:15 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Radium-226/228

Interwell Non-parametric



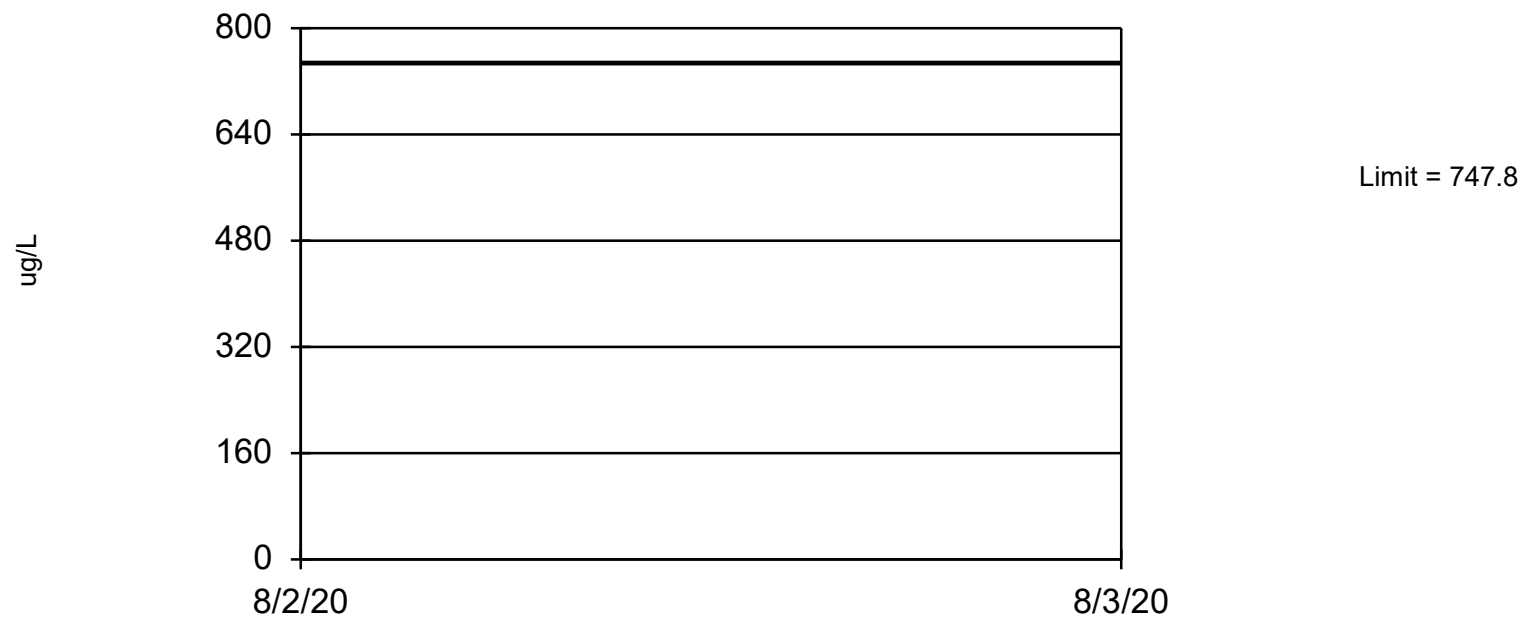
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 10 background values. 80% NDs. 63.09% coverage at $\alpha=0.01$; 74.02% coverage at $\alpha=0.05$; 93.16% coverage at $\alpha=0.5$. Report $\alpha = 0.5987$.

Tolerance Limit Analysis Run 5/7/2025 11:14 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Iron, Total

Interwell Parametric



95% coverage. Background Data Summary: Mean=341.9, Std. Dev.=127.3, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9257, critical = 0.749. Report alpha = 0.05.

Tolerance Limit Analysis Run 5/7/2025 11:16 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_24Q4

Attachment 2

Groundwater Contour Maps

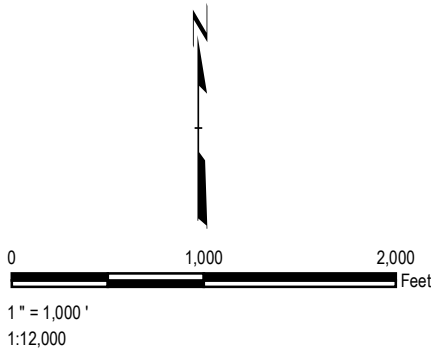


LEGEND

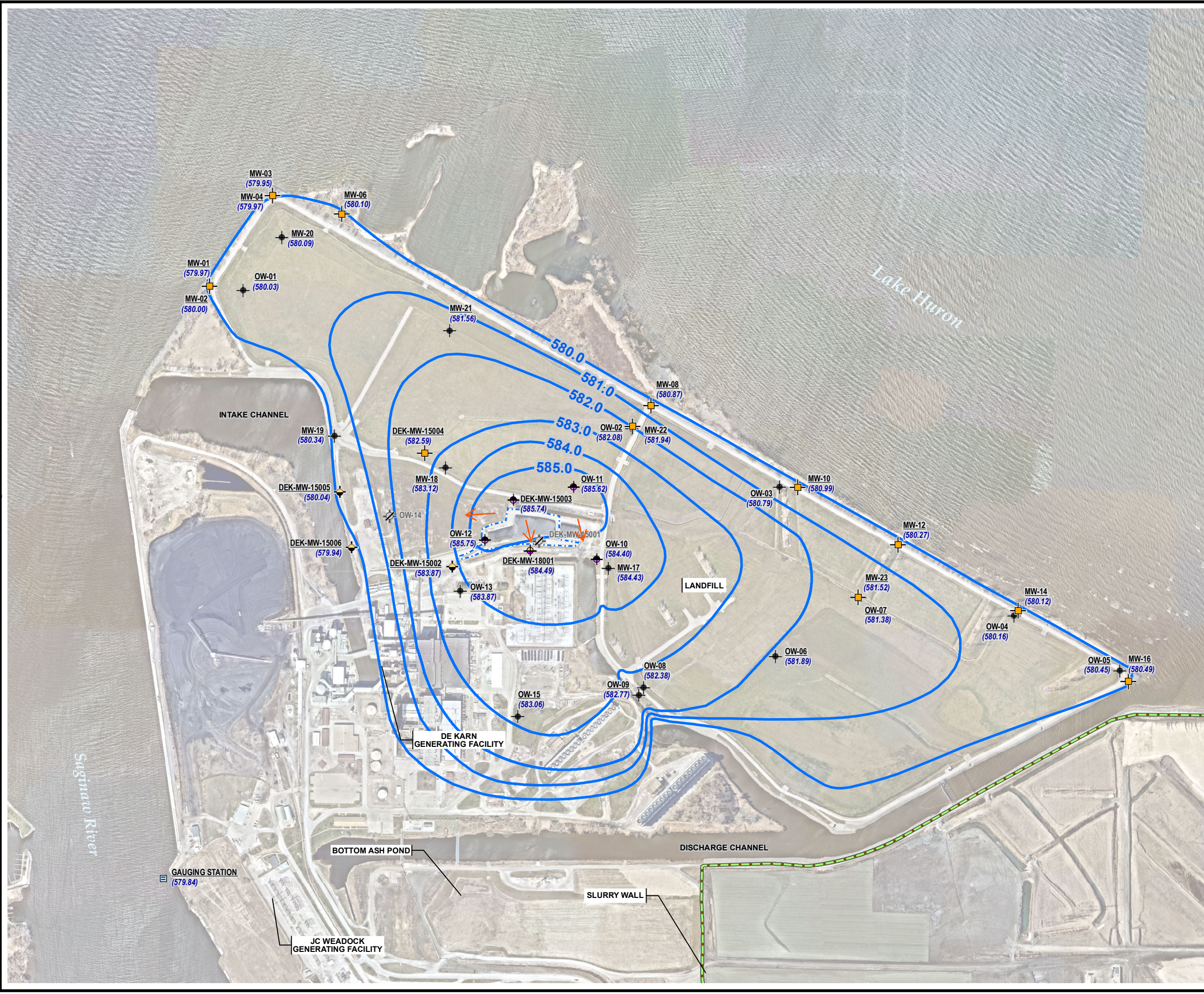
- BACKGROUND MONITORING WELL
- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
- DEK BOTTOM ASH POND MONITORING
- DECOMMISSIONED MONITORING
- JCW BOTTOM ASH POND MONITORING
- JCW LANDFILL MONITORING
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- SLURRY WALL (APPROXIMATE)
- GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
- (580.85) GROUNDWATER ELEVATION (FEET, MSL)
- GROUNDWATER FLOW DIRECTION (APPROXIMATE) PRE-KARN LINED IMPOUNDMENT OPERATION

NOTES

- BASE MAP IMAGERY FROM USDA - NATIONAL AGRICULTURE IMAGERY PROGRAM, 7/10/2016.
- WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
- NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
- MONITORING WELL DEK- MW-18001 INSTALLED IN MAY 2018. SURVEY DATA NOT YET AVAILABLE.



PROJECT: CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN			
TITLE: SHALLOW GROUNDWATER CONTOUR MAP APRIL 2018			
DRAWN BY: S. MAJOR	PROJ NO.: 290805-001	FIGURE 1	
CHECKED BY: D. LITZ			
APPROVED BY: G. CROCKFORD			
DATE: JANUARY 2019			
TRC		1540 Eisenhower Place Ann Arbor, MI 48108-3284 Phone: 734.971.7080 www.trcsolutions.com	
FILE NO.: 290805-001-017.mxd			



LEGEND

- DEK BOTTOM ASH POND & LINED IMPOUNDMENT MONITORING WELL
- DEK BOTTOM ASH POND MONITORING
- DEK LINED IMPOUNDMENT MONITORING WELL
- DECOMMISSIONED WELL
- JCW BEDROCK MONITORING WELL
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- SURFACE WATER GAUGING STATION
- NATURE AND EXTENT WELL
- SLURRY WALL (APPROXIMATE)
- LINED IMPOUNDMENT (COVENANT BOUNDARY)
- GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER ELEVATION (FEET)
- NOT USED
- GROUNDWATER FLOW DIRECTION (APPROXIMATE) KARN LINED IMPOUNDMENT OPERATION

NOTES

- BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
- WELL LOCATIONS SURVEYED BY ROWE PROFESSIONAL SERVICES COMPANY ON 11/4/2015.
- NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
- GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.

06001200Feet

1" = 600'
1:7,200

PROJECT:

CONSUMERS ENERGY COMPANY
DE KARN POWER PLANT
ESSEXVILLE, MICHIGAN

TITLE:

SHALLOW GROUNDWATER CONTOUR MAP
OCTOBER 2022

DRAWN BY: A. ADAIR

CHECKED BY: J. KRENZ

APPROVED BY: D. LITZ

DATE: JANUARY 2023

PROJ NO.: 464095.0001

FIGURE 2

TRC

1540 Eisenhower Place
Ann Arbor, MI 48108-3284
Phone: 734.971.7080
www.trccompanies.com

FILE NO.: 464095-103-003.mxd

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0
-- Saved By: AADAIR on 7/24/2025 16:23:51 PM. File Path: T:\H-PROJECTS\Consumers_Energy\464095_DEKARN.aprx. Layout Name: KLI-Closure-2025June-C



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
- 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
- GROUNDWATER FLOW DIRECTION (APPROXIMATE) ATTAINMENT MONITORING

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



1:7,200

1" = 600'

0 600 1,200 FEET

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: K. LOWERY		FIGURE 3	
APPROVED BY: D. LITZ			
DATE: JUNE 2025			
		1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:		464095_DEKARN.aprx	

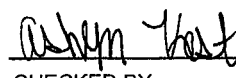
Attachment 3

Attainment Monitoring Data



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance Supplemental well Sampling (DL)
PROJECT NUMBER:	553814.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	9-30-24 TO 10-4-24
PURPOSE OF FIELDWORK:	Fourth Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, E. Rinehart

 10-4-24
SIGNED DATE

 10/8/24
CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Kam BAP/LI: 2024 GW Comp	DATE: 9/30/24	TIME ARRIVED: 810
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK AW KK ER	TIME LEFT: 1320

WEATHER		
TEMPERATURE: 64 °F	WIND: 6 MPH	VISIBILITY: Fair
WORK / SAMPLING PERFORMED		
Dek Bottom Ash pond supplemental well sampling DEK-MW- (15004, 22001, 22002, 22003, 22004, 22005, 22006)		

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	9/30/24 DATE	 CHECKED BY	10/13/24 DATE
------------	-----------------	----------------	------------------



GENERAL NOTES

PROJECT NAME: CEC Kam BAP/LI: 2024 GW Comp	DATE: 9-30-24	TIME ARRIVED: 0800
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ AW	TIME LEFT: 1400

WEATHER		
TEMPERATURE: <u>75</u> °F	WIND: <u>5-10</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
Download transducer Data		
Sample Supplemental BAP wells DEK-MW-15004, 22001, 22004 22002		
Shipped Samples		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
Computer issues, unable to Download all transducer Data	Figure out Download w/ TROLLcom to app and do another day

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

	10-16-24		10/17/24
SIGNED	DATE	CHECKED BY	DATE



GENERAL NOTES

PROJECT NAME: CEC Kam BAP/LI: 2024 GW Comp	DATE: <u>10-4-24</u>	TIME ARRIVED: <u>8:00</u>
PROJECT NUMBER: 553814.0001.0000	AUTHOR: JJ JK KK <u>ETC</u>	TIME LEFT: <u>945</u>

WEATHER		
TEMPERATURE: <u>60</u> °F	WIND: <u>7</u> MPH	VISIBILITY: <u>Cloudy</u>
WORK / SAMPLING PERFORMED		
<u>Collect con data SW-01, SW-02</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 _____ DATE 10-4-24

CHECKED BY _____ DATE 10/8/24



EQUIPMENT SUMMARY

PROJECT NAME: CEC Karn BAP/11-2024 GW
 PROJECT NO.: 553814.0004.0000

SAMPLER NAME: J. Jasso, J. Krenz, E. Rinehart

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

☒ 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 [Signature] DATE 9/30/24

CHECKED BY [Signature] DATE 10/8/24



EQUIPMENT SUMMARY

PROJECT NAME: <u>CEC Kern BAP/4: 2024 GW</u>	SAMPLER NAME: J. Jasso, <u>J. Krenz</u> , E. Rinehart, A. Kast
PROJECT NO.: <u>553814.0001</u>	

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)

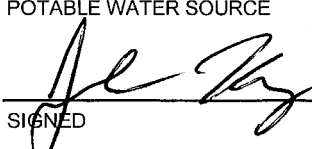
GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	☒ 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
	
10-24-21	
SIGNED	CHECKED BY
DATE	DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Compliance	MODEL: <i>Asmetrol</i>	SAMPLER: JK, JJ, <i>ER</i>
PROJECT NO.: 553814.0001.0000	SERIAL #: <i>1asit</i>	DATE: <i>9/30/24 - 10/2/24</i>

PH CALIBRATION CHECK

pH 7		pH 10		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):	(LOT #):	(EXP. DATE):		
<i>4B00370</i>	<i>Apr/26</i>	<i>3610691</i>	<i>Sep/25</i>		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
<i>9-30 7.02 / 7.02</i>		<i>4.0 / 4.0</i>		☒ WITHIN RANGE	<i>9:05</i>
<i>10-1 7.02 / 7.02</i>		<i>4.0 / 4.0</i>		☒ WITHIN RANGE	<i>8:45</i>
<i>10-2 7.62 / 7.02</i>		<i>4.0 / 4.0</i>		☒ WITHIN RANGE	<i>15:10 EX-100</i>
<i>10-3 7.06 / 7.06</i>		<i>4.0 / 4.0</i>		☐ WITHIN RANGE	<i>7:50</i>

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
(LOT #):	(EXP. DATE):			
<i>46E0784</i>	<i>May/25</i>			
POST-CAL. READING / STANDARD				
<i>9-30 1260 / 1260</i>		<i>19.8</i>	☒ WITHIN RANGE	<i>9:15</i>
<i>10-1 1260 / 1260</i>		<i>19.3</i>	☒ WITHIN RANGE	<i>8:55</i>
<i>10-2 1070 / 1070</i>		<i>11.85</i>	☐ WITHIN RANGE	<i>8:02</i>
<i>10-3 1070 / 1070</i>		<i>11.85</i>	☒ WITHIN RANGE	<i>8:02</i>

ORP CALIBRATION CHECK

CAL. READING		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
(LOT #):	(EXP. DATE):			
<i>22K100180</i>	<i>2027/10/11</i>			
POST-CAL. READING / STANDARD				
<i>9-30 229 / 229</i>		<i>20.39</i>	☒ WITHIN RANGE	<i>9:08</i>
<i>10-1 231 / 231</i>		<i>19.93</i>	☒ WITHIN RANGE	<i>8:50</i>
<i>10-2 230 / 230</i>		<i>20.03</i>	☒ WITHIN RANGE	<i>3:17 EX-100</i>
<i>10-3 240 / 240</i>		<i>12.42</i>	☐ WITHIN RANGE	<i>7:55</i>

D.O. CALIBRATION CHECK

CAL. READING		TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
(LOT #):	(EXP. DATE):			
<i>9-30 9.08 / 9.08</i>		<i>18.83</i>	☐ WITHIN RANGE	<i>9:20</i>
<i>10-1 9.03 / 9.03</i>		<i>18.95</i>	☒ WITHIN RANGE	<i>9:00</i>
<i>10-2 10.5 / 10.5</i>		<i>11.88</i>	☐ WITHIN RANGE	<i>8:11</i>
<i>10-3 10.5 / 10.5</i>		<i>11.88</i>	☒ WITHIN RANGE	<i>8:11</i>

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):		
<i>A2067</i>	<i>Apr/25</i>		
POST-CAL. READING / STANDARD			
<i>9-30 100 / 100</i>		☒ WITHIN RANGE	<i>9:16</i>
<i>10-1 100 / 100</i>		☒ WITHIN RANGE	<i>8:57</i>
<i>10-2 100 / 100</i>		☐ WITHIN RANGE	<i>8:05</i>
<i>10-3 100 / 100</i>		☐ WITHIN RANGE	<i>8:05</i>

COMMENTS

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

NOTES

<i>10-1 LaMOTTE 2020T 10/10, 0/0 8:15</i>
<i>10-3 10/00, 0/0 8:00</i>

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

CHECKED BY

DATE



WATER QUALITY METER CALIBRATION LOG

BAP/K2102

PROJECT NAME:	CEC Kam LF 2024 GW Compliance	MODEL:	YSI PRO DSS	SAMPLER:	(JK) JJ, ER
PROJECT NO.:	553814.0000	SERIAL #:	Ann Arbor	DATE:	9-30-24

PH CALIBRATION CHECK

PH 7 (LOT #): 46D0770 (EXP. DATE): APR/26	PH 4 / 10 (LOT #): 46D1317 (EXP. DATE): APR/26	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
7.02 / 7.02	4.00 / 4.00	☒ WITHIN RANGE	1029
/	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): 4GE0784 (EXP. DATE): May/25	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1309 / 1309	21.4	☒ WITHIN RANGE	1023
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): 15072 (EXP. DATE): 4-30-2025	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
227.5 / 227.5	21.9	☒ WITHIN RANGE	1032
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.89 / 8.89	20.4	☒ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): 22350212C (EXP. DATE): 11/24	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
9.48 / 10.00	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	

COMMENTS

☐ AUTOCAL SOLUTION	☒ STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
☐ pH	pH: +/- 0.2 S.U.
☐ COND	COND: +/- 1% OF CAL. STANDARD
☐ ORP	ORP: +/- 25 mV
☐ D.O.	D.O.: VARIES
☐ TURB	TURB: +/- 5% OF CAL. STANDARD
☐	
☐	

⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

CHECKED BY

DATE



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER	DATE: 9/30/24

SAMPLE ID: DEK-MW-22005	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 9:27	DATE: 9/30/24	SAMPLE	TIME: 1011	DATE: 9/30/24
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.79	SU	CONDUCTIVITY: 885.65	umhos/cm	
	ORP: -148.8	mV	DO: 0.74	mg/L	
DEPTH TO WATER: 9.58	T/ PVC	TURBIDITY: ☒ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: N/A	T/ PVC				
WELL VOLUME: NA	☐ LITERS ☐ GALLONS	TEMPERATURE: 16.37	°C	FERROUS Fe	mg/L
VOLUME REMOVED: 8.4	☒ LITERS ☐ GALLONS	COLOR: Clear		ODOR: slight	
COLOR: Clear	ODOR: No	FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY: ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER		QC SAMPLE: ☐ MS/MSD ☒ DUP- 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)
9:24	200	7.62	849.67	-13.3	0.97	0.0	17.07	9.58	INITIAL
9:32	200	7.69	867.54	-57.4	2.02	0.77	16.50	9.64	0.600
9:35	200	7.69	866.77	-66.7	0.82	0.0	16.42	9.72	1.2
9:38	200	7.69	862.37	-75.6	0.85	0.0	16.45	9.74	1.4
9:41		7.70	848.9	-83.4	0.81	0.0	16.41	9.74	2.4
9:44		7.70	856.99	-92.4	0.78	0.0	16.41	9.74	3.0
9:47		7.70	873.14	-99.6	0.79	0.0	16.41	9.74	3.6
9:50		7.71	859.9	-107.1	0.76	0.0	16.39	—	4.2
9:53		7.73	859.07	-114.3	0.74	0.0	16.37	—	4.8
9:56		7.75	879.65	-120.4	0.74	0.0	16.39	—	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			
12	250 mL	PLASTIC	A	☐	Y ☒	N	12	125 mL	PLASTIC	D	☐	Y ☐	N
12	125 mL	PLASTIC	A	☐	Y ☒	N	24	40 mL	VOA	E	☐	Y ☒	N
	60 mL	VOA	A	☐	Y ☐	N		1 L	PLASTIC	B	☐	Y ☐	N
12	125 mL	PLASTIC	B	☐	Y ☒	N					☐	Y ☐	N
12	125 mL	PLASTIC	C	☐	Y ☐	N					☐	Y ☐	N

SHIPPING METHOD: Failer	DATE SHIPPED: 9/30/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: [Signature]	DATE SIGNED: 10/30/2024



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER	DATE: 9/30/24	BY: <i>W. H. T.</i>	DATE: 10/15/24

SAMPLE ID: DEK-MW-22005

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)
9:59	200	7.76	883.53	-127.2	0.73	0.0	16.34	9.80	6.0
1002	↓	7.78	879.02	-133.5	0.78	0.0	16.43	9.78	6.6
1005		7.77	890.37	-139.5	0.78	0.0	16.47	9.76	7.2
1008		7.78	873.58	-145.7	0.72	0.0	16.27	9.74	7.8
1001		7.77	885.65	-148.8	0.74	0.0	16.37	—	8.4
1010	1010								

SIGNATURE:

DATE SIGNED:



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER DATE: 9/30	BY: <i>Adam West</i> DATE: 10/6/24

SAMPLE ID: <i>DEL-MW-22006</i>	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: <i>1044</i>	DATE: <i>9/30/24</i>	SAMPLE	TIME: <i>1135</i>	DATE: <i>9/30</i>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <i>7.36</i> SU	CONDUCTIVITY: <i>1563.2</i> umhos/cm	ORP: <i>-157.3</i> mV	DO: <i>0.74</i> mg/L	
DEPTH TO WATER: <i>10.52</i> T/ PVC	TURBIDITY: <i>8.76</i> NTU	☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <i>14</i> T/ PVC	TEMPERATURE: <i>18.3</i> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	COLOR: <i>6.2</i>	ODOR: <i>Slight</i>			
VOLUME REMOVED: <i>10.2</i> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO				
COLOR: <i>Brown</i> ODOR: <i>Slight</i>	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
TURBIDITY ☐ NONE ☐ SLIGHT ☒ MODERATE ☐ VERY	QC SAMPLE: ☐ MS/MSD ☐ DUP-				
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ 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)
1044	800	7.37	1581.0	-83.2	0.82	154.9	18.37	10.52	INITIAL
1047	200	7.37	1561.6	-105.6	0.79	81.73	18.3	11.40	0.6
1050		7.37	1546.5	-119.6	0.79	63.48	18.31	11.00	1.2
1053		7.36	1550.2	-128.8	0.79	54.03	18.36	10.97	1.8
1056		7.36	1549.6	-136.0	0.79	52.58	18.34	11.03	2.4
1059		7.36	1551.8	-141.4	0.77	55.38	18.34	11.06	3.0
1102		7.36	1560.1	-129.7	0.85	32.7	18.26	11.09	3.6
1105		7.36	1562.3	-141.3	0.77	28.1	18.3	11.07	4.2
1108		7.36	1564.7	-147.7	0.76	23.65	18.27	11.05	4.8
1111		7.36	1564.2	-151.3	0.76	12.23	18.25	11.05	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	☐	Y ☒ N	1	125 mL	PLASTIC	D	☐	Y ☒ N
1	125 mL	PLASTIC	A	☐	Y ☒ N	2	40 mL	VOA	E	☐	Y ☒ N
	60 mL	VOA	A	☐	Y ☐ N		1 L	PLASTIC	B	☐	Y ☐ N
1	125 mL	PLASTIC	B	☐	Y ☒ N					☐	Y ☐ N
1	125 mL	PLASTIC	C	☐	Y ☒ N					☐	Y ☐ N

SHIPPING METHOD: <i>Fiber</i>	DATE SHIPPED: <i>9-30-24</i>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: <i>9/30/24</i>



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn BAP/LI: 2024 GW Co	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER DATE: 9/30/24	BY: William Hand DATE: 10/6/24

SAMPLE ID: DEK - MW - 22006

[illegible]

SIGNATURE:

DATE SIGNED:



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER DATE: 9/30	BY: <i>John Hart</i> DATE: 10/8/24

SAMPLE ID: <i>DEK MW-22003</i>	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: <i>1156</i>	DATE: <i>9/30/24</i>	SAMPLE	TIME: <i>12:32</i>	DATE: <i>9/30/24</i>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <i>7.47</i> SU	CONDUCTIVITY: <i>1194.6</i> umhos/cm	ORP: <i>-147.7</i> mV	DO: <i>0.72</i> mg/L	
DEPTH TO WATER: <i>12.69</i> T/ PVC	TURBIDITY: <i>2.09</i> NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <i>NH</i> T/ PVC	TEMPERATURE: <i>15.81</i> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <i>NA</i> ☐ LITERS ☐ GALLONS	COLOR: <i>Clear</i>	ODOR: <i>Slight</i>			
VOLUME REMOVED: <i>7.2</i> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO				
COLOR: <i>Clear</i> ODOR: <i>No</i>	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
TURBIDITY: ☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY	QC SAMPLE: ☐ MS/MSD ☐ DUP.				
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ 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)
1156	200	7.44	1357.4	-79.7	1.49	10.0	16.56	12.39	INITIAL
1159		7.45	1653.9	-115.2	0.8	1.19	15.73	12.85	0.6
1202		7.46	1342.0	-127.8	0.76	4.16	15.7	12.86	1.2
1205		7.47	1577.5	-135.1	0.75	3.62	15.67	12.85	1.8
1208		7.48	1311.7	-140.0	0.74	8.98	15.60	12.85	2.4
1211		7.49	1228.7	-143.7	0.73	7.25	15.59	—	3.0
1214		7.49	1515.2	-146.2	0.73	11.51	15.54	—	3.6
1217		7.48	1524.1	-148.7	0.73	15.13	15.59	—	4.2
1220		7.47	1532.3	-150.9	0.72	17.76	15.58	—	4.8
1223		7.51	1367.4	-128.3	0.78	0.0	15.72	12.85	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	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N		
1	125 mL	PLASTIC	A	☐ Y ☒ N	2	40 mL	VOA	E	☐ Y ☒ N		
1	60 mL	VOA	A	☐ Y ☐ N		1 L	PLASTIC	B	☐ Y ☐ N		
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N		
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N		

SHIPPING METHOD: <i>Fedex</i>	DATE SHIPPED: <i>9/30/24</i>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>John Hart</i>	DATE SIGNED: <i>9/30/24</i>



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000	BY: JK, JJ, ER	DATE: 9/30/24	BY: Ashwin Hart	DATE: 10/6/24

SAMPLE ID: DEK-142-22003

[illegible]

SIGNATURE:

DATE SIGNED:



WATER SAMPLE LOG

PROJECT NAME: CEC ^{Kern BAP/LI} ~~Kern~~ LF: 2024 GW Comp PREPARED CHECKED

PROJECT NUMBER: 553814-0000-0000 BY: (K) JJ, ER DATE: 9-30-24 BY: DL DATE: 10-15-24

SAMPLE ID: DEK-MW-22001 WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER

WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER

SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER

PURGING	TIME: 1044	DATE: 9-30-24	SAMPLE	TIME: 1107	DATE: 9-30-24
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.21 SU		CONDUCTIVITY: 1089 umhos/cm		
DEPTH TO WATER: 10.78 T/ PVC		ORP: -141.3 mV		DO: 0.09 mg/L	
DEPTH TO BOTTOM: 24.22 T/ PVC		TURBIDITY: 4.83 NTU		☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY	
WELL VOLUME: NA ☐ LITERS ☐ GALLONS		TEMPERATURE: 15.9 °C		FERROUS Fe mg/L	
VOLUME REMOVED: 6 ☒ LITERS ☐ GALLONS		COLOR: clear		ODOR: none	
COLOR: orange		ODOR: Not Permitted		FILTRATE (0.45 um) ☐ YES ☒ NO	
TURBIDITY: ☐ NONE ☐ SLIGHT ☐ MODERATE ☒ VERY		FILTRATE COLOR: (DL) (NR)		FILTRATE ODOR:	
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER		QC SAMPLE: ☐ MS/MSD ☐ 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)
1047	300	7.11	1183	-103.3	0.82	9.54	15.9	10.89	INITIAL
1052	300	7.18	1105	-170.2	0.67	8.13	15.9	10.89	1.5
1057	300	7.20	1090	-178.7	0.21	6.59	15.9	10.89	3.0
1102	300	7.21	1074	-141.3	0.13	5.25	15.8	10.89	4.5
1107	300	7.21	1089	-141.3	0.09	4.83	15.9	10.89	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	
1	250 mL	PLASTIC	A	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N	
1	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☐ N	
2	60 mL	VOA	A	☐ Y ☒ N					☐ Y ☐ N	
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N	
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N	

SHIPPING METHOD: Drop off DL DATE SHIPPED: 10-4-24 (9-30-24) AIRBILL NUMBER: _____

COC NUMBER: FE064 SIGNATURE: *fl Key* DATE SIGNED: 10-14-24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED		CHECKED	
PROJECT NUMBER: 553814.0000.0000	BY:  JJ, ER	DATE: 9-30-24	BY: DL	DATE: 10-15-24

SAMPLE ID: DEK-MW-22002		WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER	
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER			
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER			

PURGING		TIME: 1121	DATE: 9-30-24	SAMPLE		TIME: 1138	DATE: 9-30-24
PURGE METHOD:		☒ PUMP PERISTALTIC PUMP ☐ BAILER		PH: 7.37 SU		CONDUCTIVITY: 1114 umhos/cm	
				ORP: -142.0 mV		DO: 0.21 mg/L	
DEPTH TO WATER: 12.45 T/ PVC				TURBIDITY: 6.59 NTU			
DEPTH TO BOTTOM 26.83 T/ PVC				☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS				TEMPERATURE: 15.7 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED 3 ☒ LITERS ☐ GALLONS				COLOR: Clear		ODOR: none	
COLOR: Clear		ODOR: none		FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY				FILTRATE COLOR: _____		FILTRATE ODOR: _____	
☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				QC SAMPLE: ☐ MS/MSD ☐ DUP- _____			
DISPOSAL METHOD ☒ GROUND ☐ DRUM ☐ OTHER				COMMENTS:			

[illegible]

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		<u>PRESERVATIVE CODES</u> 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	☐	Y	☒	N	1	125 mL	PLASTIC	D	☐	Y	☒	N
	125 mL	PLASTIC	A	☐	Y	☒	N		40 mL	VOA	E	☐	Y	☐	N
2	60 mL	VOA	A	☐	Y	☒	N					☐	Y	☐	N
1	125 mL	PLASTIC	B	☐	Y	☒	N					☐	Y	☐	N
1	125 mL	PLASTIC	C	☐	Y	☒	N					☐	Y	☐	N

SHIPPING METHOD: <u>Drop off DL</u>	DATE SHIPPED: <u>10-4-24 9-30-24</u>	IRBILL NUMBER: <u> </u>
COC NUMBER: <u> </u>	SIGNATURE: <u> </u>	DATE SIGNED: <u>10-14-24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: <u>JK JJ, ER</u> DATE: <u>9-30-24</u>	BY: <u>DL</u> DATE: <u>10-15-24</u>

SAMPLE ID: <u>DE K-MW - 22004</u>	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>1200</u>	DATE: <u>9-30-24</u>	SAMPLE	TIME: <u>1216</u>	DATE: <u>9-30-24</u>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <u>7.59</u> SU	CONDUCTIVITY: <u>809</u> umhos/cm	ORP: <u>-129.1</u> mV	DO: <u>0.16</u> mg/L	
DEPTH TO WATER: <u>11.13</u> T/ PVC	TURBIDITY: <u>3.46</u> NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <u>22.42</u> T/ PVC	TEMPERATURE: <u>16.6</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED <u>3</u> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO				
COLOR: <u>clear</u> ODOR: <u>none</u>	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
TURBIDITY ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY	QC SAMPLE: ☐ MS/MSD ☐ DUP				
DISPOSAL METHOD ☒ GROUND ☐ DRUM ☐ 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)
1201	200	7.63	885	-102.7	1.69	5.33	17.3	11.22	INITIAL
1206	200	7.64	804	-125.2	0.42	4.22	16.8	11.22	1.0
1211	200	7.61	810	-127.0	0.24	3.82	16.6	11.22	2.0
1216	200	7.59	809	-129.1	0.16	3.46	16.6	11.22	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	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N	
1	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☐ N	
2	60 mL	VOA	A	☐ Y ☒ N					☐ Y ☐ N	
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N	
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N	

SHIPPING METHOD: <u>FEDEX</u> <u>Drop off</u>	DATE SHIPPED: <u>9-30-24</u> <u>10-4-24 DL</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10-14-24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000	BY: (JK), JJ, ER DATE: 9-30-24	BY: DL DATE: 10/15/24

SAMPLE ID: DEK-MW-15004	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ VW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 1237	DATE: 9-30-24	SAMPLE	TIME: 1254	DATE: 9-30-24
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.36	SU	CONDUCTIVITY: 729	umhos/cm	
DEPTH TO WATER: 29.38 T/ PVC	ORP: -144.6	mV	DO: 0.10	mg/L	
DEPTH TO BOTTOM: 41.82 T/ PVC	TURBIDITY: 3.05	NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY		
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	TEMPERATURE: 15.8	°C	FERROUS Fe	mg/L	
VOLUME REMOVED: 3.0 ☒ LITERS ☐ GALLONS	COLOR: clear		ODOR: none		
COLOR: clear	ODOR: none		FILTRATE (0.45 um) ☐ YES ☒ NO		
TURBIDITY ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY	FILTRATE COLOR: —		FILTRATE ODOR: —		
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER	QC SAMPLE: ☐ MS/MSD ☐ 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)
1239	200	7.40	760	-129.9	1.45	3.57	16.6	29.75	INITIAL
1244	200	7.41	730	-148.5	0.31	3.92	15.9	29.75	1.0
1249	200	7.39	728	-146.8	0.18	3.79	15.8	29.75	2.0
1254	200	7.36	729	-144.6	0.10	3.05	15.8	29.75	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	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N		
1	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☐ N		
2	60 mL	VOA	A	☐ Y ☒ N					☐ Y ☐ N		
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N		
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N		

SHIPPING METHOD: Drop off Fed Ex	DATE SHIPPED: 10-4-24	AIRBILL NUMBER: —
COC NUMBER: —	SIGNATURE: <i>DL</i>	DATE SIGNED: 10-14-24

Consumers Energy
Count on Us[®]

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

[illegible]

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

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 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/04/2024.

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

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

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of 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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

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

<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

Work Order Sample Summary

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

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: CLC

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 ☒

Consumers Energy
Count on Us®

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

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q4-2024 DEK Lined Impoundment	PROJECT NUMBER: 24-0803	SAP CC or WO#:	ANALYSIS REQUESTED (Attach List if More Space is Needed)							QA REQUIREMENT:										
SAMPLING TEAM: AH, ER, JV	TURNAROUND TIME REQUIRED: ☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ OTHER _____													☐ NPDES ☒ TNI ☐ ISO 17025 ☐ 10 CFR 50 APP. B ☐ INTERNAL INFO ☐ OTHER _____						
SEND REPORT TO: Joseph Firlit	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 Metals	Anions	Ammonia	TDS	Alkalinity	Sulfide			
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX			TOTAL #	PRESERVATIVE													
	DATE	TIME		FIELD SAMPLE ID / LOCATION			None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other							
24-0803-01	10/3/24	1501	GW	DEK-MW-15003		7	4	1	1	1			x	x	x	x	x	x		
-02	10/3/24	1608	GW	OW-10		7	4	1	1	1			x	x	x	x	x	x		
-03	10/3/24	1256	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			SW	KLI-PCS-		7	4	1	1	1			x	x	x	x	x	x		
-07			SW	SW-DITCH		7	4	1	1	1			x	x	x	x	x	x		
-08			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			W	FB-KLI-		4	1	1	1	1			x	x	x			x		
RELINQUISHED BY: Asham Holt		DATE/TIME: 10/4/24 0810		RECEIVED BY: [Signature]		COMMENTS:														
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY: [Signature]		Received on Ice? ☒ Yes ☐ No M&TE #: LS027723 Temperature: 0.8-3.9 °C Cal. Due Date: 06-27-25														



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
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): 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

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

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Starred (*) analytes are not NY NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

For a specific list of accredited analytes, please feel free to contact the laboratory or visit <https://www.meritlabs.com/certifications>.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Accreditations (For Reference Only)

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



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

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0803 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
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.1
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☐ Yes ☒ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ 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

Initial Preservation Check: 10/04/2024 15:44 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

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

Phone: D:517-788-5888 FAX:

Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S67052.01	125mL Plastic NaOH/Zn Acetate	>12			
S67052.02	125mL Plastic NaOH/Zn Acetate	>12			



To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GW MONITORING – DEK BOTTOM ASH POND SUPP. WELLS – 2024 Q4

CC: HDRegister, P22-521

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

Chemistry Project: 24-0804

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond Supplemental Wells area during the week of 09/30/2024 for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/01/2024.

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, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. As appropriate, 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

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q4-2024 Karn Bottom Ash Supplemental
Date Received: 10/1/2024
Chemistry Project: 24-0804

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0804-01	DEK-MW-15004	Groundwater	09/30/2024 12:54	DEK Bottom Ash Pond Supplemental
24-0804-02	DEK-MW-22001	Groundwater	09/30/2024 11:07	DEK Bottom Ash Pond Supplemental
24-0804-03	DEK-MW-22002	Groundwater	09/30/2024 11:38	DEK Bottom Ash Pond Supplemental
24-0804-04	DEK-MW-22003	Groundwater	09/30/2024 12:32	DEK Bottom Ash Pond Supplemental
24-0804-05	DEK-MW-22004	Groundwater	09/30/2024 12:16	DEK Bottom Ash Pond Supplemental
24-0804-06	DEK-MW-22005	Groundwater	09/30/2024 10:11	DEK Bottom Ash Pond Supplemental
24-0804-07	DEK-MW-22006	Groundwater	09/30/2024 11:35	DEK Bottom Ash Pond Supplemental
24-0804-08	DUP-DEK-BAP-02	Groundwater	09/30/2024 00:00	DEK Bottom Ash Pond Supplemental

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-15004**
 Lab Sample ID: 24-0804-01
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:54 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-01-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-01-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	150		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	128		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	923		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	68600		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	3770		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	33		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	15200		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	316		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	7		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	2		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	5210		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	87300		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 #: 24-0804-01-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	72900		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-15004**
 Lab Sample ID: 24-0804-01
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:54 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	165000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	4590		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	574		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	209000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	209000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	136		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22001**
 Lab Sample ID: 24-0804-02
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:07 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-02-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-02-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	46		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	114		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1380		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	179000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	2		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	8200		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	19		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	21500		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	1130		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	32		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	5		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	6870		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	79600		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0804-02-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	76000		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22001**
 Lab Sample ID: 24-0804-02
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:07 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	474000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3310		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-02-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	994		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-02-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	201000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	201000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22002**
 Lab Sample ID: 24-0804-03
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:38 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-03-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	60		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	126		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	964		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	145000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	1		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	6910		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	15		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	40200		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	788		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	16		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	5		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	5960		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	97400		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 #: 24-0804-03-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-03-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	102000		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22002**
 Lab Sample ID: 24-0804-03
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:38 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-03-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	399000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-03-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2760		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-03-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	994		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-03-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	239000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	239000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-03-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22003**
 Lab Sample ID: 24-0804-04
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:32 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-04-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-04-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	2		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	26		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	99		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	779		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	172000		ug/L	1000.0	10/08/2024	AB24-1009-01
Chromium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Cobalt	ND		ug/L	6.0	10/08/2024	AB24-1009-01
Copper	1		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	3780		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	28		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	51500		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	802		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	12		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	5		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	7260		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	98000		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 #: 24-0804-04-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-04-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	143000		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22003**
 Lab Sample ID: 24-0804-04
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:32 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-04-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	471000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-04-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2580		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-04-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1140		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-04-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	249000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	249000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-04-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	55		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22004**
 Lab Sample ID: 24-0804-05
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:16 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-05-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-05-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Arsenic	42		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	96		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1200		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	84300		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	941		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	24		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	17900		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	111		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	6		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	3		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	7540		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	95500		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 #: 24-0804-05-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-05-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	81100		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22004**
 Lab Sample ID: 24-0804-05
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:16 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-05-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	123000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-05-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2990		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-05-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	616		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-05-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	299000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	299000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-05-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	170		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22005**
 Lab Sample ID: 24-0804-06
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 10:11 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-06-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	17		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	90		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1140		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	87800		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	369		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	16		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	16800		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	102		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	3		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	6140		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	92400		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 #: 24-0804-06-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-06-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	69900		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22005**
 Lab Sample ID: 24-0804-06
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 10:11 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-06-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	116000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-06-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3890		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-06-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	622		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-06-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	317000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	317000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-06-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	403		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22006**
 Lab Sample ID: 24-0804-07
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:35 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-07-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-07-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	3		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	98		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	675		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	193000		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	4		ug/L	1.0	10/08/2024	AB24-1009-01
Iron	6170		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	51		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	104000		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	1260		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	6		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	7770		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	59500		ug/L	1000.0	10/08/2024	AB24-1009-01
Thallium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Vanadium	ND		ug/L	2.0	10/08/2024	AB24-1009-01
Zinc	ND		ug/L	10.0	10/08/2024	AB24-1009-01

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 24-0804-07-C02-A01 Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-07-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	33600		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DEK-MW-22006**
 Lab Sample ID: 24-0804-07
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 11:35 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-07-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	652000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-07-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	901		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-07-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1440		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-07-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	439000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	439000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-07-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	138		ug/L	40.0	10/07/2024	AB24-1007-11

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DUP-DEK-BAP-02**
 Lab Sample ID: 24-0804-08
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0804-08-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/02/2024	AB24-1002-02

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

Aliquot #: 24-0804-08-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	17		ug/L	1.0	10/08/2024	AB24-1009-01
Barium	85		ug/L	5.0	10/08/2024	AB24-1009-01
Beryllium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Boron	1140		ug/L	20.0	10/08/2024	AB24-1009-01
Cadmium	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Calcium	85400		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	349		ug/L	20.0	10/08/2024	AB24-1009-01
Lead	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Lithium	16		ug/L	10.0	10/08/2024	AB24-1009-01
Magnesium	15100		ug/L	1000.0	10/08/2024	AB24-1009-01
Manganese	96		ug/L	5.0	10/08/2024	AB24-1009-01
Molybdenum	ND		ug/L	5.0	10/08/2024	AB24-1009-01
Nickel	3		ug/L	2.0	10/08/2024	AB24-1009-01
Potassium	6260		ug/L	100.0	10/08/2024	AB24-1009-01
Selenium	ND		ug/L	1.0	10/08/2024	AB24-1009-01
Silver	ND		ug/L	0.2	10/08/2024	AB24-1009-01
Sodium	91900		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 #: 24-0804-08-C02-A01

Analyst: TMR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/02/2024	AB24-1001-01
Nitrite	ND		ug/L	100.0	10/02/2024	AB24-1001-01

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

Aliquot #: 24-0804-08-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	69400		ug/L	1000.0	10/08/2024	AB24-1007-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond Supplemental**
 Field Sample ID: **DUP-DEK-BAP-02**
 Lab Sample ID: 24-0804-08
 Matrix: Groundwater

Laboratory Project: **24-0804**
 Collect Date: 09/30/2024
 Collect Time: 12:00 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0804-08-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/02/2024	AB24-1007-02
Sulfate	121000		ug/L	1000.0	10/08/2024	AB24-1007-02

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 24-0804-08-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3810		ug/L	25.0	10/09/2024	AB24-1009-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0804-08-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	620		mg/L	10.0	10/02/2024	AB24-1002-08

Alkalinity by SM 2320B Aliquot #: 24-0804-08-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	316000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Bicarbonate	316000		ug/L	10000.0	10/09/2024	AB24-1009-04
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2024	AB24-1009-04

Sulfide, Total by SM 4500 S2D Aliquot #: 24-0804-08-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	480		ug/L	40.0	10/07/2024	AB24-1007-11

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: 24-0804 Inspection Date: 10-01-24 Inspection By: EB

Sample Origin/Project Name: Q4-2024 DEK BAP

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx ☒ UPS _____ USPS _____

Tracking Number: 7189 2273 9645 Other/Carry In (whom) _____

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 3.2-0.9 °C Samples Received on Ice: Yes ☒ No _____

M&TE # and Expiration LS027723/ 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 60mL)	<u>16</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>32</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>8</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 ☒

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: Q4-2024 DEK Bottom Ash Supplemental				PROJECT NUMBER: 24-0804		SAP CC or WO#:		ANALYSIS REQUESTED (Attach List if More Space is Needed)										QA REQUIREMENT: ☐ NPDES ☒ TNI ☐ ISO 17025 ☐ 10 CFR 50 APP. B ☐ INTERNAL INFO ☐ OTHER _____														
						REQUESTER: Harold Register																										
SAMPLING TEAM: <i>E. Rinchert</i> <i>J. Krcak</i>				TURNAROUND TIME REQUIRED: ☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ 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																														
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION				TOTAL #	PRESERVATIVE																						
		DATE	TIME							None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																
24-0804-01		9/30/24	1254	GW	DEK-MW-15004				7	4	1	1	1						x	x	x	x	x	x								
-02		9/30/24	1107	GW	DEK-MW-22001				7	4	1	1	1						x	x	x	x	x	x								
-03		9/30/24	1138	GW	DEK-MW-22002				7	4	1	1	1						x	x	x	x	x	x								
-04		9/30/24	1232	GW	DEK-MW-22003				7	4	1	1	1						x	x	x	x	x	x								
-05		9/30/24	1216	GW	DEK-MW-22004				7	4	1	1	1						x	x	x	x	x	x								
-06		9/30/24	1011	GW	DEK-MW-22005				7	4	1	1	1						x	x	x	x	x	x								
-07		9/30/24	1135	GW	DEK-MW-22006				7	4	1	1	1						x	x	x	x	x	x								
-08		9/30/24	—	GW	DUP-DEK-BAP-02				7	4	1	1	1						x	x	x	x	x	x								

RELINQUISHED BY:		DATE/TIME: 9/30/24 11345		RECEIVED BY:		COMMENTS: Received on Ice? ☒ Yes ☐ No M&TE #: <u>LS02723</u> Temperature: <u>0.2-0.9</u> °C Cal. Due Date: <u>06-27-25</u>									
RELINQUISHED BY: Fed Ex		DATE/TIME: 10/01/24 10:30		RECEIVED BY:											

24-0804 Page 23 of 39



Analytical Laboratory Report

Report ID: S66880.01(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): S66880.01-S66880.08
Project: 24-0804 PR#24101038
Collected Date(s): 09/30/2024
Submitted Date/Time: 10/01/2024 15:44
Sampled by: Unknown
P.O. #: 440011437

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

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 4500 S2 D 2011



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S66880.01	DEK-MW-15004 (24-0804-01)	Groundwater	09/30/24 12:54
S66880.02	DEK-MW-22001 (24-0804-02)	Groundwater	09/30/24 11:07
S66880.03	DEK-MW-22002 (24-0804-03)	Groundwater	09/30/24 11:38
S66880.04	DEK-MW-22003 (24-0804-04)	Groundwater	09/30/24 12:32
S66880.05	DEK-MW-22004 (24-0804-05)	Groundwater	09/30/24 12:16
S66880.06	DEK-MW-22005 (24-0804-06)	Groundwater	09/30/24 10:11
S66880.07	DEK-MW-22006 (24-0804-07)	Groundwater	09/30/24 11:35
S66880.08	DUP-DEK-BAP-02 (24-0804-08)	Groundwater	09/30/24 00:01



Analytical Laboratory Report

Lab Sample ID: S66880.01
Sample Tag: DEK-MW-15004 (24-0804-01)
Collected Date/Time: 09/30/2024 12:54
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: 10/07/24 18:38, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.136	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.02
Sample Tag: DEK-MW-22001 (24-0804-02)
Collected Date/Time: 09/30/2024 11:07
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: 10/07/24 18:40, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.03
Sample Tag: DEK-MW-22002 (24-0804-03)
Collected Date/Time: 09/30/2024 11:38
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: 10/07/24 18:42, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.04
Sample Tag: DEK-MW-22003 (24-0804-04)
Collected Date/Time: 09/30/2024 12:32
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: 10/07/24 18:44, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.055	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.05
Sample Tag: DEK-MW-22004 (24-0804-05)
Collected Date/Time: 09/30/2024 12:16
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: 10/07/24 18:46, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.170	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.06
Sample Tag: DEK-MW-22005 (24-0804-06)
Collected Date/Time: 09/30/2024 10:11
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: 10/07/24 18:48, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.403	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.07
Sample Tag: DEK-MW-22006 (24-0804-07)
Collected Date/Time: 09/30/2024 11:35
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: 10/07/24 18:50, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.138	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S66880.08
Sample Tag: DUP-DEK-BAP-02 (24-0804-08)
Collected Date/Time: 09/30/2024 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: 10/07/24 23:54, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.480	0.04		mg/L	2	18496-25-8	

Merit Laboratories Login Checklist

Lab Set ID:S66880

Client:CONSUMERS (Consumers Energy Company)

Project: 24-0804 PR#24101038

Submitted:10/01/2024 15:44 Login User: MAM

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. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	5.3 IR
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☐ No ☒ 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: S66880 Submitted: 10/01/2024 15:44

Client: CONSUMERS (Consumers Energy Company)

Project: 24-0804 PR#24101038

Initial Preservation Check: 10/01/2024 16:01 MAM

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

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

Phone: D:517-788-5888 FAX:

Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S66880.01	125mL Plastic NaOH/Zn Acetate	>12			
S66880.02	125mL Plastic NaOH/Zn Acetate	>12			
S66880.03	125mL Plastic NaOH/Zn Acetate	>12			
S66880.04	125mL Plastic NaOH/Zn Acetate	>12			
S66880.05	125mL Plastic NaOH/Zn Acetate	>12			
S66880.06	125mL Plastic NaOH/Zn Acetate	>12			
S66880.07	125mL Plastic NaOH/Zn Acetate	>12			
S66880.08	125mL Plastic NaOH/Zn Acetate	>12			

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. 440011437
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	24-0804 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 CODE:	GW=GROUNDWATER SL=SLUDGE	VW=WASTEWATER DW=DRINKING WATER	S=SOIL O=OIL	L=LIQUID WP=WIPE	SD=SOLID A=AIR W=WASTE	# Containers & Preservatives
--------------	-----------------------------	------------------------------------	-----------------	---------------------	------------------------------	------------------------------

[illegible][illegible]

RELINQUISHED BY:	 CONSUMERS ENERGY	☐ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			10-9-24	1544
RECEIVED BY:	 Johanna Murray		DATE	TIME
SIGNATURE/ORGANIZATION			01/1/24	1344
RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL _____ <i>07:12 5.3</i>	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

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

Rev. 5.18.12

Laboratory Data Quality Review Groundwater Monitoring Event September 2024 DE Karn Lined Impoundment

Groundwater samples were collected by TRC for the September 2024 sampling event. The samples were 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) 24-0804 and S66880.01(01).

During the September 2024 sampling event, groundwater samples were collected from the following wells:

- DEK-MW-15004
- DEK-MW-22001
- DEK-MW-22002
- DEK-MW-22003
- DEK-MW-22004
- DEK-MW-22005
- DEK-MW-22006

The samples were 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:

- Chain-of-custody (COC) and data completeness;
- 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 and IV constituents, optional Piper Diagram analyses, additional Part 115 constituents, as well as additional geochemistry parameters will be utilized for the purposes of a hydrogeological monitoring program (HMP).
- Data are usable for the purposes of the HMP.
- 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

- Sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. No issues were noted.

- The preservation for was assumed to be acceptable based on case narrative and COC preservation information; the cooler temperatures were between 0-6°C and acid was used for sample preservation, as applicable.
- The preparation times and dates for all analyses were provided in the electronic data deliverable (EDD) for this data set. All preparation and analysis holding time requirements were met.
- No blank samples were reported with this data set.
- MS and MSD analyses were not performed on a sample in this data set.
- Laboratory duplicate analyses were not performed on a sample in this data set.
- Samples DUP-DEK-BAP-02/DEK-MW-22005 were submitted as the field duplicate pair with this data set; all criteria were met.
- The RLs met the project requirements and were deemed suitable for data use.
- Dilution factors for all analyses were provided in the EDD for this data set; all dilution factors were listed as 1-fold with the following exception.
 - All samples were analyzed at a 2-fold dilution for sulfide. Sulfide was detected above the RL in all samples with the exception of DEK-MW-22001 and DEK-MW-22002. Sulfide is analyzed for qualitative geochemical evaluation; data usability is not affected by the elevated reporting limit.



PROJECT NAME:	CEC Karn BAP/LI: 2025 GW Compliance
PROJECT NUMBER:	634695.0000.00000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	TO 3-4-25 TO 3-5-25
PURPOSE OF FIELDWORK:	Fourth Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Kast

JL 3-6-25
SIGNED DATE

AK 3/6/25
CHECKED BY DATE



GENERAL NOTES

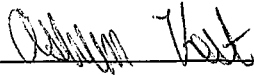
PROJECT NAME: CEC Karn LF: 2025 GW Compliance	DATE: 3/4/25	TIME ARRIVED: 8:02
PROJECT NUMBER: 634694.0000.0000	AUTHOR: JK, JJ, (AK)	TIME LEFT: 4:15

WEATHER		
TEMPERATURE: 35-45 °F	WIND: 10-15 MPH	VISIBILITY: Clear/overcast
WORK / SAMPLING PERFORMED		
Arrive on-site @ 8:02, check in w/ security Meet with Jake, give him LaMotte 2020, set up to sample MW-18; halted due to training @ 9:00. Set up to sample MW-18 @ 10:30, sample MW-19, OW-10, DEK - MW-15003		

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 _____

 3-6-25
 CHECKED BY _____ DATE _____



GENERAL NOTES

PROJECT NAME: CEC Karn BAP/LI: 2025 GW Comp	DATE: <u>3-4-25</u>	TIME ARRIVED: <u>0730</u>
PROJECT NUMBER: 634695.0000.00000	AUTHOR: <u>JK</u> JJ, AK	TIME LEFT: <u>1610/1615</u>

WEATHER		
TEMPERATURE: <u>48</u> °F	WIND: <u>10-15</u> MPH	VISIBILITY: <u>cloudy</u>
WORK / SAMPLING PERFORMED		
Sampled monitoring wells DEK-MW-15002, -15006, -15005, -22006, and -22003, and -18001		
Retrieved annual safety orientation		
OW-13 ^{DTW} DTB: 5.04 DTB: 14.57		

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

3-6-25
 SIGNED _____ DATE _____

3/6/25
 CHECKED BY _____ DATE _____



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2025 GW Com	DATE: <u>3/5/25</u>	TIME ARRIVED: <u>0540</u>
PROJECT NUMBER: 634698.0000.0000	AUTHOR: AW JK <u>JJ</u>	TIME LEFT: <u>1200</u>

WEATHER		
TEMPERATURE: <u>21</u> °F	WIND: <u>30</u> MPH	VISIBILITY: <u>Overcast</u>
WORK / SAMPLING PERFORMED		
Well Sano Jcw-MW18001, ca. 57 Rod +		
Jcw-MW18004, Dup #02, FB, E.B, MW-15019		
MW-15008, MW-15002, MW-15016, E.B.		

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

3/6/25
 SIGNED _____ DATE _____

3-6-25
 CHECKED BY _____ DATE _____



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2025 GW	SAMPLER NAME: J. Jasso , J. Krenz, A. Kast
PROJECT NO.:	634695.0000.00000	

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)

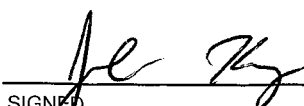
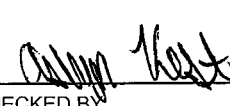
SAMPLING METHOD

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	☒ 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>3-6-25</u>	 CHECKED BY _____ DATE <u>3/6/25</u>



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn LF: 2025 GW Compliance	MODEL:	AK Agda roll 600	SAMPLER:	JK, JJ (AK)
PROJECT NO.:	634694.0000.0000	SERIAL #:	Ann Arbor	DATE:	3/4/25

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):	(LOT #):	(EXP. DATE):		
46H0553	AUG/26	46I0445	SEP/26		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
7.08 / 7.08		4.00 / 4.00		☒ WITHIN RANGE	7:20
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
46K1199			
(EXP. DATE): NOV/25			
POST-CAL. READING / STANDARD			
964 / 964		☒ WITHIN RANGE	7:22
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
236100046			
(EXP. DATE): 2028-07-04			
POST-CAL. READING / STANDARD			
248 / 248		☒ WITHIN RANGE	7:25
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
D.I			
POST-CAL. READING / SATURATED AIR			
12.40 / 12.40		☐ WITHIN RANGE	7:27
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):		
A3097	APR-25		
POST-CAL. READING / STANDARD			
100 / 100		☒ WITHIN RANGE	7:29
/		☒ WITHIN RANGE	10:28
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

COMMENTS

☐ AUTOCAL SOLUTION	☒ STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
☐ pH	pH: +/- 0.2 S.U.
☐ COND	COND: +/- 1% OF CAL. STANDARD
☐ ORP	ORP: +/- 25 mV
☐ D.O.	D.O.: VARIES
☐ TURB	TURB: +/- 5% OF CAL. STANDARD
☐	
☐	

⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

Switched to LaMotte 2020
For turbidity; In-situ
RDO sensor expired

PROBLEMS ENCOUNTERED

In-situ turbidity readings were fluctuating between 0 NTU & 5,000 NTU

CORRECTIVE ACTIONS

Switched to LaMotte 2020

SIGNED

Ashley Hart

DATE

3/6/25

CHECKED BY

JL Zy

DATE

3-6-25



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2025 GW Compliance	MODEL:	YSI PRO DSS	SAMPLER:	(JK) JJ, AK
PROJECT NO.:	634695.0000.00000	SERIAL #:	Ann Arbor	DATE:	3-4-25

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):	(LOT #):	(EXP. DATE):		
46H0553	Aug/26	46E0445	Sep/26		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
7.03 / 7.03		4.00 / 4.00		☒ WITHIN RANGE	0752
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
46S0059			
(EXP. DATE): Oct/25			
POST-CAL. READING / STANDARD			
1260 / 1260		☒ WITHIN RANGE	0745
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
248100690			
(EXP. DATE): 3-6-29			
POST-CAL. READING / STANDARD			
237.2 / 237.2		☒ WITHIN RANGE	0757
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
POST-CAL. READING / SATURATED AIR			
10.92 / 10.92		☒ WITHIN RANGE	0802
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #):	(LOT #):		
(EXP. DATE): N/A	(EXP. DATE):		
POST-CAL. READING / STANDARD			
10.03 / 10.0		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

COMMENTS

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

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

CHECKED BY

DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2025 GW Compliance	MODEL:	YSI Pro DSS	SAMPLER:	JJ
PROJECT NO.:	634698.0000.0000	SERIAL #:	TRC A2	DATE:	3/5/15

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):	(LOT #):	(EXP. DATE):		
461053	8/26	461045	9/26		
POST-CAL. READING / STANDARD		POST-CAL. READING / STANDARD			
700 / 700		400 / 400		☒ WITHIN RANGE	0:20
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	
/		/		☐ WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
461054	9/25		
POST-CAL. READING / STANDARD			
1309 / 1309	21	☒ WITHIN RANGE	0:20
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
461003	4/09		
POST-CAL. READING / STANDARD			
223 / 223	23	☒ WITHIN RANGE	0:20
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #):	(°CELSIUS)		
461003	4/09		
POST-CAL. READING / SATURATED AIR			
8.35 / 8.35	23	☒ WITHIN RANGE	0:20
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	
/		☐ WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #):	(EXP. DATE):		
461054	9/26		
POST-CAL. READING / STANDARD			
0 / 0	/	☒ WITHIN RANGE	0:20
100 / 100	/	☒ WITHIN RANGE	0:20
/	/	☐ WITHIN RANGE	
/	/	☐ WITHIN RANGE	

COMMENTS

☐ AUTOCAL SOLUTION	☒ STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
☐ pH	pH: +/- 0.2 S.U.
☐ COND	COND: +/- 1% OF CAL. STANDARD
☐ ORP	ORP: +/- 25 mV
☐ D.O.	D.O.: VARIES
☐ TURB	TURB: +/- 5% OF CAL. STANDARD
☐	
☐	
☐	

⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

CHECKED BY

DATE



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: JJ, AK DATE: 3-4-25	BY: AV DATE: 3/6/25

SAMPLE ID: DEK-MW-18001	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 0812	DATE: 3-4-25	SAMPLE	TIME: 0813	DATE: 3-4-25
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.36 SU	CONDUCTIVITY: 651 umhos/cm	ORP: 117.6 mV	DO: 0.54 mg/L	
DEPTH TO WATER: 9.85 T/ PVC	TURBIDITY: 2.48 NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: 14.68 T/ PVC	TEMPERATURE: 10.0 °C	FERROUS Fe: mg/L			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	COLOR: Clear	ODOR: none			
VOLUME REMOVED: 8 ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO	FILTRATE COLOR: FILTRATE ODOR:			
COLOR: Clear	TURBIDITY ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY	QC SAMPLE: ☒ MS/MSD ☐ DUP-			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ 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)
0813	400	6.87	919	152.2	7.24	57.3	9.2	10.02	INITIAL
0818	400	7.39	646	127.9	0.82	12.7	9.8	10.02	2
0823	400	7.37	648	123.9	0.66	6.92	9.8	10.02	4
0828	400	7.37	649	122.1	0.61	2.83	9.9	10.02	6
0833	400	7.36	651	117.6	0.54	2.48	10.0	10.02	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	☐ Y ☒ N	3	125 mL	PLASTIC	D	☐ Y ☒ N	
3	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	F	☐ Y ☒ N	
6	60 mL	VOA	A	☐ Y ☒ N	2	1 L	PLASTIC	B	☐ Y ☒ N	
3	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N	
3	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N	

SHIPPING METHOD: Fedex	DATE SHIPPED: 3-4-25	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>fe Ky</i>	DATE SIGNED: 3-6-25



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: <u>JK JJ, AK</u> DATE: <u>3-4-25</u>	BY: <u>AK</u> DATE: <u>3/6/25</u>

SAMPLE ID: <u>DEK-MW-15002</u>	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>1036</u>	DATE: <u>3-4-25</u>	SAMPLE	TIME: <u>1108</u>	DATE: <u>3-4-25</u>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <u>7.15</u> SU	CONDUCTIVITY: <u>871</u> umhos/cm	ORP: <u>95.3</u> mV	DO: <u>0.45</u> mg/L	
DEPTH TO WATER: <u>8.20</u> T/ PVC	TURBIDITY: <u>0.00</u> NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <u>15.72</u> T/ PVC	TEMPERATURE: <u>10.0</u> °C	PERROUS Fe: _____ mg/L			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	COLOR: <u>clear</u>	ODOR: <u>Yes</u>			
VOLUME REMOVED: <u>12</u> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>clear</u> ODOR: <u>Yes</u>	QC SAMPLE: ☐ MS/MSD ☐ DUP-	COMMENTS:			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER					

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)
1038	400	7.56	771	122.7	2.15	0.03	8.7	8.63	INITIAL
1043	400	7.75	767	114.5	0.75	0.27	9.5	8.63	2
1048	400	7.26	792	110.9	0.64	1.05	9.5	8.63	4
1053	400	7.21	827	105.2	0.59	0.15	9.8	8.63	6
1058	400	7.18	850	100.8	0.49	0.00	9.9	8.63	8
1103	400	7.16	863	98.2	0.46	0.00	10.0	8.63	10
1108	400	7.15	871	95.3	0.45	0.00	10.0	8.63	12

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	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N	
1	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☒ N	
2	60 mL	VOA	A	☐ Y ☒ N		1 L	PLASTIC	B	☐ Y ☒ N	
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☒ N	
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☒ N	

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>3-4-25</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3-6-25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 634695.0000.00000		BY: JK JJ, AK	DATE: 3-4-25	BY: <u>AK</u>	DATE: 3/6/25
SAMPLE ID: <u>DEK-MW-15005</u>		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>1248</u>	DATE: <u>3-4-25</u>	SAMPLE	TIME: <u>1320</u>	DATE: <u>3-4-25</u>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER		PH: <u>7.40</u> SU		CONDUCTIVITY: <u>1209</u> umhos/cm	
		ORP: <u>66.4</u> mV		DO: <u>0.37</u> mg/L	
DEPTH TO WATER: <u>11.51</u> T/ PVC		TURBIDITY: <u>0.28</u> NTU			
DEPTH TO BOTTOM: <u>22.30</u> T/ PVC		☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS		TEMPERATURE: <u>10.6</u> °C		FERROUS Fe <u> </u> mg/L	
VOLUME REMOVED: <u>12</u> ☒ LITERS ☐ GALLONS		COLOR: <u>clear</u>		ODOR: <u>none</u>	
COLOR: <u>clear</u> ODOR: <u>none</u>		FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY		FILTRATE COLOR: <u> </u>		FILTRATE ODOR: <u> </u>	
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER		QC SAMPLE: ☐ MS/MSD ☐ DUP- <u> </u>			
COMMENTS: <u>FB 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)
1250	400	8.03	1088 1268	70.7	3.22	0.55	9.8	11.81	INITIAL
1255	400	7.55	1132	70.6	0.76	0.00	10.3	11.81	2
1300	400	7.52	1140	68.9	0.54	0.00	10.4	11.81	4
1305	400	7.47	1168	70.4	0.45	0.00	10.5	11.81	6
1310	400	7.42	1203	70.2	0.40	0.00	10.6	11.81	8
1315	400	7.40	1210	68.3	0.36	0.00	10.6	11.81	10
1320	400	7.40	1209	66.4	0.37	0.28	10.6	11.81	12

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	☐ Y ☒ N	2	125 mL	PLASTIC	D	☐ Y ☒ N
2	125 mL	PLASTIC	A	☐ Y ☒ N	40 mL VOA E				
2	60 mL	VOA	A	☐ Y ☒ N	1 L PLASTIC B				
2	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N
2	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>3-4-25</u>	AIRBILL NUMBER: <u> </u>
COC NUMBER: <u> </u>	SIGNATURE: <u><i>je ky</i></u>	DATE SIGNED: <u>3-6-25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: (JK) JJ, AK	DATE: 3-4-25
	BY: AL	DATE: 3/6/25

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: 1128	DATE: 3-4-25	SAMPLE	TIME: 1204	DATE: 3-4-25
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.29	SU	CONDUCTIVITY: 1230	umhos/cm	
	ORP: 69.0	mV	DO: 0.34	mg/L	
DEPTH TO WATER: 11.08	T/ PVC	TURBIDITY: 2.15	NTU		
DEPTH TO BOTTOM: 21.50	T/ PVC	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA	☐ LITERS ☐ GALLONS	TEMPERATURE: 10.2	°C	FERROUS Fe	mg/L
VOLUME REMOVED: 14	☒ LITERS ☐ GALLONS	COLOR: clear		ODOR: none	
COLOR: clear w/ particulate	ODOR: none	FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER		QC SAMPLE: ☐ MS/MSD ☒ DUP- DEK-BAP			
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)
1129	400	7.77	1253	87.2	3.68	76.4	9.6	11.22	INITIAL
1134	400	7.35	1264	92.1	0.77	49.0	10.1	11.22	2
1139	400	7.27	1244	89.6	0.52	24.2	10.2	11.22	4
1144	400	7.24	1243	85.8	0.44	15.8	10.2	11.22	6
1149	400	7.23	1239	82.2	0.41	11.0	10.2	11.22	8
1154	400	7.26	1236	76.9	0.38	8.57	10.7	11.22	10
1159	400	7.27	1230	73.8	0.36	7.30	10.2	11.22	12
1204	400	7.29	1230	69.0	0.34	2.15	10.2	11.22	14

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	☐ Y ☒ N	2	125 mL	PLASTIC	D	☐ Y ☒ N	
2	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☒ N	
4	60 mL	VOA	A	☐ Y ☒ N		1 L	PLASTIC	B	☐ Y ☒ N	
2	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☒ N	
2	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☒ N	

SHIPPING METHOD: Fedex	DATE SHIPPED: 3-4-25	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>je King</i>	DATE SIGNED: 3-6-25



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: JK, JJ, AK DATE: 3/4/25	BY: JK DATE: 3-6-25

SAMPLE ID: OW-10	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 12:11	DATE: 3/4/25	SAMPLE	TIME: 12:51	DATE: 3/4/25
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.37	SU	CONDUCTIVITY: 995.82	umhos/cm	
	ORP: -61.1	mV	DO: 3.70	mg/L	
DEPTH TO WATER: 8.65	T/ PVC	TURBIDITY: 6.27	NTU		
DEPTH TO BOTTOM: 18.94	T/ PVC	☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	TEMPERATURE: 10.52	°C	FERROUS Fe	mg/L	
VOLUME REMOVED: 3.75 ☒ LITERS ☐ GALLONS	COLOR: clear	ODOR: slight			
COLOR: cloudy	ODOR: slight	FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY	FILTRATE COLOR: —	FILTRATE ODOR: —			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER	QC SAMPLE: ☐ MS/MSD ☐ 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)
12:11	100	7.45	983.63	12.2	4.08	36.09	10.12	8.65	INITIAL
12:16	150	7.40	979.25	-17.5	3.76	20.16	10.13	8.78	.5
12:21		7.40	985.94	-37.6	3.74	14.85	9.96	8.72	1.25
12:26		7.39	982.87	-47.7	3.71	8.57	10.21	8.72	2
12:31		7.38	994.50	-54.5	3.70	8.33	10.16	8.78	2.75
12:36		7.38	997.17	-56.1	3.71	7.98	10.22	8.82	3.5
12:41		7.38	990.87	-60.9	3.70	6.76	10.27	8.78	4.25
12:46		7.37	994.07	-57.8	3.70	6.56	10.34	8.76	5
12:51		7.37	995.82	-61.1	3.70	6.27	10.52	8.76	5.75
SAMPLE									

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	☐	☒ Y ☒ N	1	125 mL	PLASTIC	D	☐	☒ Y ☒ N
1	125 mL	PLASTIC	A	☐	☒ Y ☒ N	40 mL VOA E ☐ Y ☒ N					
2	60 mL	VOA	A	☐	☒ Y ☒ N	2	1 L	PLASTIC	B	☐	☒ Y ☒ N
1	125 mL	PLASTIC	B	☐	☒ Y ☒ N					☐	☒ Y ☒ N
1	125 mL	PLASTIC	C	☐	☒ Y ☒ N					☐	☒ Y ☒ N

SHIPPING METHOD: Fedex	DATE SHIPPED: 3-4-25	AIRBILL NUMBER: —
COC NUMBER: —	SIGNATURE: [Signature]	DATE SIGNED: 3/6/25



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: JK, JJ, <u>AK</u> DATE: <u>3/4/25</u>	BY: <u>JK</u> DATE: <u>3-6-25</u>

SAMPLE ID: <u>DEK-MW-15003</u>	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>1328</u>	DATE: <u>3/4/25</u>	SAMPLE	TIME: <u>1408</u>	DATE: <u>3/4/25</u>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <u>8.52</u> SU	CONDUCTIVITY: <u>311.12</u> umhos/cm	ORP: <u>-98.5</u> mV	DO: <u>3.69</u> mg/L	
DEPTH TO WATER: <u>20.24</u> T/ PVC	TURBIDITY: <u>1.67</u> NTU	☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <u>28.98</u> T/ PVC	TEMPERATURE: <u>13.02</u> °C	FERROUS Fe <u> </u> mg/L			
WELL VOLUME: <u>NA</u> ☐ LITERS ☐ GALLONS	COLOR: <u>clear</u>	ODOR: <u>very slight</u>			
VOLUME REMOVED: <u>4.5</u> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO				
COLOR: <u>clear w/ particulate</u> ODOR: <u>slight</u>	FILTRATE COLOR: <u> </u>	FILTRATE ODOR: <u> </u>			
TURBIDITY ☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY	QC SAMPLE: ☐ MS/MSD ☒ DUP- <u>KLI</u>				
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ 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)
13:28	200	8.71	284.15	29.1	4.28	4.24	13.62	20.24	INITIAL
13:33	100	8.70	308.77	-30.9	3.97	4.20	12.71	20.72	1
13:38		8.68	309.13	-52.5	3.92	2.67	12.05	20.78	1.5
13:43		8.62	310.55	-68.4	3.82	2.17	12.57	20.86	2
13:48		8.62	310.72	-83.4	3.75	2.50	12.76	20.89	2.5
13:53		8.62	310.29	-89.8	3.73	2.31	12.70	20.91	3
13:58		8.58	311.51	-94.5	3.70	1.80	12.90	20.95	3.5
14:03		8.56	310.56	-97.9	3.69	1.99	12.94	20.97	4
14:08		8.52	311.12	-98.5	3.69	1.87	13.02	20.99	4.5
SAMPLE									

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		<u>PRESERVATIVE CODES</u> 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	☐	Y ☒ N	2	125 mL	PLASTIC	D	☐	Y ☒ N
2	125 mL	PLASTIC	A	☐	Y ☒ N	40 mL		VOA	E	☐	Y ☒ N
4	60 mL	VOA	A	☐	Y ☒ N	4	1 L	PLASTIC	B	☐	Y ☒ N
2	125 mL	PLASTIC	B	☐	Y ☒ N					☐	Y ☒ N
2	125 mL	PLASTIC	C	☐	Y ☒ N					☐	Y ☒ N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>3-4-25</u>	AIRBILL NUMBER: <u> </u>
COC NUMBER: <u> </u>	SIGNATURE: <u> </u>	DATE SIGNED: <u>3/6/25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: <u>JK JJ, AK</u> DATE: <u>3-4-25</u>	BY: <u>AK</u> DATE: <u>3/6/25</u>

SAMPLE ID: <u>DEK-MW-22003</u>	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>1453</u>	DATE: <u>3-4-25</u>	SAMPLE	TIME: <u>1529</u>	DATE: <u>3-4-25</u>
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: <u>7.42</u> SU	CONDUCTIVITY: <u>1115</u> umhos/cm	ORP: <u>2.8</u> mV	DO: <u>0.37</u> mg/L	
DEPTH TO WATER: <u>12.87</u> T/ PVC	TURBIDITY: <u>8.41</u> NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DEPTH TO BOTTOM: <u>24.42</u> T/ PVC	TEMPERATURE: <u>10.8</u> °C	FERROUS Fe: _____ mg/L			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>14</u> ☒ LITERS ☐ GALLONS	FILTRATE (0.45 um) ☐ YES ☒ NO				
COLOR: <u>orange</u>	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
TURBIDITY: ☐ NONE ☐ SLIGHT ☐ MODERATE ☒ VERY	QC SAMPLE: ☐ MS/MSD ☐ DUP-				
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ 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)
1454	400	7.68	1199	30.5	3.06	over range	10.4	12.99	INITIAL
1459	400	7.39	1252	28.1	0.79	101.2	10.7	12.99	2
1504	400	7.36	1223	21.4	0.49	35.4	10.7	12.99	4
1509	400	7.36	1190	16.1	0.42	24.8	10.8	12.99	6
1514	400	7.38	1149	9.4	0.37	16.2	10.8	12.99	8
1519	400	7.39	1123	3.4	0.34	10.92	10.8	12.99	10
1524	400	7.41	1127	3.2	0.34	9.76	10.8	12.99	12
1529	400	7.42	1115	2.8	0.37	8.41	10.8	12.99	14

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	☐ Y	☒ N	1	125 mL	PLASTIC	D	☐ Y	☒ N
1	125 mL	PLASTIC	A	☐ Y	☒ N	40 mL		VOA	E	☐ Y	☒ N
2	60 mL	VOA	A	☐ Y	☒ N	1 L		PLASTIC	B	☐ Y	☒ N
1	125 mL	PLASTIC	B	☐ Y	☒ N					☐ Y	☒ N
1	125 mL	PLASTIC	C	☐ Y	☒ N					☐ Y	☒ N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>3-4-25</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3-6-25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634695.0000.00000	BY: JK JJ, AK DATE: 3-4-25	BY: AK DATE: 3/6/25

SAMPLE ID: DEK-mw-22006	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 1357	DATE: 3-4-25	SAMPLE	TIME: 1474	DATE: 3-4-25
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.26 SU	CONDUCTIVITY: 1114 umhos/cm	ORP: -0.8 mV	DO: 0.39 mg/L	
DEPTH TO WATER: 10.57 T/ PVC	TURBIDITY: 4.13 NTU				
DEPTH TO BOTTOM: 17.10 T/ PVC	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	TEMPERATURE: 7.0 °C	FERROUS Fe: mg/L			
VOLUME REMOVED: 14 ☒ LITERS ☐ GALLONS	COLOR: Clear	ODOR: none			
COLOR: Slight orange	ODOR: none	FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☐ NONE ☐ SLIGHT ☒ MODERATE ☐ VERY	FILTRATE COLOR:	FILTRATE ODOR:			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER	QC SAMPLE: ☐ MS/MSD ☐ 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)
1359	400	7.62	1091	45.7	2.52	31.9	6.9	10.92	INITIAL
1404	400	7.28	1089	39.7	0.85	33.3	7.0	10.92	2
1409	460	7.24	1086	29.6	0.57	25.2	7.0	10.92	4
1414	400	7.24	1086	22.4	0.50	11.3	7.0	10.92	6
1419	400	7.24	1093	15.2	0.46	10.74	7.0	10.92	8
1424	400	7.25	1100	8.9	0.43	5.60	7.0	10.92	10
1429	400	7.25	1107	4.2	0.40	5.11	7.0	10.92	12
1434	400	7.26	1114	-0.8	0.39	4.13	7.0	10.92	14

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	☐ Y ☒ N	1	125 mL	PLASTIC	D	☐ Y ☒ N	
1	125 mL	PLASTIC	A	☐ Y ☒ N		40 mL	VOA	E	☐ Y ☒ N	
2	60 mL	VOA	A	☐ Y ☒ N		1 L	PLASTIC	B	☐ Y ☒ N	
1	125 mL	PLASTIC	B	☐ Y ☒ N					☐ Y ☐ N	
1	125 mL	PLASTIC	C	☐ Y ☒ N					☐ Y ☐ N	

SHIPPING METHOD: FedEx	DATE SHIPPED: 3-4-25	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>fe</i>	DATE SIGNED: 3-6-25



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2025 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 634698.0000.0000	BY: JJ	DATE: 3/6/17	BY: JK	DATE: 3-6-25

SAMPLE ID: MW-15002	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING		TIME: 0955	DATE: 3/5/25	SAMPLE		TIME: 1015	DATE: 3/5/25
PURGE METHOD:		☒ PUMP PERISTALTIC PUMP ☐ BAILER		PH: 7.76 SU ORP: -0.89 mV		CONDUCTIVITY: 339 umhos/cm DO: 7.89 mg/L	
DEPTH TO WATER: 6.55 T/ PVC				TURBIDITY: 9 NTU			
DEPTH TO BOTTOM: NM T/ PVC				☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS				TEMPERATURE: 7.2 °C FERROUS Fe _____ mg/L			
VOLUME REMOVED: 2 ☒ LITERS ☐ GALLONS				COLOR: 1604 ODOR: none			
COLOR: clear ODOR: none				FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☐ NONE ☒ SLIGHT ☐ MODERATE ☐ VERY				FILTRATE COLOR: _____ FILTRATE ODOR: _____			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER				QC SAMPLE: ☐ MS/MSD ☐ DUP- _____			
COMMENTS:							

[illegible]

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	☐ Y ☐ N	2	125 mL	PLASTIC	D	☐ Y ☐ N		
1	125 mL	PLASTIC	A	☐ Y ☐ N	3	40 mL	VOA	E	☐ Y ☐ N		
1	60 mL	VOA	A	☐ Y ☐ N	4	1 L	PLASTIC	D	☐ Y ☐ N		
1	125 mL	PLASTIC	B	☐ Y ☐ N					☐ Y ☐ N		
1	125 mL	PLASTIC	C	☐ Y ☐ N					☐ Y ☐ N		

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>3-6-25</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>3/10/25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2025 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 634698.0000.0000	BY: JJ	DATE: 3/6/11	BY: JK	DATE: 3-6-25

SAMPLE ID: <u>MU-15008</u>		WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER _____	
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER _____			
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER _____			

PURGING	TIME: 0928	DATE: 3/5/15	SAMPLE	TIME: 0948	DATE: 3/5/15
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.49	SU	CONDUCTIVITY: 764	umhos/cm	
DEPTH TO WATER: 438 T/ PVC	ORP: -145	mV	DO: 1.47	mg/L	
DEPTH TO BOTTOM: NM T/ PVC	TURBIDITY: 5	NTU	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY		
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	TEMPERATURE: 7.5	°C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: 4 ☒ LITERS ☐ GALLONS	COLOR: Clear	ODOR: non	ODOR: non		
COLOR: clear	FILTRATE (0.45 um) ☐ YES ☒ NO	TURBIDITY ☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER	FILTRATE COLOR: _____	FILTRATE ODOR: _____	QC SAMPLE: ☐ MS/MSD ☐ DUP- _____		
COMMENTS:					

[illegible]

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	☐ Y ☐ N	1	125 mL	PLASTIC	D	☐ Y ☐ N		
1	125 mL	PLASTIC	A	☐ Y ☐ N	1	40 mL	VOA	E	☐ Y ☐ N		
1	60 mL	VOA	A	☐ Y ☐ N	1	1 L	PLASTIC	B	☐ Y ☐ N		
1	125 mL	PLASTIC	B	☐ Y ☐ N					☐ Y ☐ N		
1	125 mL	PLASTIC	C	☐ Y ☐ N					☐ Y ☐ N		

SHIPPING METHOD: <u>Hub Drop off</u>	DATE SHIPPED: <u>3-6-25</u>	AIRBILL NUMBER: <u> </u>
COC NUMBER: <u> </u>	SIGNATURE: <u></u>	DATE SIGNED: <u>3/10/25</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2025 GW C	PREPARED	CHECKED
PROJECT NUMBER: 634698.0000.0000	BY: JJ DATE: 3/6/15	BY: JK DATE: 3-6-25

SAMPLE ID: MW-15016	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER	
SAMPLE TYPE: ☒ GW ☐ VVW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER	

PURGING	TIME: 1025	DATE: 3/5/15	SAMPLE	TIME: 1050	DATE: 3/5/15
PURGE METHOD: ☒ PUMP PERISTALTIC PUMP ☐ BAILER	PH: 7.27 SU	CONDUCTIVITY: 868 umhos/cm	ORP: -95 mV	DO: 2.95 mg/L	
DEPTH TO WATER: 3.25 T/ PVC	TURBIDITY: 8 NTU				
DEPTH TO BOTTOM: NM T/ PVC	☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				
WELL VOLUME: NA ☐ LITERS ☐ GALLONS	TEMPERATURE: 4.7 °C	FERROUS Fe mg/L			
VOLUME REMOVED: 2.5 ☐ LITERS ☐ GALLONS	COLOR: Clear	ODOR: non			
COLOR: Brownish	ODOR: non	FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY ☐ NONE ☐ SLIGHT ☐ MODERATE ☒ VERY		FILTRATE COLOR: FILTRATE ODOR:			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER		QC SAMPLE: ☐ MS/MSD ☐ 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	100	7.27	868	-85	9.70	140	6.9	3.25	INITIAL
1030		7.27	841	-83	3.75	69	5.6	3.50	5
1035		7.25	853	-87	3.30	19	5.9	3.50	1
1040		7.27	862	-95	2.97	8	4.7	3.60	1.5
1045		7.27	870	-95	2.96	8	4.7	3.60	2
1050		7.27	868	-95	2.95	8	4.7	3.60	2.5

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	☐ Y ☐ N		125 mL	PLASTIC	D	☐ Y ☐ N	
1	125 mL	PLASTIC	A	☐ Y ☐ N		40 mL	VOA	E	☐ Y ☐ N	
	60 mL	VOA	A	☐ Y ☐ N		1 L	PLASTIC	B	☐ Y ☐ N	
1	125 mL	PLASTIC	B	☐ Y ☐ N					☐ Y ☐ N	
	125 mL	PLASTIC	C	☐ Y ☐ N					☐ Y ☐ N	

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 3-6-25	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 3/6/25



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2025 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 634698.0000.0000	BY: JJ	DATE: 3/6/11	BY: 512	DATE: 3-6-25

SAMPLE ID: <u>MW-15019</u>	WELL DIAMETER: ☒ 2" ☐ 4" ☐ 6" ☐ OTHER _____
WELL MATERIAL: ☒ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER _____	
SAMPLE TYPE: ☒ GW ☐ VW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER _____	

PURGING		TIME: 0832	DATE: 3/5/15	SAMPLE		TIME: 0857	DATE: 3/5/15
PURGE METHOD:		☒ PUMP PERISTALTIC PUMP ☐ BAILER		PH: 7.04		SU	CONDUCTIVITY: 1896 umhos/cm
				ORP: -102 mV		DO: 1.80	mg/L
DEPTH TO WATER: 535 T/ PVC				TURBIDITY: 3 NTU			
DEPTH TO BOTTOM: NM T/ PVC				☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY			
WELL VOLUME: NA ☐ LITERS ☐ GALLONS				TEMPERATURE: 7.1 °C			
VOLUME REMOVED: 5 ☐ LITERS ☐ GALLONS				FERROUS Fe: _____ mg/L			
COLOR: clear				ODOR: none			
ODOR: none				FILTRATE (0.45 um) ☐ YES ☒ NO			
TURBIDITY				FILTRATE COLOR: _____			
☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				FILTRATE ODOR: _____			
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER				QC SAMPLE: ☐ MS/MSD ☒ DUP- #101			
				COMMENTS:			

[illegible]

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	☐ Y ☐ N	2	125 mL	PLASTIC	D	☐ Y ☐ N	
2	125 mL	PLASTIC	A	☐ Y ☐ N	2	40 mL	VOA	E	☐ Y ☐ N	
2	60 mL	VOA	A	☐ Y ☐ N	2	1 L	PLASTIC	B	☐ Y ☐ N	
2	125 mL	PLASTIC	B	☐ Y ☐ N					☐ Y ☐ N	
2	125 mL	PLASTIC	C	☐ Y ☐ N					☐ Y ☐ N	

SHIPPING METHOD: <u>hub drop off</u>	DATE SHIPPED: <u>3-6-25</u>	AIRBILL NUMBER: <u> </u>
COC NUMBER: <u> </u>	SIGNATURE: <u> </u>	DATE SIGNED: <u>3/6/25</u>

CHAIN OF CUSTODY

Consumers Energy

Count on Us®

CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page 1 of 1

SAMPLING SITE / CUSTOMER:

1-2025 DEK Bottom Ash Pond Wells

PROJECT NUMBER:

25-0100

SAP CC or WO#:

REQUESTER: Harold Register

ANALYSIS REQUESTED
(Attach List if More Space is Needed)

QA REQUIREMENT:

SAMPLING TEAM:

TURNAROUND TIME REQUIRED:

☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ OTHER

☐ NPDES

☒ TNI

☐ ISO 17025

☐ 10 CFR 50 APP. B

☐ INTERNAL INFO

☐ OTHER

SEND REPORT TO:

Joseph Firli

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

PRESERVATIVE

FIELD SAMPLE ID / LOCATION

TOTAL #

None
HNO₃
H₂SO₄
NaOH
HCl
MeOH
Other

Total Metals

Anions

Ammonia

TDS

Alkalinity

Sulfide

REMARKS

25-0100-01

3-4-25

1108

GW

DEK-MW-15002

7

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-02

3-4-25

1320

GW

DEK-MW-15005

7

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-03

3-4-25

1324

GW

DEK-MW-15006

7

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-04

3-4-25

GW

DUP-DEK-BAP-01

7

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-05

3-4-25

1320

W

FB-DEK-BAP

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-06

3-4-25

1331

W

EB-DEK-BAP

4

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

ELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

ELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

Fed Ex

03-05-25 / 10:29

Received on Ice? ☒ Yes ☐ No

Temperature: 2.2-4.6C

M&TE #: LS028757

Cal. Due Date: 01-16-26

CHAIN OF CUSTODY

25
192324



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page 1 of 1

AMPLING SITE / CUSTOMER:
1-2025 DEK Lined Impoundment

PROJECT NUMBER:
25-0102

SAP CC or WO#:
REQUESTER: Harold Register

ANALYSIS REQUESTED
(Attach List if More Space is Needed)

QA REQUIREMENT:

AMPLING TEAM:

TURNAROUND TIME REQUIRED:
☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ OTHER

☐ NPDES
☒ TNI
☐ ISO 17025
☐ 10 CFR 50 APP. B
☐ INTERNAL INFO
☐ OTHER

END REPORT TO: Joseph Firit

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 = Waste
WT = General Waste

CONTAINERS

TOTAL	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other

Total Metals
Anions
Ammonia
TDS
Alkalinity
Sulfide

REMARKS

FIELD SAMPLE ID / LOCATION

#

None
HNO₃
H₂SO₄
NaOH
HCl
MeOH
Other

Total Metals
Anions
Ammonia
TDS
Alkalinity
Sulfide

REMARKS

LAB
SAMPLE ID

SAMPLE COLLECTION
DATE TIME

MATRIX

25-0102-01

3/4/25

1408

GW

DEK-MW-15003

7

4 1 1 1

x x x x x x

-02

3/4/25

1251

GW

OW-10

7

4 1 1 1

x x x x x x

-03

1529

GW

DEK-MW-22003

7

4 1 1 1

x x x x x x

-04

1529

GW

DEK-MW-22003

7

4 1 1 1

x x x x x x

-05

1529

GW

DEK-MW-22006

7

4 1 1 1

x x x x x x

-06

1529

GW

DUP-KLI

7

4 1 1 1

x x x x x x

-07

1529

W

EB-KLI

4

1 1 1 1

x x x x x x

-08

1529

W

FB-KLI

4

1 1 1 1

x x x x x x

ELINGISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

ELINGISHED BY:

DATE/TIME:

RECEIVED BY:

Received on Ice? ☒ Yes ☐ No
Temperature: 1.8-4.9°C

M&TE #: LS028757

Cal. Due Date: 01-16-26

Fed Ex

03-04-25 / 10:29

Feder

Environment testing

Chain of Custody Record

Ver: 05/06/2024

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 18, 2025

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2025 Q1

CC: HDRegister, P22-521

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

Chemistry Project: 25-0102

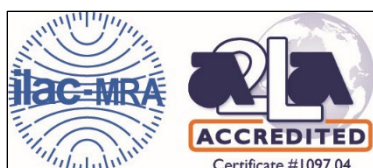
TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 03/05/2025 for the 1st Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 03/05/2025.

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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

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

<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

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q1-2025 DEK Lined Impoundment
Date Received: 3/5/2025
Chemistry Project: 25-0102

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
25-0102-01	DEK-MW-15003	Groundwater	03/04/2025 14:08	DEK Lined Impoundment
25-0102-02	OW-10	Groundwater	03/04/2025 12:51	DEK Lined Impoundment
25-0102-03	OW-11	Not Collected		DEK Lined Impoundment
25-0102-04	DEK-MW-22003	Groundwater	03/04/2025 15:29	DEK Lined Impoundment
25-0102-05	DEK-MW-22006	Groundwater	03/04/2025 14:34	DEK Lined Impoundment
25-0102-06	DUP-KLI	Groundwater	03/04/2025 00:00	DEK Lined Impoundment
25-0102-07	EB-KLI	Water	03/04/2025 14:13	DEK Lined Impoundment
25-0102-08	FB-KLI	Water	03/04/2025 12:51	DEK Lined Impoundment

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-15003**
 Lab Sample ID: 25-0102-01
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 02:08 PM

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

Aliquot #: 25-0102-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	358		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	47		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	729		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	32300		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	138		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	21		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	4800		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	63		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	23		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	4540		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	2		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	56100		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	2		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

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

Aliquot #: 25-0102-01-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	60200		ug/L	1000.0	03/10/2025	AB25-0310-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-15003**
 Lab Sample ID: 25-0102-01
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 02:08 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 25-0102-01-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2025	AB25-0310-01
Sulfate	37000		ug/L	1000.0	03/10/2025	AB25-0310-01

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 25-0102-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1880		ug/L	25.0	03/12/2025	AB25-0312-09

Total Dissolved Solids by SM 2540C Aliquot #: 25-0102-01-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	290		mg/L	10.0	03/06/2025	AB25-0306-03

Alkalinity by SM 2320B Aliquot #: 25-0102-01-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	102000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Bicarbonate	102000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Carbonate	ND		ug/L	10000.0	03/12/2025	AB25-0312-03

Sulfide, Total by SM 4500 S2D Aliquot #: 25-0102-01-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	370		ug/L	20.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **OW-10**
Lab Sample ID: 25-0102-02
Matrix: Groundwater

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 12:51 PM

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

Aliquot #: 25-0102-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	2		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	218		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	1610		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	193000		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	1		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	2		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	5410		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	40		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	36300		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	998		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	6		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	7690		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	2		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	81600		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	3		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-02-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

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

Aliquot #: 25-0102-02-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	97600		ug/L	1000.0	03/10/2025	AB25-0310-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **OW-10**
 Lab Sample ID: 25-0102-02
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 12:51 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 25-0102-02-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2025	AB25-0310-01
Sulfate	ND		ug/L	1000.0	03/10/2025	AB25-0310-01

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 25-0102-02-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	4560		ug/L	25.0	03/12/2025	AB25-0312-09

Total Dissolved Solids by SM 2540C Aliquot #: 25-0102-02-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	930		mg/L	10.0	03/06/2025	AB25-0306-03

Alkalinity by SM 2320B Aliquot #: 25-0102-02-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	738000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Bicarbonate	738000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Carbonate	ND		ug/L	10000.0	03/12/2025	AB25-0312-03

Sulfide, Total by SM 4500 S2D Aliquot #: 25-0102-02-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	110		ug/L	20.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-22003**
 Lab Sample ID: 25-0102-04
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 03:29 PM

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

Aliquot #: 25-0102-04-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	32		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	88		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	737		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	147000		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	2		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	2		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	2470		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	28		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	44800		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	575		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	12		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	5		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	5720		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	1		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	95900		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	2		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-04-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

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

Aliquot #: 25-0102-04-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	116000		ug/L	1000.0	03/10/2025	AB25-0310-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-22003**
 Lab Sample ID: 25-0102-04
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 03:29 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 25-0102-04-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2025	AB25-0310-01
Sulfate	353000		ug/L	1000.0	03/10/2025	AB25-0310-01

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 25-0102-04-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2660		ug/L	25.0	03/12/2025	AB25-0312-09

Total Dissolved Solids by SM 2540C Aliquot #: 25-0102-04-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1010		mg/L	10.0	03/06/2025	AB25-0306-03

Alkalinity by SM 2320B Aliquot #: 25-0102-04-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	285000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Bicarbonate	285000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Carbonate	ND		ug/L	10000.0	03/12/2025	AB25-0312-03

Sulfide, Total by SM 4500 S2D Aliquot #: 25-0102-04-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	90		ug/L	20.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-22006**
 Lab Sample ID: 25-0102-05
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 02:34 PM

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

Aliquot #: 25-0102-05-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	2		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	91		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	429		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	196000		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	2		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	8480		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	60		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	112000		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	1330		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	4		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	5100		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	1		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	54600		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-05-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-05-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

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

Aliquot #: 25-0102-05-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	23400		ug/L	1000.0	03/10/2025	AB25-0310-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DEK-MW-22006**
 Lab Sample ID: 25-0102-05
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 02:34 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 25-0102-05-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2025	AB25-0310-01
Sulfate	581000		ug/L	1000.0	03/10/2025	AB25-0310-01

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 25-0102-05-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	558		ug/L	25.0	03/12/2025	AB25-0312-09

Total Dissolved Solids by SM 2540C Aliquot #: 25-0102-05-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	03/06/2025	AB25-0306-03

Alkalinity by SM 2320B Aliquot #: 25-0102-05-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	505000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Bicarbonate	505000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Carbonate	ND		ug/L	10000.0	03/12/2025	AB25-0312-03

Sulfide, Total by SM 4500 S2D Aliquot #: 25-0102-05-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	70		ug/L	20.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **DUP-KLI**
Lab Sample ID: 25-0102-06
Matrix: Groundwater

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 12:00 AM

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

Aliquot #: 25-0102-06-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	379		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	48		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	724		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	31600		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	132		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	21		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	4790		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	68		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	24		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	4550		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	1		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	56800		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	2		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-06-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-06-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

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

Aliquot #: 25-0102-06-C02-A02

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59800		ug/L	1000.0	03/10/2025	AB25-0310-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
 Field Sample ID: **DUP-KLI**
 Lab Sample ID: 25-0102-06
 Matrix: Groundwater

Laboratory Project: **25-0102**
 Collect Date: 03/04/2025
 Collect Time: 12:00 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 25-0102-06-C02-A02 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/05/2025	AB25-0310-01
Sulfate	37000		ug/L	1000.0	03/10/2025	AB25-0310-01

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL Aliquot #: 25-0102-06-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1950		ug/L	25.0	03/12/2025	AB25-0312-09

Total Dissolved Solids by SM 2540C Aliquot #: 25-0102-06-C04-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	286		mg/L	10.0	03/06/2025	AB25-0306-03

Alkalinity by SM 2320B Aliquot #: 25-0102-06-C05-A01 Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	103000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Bicarbonate	103000		ug/L	10000.0	03/12/2025	AB25-0312-03
Alkalinity Carbonate	ND		ug/L	10000.0	03/12/2025	AB25-0312-03

Sulfide, Total by SM 4500 S2D Aliquot #: 25-0102-06-C07-A01 Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	460		ug/L	40.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **EB-KLI**
Lab Sample ID: 25-0102-07
Matrix: Water

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 02:13 PM

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

Aliquot #: 25-0102-07-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	ND		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	4		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	ND		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	ND		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	ND		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	15		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-07-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-07-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL

Aliquot #: 25-0102-07-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	03/12/2025	AB25-0312-09

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **EB-KLI**
Lab Sample ID: 25-0102-07
Matrix: Water

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 02:13 PM

Sulfide, Total by SM 4500 S2D				Aliquot #: 25-0102-07-C04-A01		Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/11/2025	AB25-0312-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **FB-KLI**
Lab Sample ID: 25-0102-08
Matrix: Water

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 12:51 PM

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

Aliquot #: 25-0102-08-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Arsenic	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Barium	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Beryllium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Boron	ND		ug/L	20.0	03/09/2025	AB25-0309-02
Cadmium	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Calcium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Chromium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Cobalt	ND		ug/L	6.0	03/09/2025	AB25-0309-02
Copper	4		ug/L	1.0	03/09/2025	AB25-0309-02
Iron	ND		ug/L	20.0	03/09/2025	AB25-0309-02
Lead	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Lithium	ND		ug/L	10.0	03/09/2025	AB25-0309-02
Magnesium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Manganese	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Molybdenum	ND		ug/L	5.0	03/09/2025	AB25-0309-02
Nickel	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Potassium	ND		ug/L	100.0	03/09/2025	AB25-0309-02
Selenium	ND		ug/L	1.0	03/09/2025	AB25-0309-02
Silver	ND		ug/L	0.2	03/09/2025	AB25-0309-02
Sodium	ND		ug/L	1000.0	03/09/2025	AB25-0309-02
Thallium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Vanadium	ND		ug/L	2.0	03/09/2025	AB25-0309-02
Zinc	ND		ug/L	10.0	03/09/2025	AB25-0309-02

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 25-0102-08-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2025	AB25-0310-05

Anions by EPA 300.0 Aqueous, NO2, NO3

Aliquot #: 25-0102-08-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/05/2025	AB25-0305-06
Nitrite	ND		ug/L	100.0	03/05/2025	AB25-0305-06

Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL

Aliquot #: 25-0102-08-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	03/12/2025	AB25-0312-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**
Field Sample ID: **FB-KLI**
Lab Sample ID: 25-0102-08
Matrix: Water

Laboratory Project: **25-0102**
Collect Date: 03/04/2025
Collect Time: 12:51 PM

Sulfide, Total by SM 4500 S2D

Aliquot #: 25-0102-08-C04-A01

Analyst: Merit

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/11/2025	AB25-0312-01

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

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 25-0102 Inspection Date: 3.5.25 Inspection By: KDR

Sample Origin/Project Name: Q1-2025 DEK Lined Impoundment

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx ☒ UPS _____ USPS _____

Tracking Number: _____ Other/Carry In (whom) _____

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 1.8-4.9 °C Samples Received on Ice: Yes ☒ No _____

M&TE # and Expiration LS028757/ 1.16.26

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 <u>60mL</u>)	<u>10</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>28</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>5</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes ☒ No _____ N/A _____ pH paper lot # 210224 Exp. Date 12.1.26

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No ☒

Consumers Energy
Count on Us®

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

[illegible]



Analytical Laboratory Report

Report ID: S72099.01(01)
Generated on 03/12/2025

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): S72099.01-S72099.07
Project: 25-0102 PR#25030245
Collected Date(s): 03/04/2025
Submitted Date/Time: 03/06/2025 15:27
Sampled by: Unknown
P.O. #: 4400131511

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

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 4500 S2 D 2021



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S72099.01	DEK-MW-15003 (25-0102-01)	Groundwater	03/04/25 14:08
S72099.02	OW-10 (25-0102-02)	Groundwater	03/04/25 12:51
S72099.03	DEK-MW-22003 (25-0102-04)	Groundwater	03/04/25 15:29
S72099.04	DEK-MW-22006 (25-0102-05)	Groundwater	03/04/25 14:34
S72099.05	DUP-KLI (25-0102-06)	Groundwater	03/04/25 00:01
S72099.06	EB-KLI (25-0102-07)	Groundwater	03/04/25 14:13
S72099.07	FB-KLI (25-0102-08)	Groundwater	03/04/25 12:51



Analytical Laboratory Report

Lab Sample ID: S72099.01
Sample Tag: DEK-MW-15003 (25-0102-01)
Collected Date/Time: 03/04/2025 14:08
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 12:29, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.37	0.02		mg/L	1	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S72099.02
Sample Tag: OW-10 (25-0102-02)
Collected Date/Time: 03/04/2025 12:51
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 12:33, Analyst: MDG

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



Analytical Laboratory Report

Lab Sample ID: S72099.03
Sample Tag: DEK-MW-22003 (25-0102-04)
Collected Date/Time: 03/04/2025 15:29
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 12:49, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.09	0.02		mg/L	1	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S72099.04
Sample Tag: DEK-MW-22006 (25-0102-05)
Collected Date/Time: 03/04/2025 14:34
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 12:52, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.07	0.02		mg/L	1	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S72099.05
Sample Tag: DUP-KLI (25-0102-06)
Collected Date/Time: 03/04/2025 00:01
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 13:00, Analyst: MDG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.46	0.04		mg/L	2	18496-25-8	



Analytical Laboratory Report

Lab Sample ID: S72099.06
Sample Tag: EB-KLI (25-0102-07)
Collected Date/Time: 03/04/2025 14:13
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 13:06, 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: S72099.07
Sample Tag: FB-KLI (25-0102-08)
Collected Date/Time: 03/04/2025 12:51
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125mL Plastic	NaOH/Zn Acetate	Yes	4.4	IR

Inorganics

Method: SM4500-S2 D, Run Date: 03/11/25 14:05, 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:S72099

Client:CONSUMERS (Consumers Energy Company)

Project: 25-0102 PR#25030245

Submitted:03/06/2025 15:27 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.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☐ Yes ☒ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ 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: S72099 Submitted: 03/06/2025 15:27
Client: CONSUMERS (Consumers Energy Company)
Project: 25-0102 PR#25030245

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

Initial Preservation Check: 03/06/2025 16:11 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
S72099.01	125mL Plastic NaOH/Zn Acetate	>12			
S72099.02	125mL Plastic NaOH/Zn Acetate	>12			
S72099.03	125mL Plastic NaOH/Zn Acetate	>12			
S72099.04	125mL Plastic NaOH/Zn Acetate	>12			
S72099.05	125mL Plastic NaOH/Zn Acetate	>12			
S72099.06	125mL Plastic NaOH/Zn Acetate	>12			
S72099.07	125mL Plastic NaOH/Zn Acetate	>12			



ANALYTICAL REPORT

PREPARED FOR

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

Generated 4/9/2025 1:53:40 PM

JOB DESCRIPTION

Karn/Weadock CCR DEK Lined Impoundment

JOB NUMBER

240-220003-1

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



Generated
4/9/2025 1:53:40 PM

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

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	15
QC Sample Results	16
QC Association Summary	19
Lab Chronicle	20
Certification Summary	22
Chain of Custody	23
Receipt Checklists	27



Definitions/Glossary

Client: TRC Environmental Corporation.

Job ID: 240-220003-1

Project/Site: Karn/Weadock CCR DEK Lined Impoundment

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 Lined Impoundment

Job ID: 240-220003-1

Job ID: 240-220003-1

Eurofins Cleveland

Job Narrative 240-220003-1

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 3/7/2025 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 1.8°C.

Gas Flow Proportional Counter

Method 904.0: Radium-228 Prep Batch 160-707030:

The laboratory control sample (LCS) recovery (123%) associated with the following sample(s) is outside the upper QC limit of (120%) indicating a potential positive bias for that analyte. This analyte was not observed above the MDC in the associated samples; therefore the sample data is not adversely affected by this excursion. The data have been reported with this narrative. DEK-MW-15003 (240-220003-1), OW-10 (240-220003-2), DEK-MW-18001 (240-220003-3), DEK-MW-22003 (240-220003-4), DEK-MW-22006 (240-220003-5), DUP-KLI (240-220003-6) and (240-220003-A-1-B DU)

The analyte was observed above the MDC for the sample duplicate (DU). However, the purpose of the DU is to demonstrate batch precision, for which the laboratory evaluates DER (duplicate error ratio) and the DU meets applicable criteria.

Method 904.0: Radium-228 prep batch 160-708676:

Insufficient sample volume was available to perform a sample duplicate for the following samples: EB-KLI (240-220003-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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.

Job ID: 240-220003-1

Project/Site: Karn/Weadock CCR DEK Lined Impoundment

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.

Job ID: 240-220003-1

Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-220003-1	DEK-MW-15003	Water	03/04/25 14:08	03/07/25 08:00
240-220003-2	OW-10	Water	03/04/25 12:51	03/07/25 08:00
240-220003-3	DEK-MW-18001	Water	03/04/25 08:33	03/07/25 08:00
240-220003-4	DEK-MW-22003	Water	03/04/25 15:29	03/07/25 08:00
240-220003-5	DEK-MW-22006	Water	03/04/25 14:34	03/07/25 08:00
240-220003-6	DUP-KLI	Water	03/04/25 00:00	03/07/25 08:00
240-220003-7	EB-KLI	Water	03/04/25 00:00	03/07/25 08:00

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DEK-MW-15003

Lab Sample ID: 240-220003-1

Date Collected: 03/04/25 14:08

Matrix: Water

Date Received: 03/07/25 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	0.0549	U	0.0565	0.0567	1.00	0.0888	pCi/L	03/11/25 07:48	04/04/25 22:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		30 - 110					03/11/25 07:48	04/04/25 22:32	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	0.252	U	0.288	0.289	1.00	0.472	pCi/L	03/11/25 07:50	03/17/25 12:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		30 - 110					03/11/25 07:50	03/17/25 12:12	1
Y Carrier	84.1		30 - 110					03/11/25 07:50	03/17/25 12:12	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	0.307	U	0.293	0.295	5.00	0.472	pCi/L		04/08/25 16:38	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: OW-10

Lab Sample ID: 240-220003-2

Date Collected: 03/04/25 12:51

Matrix: Water

Date Received: 03/07/25 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	0.165		0.105	0.106	1.00	0.142	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		30 - 110					03/11/25 07:48	04/04/25 22:55	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	0.674	U	0.498	0.502	1.00	0.756	pCi/L	03/11/25 07:50	03/17/25 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		30 - 110					03/11/25 07:50	03/17/25 12:13	1
Y Carrier	84.5		30 - 110					03/11/25 07:50	03/17/25 12:13	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	0.839		0.509	0.513	5.00	0.756	pCi/L		04/08/25 16:38	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DEK-MW-18001

Lab Sample ID: 240-220003-3

Date Collected: 03/04/25 08:33

Matrix: Water

Date Received: 03/07/25 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	0.110	U	0.0869	0.0875	1.00	0.131	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.1		30 - 110					03/11/25 07:48	04/04/25 22:55	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	0.607	U	0.428	0.431	1.00	0.649	pCi/L	03/11/25 07:50	03/17/25 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.1		30 - 110					03/11/25 07:50	03/17/25 12:13	1
Y Carrier	79.3		30 - 110					03/11/25 07:50	03/17/25 12:13	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	0.717		0.437	0.440	5.00	0.649	pCi/L		04/08/25 16:38	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DEK-MW-22003

Lab Sample ID: 240-220003-4

Date Collected: 03/04/25 15:29

Matrix: Water

Date Received: 03/07/25 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	0.177		0.0901	0.0915	1.00	0.112	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.1		30 - 110					03/11/25 07:48	04/04/25 22:55	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	0.546	U	0.448	0.451	1.00	0.704	pCi/L	03/11/25 07:50	03/17/25 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.1		30 - 110					03/11/25 07:50	03/17/25 12:13	1
Y Carrier	82.2		30 - 110					03/11/25 07:50	03/17/25 12:13	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	0.723		0.457	0.460	5.00	0.704	pCi/L		04/09/25 12:34	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DEK-MW-22006

Lab Sample ID: 240-220003-5

Date Collected: 03/04/25 14:34

Matrix: Water

Date Received: 03/07/25 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	0.147		0.0848	0.0858	1.00	0.112	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.4		30 - 110					03/11/25 07:48	04/04/25 22:55	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	0.450	U	0.397	0.399	1.00	0.628	pCi/L	03/11/25 07:50	03/17/25 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.4		30 - 110					03/11/25 07:50	03/17/25 12:13	1
Y Carrier	80.7		30 - 110					03/11/25 07:50	03/17/25 12:13	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	0.597	U	0.406	0.408	5.00	0.628	pCi/L		04/09/25 12:34	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DUP-KLI

Lab Sample ID: 240-220003-6

Date Collected: 03/04/25 00:00

Matrix: Water

Date Received: 03/07/25 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	0.0700	U	0.0648	0.0651	1.00	0.0987	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					03/11/25 07:48	04/04/25 22:55	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	0.176	U	0.335	0.335	1.00	0.579	pCi/L	03/11/25 07:50	03/17/25 12:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					03/11/25 07:50	03/17/25 12:13	1
Y Carrier	87.1		30 - 110					03/11/25 07:50	03/17/25 12:13	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	0.246	U	0.341	0.341	5.00	0.579	pCi/L		04/09/25 12:34	1

Client Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: EB-KLI

Lab Sample ID: 240-220003-7

Date Collected: 03/04/25 00:00

Matrix: Water

Date Received: 03/07/25 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	-0.00212	U	0.0469	0.0469	1.00	0.0994	pCi/L	03/11/25 07:48	04/04/25 22:55	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.6		30 - 110					03/11/25 07:48	04/04/25 22:55	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	-0.0930	U	0.266	0.266	1.00	0.527	pCi/L	03/20/25 08:45	03/26/25 12:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.9		30 - 110					03/20/25 08:45	03/26/25 12:19	1
Y Carrier	83.7		30 - 110					03/20/25 08:45	03/26/25 12:19	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	-0.0951	U	0.270	0.270	5.00	0.527	pCi/L		04/09/25 12:34	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
		Ba					
Lab Sample ID	Client Sample ID	(30-110)					
240-220003-1	DEK-MW-15003	90.4					
240-220003-1 DU	DEK-MW-15003	91.1					
240-220003-2	OW-10	81.8					
240-220003-3	DEK-MW-18001	83.1					
240-220003-4	DEK-MW-22003	83.1					
240-220003-5	DEK-MW-22006	85.4					
240-220003-6	DUP-KLI	83.3					
240-220003-7	EB-KLI	83.6					
LCS 160-707028/2-A	Lab Control Sample	89.6					
MB 160-707028/1-A	Method Blank	87.0					
Tracer/Carrier Legend							
Ba = Ba Carrier							

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
		Ba		Y			
Lab Sample ID	Client Sample ID	(30-110)	(30-110)				
240-220003-1	DEK-MW-15003	90.4	84.1				
240-220003-1 DU	DEK-MW-15003	91.1	83.7				
240-220003-2	OW-10	81.8	84.5				
240-220003-3	DEK-MW-18001	83.1	79.3				
240-220003-4	DEK-MW-22003	83.1	82.2				
240-220003-5	DEK-MW-22006	85.4	80.7				
240-220003-6	DUP-KLI	83.3	87.1				
240-220003-7	EB-KLI	93.9	83.7				
LCS 160-707030/2-A	Lab Control Sample	89.6	80.4				
LCS 160-708676/2-A	Lab Control Sample	89.7	81.1				
LCSD 160-708676/3-A	Lab Control Sample Dup	90.7	83.4				
MB 160-707030/1-A	Method Blank	87.0	80.0				
MB 160-708676/1-A	Method Blank	78.7	82.2				
Tracer/Carrier Legend							
Ba = Ba Carrier							
Y = Y Carrier							

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-707028/1-A

Matrix: Water

Analysis Batch: 710744

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 707028

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03617	U	0.0564	0.0565	1.00	0.0975	pCi/L	03/11/25 07:48	04/04/25 22:30	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.0		30 - 110					03/11/25 07:48	04/04/25 22:30	1

Lab Sample ID: LCS 160-707028/2-A

Matrix: Water

Analysis Batch: 710744

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 707028

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226		9.58	8.733		0.922	1.00	0.0861	pCi/L	91	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	89.6		30 - 110							

Lab Sample ID: 240-220003-1 DU

Matrix: Water

Analysis Batch: 710745

Client Sample ID: DEK-MW-15003

Prep Type: Total/NA

Prep Batch: 707028

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-226	0.0549	U	0.1254		0.0737	1.00	0.0937	pCi/L	0.54	1
Carrier	DU %Yield	DU Qualifier	Limits							
Ba Carrier	91.1		30 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-707030/1-A

Matrix: Water

Analysis Batch: 708118

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 707030

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1383	U	0.351	0.351	1.00	0.617	pCi/L	03/11/25 07:50	03/17/25 12:12	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.0		30 - 110					03/11/25 07:50	03/17/25 12:12	1
Y Carrier	80.0		30 - 110					03/11/25 07:50	03/17/25 12:12	1

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

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

Lab Sample ID: LCS 160-707030/2-A

Matrix: Water

Analysis Batch: 708118

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 707030

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228			8.01	9.837		1.35	1.00	0.520	pCi/L	123	75 - 125
	LCS	LCS									
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	89.6		30 - 110								
Y Carrier	80.4		30 - 110								

Lab Sample ID: 240-220003-1 DU

Matrix: Water

Analysis Batch: 708118

Client Sample ID: DEK-MW-15003

Prep Type: Total/NA

Prep Batch: 707030

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit		RER	RER Limit
Radium-228	0.252	U		0.7377		0.389	1.00	0.536	pCi/L		0.72	1
	DU	DU										
Carrier	%Yield	Qualifier	Limits									
Ba Carrier	91.1		30 - 110									
Y Carrier	83.7		30 - 110									

Lab Sample ID: MB 160-708676/1-A

Matrix: Water

Analysis Batch: 709426

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 708676

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05980	U	0.377	0.377	1.00	0.684	pCi/L	03/20/25 08:45	03/26/25 12:19	1
	MB	MB								
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	78.7		30 - 110					03/20/25 08:45	03/26/25 12:19	1
Y Carrier	82.2		30 - 110					03/20/25 08:45	03/26/25 12:19	1

Lab Sample ID: LCS 160-708676/2-A

Matrix: Water

Analysis Batch: 709426

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 708676

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228			9.60	8.759		1.25	1.00	0.566	pCi/L	91	75 - 125
	LCS	LCS									
Carrier	%Yield	Qualifier	Limits								
Ba Carrier	89.7		30 - 110								
Y Carrier	81.1		30 - 110								

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

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

Lab Sample ID: LCSD 160-708676/3-A

Matrix: Water

Analysis Batch: 709426

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 708676

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228			9.60	9.793		1.34	1.00	0.589	pCi/L	102	75 - 125	0.40	1
	LCSD	LCSD											
Carrier	%Yield	Qualifier	Limits										
Ba Carrier	90.7		30 - 110										
Y Carrier	83.4		30 - 110										

QC Association Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Rad

Prep Batch: 707028

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-220003-1	DEK-MW-15003	Total/NA	Water	PrecSep STD	
240-220003-2	OW-10	Total/NA	Water	PrecSep STD	
240-220003-3	DEK-MW-18001	Total/NA	Water	PrecSep STD	
240-220003-4	DEK-MW-22003	Total/NA	Water	PrecSep STD	
240-220003-5	DEK-MW-22006	Total/NA	Water	PrecSep STD	
240-220003-6	DUP-KLI	Total/NA	Water	PrecSep STD	
240-220003-7	EB-KLI	Total/NA	Water	PrecSep STD	
MB 160-707028/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-707028/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-220003-1 DU	DEK-MW-15003	Total/NA	Water	PrecSep STD	

Prep Batch: 707030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-220003-1	DEK-MW-15003	Total/NA	Water	PrecSep_0	
240-220003-2	OW-10	Total/NA	Water	PrecSep_0	
240-220003-3	DEK-MW-18001	Total/NA	Water	PrecSep_0	
240-220003-4	DEK-MW-22003	Total/NA	Water	PrecSep_0	
240-220003-5	DEK-MW-22006	Total/NA	Water	PrecSep_0	
240-220003-6	DUP-KLI	Total/NA	Water	PrecSep_0	
MB 160-707030/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-707030/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-220003-1 DU	DEK-MW-15003	Total/NA	Water	PrecSep_0	

Prep Batch: 708676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-220003-7	EB-KLI	Total/NA	Water	PrecSep_0	
MB 160-708676/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-708676/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-708676/3-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: 240-220003-1

Client Sample ID: DEK-MW-15003

Lab Sample ID: 240-220003-1

Date Collected: 03/04/25 14:08

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710746	SWS	EET SL	04/04/25 22:32
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:12
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/08/25 16:38

Client Sample ID: OW-10

Lab Sample ID: 240-220003-2

Date Collected: 03/04/25 12:51

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:13
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/08/25 16:38

Client Sample ID: DEK-MW-18001

Lab Sample ID: 240-220003-3

Date Collected: 03/04/25 08:33

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:13
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/08/25 16:38

Client Sample ID: DEK-MW-22003

Lab Sample ID: 240-220003-4

Date Collected: 03/04/25 15:29

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:13
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/09/25 12:34

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR DEK Lined Impoundment

Job ID: 240-220003-1

Client Sample ID: DEK-MW-22006

Lab Sample ID: 240-220003-5

Date Collected: 03/04/25 14:34

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:13
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/09/25 12:34

Client Sample ID: DUP-KLI

Lab Sample ID: 240-220003-6

Date Collected: 03/04/25 00:00

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			707030	OGC	EET SL	03/11/25 07:50
Total/NA	Analysis	904.0		1	708118	SWS	EET SL	03/17/25 12:13
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/09/25 12:34

Client Sample ID: EB-KLI

Lab Sample ID: 240-220003-7

Date Collected: 03/04/25 00:00

Matrix: Water

Date Received: 03/07/25 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			707028	OGC	EET SL	03/11/25 07:48
Total/NA	Analysis	903.0		1	710745	SWS	EET SL	04/04/25 22:55
Total/NA	Prep	PrecSep_0			708676	OGC	EET SL	03/20/25 08:45
Total/NA	Analysis	904.0		1	709426	SWS	EET SL	03/26/25 12:19
Total/NA	Analysis	Ra226_Ra228		1	711562	FLC	EET SL	04/09/25 12:34

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: 240-220003-1

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	04-06-27
ANAB	Dept. of Energy	L2305.01	04-06-27
Arizona	State	AZ0813	12-08-25
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	12-01-26
Kansas	NELAP	E-10236	10-31-25
Kentucky (DW)	State	KY90125	12-31-25
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-25
Louisiana (All)	NELAP	106151	06-30-25
Louisiana (DW)	State	LA011	12-31-25
Maryland	State	310	09-30-25
Massachusetts	State	M-MO054	06-30-25
MI - RadChem Recognition	State	9005	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
North Carolina (DW)	State	29700	07-31-25
North Dakota	State	R-207	06-30-25
Oklahoma	NELAP	9997	08-31-25
Oregon	NELAP	4157	09-01-25
Pennsylvania	NELAP	68-00540	02-28-26
South Carolina	State	85002	06-30-25
Texas	NELAP	T104704193	07-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	525-23-138-94730	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

Ver: 05/06/2024 4/9/2025

Eurofins - Cleveland Sample Receipt Form/Narrative **Barberton Facility** **Login # :** **Cooler unpacked by: MALISSA LOAR**

Client IRE **Site Name** _____ **Cooler Received on** 3.7.25 **Opened on** 3.7.25

FedEx: 1st Grd Exp UPS **FAS** Waypoint **Client Drop Off** _____ **Eurofins Courier** _____ **Other** _____

Receipt After-hours, Drop-off Date/Time _____ **Storage Location** _____

Eurofins Cooler # 24 **Foam Box** _____ **Client Cooler** _____ **Box** _____ **Other** _____

Packing material used. Bubble Wrap _____ Foam _____ Plastic Bag None **Other** _____

COOLANT Wet Ice Blue Ice _____ Dry Ice _____ Water _____ ☐ See Multiple Cooler Form

1 Cooler temperature upon receipt _____
IR GUN # 13 (CF S °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp 1.8 °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 NO
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes NO
-Were tamper/custody seals intact and uncompromised? YES No NO
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)? YES No NO
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
13 If yes, Questions 13-17 have been checked at the originating laboratory
14 Were all preserved sample(s) at the correct pH upon receipt? YES No NO pH Strip Lot# HC448976
15 Were VOAAs on the COC? YES No NO
16 Were air bubbles >6 mm in any VOA vials? YES No NO Larger than this
17 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes NO No NO
18 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 VOAAs Frozen _____

Temperature readings. _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservation</u> <u>Temp</u>	<u>Preservation</u> <u>Added</u>	<u>Lot Number</u>
DEK-MW-15003	240-220003-A-1	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-15003	240-220003-B-1	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
OW-10	240-220003-A-2	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
OW-10	240-220003-B-2	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-18001	240-220003-A-3	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-18001	240-220003-B-3	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-22003	240-220003-A-4	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-22003	240-220003-B-4	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-22006	240-220003-A-5	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DEK-MW-22006	240-220003-B-5	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DUP-KLI	240-220003-A-6	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
DUP-KLI	240-220003-B-6	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
EB-KLI	240-220003-A-7	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____
EB-KLI	240-220003-B-7	Plastic 1 liter - Nitric Acid	_____	_____	_____	_____

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

Chain of Custody Record

 eurofins

Environment Testing

Client Information (Sub Contract Lab) Client Contact: Shipping/Receiving Company: TestAmerica Laboratories, Inc.				Carrier Tracking No(s): 240-199488.1	
Address: 413715 Rider Trail North, City: Earth City State, Zip: MO, 63045 Phone: 314-298-8566(Tel) 314-298-8757(Fax) Email: N/A				Lab PM: Brooks, Kris M E-Mail: Kris.Brooks@et.eurolinsus.com State of Origin: Michigan Page 1 of 1	
Project Name: KarnWeadock CCR Groundwater Monitoring Site: N/A				Job #: 240-220003-1 Preservation Codes:	
Due Date Requested: 4/7/2025 TAT Requested (days): N/A				Accreditations Required (See note): N/A	
PO #: N/A WO #: N/A Project #: 24024154 SSOW#: N/A				Analysis Requested	
Sample Date Sample Time Sample ID (Lab ID)				Total Number of Containers	
Sample Type (C=Comp, G=grab) Matrix (Water, Solid, Over-sat, Oil, BT-Tissue, Acid)				Special Instructions/Note:	
Preservation Code				Other: N/A	
DEK-MW-15003 (240-220003-1) OW-10 (240-220003-2) DEK-MW-18001 (240-220003-3) DEK-MW-22003 (240-220003-4) DEK-MW-22006 (240-220003-5) DUP-KLI (240-220003-6) EB-KLI (240-220003-7)				Special Instructions/Note: TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Note: Since laboratory accreditation is subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months	
Possible Hazard Identification Unconfirmed				Special Instructions/QC Requirements:	
Deliverable Requested: I, II, III, IV, Other (specify)				Method of Shipment:	
Empty Kit Relinquished by:				Date:	
Relinquished by:				Date/Time:	
Relinquished by:				Date/Time:	
Relinquished by:				Date/Time:	
Custody Seals Intact:				Cooler Temperature(s) °C and Other Remarks:	

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-220003-1

Login Number: 220003

List Number: 2

Creator: Forrest, Cheyenne L

List Source: Eurofins St. Louis

List Creation: 03/10/25 10:48 AM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Laboratory Data Quality Review Groundwater Monitoring Event March 2025 DE Karn Lined Impoundment

Groundwater samples were collected by TRC for the March 2025 sampling event. The samples were 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) 25-0102 and S72099.01(01).

During the March 2025 sampling event, groundwater samples were collected from the following wells:

- DEK-MW-15003 ■ DEK-MW-22003 ■ DEK-MW-22006
- OW-10

The samples were 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

Equipment blank and field blank samples were also collected but were not analyzed for alkalinity, chloride, fluoride, sulfate, and TDS.

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:

- Chain-of-custody (COC) and data completeness;
- 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 and IV constituents, optional Piper Diagram analyses, additional Part 115 constituents, as well as additional geochemistry parameters will be utilized for the purposes of a hydrogeological monitoring program (HMP).
- Data are usable for the purposes of the HMP.
- 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

- Sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. The laboratory noted that sample OW-11 was not collected.

- The preservation for was assumed to be acceptable based on case narrative and COC preservation information; the cooler temperatures were between 0-6°C and acid was used for sample preservation, as applicable.
- The preparation times and dates for all analyses were provided in the electronic data deliverable (EDD) for this data set. All preparation and analysis holding time requirements were met.
- One equipment blank (EB-KLI) and one field blank (FB-KLI) were collected. Target analytes were not detected in these blank samples with the following exceptions.
 - Copper (4 µg/L) and zinc (15 µg/L) were detected in sample EB-KLI at the listed concentrations. In addition, copper (4 µg/L) was detected in sample FB-KLI at the listed concentration. Potential false positive exists for positive copper results that were associated with these blanks that were less than 10x the blank concentration, as summarized in Attachment A. There is no impact on data usability for nondetect results for copper and zinc.
- MS and MSD analyses were not performed on a sample in this data set.
- Laboratory duplicate analyses were not performed on a sample in this data set.
- Samples DUP-KLI/JHC-MW-15003 were submitted as the field duplicate pair with this data set; all criteria were met.
- The RLs were compared to the “Requested Reporting Limits” column from Table 4 of the 1Q25 Karn Weadock Bottle Request (Weadock Landfill CCR/HMP Parameters and Reporting Limits). The following discrepancy was noted:
 - The RL for sulfate (1,000 µg/L) was below the requested RL (2,000 µg/L). Sulfate was nondetect in sample OW-10. However, there is no adverse impact on data usability since the reported RL is lower than the requested RL and detections of sulfate in the groundwater samples were above the requested RL.
 - It should be noted that no project RLs exist for nitrate, nitrite, ammonia, sulfide, and manganese.
- Dilution factors for all analyses were provided in the EDD for this data set; all dilution factors were listed as 1-fold with the following exception.
 - Sample DUP-KLI was analyzed at a 2-fold dilution for sulfide likely due to the concentration of sulfide which exceeded the calibration range when analyzed undiluted. There is no impact on data usability due to this issue since sulfide was detected above the RL in this sample.

Attachment A
Summary of Data Non-Conformances for Groundwater Analytical Data
DE Karn Lined Impoundment
West Olive, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
OW-10	3/4/2025	Copper	Equipment blank and field blank contamination; potential false positive exists for the listed results.
DEK-MW-22003	3/4/2025		
DEK-MW-22006	3/4/2025		

Attachment 4

Alternate Source Demonstration

A CMS Energy Company

Date: July 25, 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]

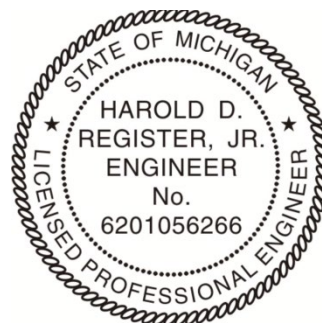
I hereby certify that the alternative source demonstration presented within this July 25, 2025 technical memorandum has been prepared to meet the requirements of Title 40 CFR §257.94(e)2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e)2.


Signature

July 25, 2025
Date of Certification

Harold D. Register, Jr., P.E.
Name

6201056266
Professional Engineer Certification Number



07/25/2025

ENCLOSURES

TRC (July 2025). Closure Alternate Source Demonstration: Karn Lined Impoundment Consumers Energy Company, Essexville, Michigan

Technical Memorandum

Date: July 25, 2025

To: JR Register, Consumers Energy

From: Darby Litz, TRC
Kristin Lowery, TRC

cc: Graham Crockford, TRC

Project No.: 634695.0000.0000 Phase 3

Subject: Closure Alternate Source Demonstration
Karn Lined Impoundment, Consumers Energy Company, Essexville, Michigan

The evaluation of data collected post-removal of coal combustion residuals (CCR) from the Karn Lined Impoundment indicated that multiple detection monitoring constituents are present at concentrations above the groundwater protections standard (GWPS). In addition, two assessment monitoring constituents, lithium and vanadium, were detected above the GWPS, each in one of the compliance monitoring wells.

The post-removal groundwater sampling events showed the following exceedances of the GWPSs on a direct comparison basis:

- Boron at OW-10;
- Calcium at OW-10, DEK-MW-22003, and DEK-MW-22006;
- Iron¹ at DEK-MW-18001, OW-10, DEK-MW-22003 and DEK-MW-22006;
- Sulfate at DEK-MW-22003 and DEK-MW-22006;
- Total dissolved solids at DEK-MW-18001, OW-10, DEK-MW-22003, and DEK-MW-22006;
- Lithium at DEK-MW-22006; and
- Vanadium² at OW-10.

There are several lines of evidence to demonstrate that concentrations of boron, calcium, lithium, sulfate, total dissolved solids, iron, and vanadium are attributable to other sources onsite and not related to the operation of the Karn Lined Impoundment.

1. Groundwater quality has been affected by site operations that pre-date operation of the Karn Lined Impoundment.

¹ Michigan Part 115 detection monitoring parameter.

² Michigan Part 115 assessment monitoring parameter.

2. The Karn Lined Impoundment was designed as a double-lined system to contain CCR materials and the leak detection system operated as designed for the active life of the system and the unit remained in detection monitoring.
3. The water quality data from the Karn Lined Impoundment secondary collection system (KLI-SCS) demonstrates that the monitored constituents are generally present at concentrations below the GWPS. In cases where elevated concentrations are observed, they appear to reflect the quality of influent water rather than the CCR material.

This Technical Memorandum provides these lines of evidence to document an Alternate Source Demonstration in support of certifying closure of the Karn Lined Impoundment in accordance with Section 11519b(9) of Act No. 640 of 2018 (2018 Amendment) 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 (MCL 324.11519b(9)).

Pre-Existing Groundwater Conditions

Groundwater quality has been affected by site operations that pre-date the operation of the Karn Lined Impoundment. The footprint of the Karn Lined Impoundment is immediately adjacent to the pre-existing Karn Bottom Ash Pond and Karn Landfill (Figure 1). As reported in the 2017 Annual Groundwater Monitoring Report: DE Karn Bottom Ash Pond CCR Unit,³ potential statistically significant increases (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;⁴ the groundwater in the vicinity of the Karn Bottom Ash Pond is documented to have been affected by CCR prior to the existence of the Karn Lined Impoundment and the selection of a groundwater remedy has not yet been completed.

Although concentrations of boron, calcium, iron, sulfate, and total dissolved solids at the Karn Lined Impoundment wells exceed the GWPS established based on background/baseline concentrations at DEK-MW-15003, concentrations at other wells in the vicinity of the Karn Bottom Ash Pond (DEK-MW-15002, DEK-MW-15004, DEK-MW-15005, DEK-MW-15006) are comparable to the Karn Lined Impoundment compliance wells (Attachment 1, Charts 1-5). Furthermore, boron concentrations at OW-10 have consistently been higher than the boron concentrations at DEK-MW-15003, including the period before the Karn Lined Impoundment began operation, providing additional evidence that boron in groundwater is not a result of the Karn Lined Impoundment's operation, as shown in the boron time series plot in Attachment 1 (Chart 6). Concentrations of total dissolved solids and their component constituents (calcium, iron, and sulfate) are generally higher at DEK-MW-22003 and DEK-MW-22006 than the other Karn Lined Impoundment compliance wells (Attachment 1, Charts 2-5). These two wells are located within the footprint of the former Karn Bottom Ash Pond and were installed after CCR was removed. The disturbance of native soils can affect the quality and quantity of infiltration, causing changes in general groundwater chemistry, e.g. total dissolved solids. Similar concentrations of total dissolved solids, calcium, iron and sulfate, are observed at other wells within the former bottom ash

³ TRC. 2018. Annual Groundwater Monitoring Report – DE Karn Power Plant Bottom Ash Pond CCR Unit. January.

⁴ Consumers Energy. 2019. D.E. Karn Generating Facility Bottom Ash Pond CCR Removal Documentation Report. October 30.

pond footprint (Attachment 1, Charts 7-10). The presence of elevated total dissolved solids and associated constituents in DEK-MW-22003 and DEK-MW-22006, combined with the absence of elevated boron concentrations further supports the influence of a source other than CCR on groundwater quality.

Additionally, as documented in the Karn Lined Impoundment Hydrogeological Monitoring Plan (HMP),⁵ the site development included reclaiming low-lands with ash fill. The presence of ash is documented in the boring logs for the Karn Lined Impoundment and Karn Bottom Ash Pond monitoring wells. 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. Ash fill has been noted to have been historically placed beneath the secondary liner of the Karn Lined Impoundment⁶.

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 §257.72.⁷ 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 and provided to the Department of Environment, Great Lakes, and Energy (EGLE) on a quarterly basis.

Increased average daily SCS flow rates noted for a brief 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 provided a proactive notification and a preliminary written assessment of the flow rate exceedances to the EGLE on January 15, 2021 and January 22, 2021, respectively. Remedial actions performed in response to the increased flow rates are documented in the First Quarter 2021 Hydrogeological Monitoring Report prepared for the DE Karn Lined Impoundment CCR Unit.⁸ 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 rate of 25 gallons per acre per day (GPAD). Since early 2021, the SCS flow rate has consistently 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 following the repairs. The SCS flow rate was monitored for the end-of-life CCRs and NPDES decant water that remained in the CCR unit until closure activities commenced in August 2024.

The double composite liner system construction of the Karn Lined Impoundment and the SCS flow rate monitoring for leak detection functioned as designed during the operation of the CCR unit and indicate

⁵ TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan. November.

⁶ WSP. 2024. D.E. Karn Generating Facility Karn Lined Impoundment Decommissioning Report. October.

⁷ Golder Associates, Inc. 2018. D. E. Karn Generating Facility Bottom Ash Lined Impoundment Liner System Design Certification Report. April.

⁸ TRC. 2021. First Quarter 2021 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit. April.

liquids managed within the unit did not migrate past the liner system and affect groundwater quality. Furthermore, as documented in the CCR Removal Documentation Report,⁹ the primary sand drainage layer contained less than 2% microscopic estimation of particles of CCR intermixed in the soil by weight, providing another line of evidence that CCR-affected material did not migrate into the liner system. Groundwater monitoring performed in accordance with the Karn Lined Impoundment HMP demonstrated that the CCR unit remained in detection monitoring throughout its operation.

Karn Lined Impoundment Collection System Water Quality Data

In response to the prior exceedance of the SCS Response Action Flow Rate, Consumers Energy initiated sampling 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 KLI-PCS and KLI-SCS data are compared to the GWPS in a series of time-series plots are included in Attachment 2.

These time-series plots demonstrate that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the GWPS, except for calcium, iron, sulfate, TDS, and vanadium. The calcium, iron, 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.

Although vanadium is detected in the secondary collection system, it is generally not detected in groundwater near the Karn Lined Impoundment, except for at two monitoring wells. Vanadium is detected intermittently in groundwater at OW-10 and has historically been detected at OW-11. Vanadium is not detected elsewhere in the groundwater monitoring network, including at DEK-MW-15003 and DEK-MW-18001 which are located closer to the Karn Lined Impoundment than OW-10 and OW-11, and historically at OW-12 which is located closest to the observed deficiencies in the liner system and is most likely to have been impacted by unit operation (Attachment 1, Charts 11-13). Concentrations of vanadium at OW-11 are more than an order of magnitude greater than concentrations in the PCS and SCS, indicating the source of vanadium in groundwater is a local source rather than impact of leachate from the Karn Lined Impoundment.

Lastly, while lithium concentrations are detected above the GWPS (46 ug/L) at DEK-MW-22006 (51 ug/L on 9/30/2024 and 60 ug/L on 3/4/2025), lithium concentrations in the PCS and SCS have been non-detect or slightly above the laboratory reporting limit (10 ug/L) for the life of monitoring (Attachment 1, Chart 14).¹⁰ Therefore, leachate from the Karn Lined Impoundment is not the source of lithium detected at DEK-MW-22006.

Conclusions and Recommendations

Based on the multiple lines of evidence presented above, the concentrations of boron, calcium, lithium, sulfate, total dissolved solids, iron, and vanadium are not attributed to the Karn Lined Impoundment:

⁹ WSP. 2024. D.E. Karn Generating Facility Karn Lined Impoundment Decommissioning Report. October.

¹⁰ Lithium was detected in the PCS at an elevated concentration (57 ug/L) in a single event in July 2023. This was the first sample collected after operation of the Karn Units 1&2 ceased and is likely a result of changes in the miscellaneous low-volume waste being placed in the Karn Lined Impoundment rather than the ash management. Similar temporary increases were observed for other constituents during this event.

1. Groundwater quality has been affected by site operations that pre-date operation of the Karn Lined Impoundment.
2. The Karn Lined Impoundment was designed as a double-lined system to contain CCR materials and the leak detection system operated as designed for the active life of the system and the unit remained in detection monitoring.
3. The water quality data from the Karn Lined Impoundment secondary collection system (KLI-SCS) demonstrates that the monitored constituents are generally present at concentrations below the GWPS. In cases where elevated concentrations are observed, they appear to reflect the quality of influent water rather than the CCR material.

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 HMP and demonstrates that these concentrations are due to pre-existing groundwater conditions and regional changes in geochemistry.

Attachments

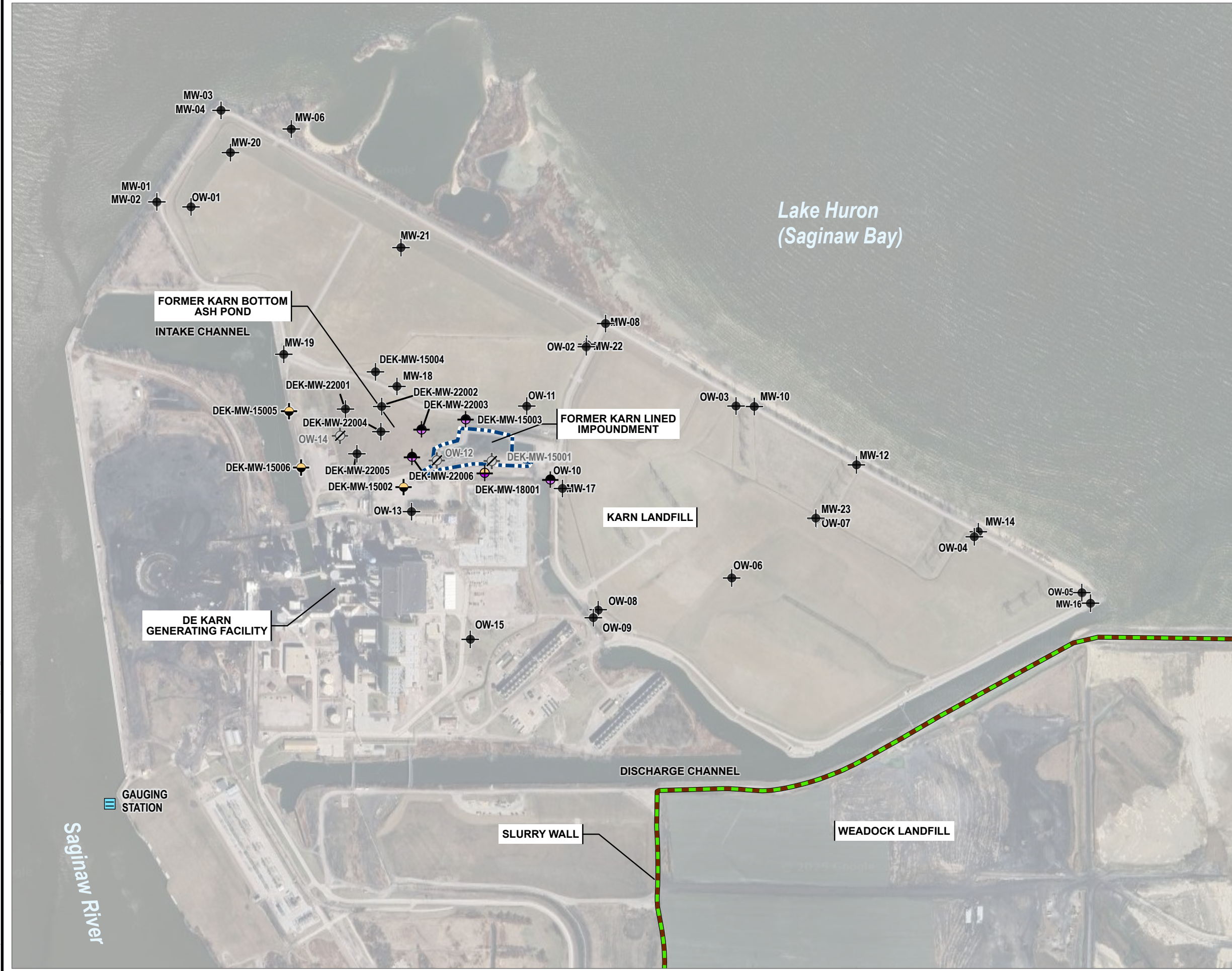
Figure 1 Site Layout Map

Attachment 1 Groundwater Data Evaluation

Attachment 2 Karn Lined Impoundment Collection System Water Chemistry

Figure

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Int; Map Rotation: 0
-- Saved By: AADAIR on 6/13/2025 08:29:33 AM - File Path: T:\H-PROJECTS\Consumers_Energy\464095_DEKARN.aprx - Layout Name: KL-Closure-2025June



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
- SLURRY WALL (APPROXIMATE)
- LINED IMPOUNDMENT (COVENANT BOUNDARY)

NOTES

1. BASE MAP IMAGERY FROM GOOGLE SATELLITE IMAGERY, (04/05/2024).
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.

1:7,200
1" = 600'

0 600 1,200 FEET

PROJECT: CONSUMERS ENERGY COMPANY DE KARN POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SITE LAYOUT MAP	
DRAWN BY: A. ADAIR	PROJ. NO.: 634695.0000
CHECKED BY: K. LOWERY	FIGURE 1
APPROVED BY: D. LITZ	
DATE: JUNE 2025	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464095_DEKARN.aprx

Attachment 1

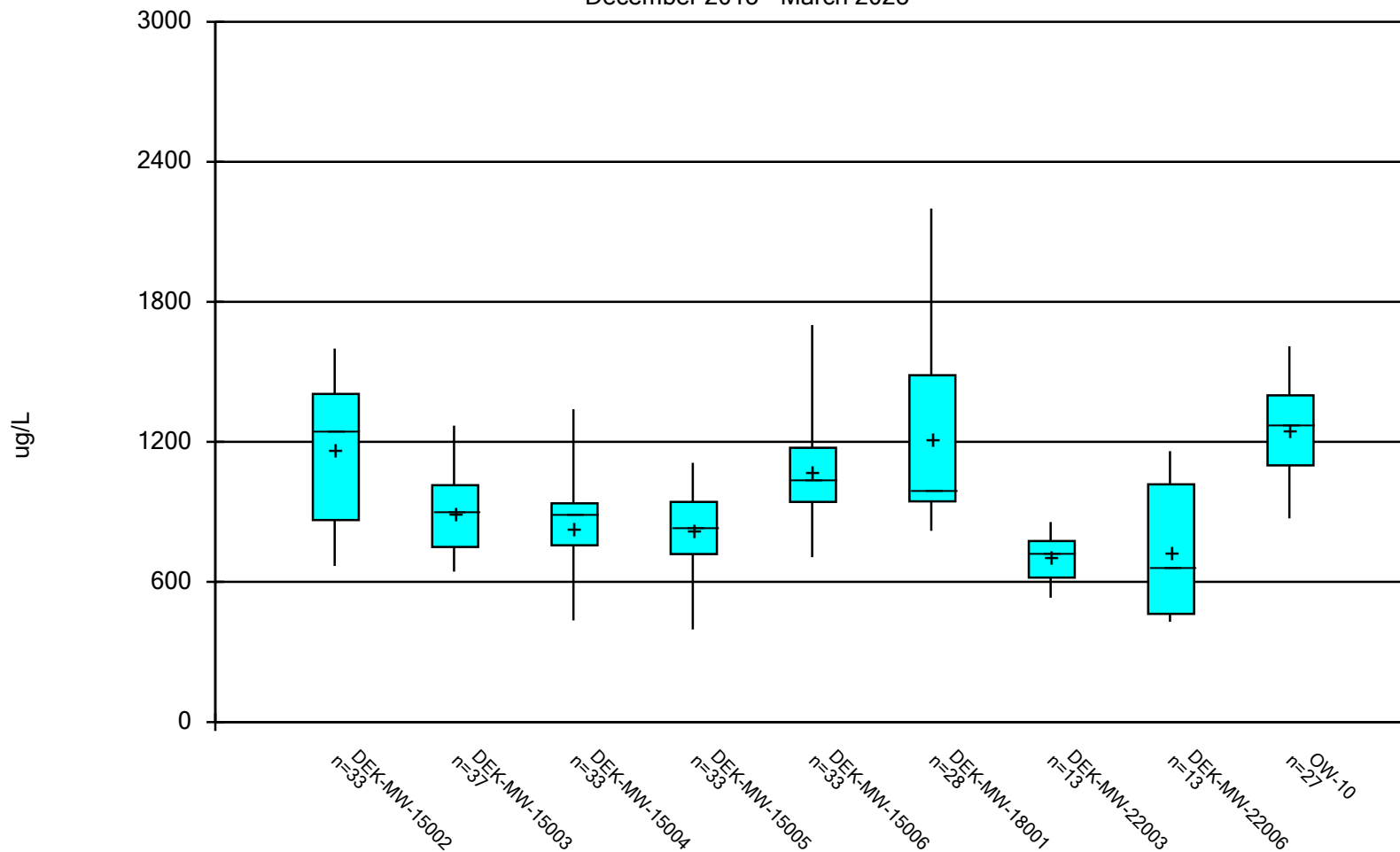
Groundwater Data Evaluation

Chart 1

Boron Box & Whiskers Plot

Karn Bottom Ash Pond Wells

December 2015 - March 2025



Constituent: Boron, Total Analysis Run 6/16/2025 10:17 AM

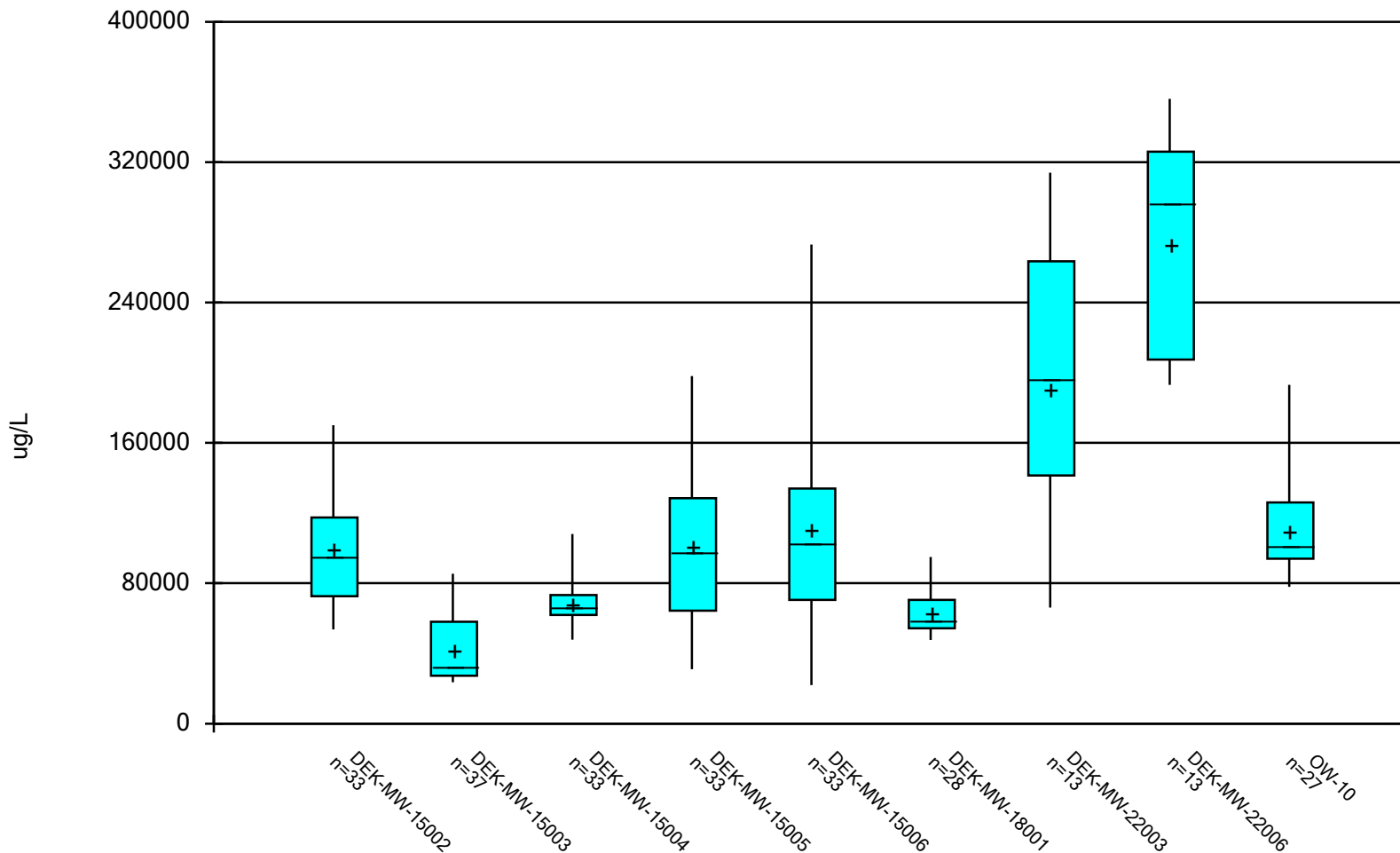
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 2

Calcium Box & Whiskers Plot

Karn Bottom Ash Pond Wells

December 2015 - March 2025



Constituent: Calcium, Total Analysis Run 6/16/2025 10:19 AM

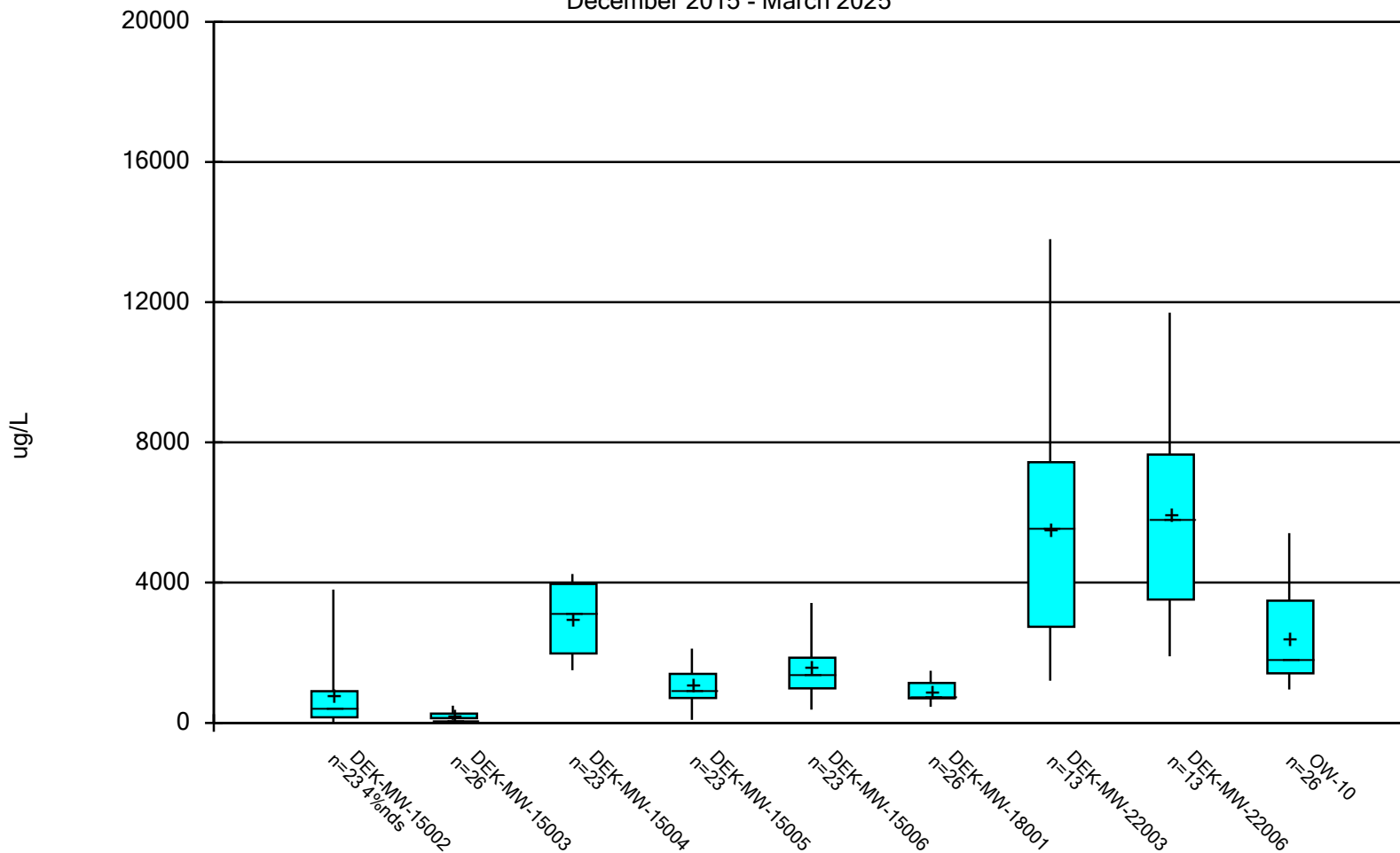
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 3

Iron Box & Whiskers Plot

Karn Bottom Ash Pond Wells

December 2015 - March 2025



Constituent: Iron, Total Analysis Run 6/16/2025 10:21 AM

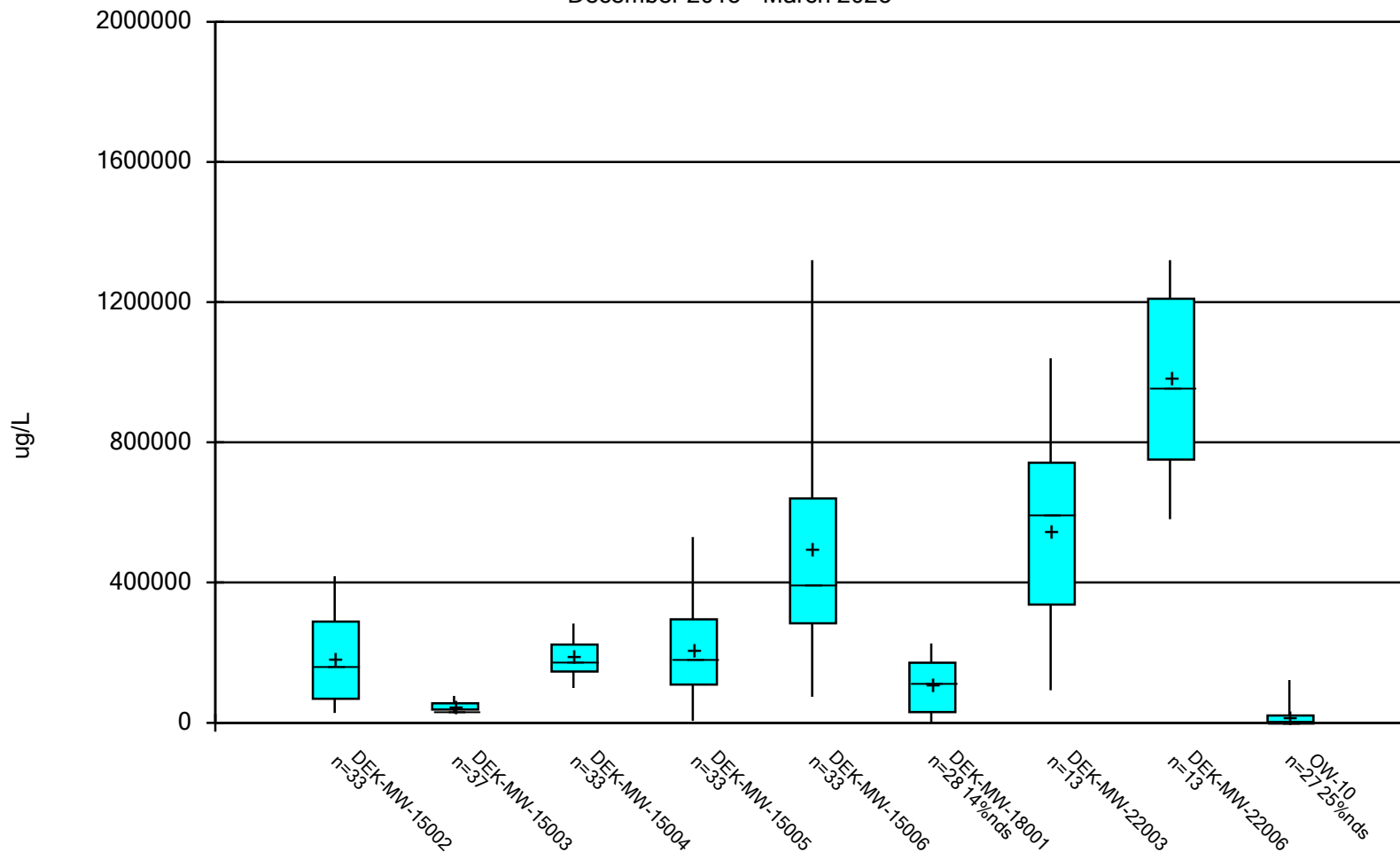
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 4

Sulfate Box & Whiskers Plot

Karn Bottom Ash Pond Wells

December 2015 - March 2025



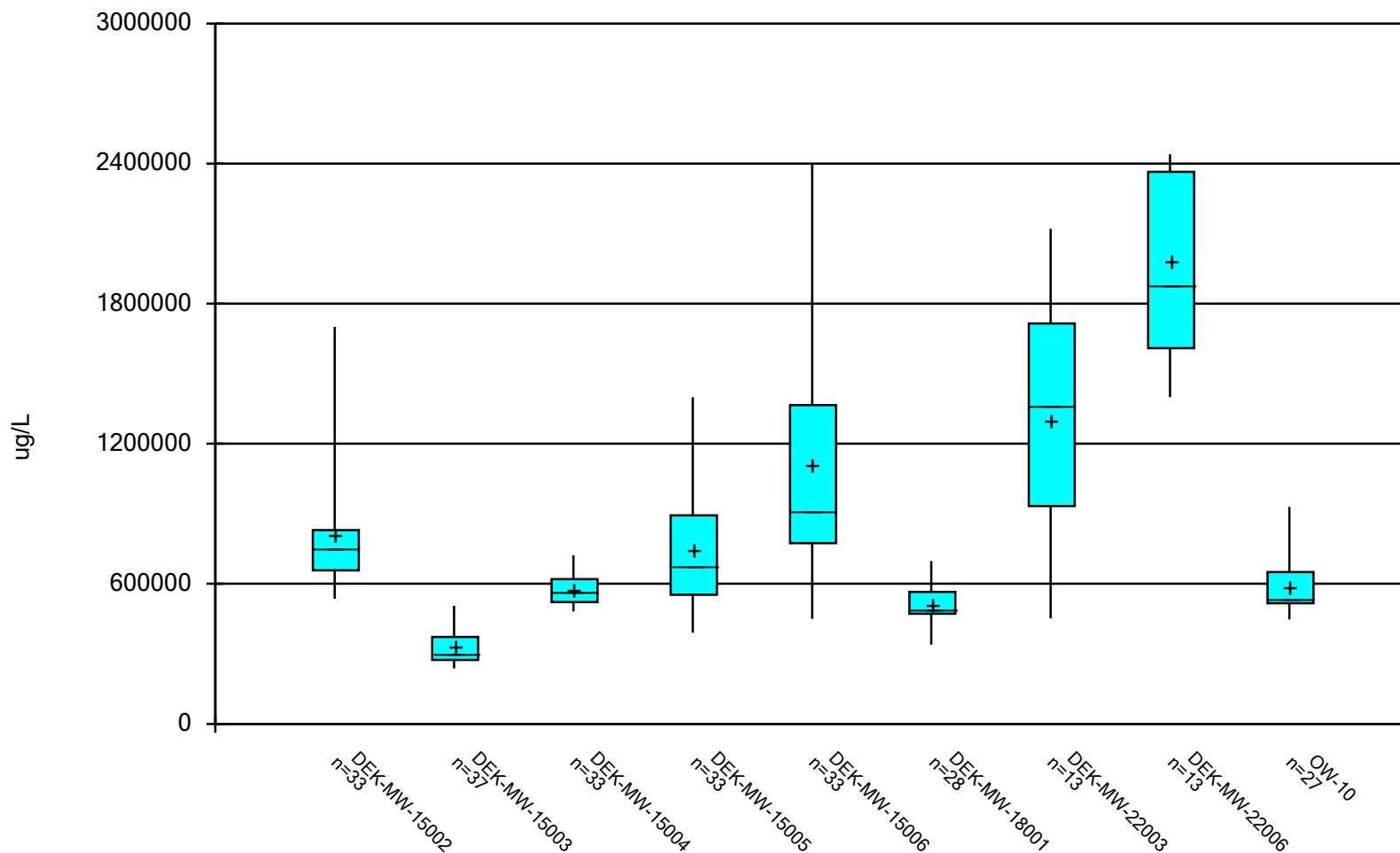
Constituent: Sulfate Analysis Run 6/16/2025 10:23 AM

Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 5

Total Dissolved Solids Box & Whiskers Plot

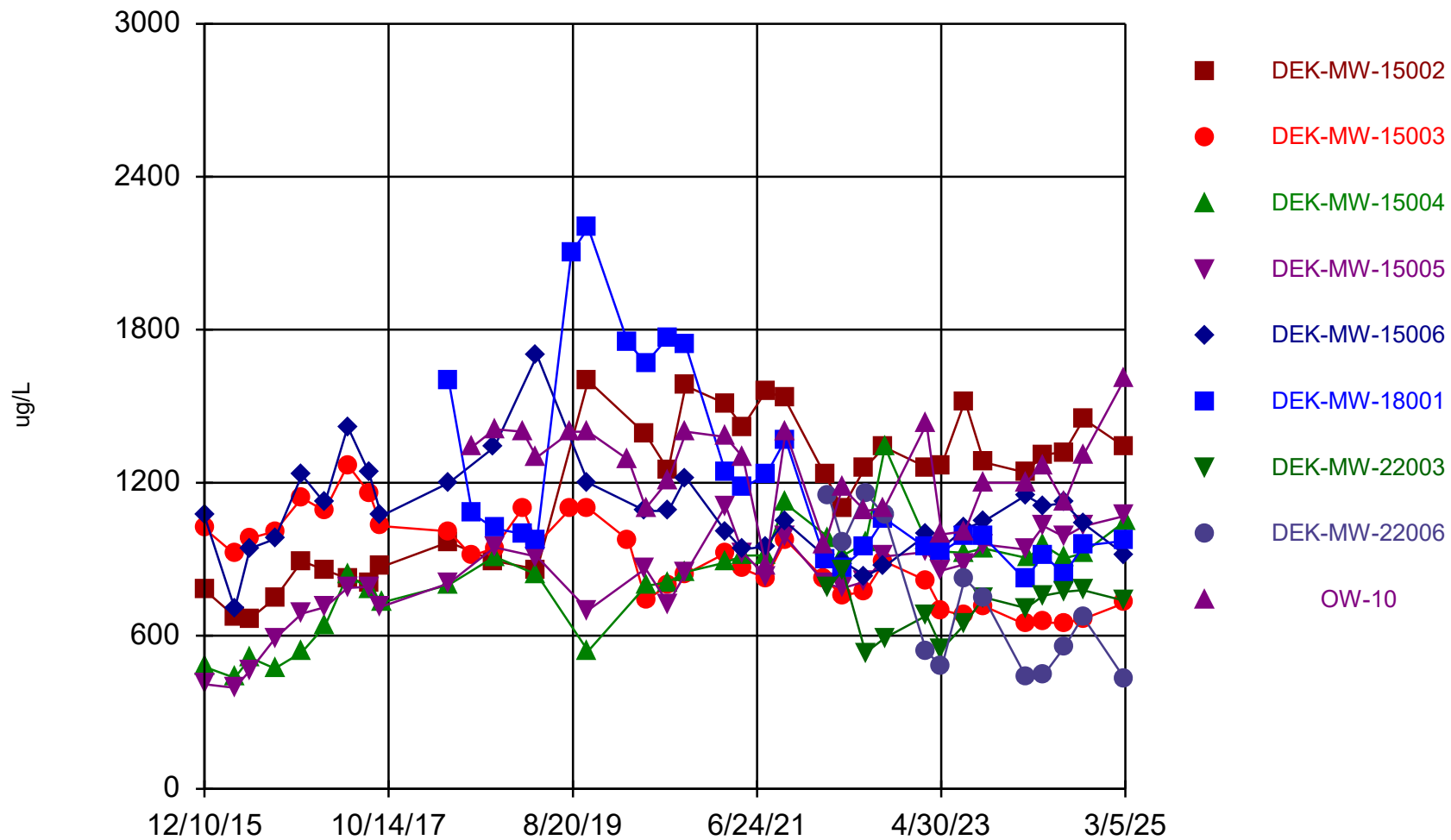
Karn Bottom Ash Pond Wells
December 2015 - March 2025



Constituent: Total Dissolved Solids Analysis Run 6/16/2025 10:25 AM

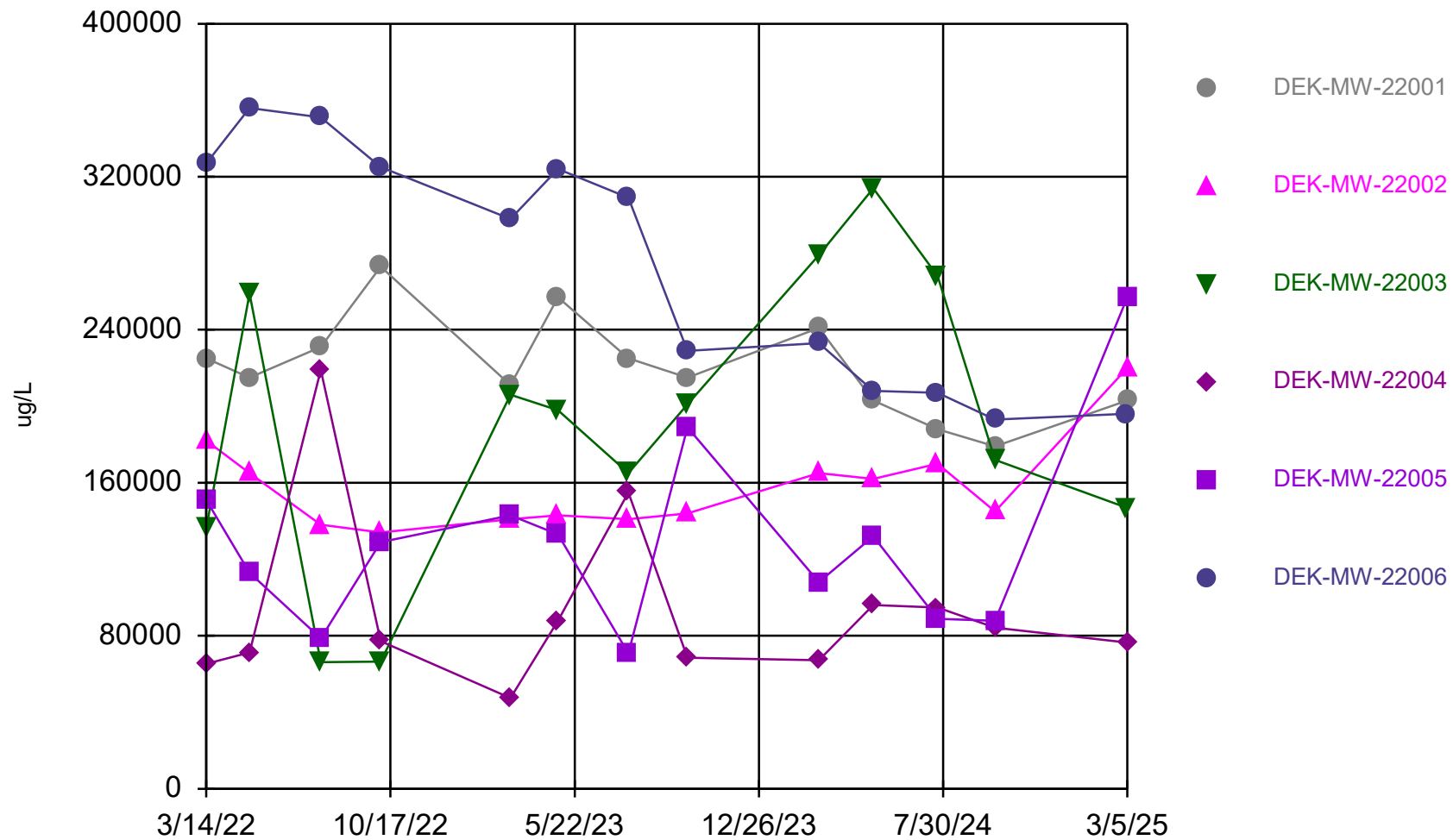
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 6
Boron Time Series



Constituent: Boron, Total Analysis Run 6/16/2025 10:30 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

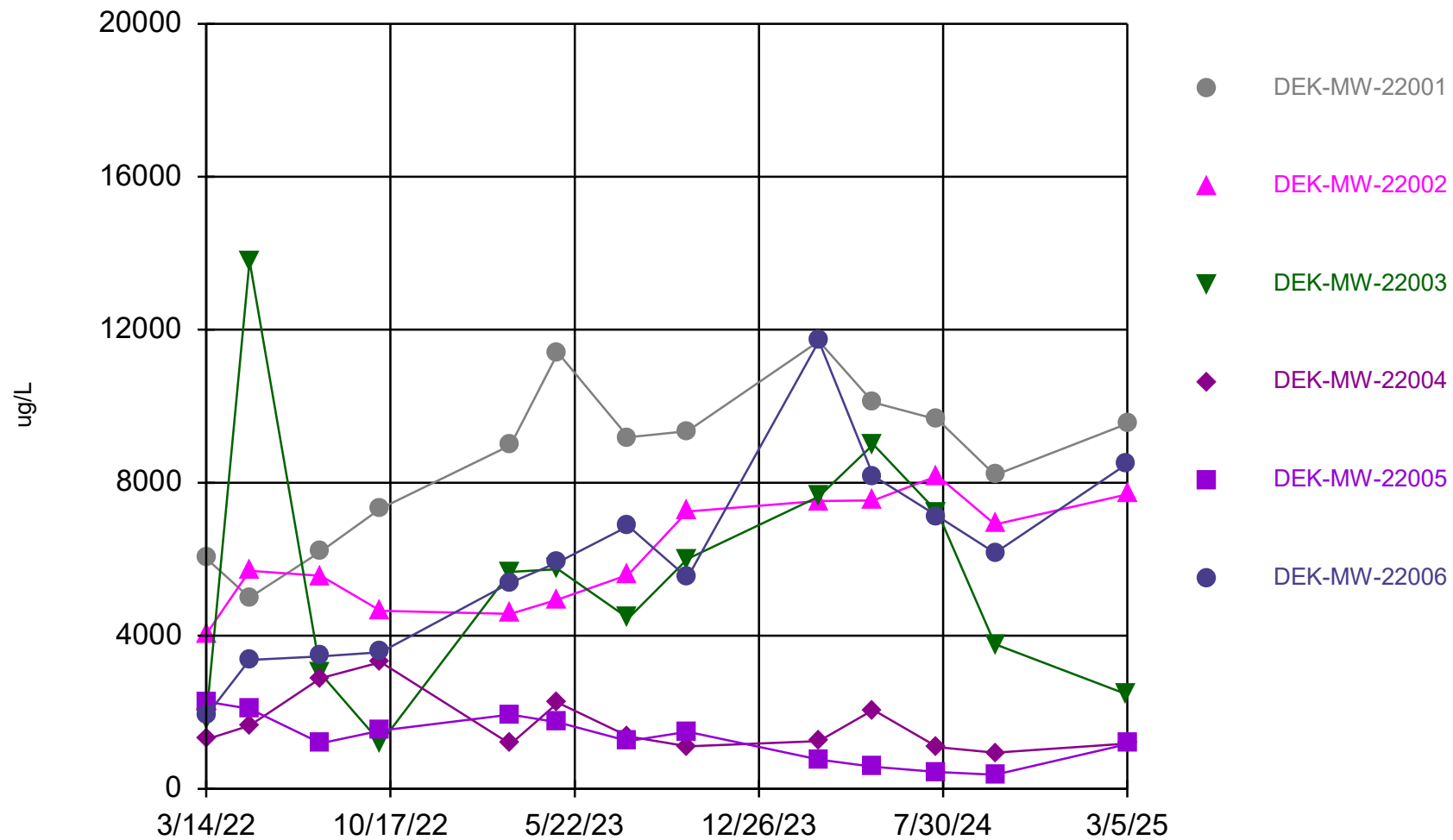
Chart 7 Calcium Time Series



Constituent: Calcium, Total Analysis Run 6/16/2025 10:36 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

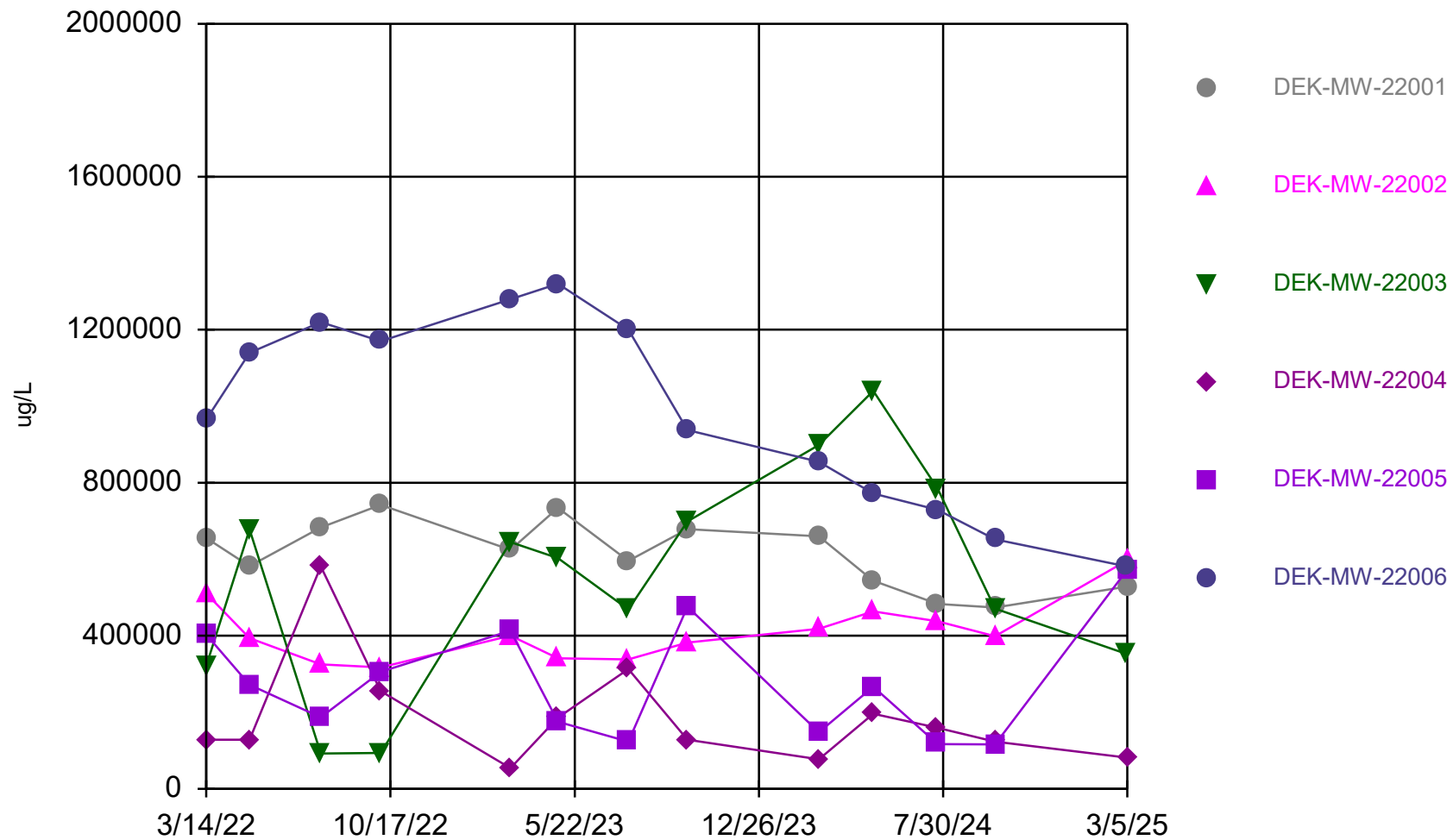
Chart 8

Iron Time Series



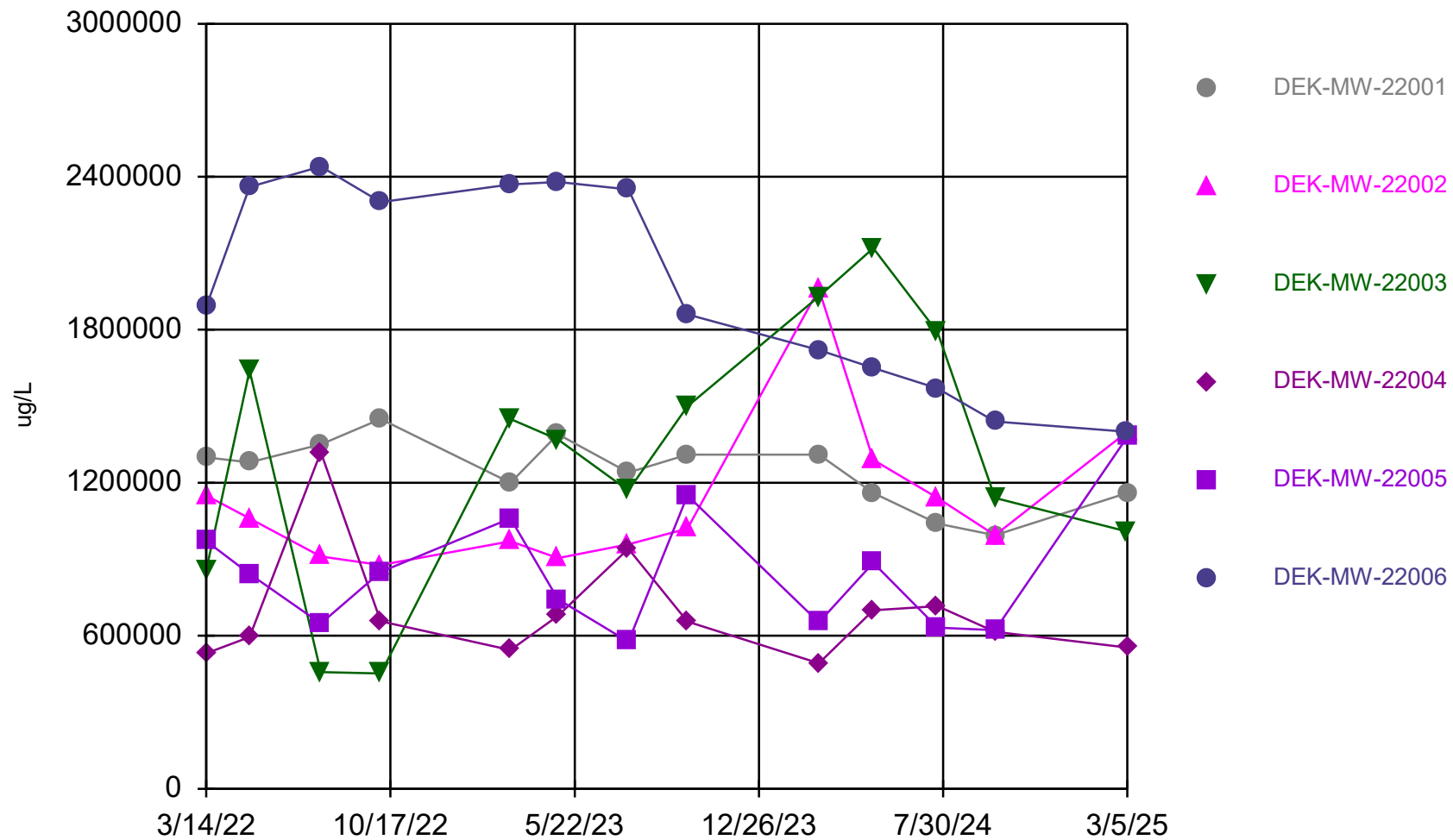
Constituent: Iron, Total Analysis Run 6/16/2025 10:36 AM
 Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 9 Sulfate Time Series



Constituent: Sulfate Analysis Run 6/16/2025 10:36 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 10
Total Dissolved Solids Time Series



Constituent: Total Dissolved Solids Analysis Run 6/16/2025 10:36 AM

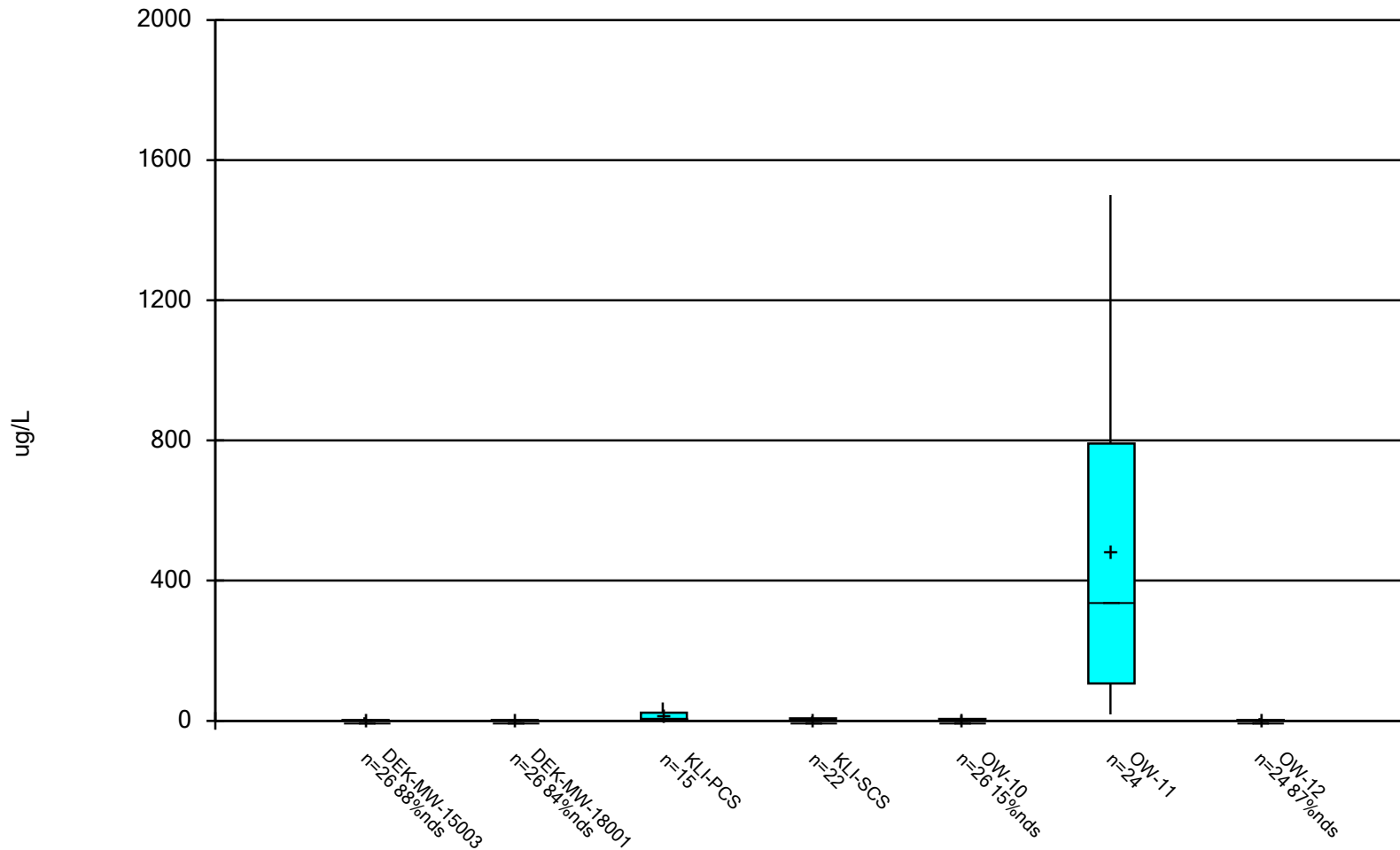
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 11

Vanadium Box & Whiskers Plot

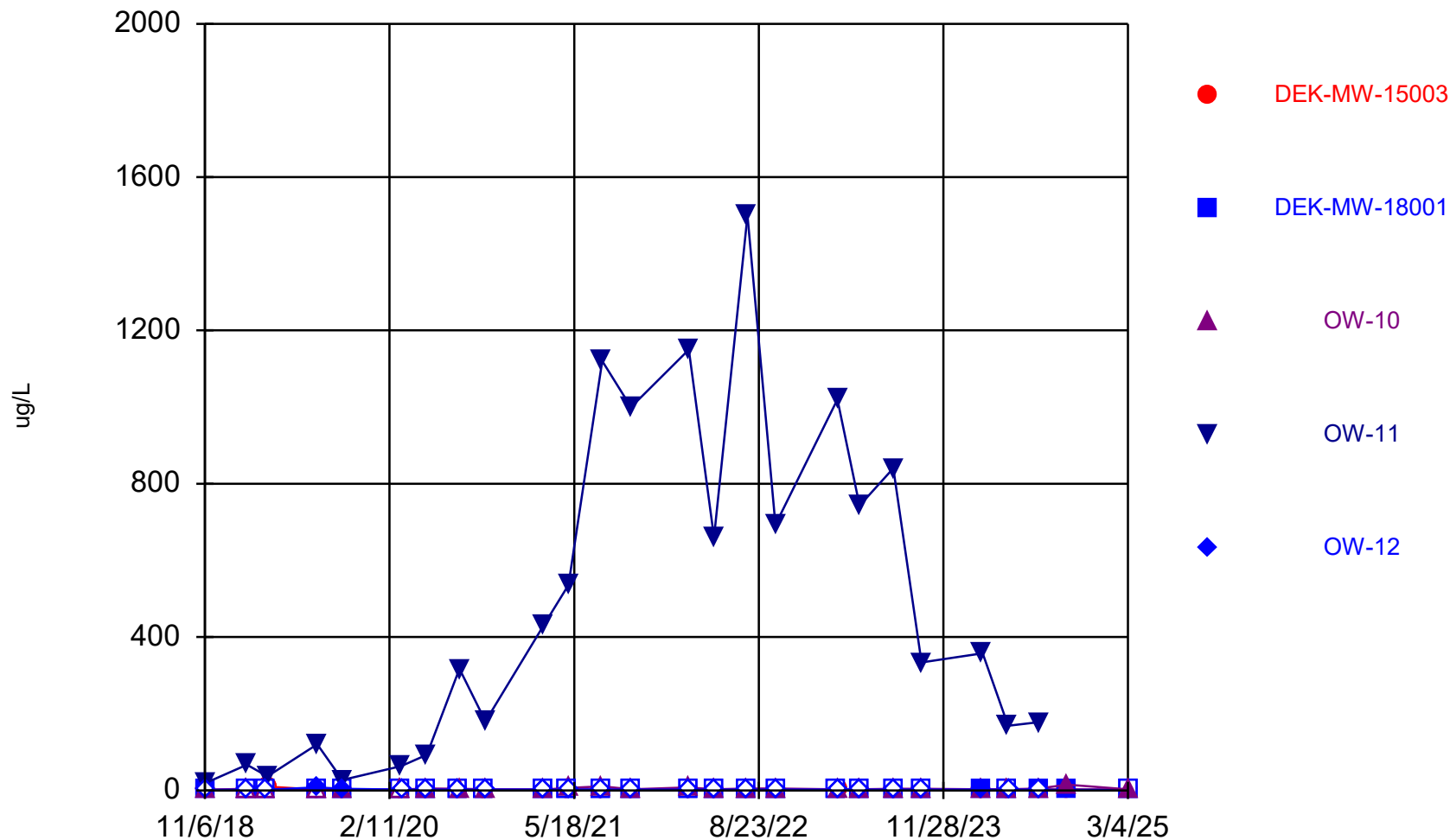
Karn Lined Impoundment

November 2018 - March 2025



Constituent: Vanadium, Total Analysis Run 6/16/2025 11:17 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

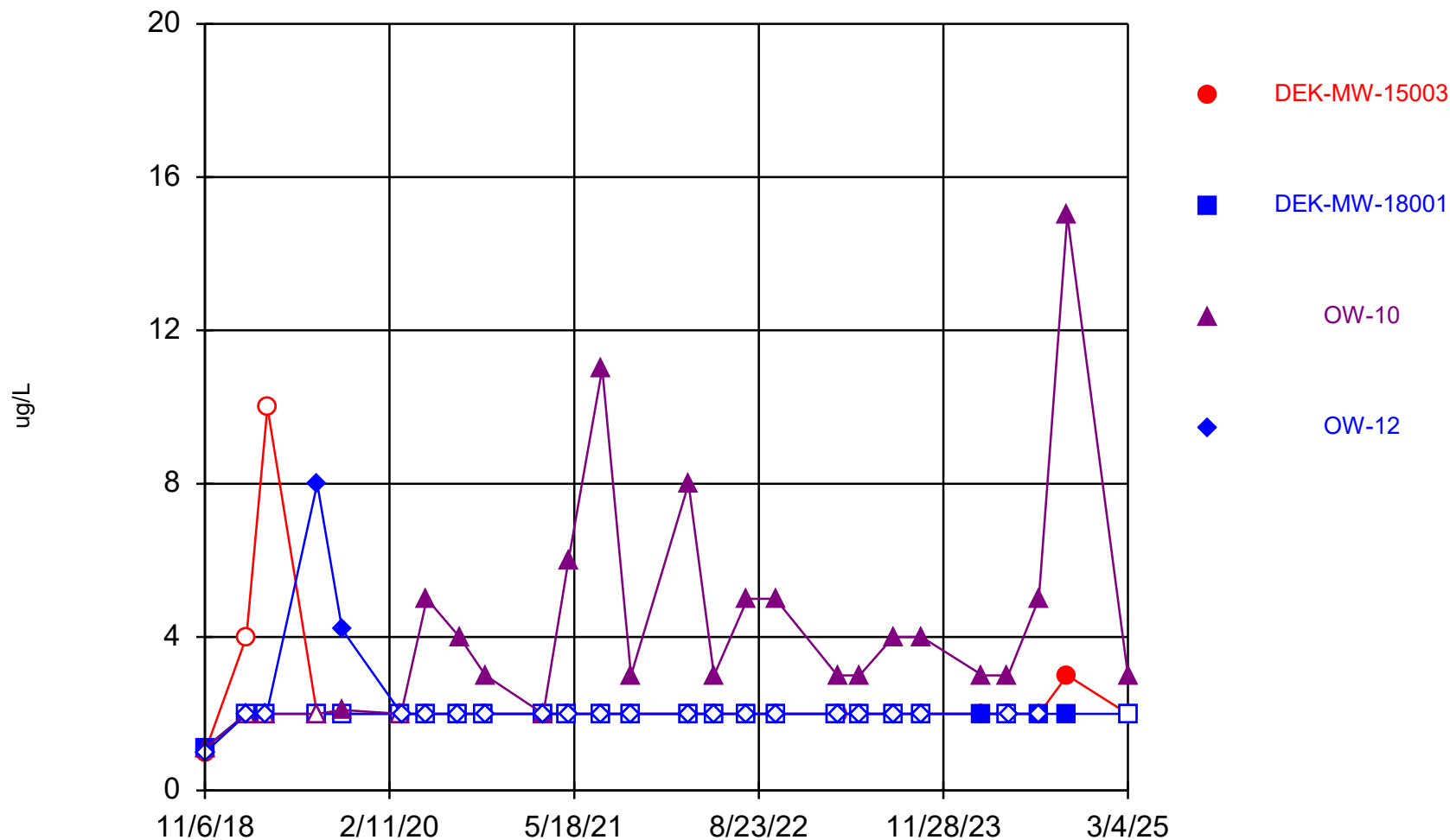
Chart 12 Vanadium Concentrations - KLI Monitoring Network



Constituent: Vanadium, Total Analysis Run 6/9/2025 8:52 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 13

Vanadium Concentrations - KLI Monitoring Network

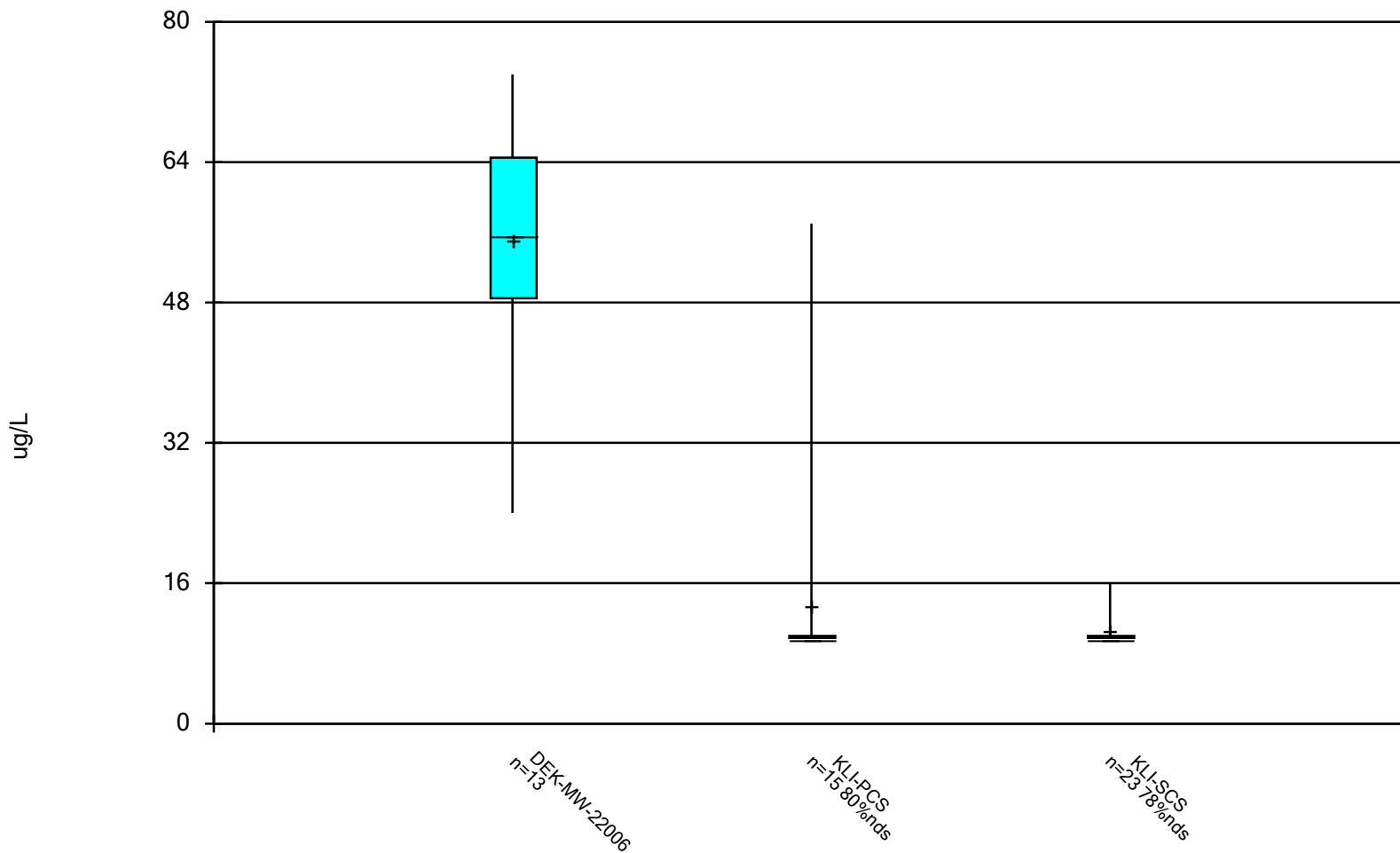


Constituent: Vanadium, Total Analysis Run 6/9/2025 8:53 AM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

Chart 14

Lithium Box & Whiskers Plot

March 2021 - March 2025

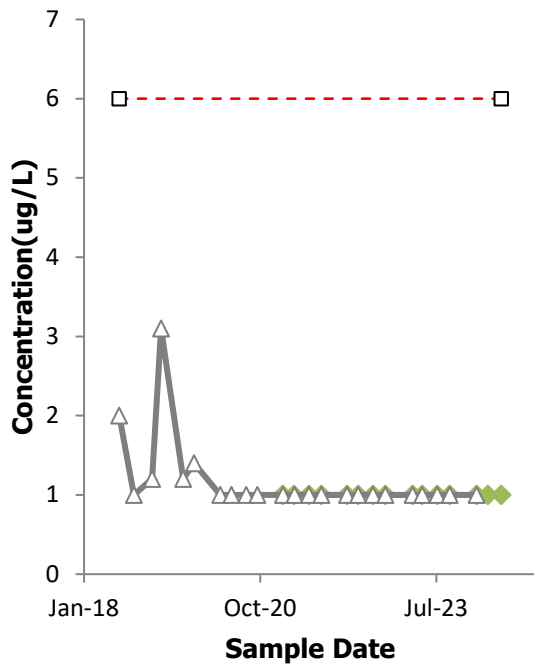


Constituent: Lithium, Total Analysis Run 6/5/2025 1:22 PM
Client: Consumers Energy Data: DEK KLI CCR Sanitas_25Q1

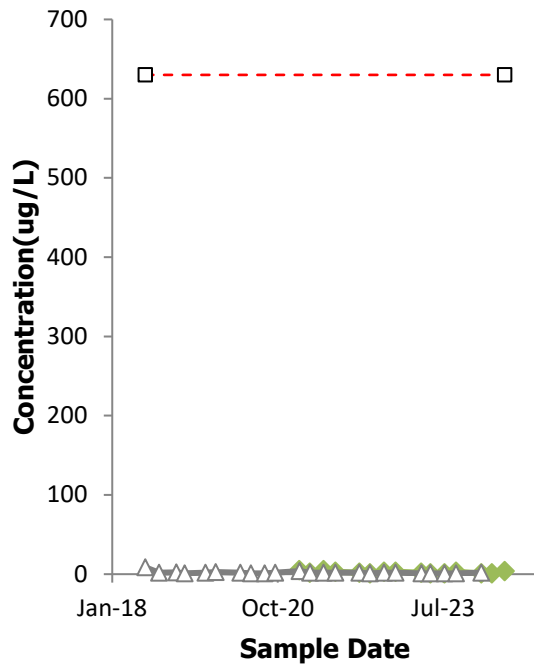
Attachment 2
Karn Lined Impoundment Collection System Water
Chemistry

Karn Lined Impoundment Collection System Water Quality Time Series

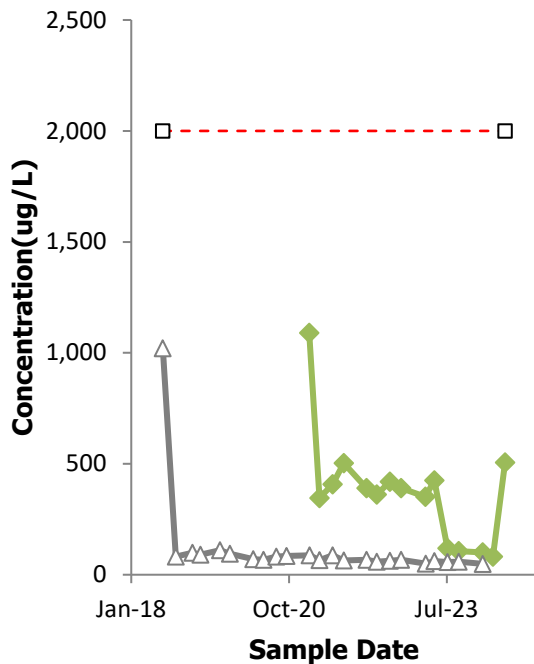
—◆— Antimony, KLI Primary Collection System
—△— Antimony, KLI Secondary Collection System
- - □ - - Antimony, GWPS



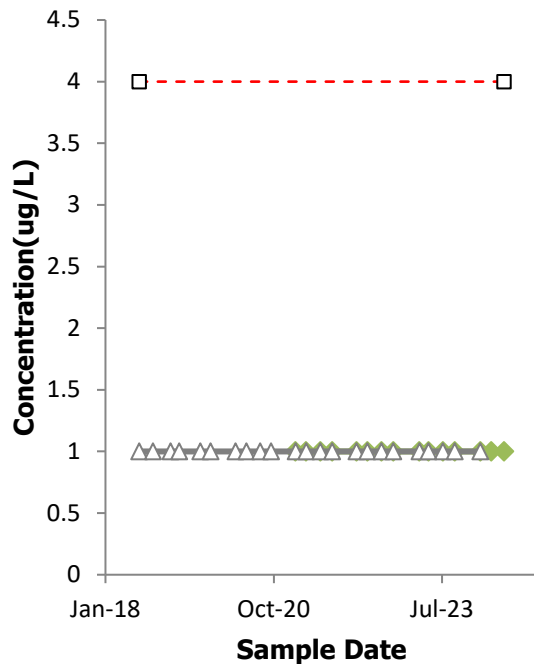
—◆— Arsenic, KLI Primary Collection System
—△— Arsenic, KLI Secondary Collection System
- - □ - - Arsenic, GWPS



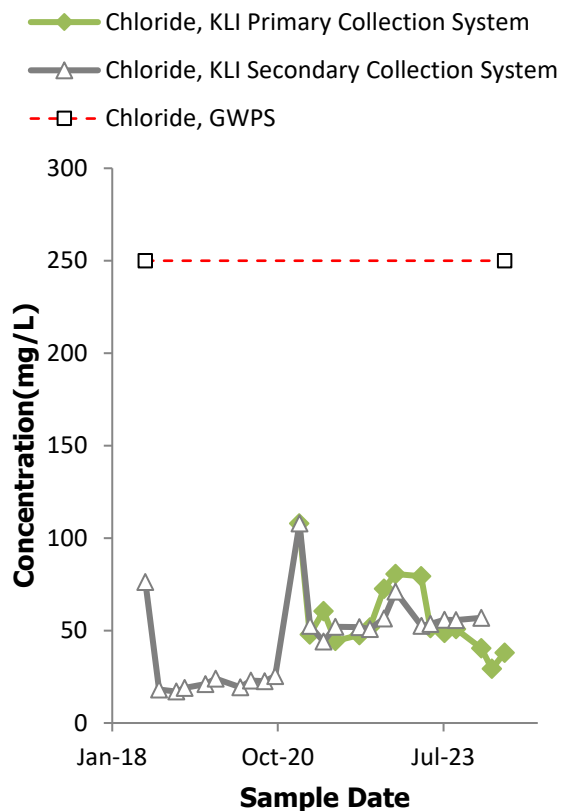
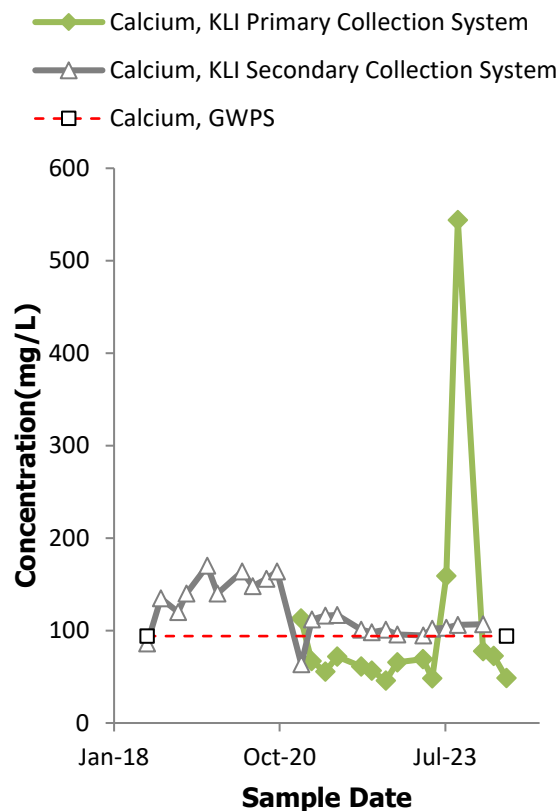
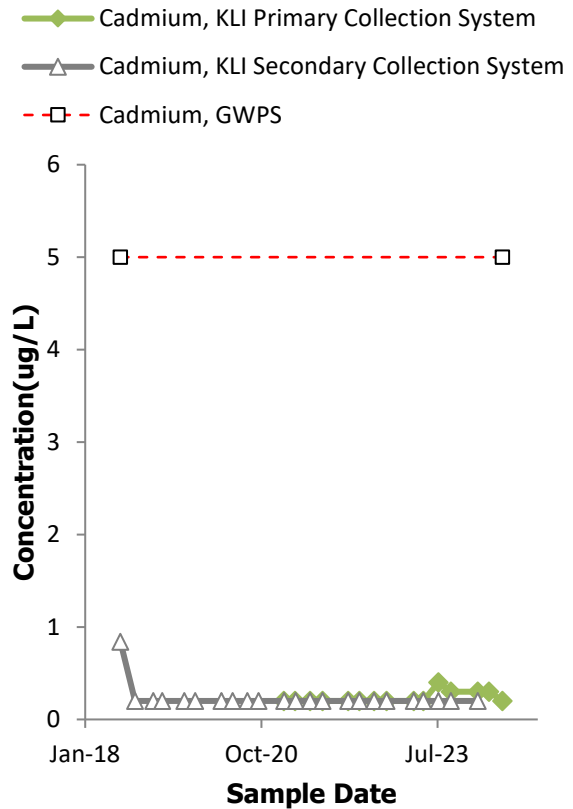
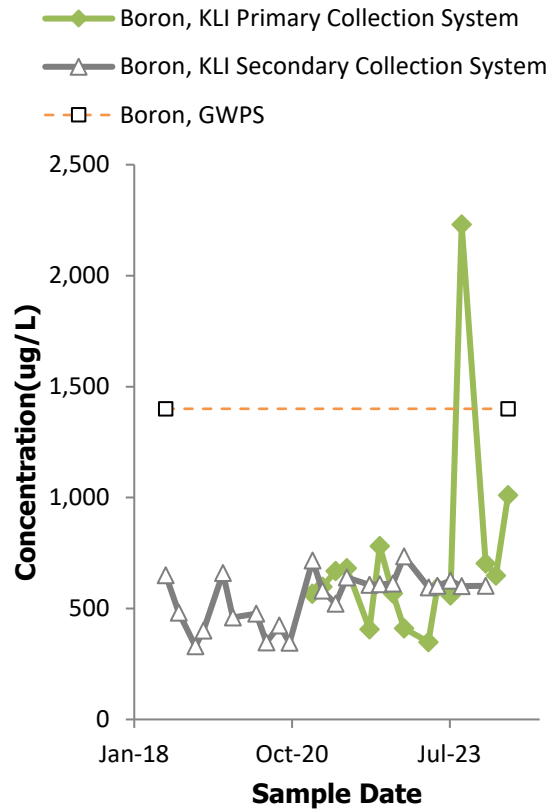
—◆— Barium, KLI Primary Collection System
—△— Barium, KLI Secondary Collection System
- - □ - - Barium, GWPS



—◆— Beryllium, KLI Primary Collection System
—△— Beryllium, KLI Secondary Collection System
- - □ - - Beryllium, GWPS

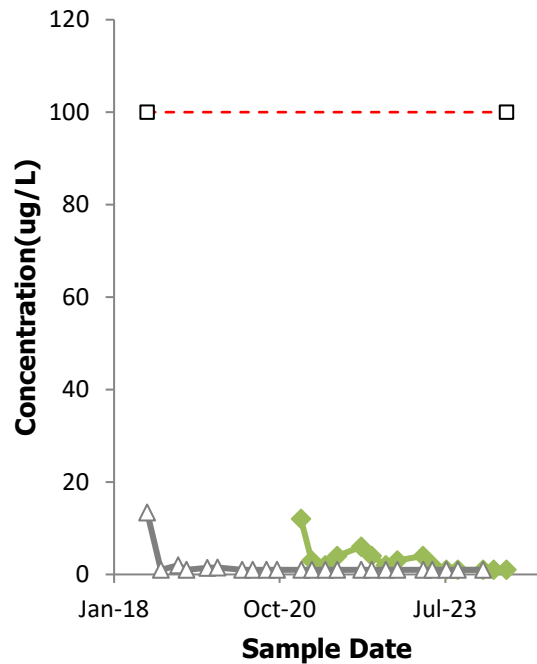


Karn Lined Impoundment Collection System Water Quality Time Series

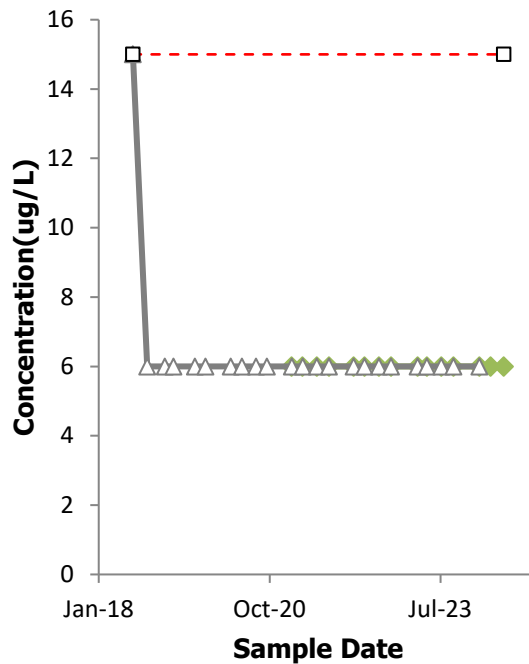


Karn Lined Impoundment Collection System Water Quality Time Series

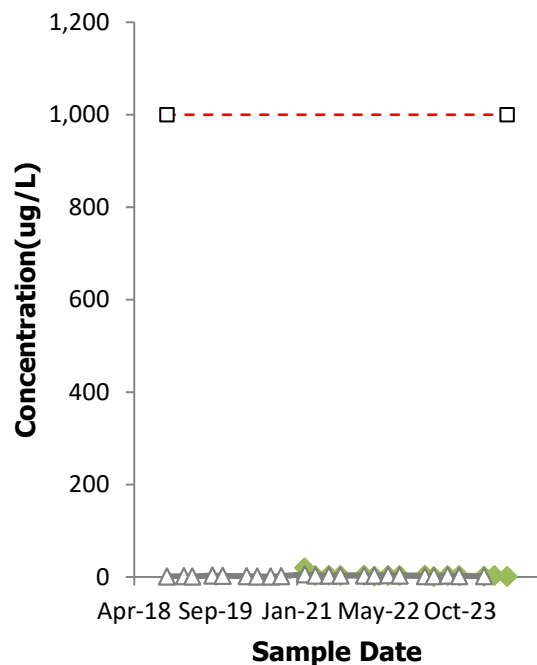
◆ Chromium, KLI Primary Collection System
 ▲ Chromium, KLI Secondary Collection System
 -□- Chromium, GWPS



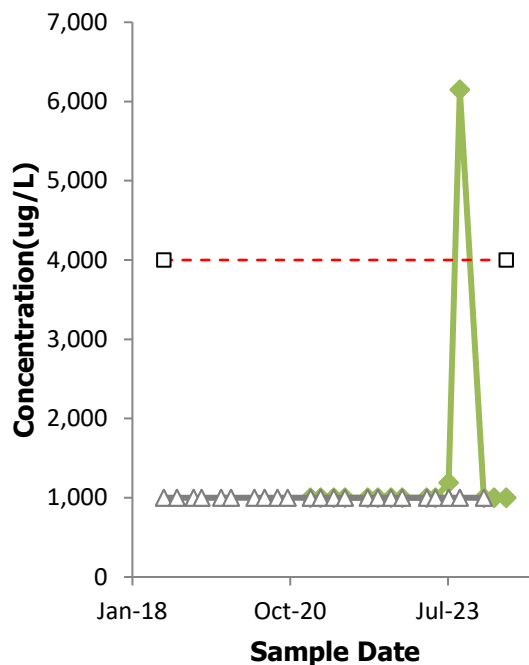
◆ Cobalt, KLI Primary Collection System
 ▲ Cobalt, KLI Secondary Collection System
 -□- Cobalt, GWPS



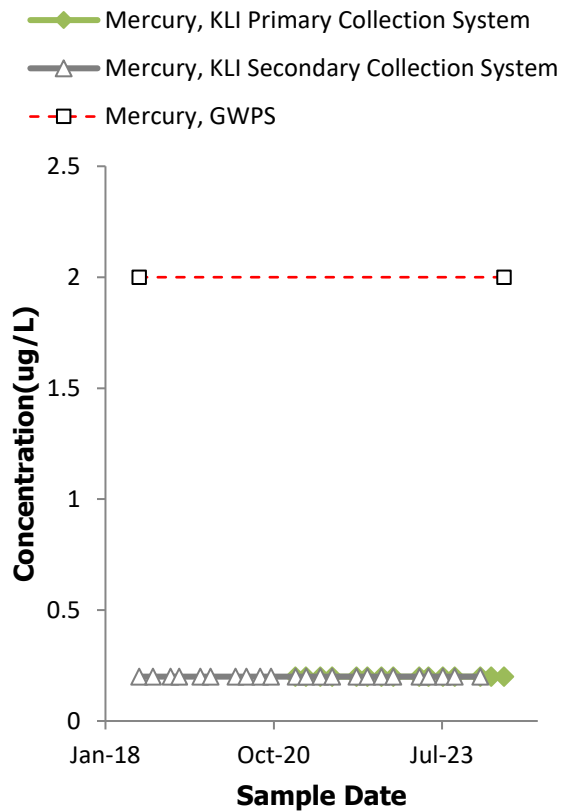
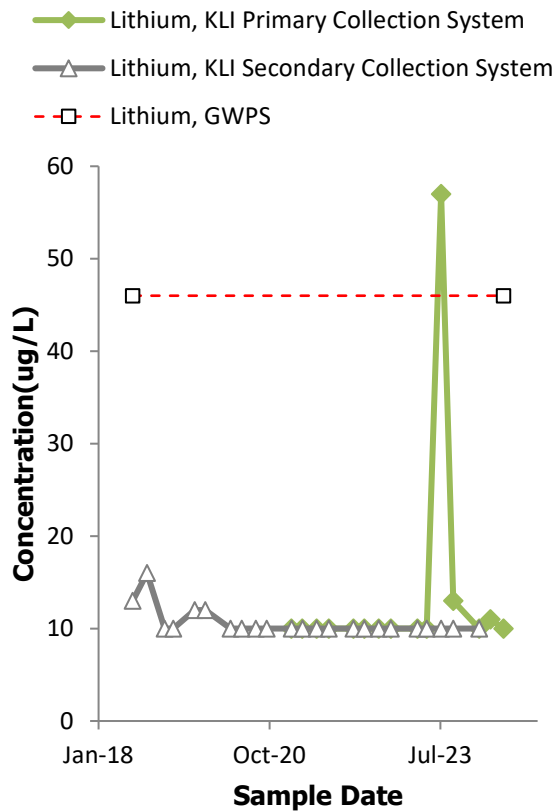
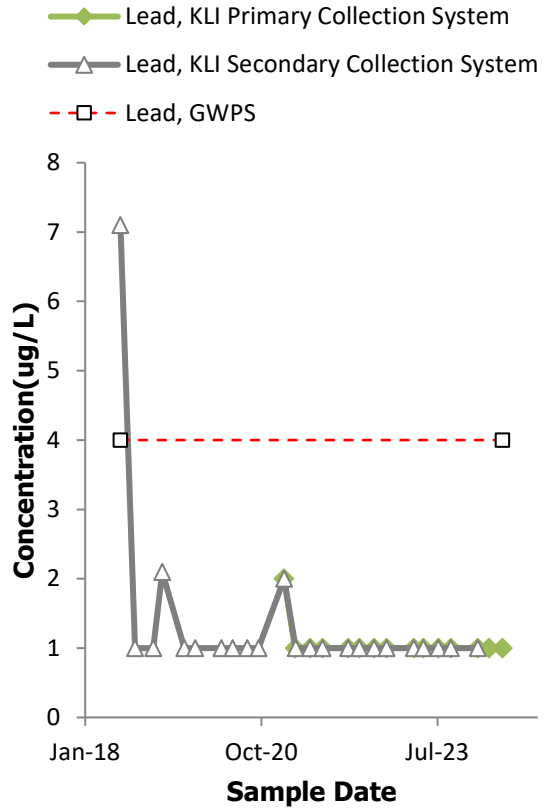
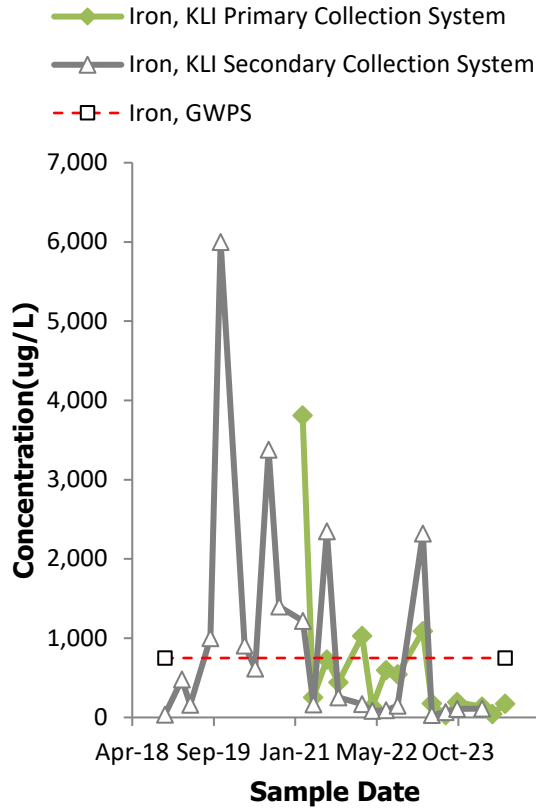
◆ Copper, KLI Primary Collection System
 ▲ Copper, KLI Secondary Collection System
 -□- Copper, GWPS



◆ Fluoride, KLI Primary Collection System
 ▲ Fluoride, KLI Secondary Collection System
 -□- Fluoride, GWPS

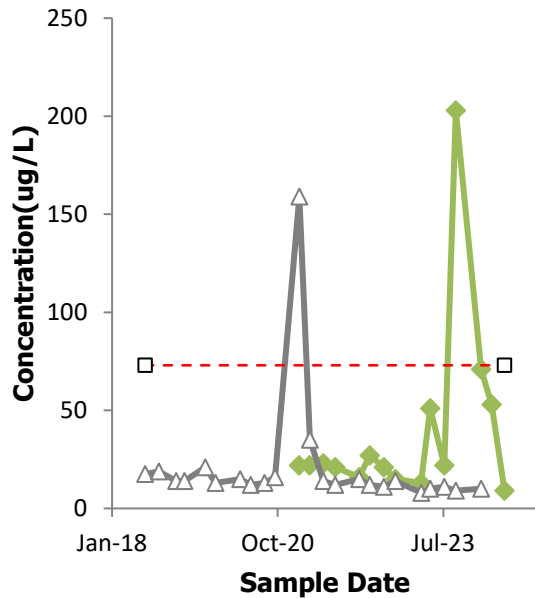


Karn Lined Impoundment Collection System Water Quality Time Series

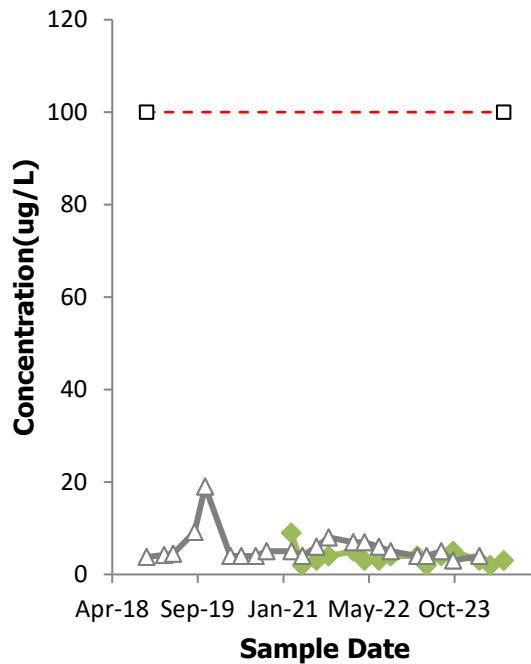


Karn Lined Impoundment Collection System Water Quality Time Series

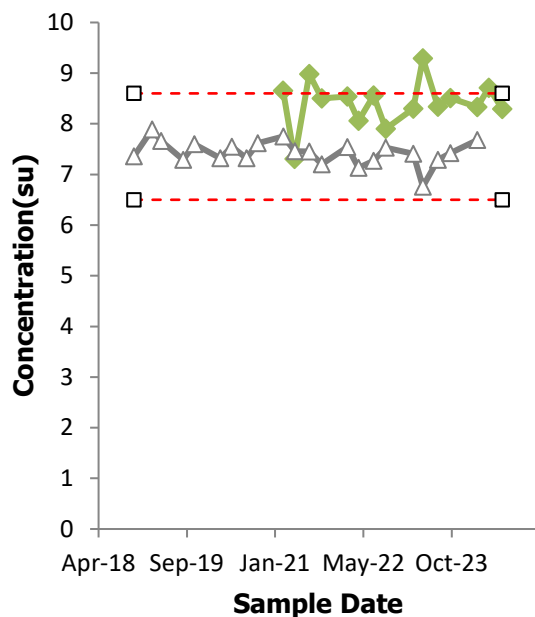
◆ Molybdenum, KLI Primary Collection System
 ▲ Molybdenum, KLI Secondary Collection System
 -□- Molybdenum, GWPS



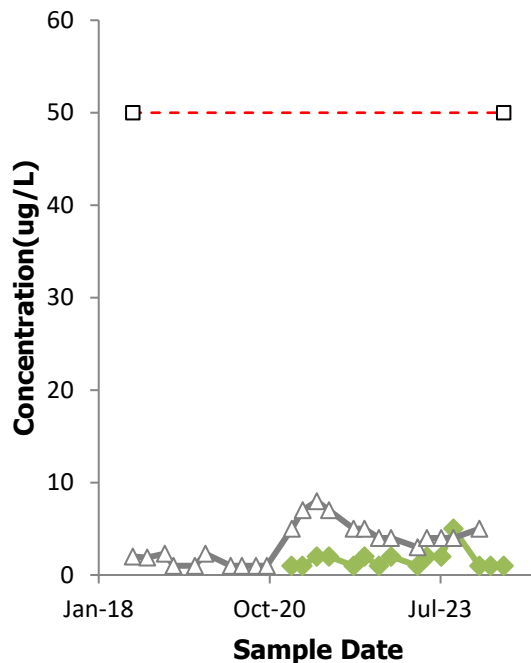
◆ Nickel, KLI Primary Collection System
 ▲ Nickel, KLI Secondary Collection System
 -□- Nickel, GWPS



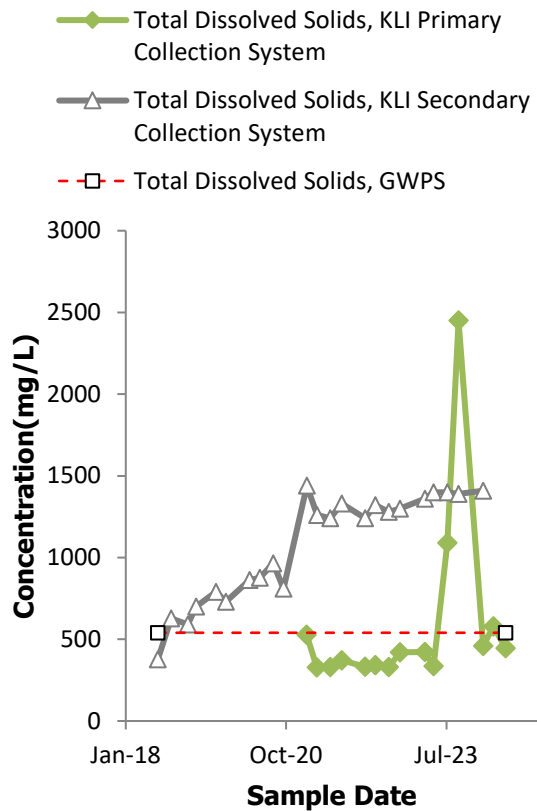
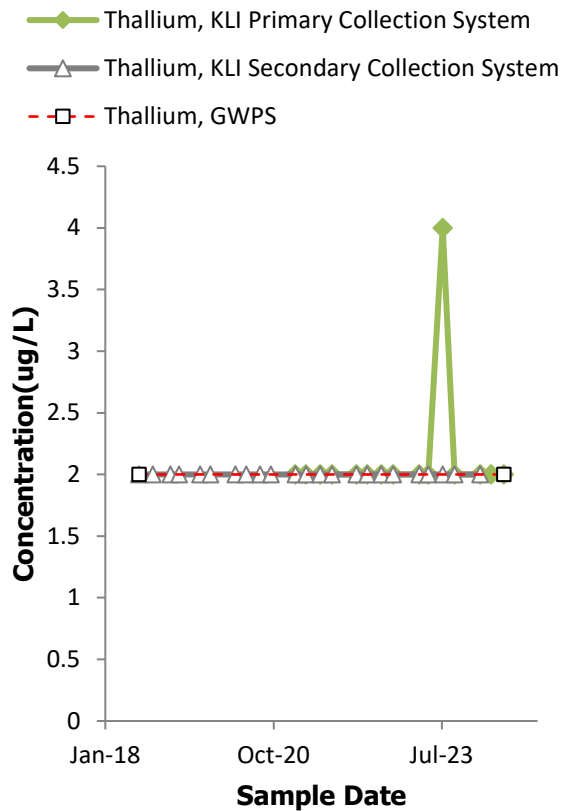
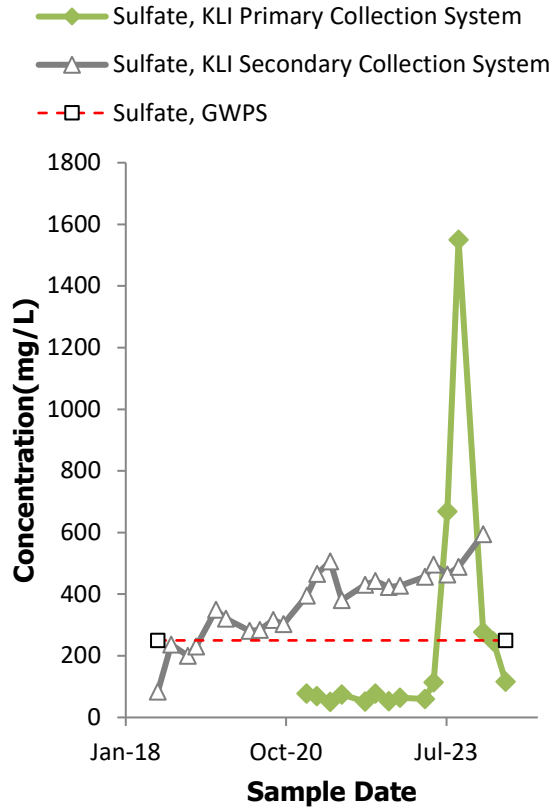
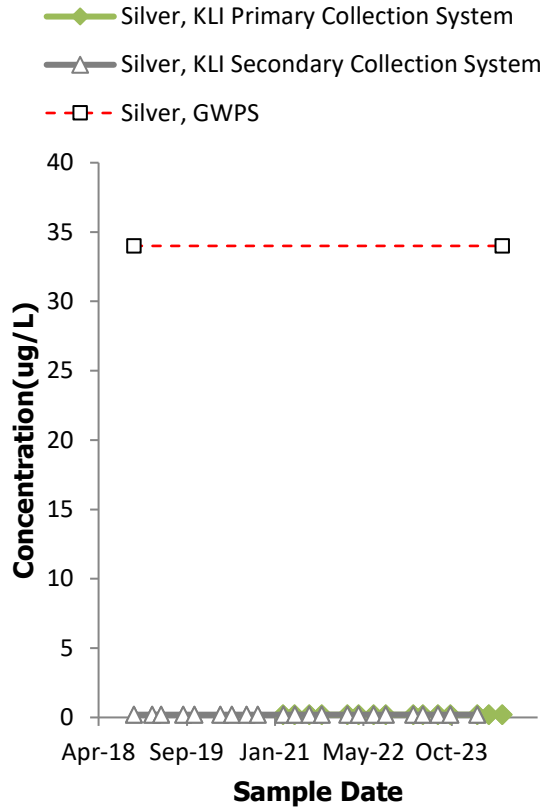
◆ pH, Field, KLI Primary Collection System
 ▲ pH, Field, KLI Secondary Collection System
 -□- pH, Field, GWPS
 -□- pH, Field, GWPS



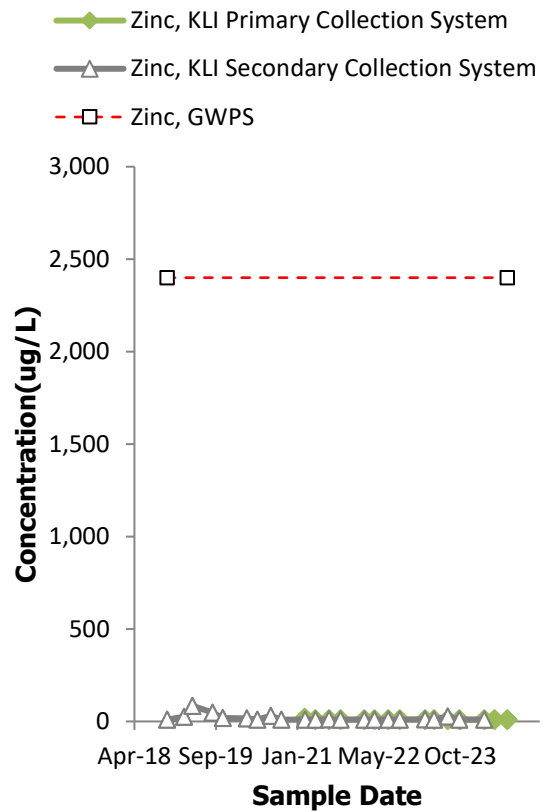
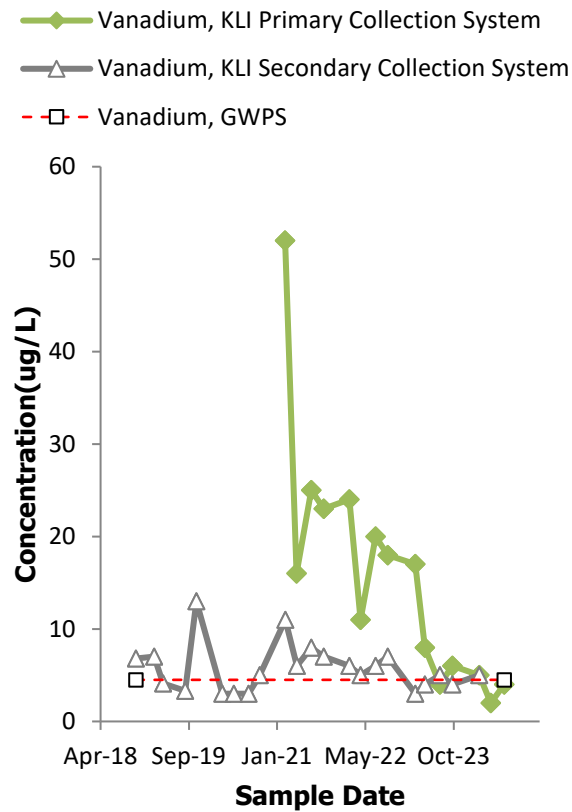
◆ Selenium, KLI Primary Collection System
 ▲ Selenium, KLI Secondary Collection System
 -□- Selenium, GWPS



Karn Lined Impoundment Collection System Water Quality Time Series



Karn Lined Impoundment Collection System Water Quality Time Series



Attachment B
WSP USA Inc. October 2024. *D.E. Karn Generating Facility*
Karn Lined Impoundment Decommissioning Report

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.

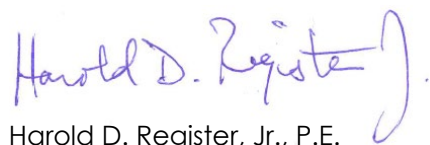
The first of those two sampling events was completed in October during the 4th Quarter 2024 sampling event and will be reported by the end of January 2025. The second sampling event will be conducted in March 2026 representing the first quarter sampling event. The results from

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

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:

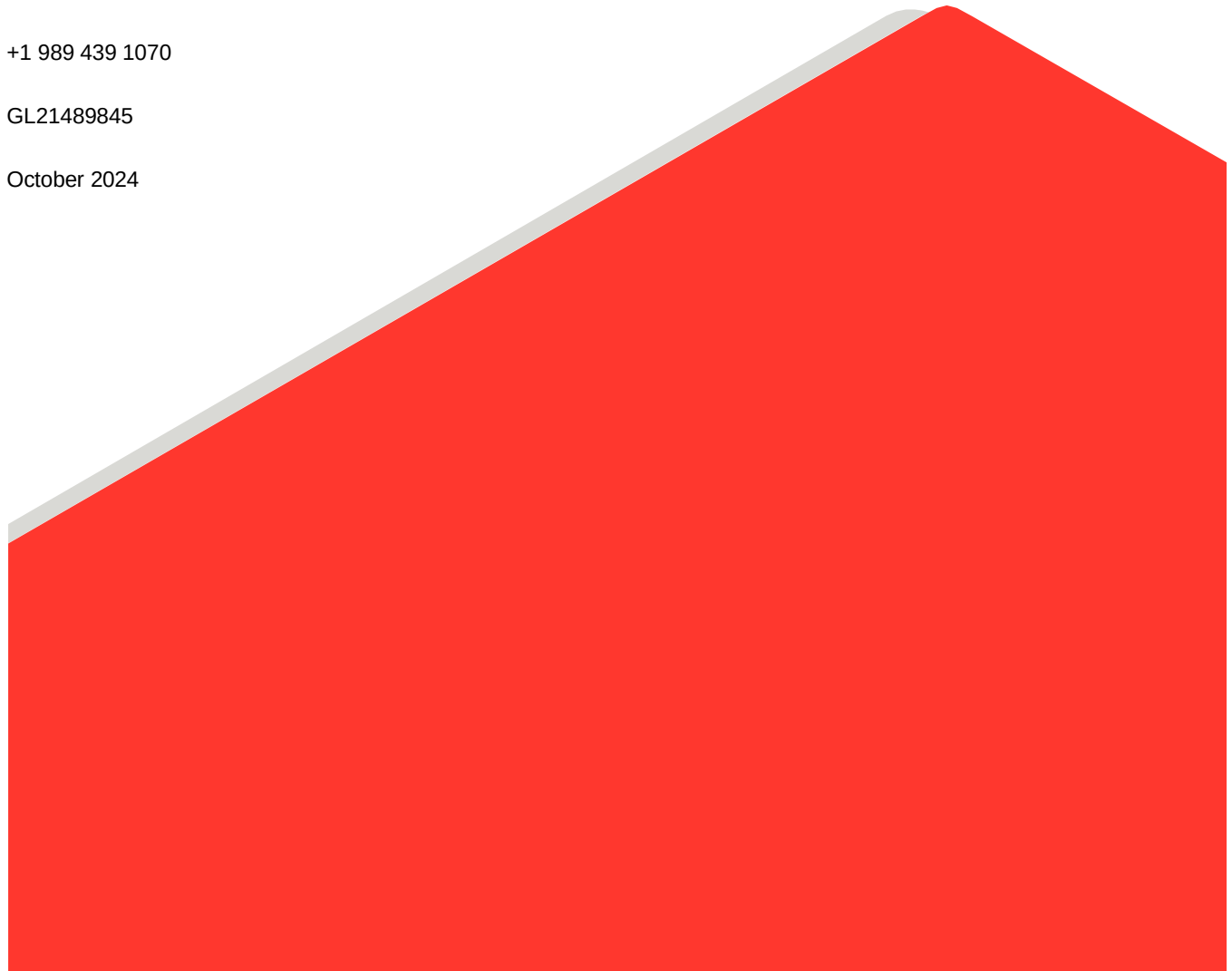
WSP USA Inc.

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.
 - o **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.
 - o **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.
 - o **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*.

Table of Contents

1.0 INTRODUCTION1

1.1 Purpose1

2.0 CCR REMOVAL AND DOCUMENTATION1

2.1 Narrative Description of CCR Removal.....2

2.2 Documentation of Excavation Grades – First Line of Evidence3

2.3 Photographic Documentation – Second Line of Evidence3

2.4 Microscopy – Third Line of Evidence3

3.0 SUMMARY4

4.0 STANDARD OF CARE4

TABLES

Table 1 Karn Lined Impoundment Microscopy Results

FIGURES

Figure 1 Site Overview

Figure 2 CCR Removal Documentation - Excavation Surface

Figure 3 CCR Removal Documentation - Sample Grid Nodes

Figure 4 CCR Removal Documentation - Confirmation Grid Nodes

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

https://wspnlinenam-my.sharepoint.com/personal/brenda_bunyon_wsp_com/documents/documents//2024-october_karn lined impoundment cqa report_final draft.docx

Tables



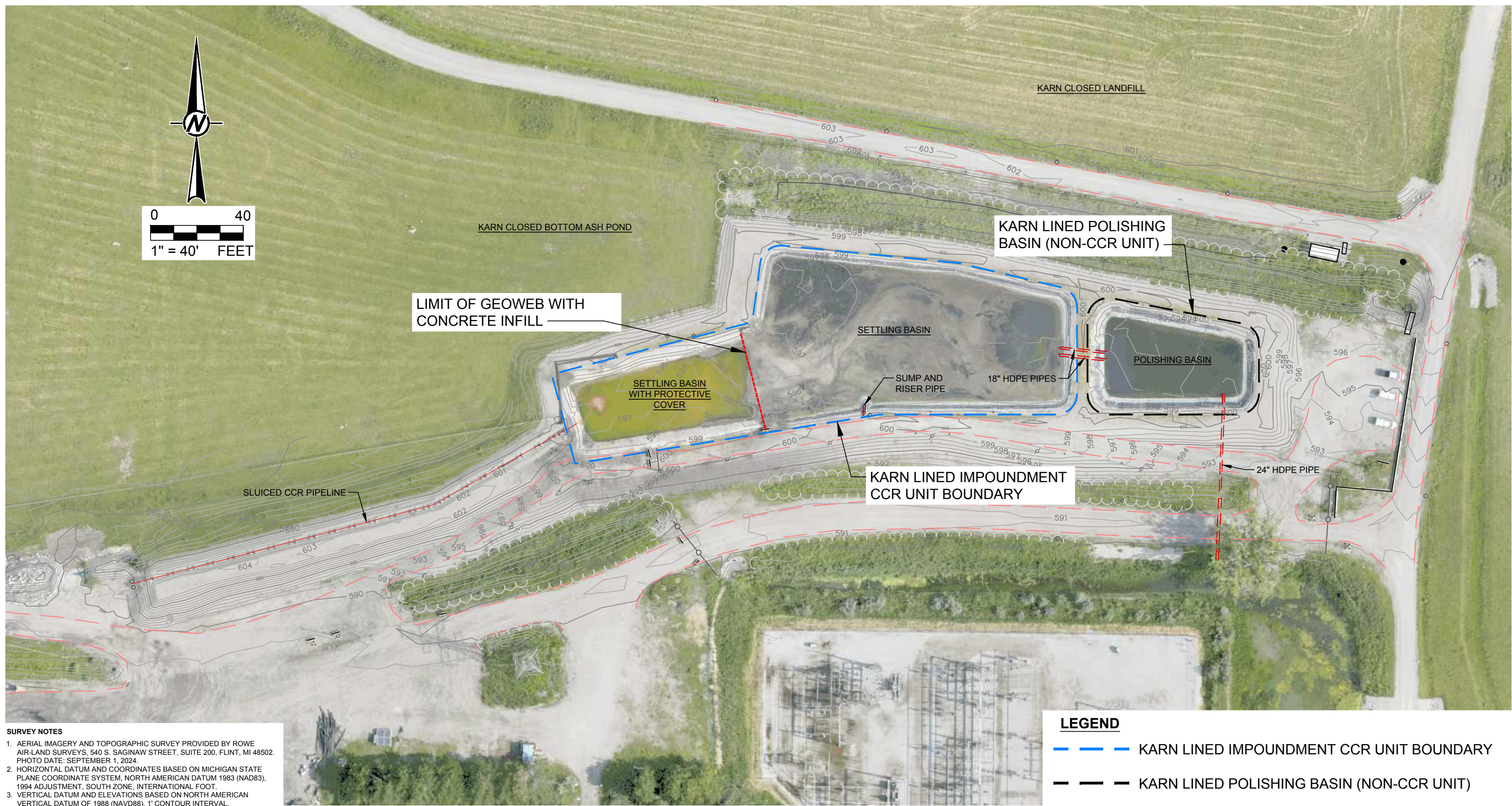
Table 1. Lined Impoundment Microscopy Results						
Grid Node	Northing	Easting	Date Sampled	Soil Description	Microscopic Estimation of CCR (%)	Pass/ Fail (less than 10%)
K-1	783006.90	13263227.43	9/3/2024	2NS Sand	0.5%	Pass
K-3	782999.36	13263303.23	9/3/2024	2NS Sand	0.5%	Pass
K-7	782943.23	13263450.81	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



0 40
1" = 40' FEET



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)

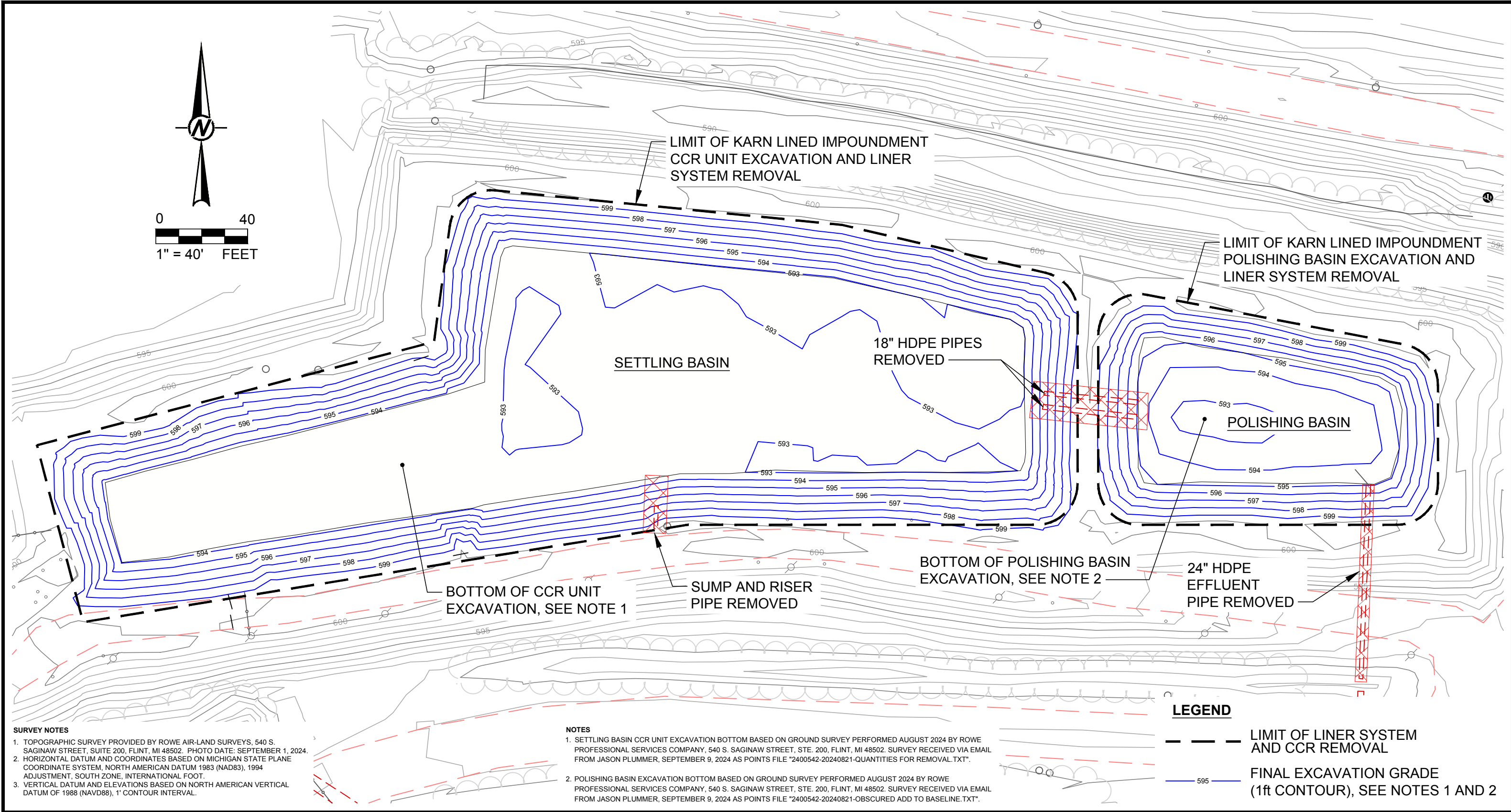
A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP
REV	DATE	DESCRIPTION	BY	CK	APP

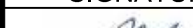
SIGNATURE
NAME
JOHN D. PULS
MICHIGAN P.E. No.
6201055778

D.E. KARN GENERATING FACILITY
ESSEXVILLE, MI

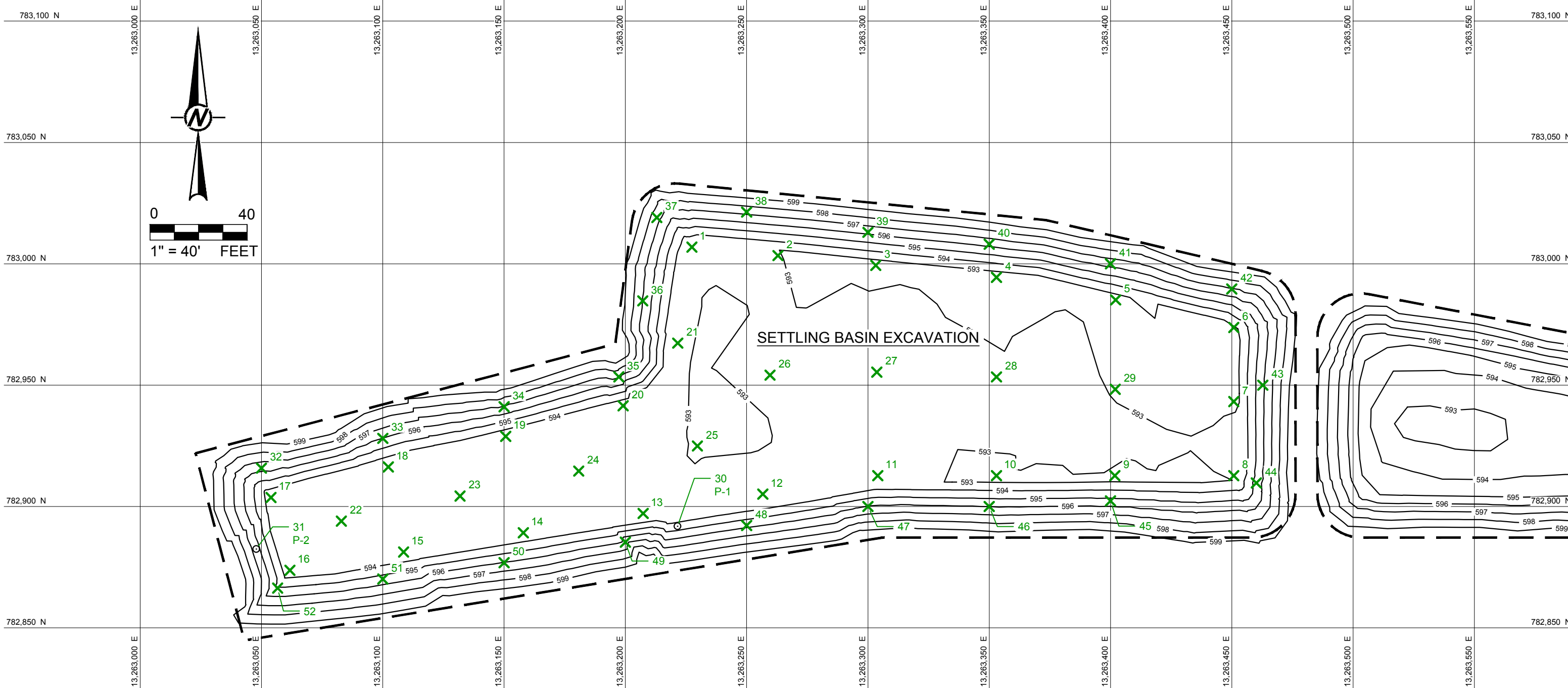
SITE OVERVIEW			
LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT			
SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		1	A

P: \\ConsumersEnergy\\21489845 DEK Demolition Grading\\PRODUCTION\\ - Lined Imp Closure Cert Report Grd Node Figs\\GL21489845 Lined Imp Closure - As-Built Excavation.dwg Oct 30, 2024 - 8:54am By: USSA700736



						SIGNATURE	 D.E. KARN GENERATING FACILITY ESSEXVILLE, MI	CCR REMOVAL DOCUMENTATION - EXCAVATION SURFACE			
						 NAME		LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT			
						JOHN D. PULS					
						MICHIGAN P.E. No.					
						6201055778					
A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP			SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
REV	DATE	DESCRIPTION	BY	CK	APP			JOB: GL21489845.0003		2	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



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.

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-OBSURED ADD TO BASELINE.TXT".

LEGEND

- LIMIT OF LINER SYSTEM AND CCR REMOVAL
- 595 — FINAL EXCAVATION GRADE (1ft CONTOUR), SEE NOTES 1 AND 2

- X¹ CCR REMOVAL CERTIFICATION GRID NODE AND ID
- ³⁰_{P-1} 2021 LINER REPAIR / PUNCTURE LOCATION

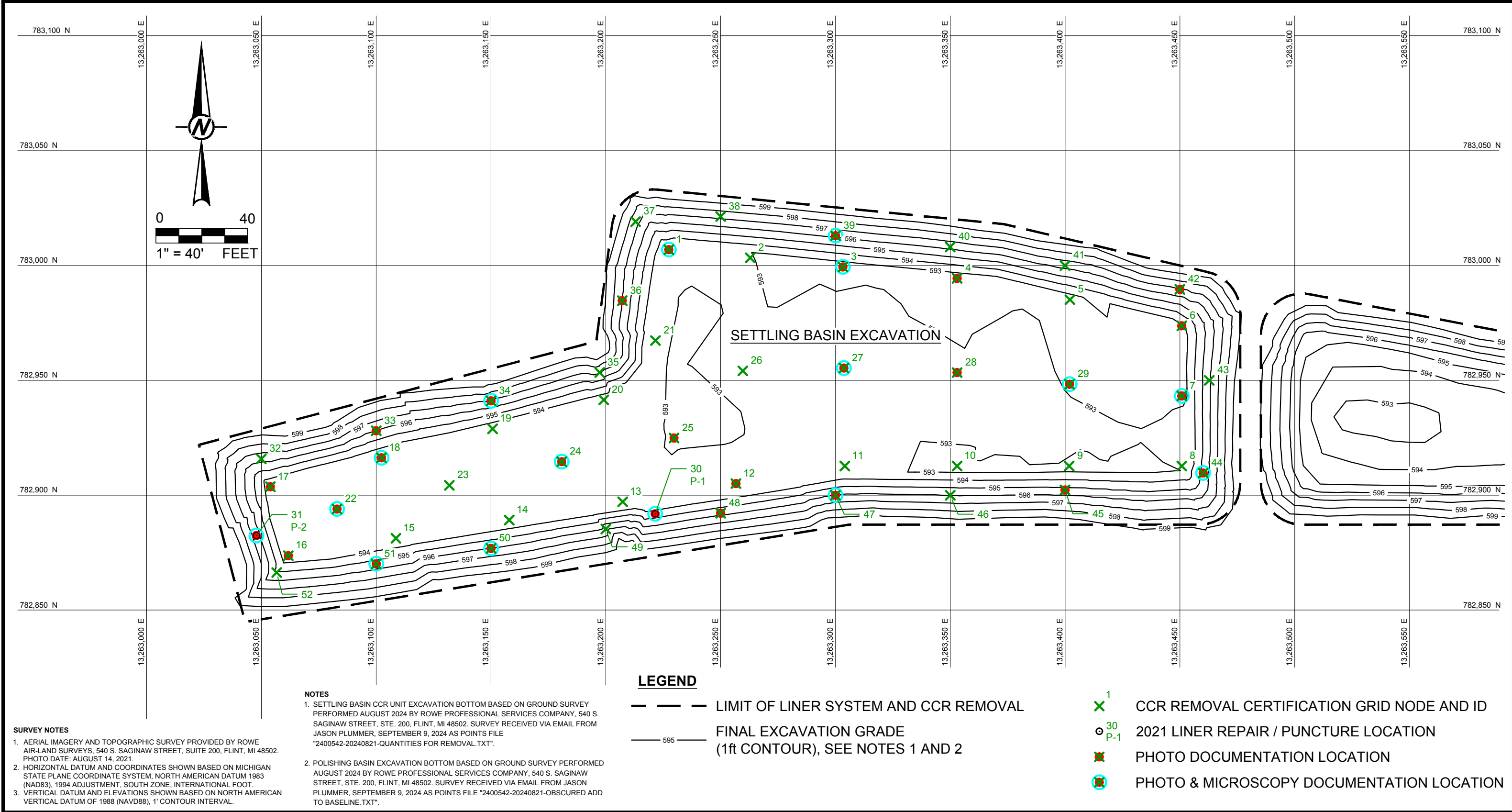
A	2024-10-30	ISSUED FOR FINAL REPORT	SDA	SET	JDP
REV	DATE	DESCRIPTION	BY	CK	APP

SIGNATURE
NAME
JOHN D. PULS
MICHIGAN P.E. No.
6201055778

D.E. KARN GENERATING FACILITY
ESSEXVILLE, MI

CCR REMOVAL DOCUMENTATION - SAMPLE GRID NODES			
LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT			
SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		3	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 - 8:56am 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: 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.

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-OBSCURSED ADD TO BASELINE.TXT".

LEGEND

- LIMIT OF LINER SYSTEM AND CCR REMOVAL
- 595 — FINAL EXCAVATION GRADE (1ft CONTOUR), SEE NOTES 1 AND 2

- 1 CCR REMOVAL CERTIFICATION GRID NODE AND ID
- 30 P-1 2021 LINER REPAIR / PUNCTURE LOCATION
- PHOTO DOCUMENTATION LOCATION
- PHOTO & MICROSCOPY DOCUMENTATION LOCATION

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

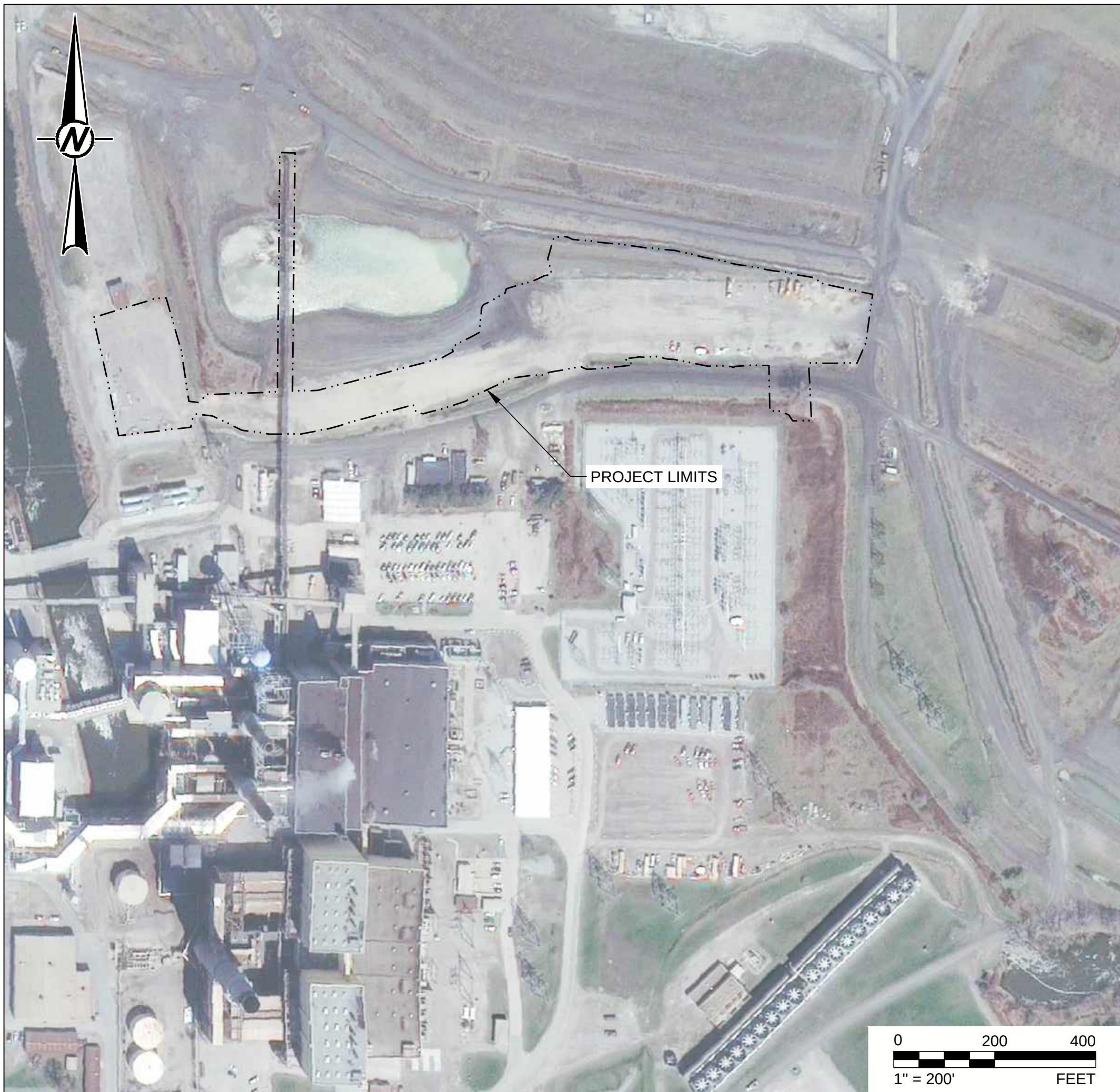
D.E. KARN GENERATING FACILITY
ESSEXVILLE, MI

CCR REMOVAL DOCUMENTATION - CONFIRMATION GRID NODES			
LINED IMPOUNDMENT CCR REMOVAL DOCUMENTATION REPORT			
SCALE: 1" = 40'	DRAWING NO.	FIGURE	REV.
JOB: GL21489845.0003		4	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

Consumers Energy Company
DE Karn Generating Plant
2742 N. Weadock Hwy.
Essexville, MI 48732

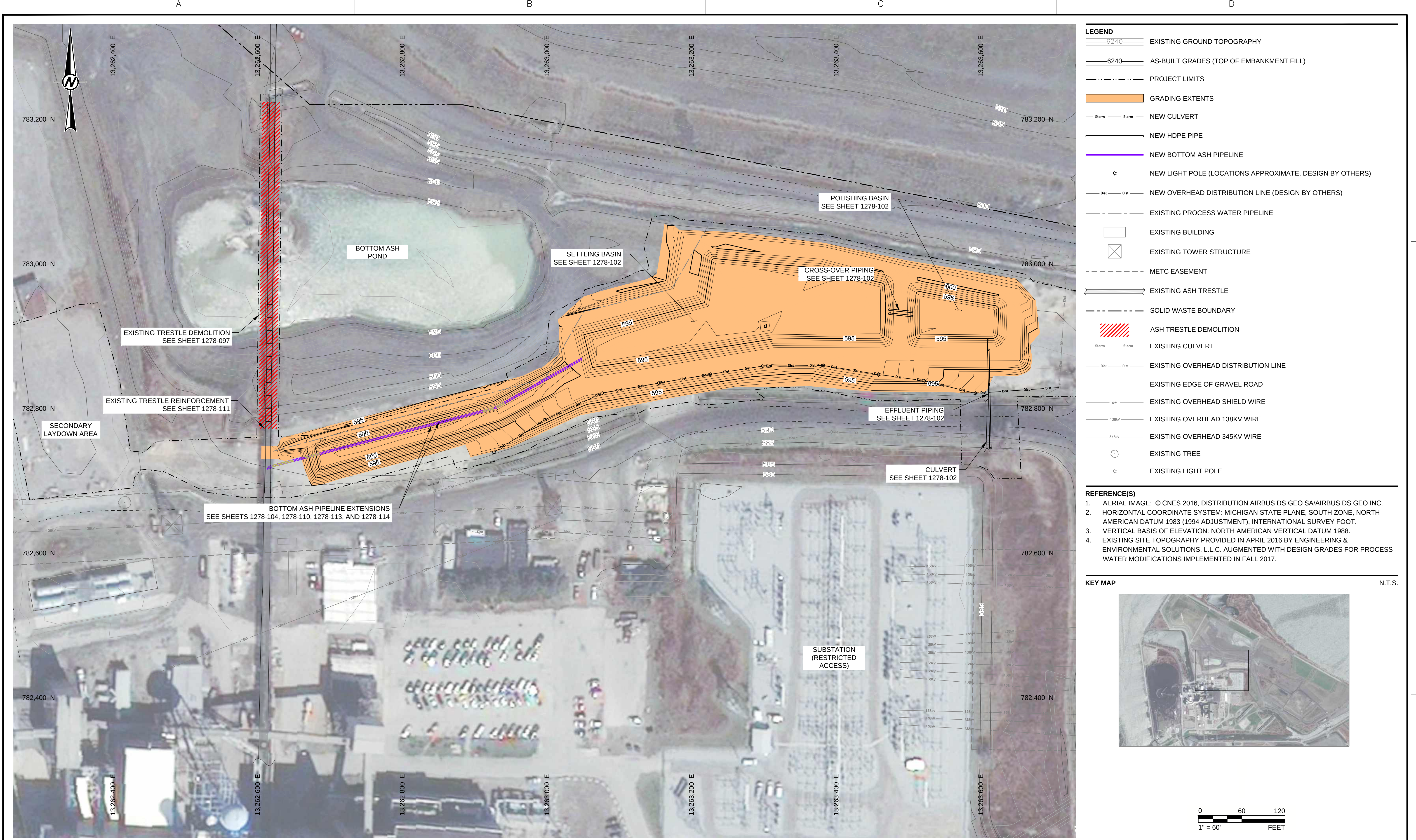
Prepared by:

Golder Associates
Golder Associates Inc.
44 Union Blvd., Ste. 300
Lakewood, CO 80228

SHEET LIST		
SHEET NUMBER	SHEET TITLE	REV.
GENERAL		
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
CIVIL AND PIPING		
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.
STRUCTURAL		
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
PROCESS		
1278-116	PROCESS FLOW DIAGRAM	0
1278-117	PIPING & INSTRUMENTATION DIAGRAM	0

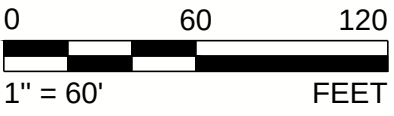
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----



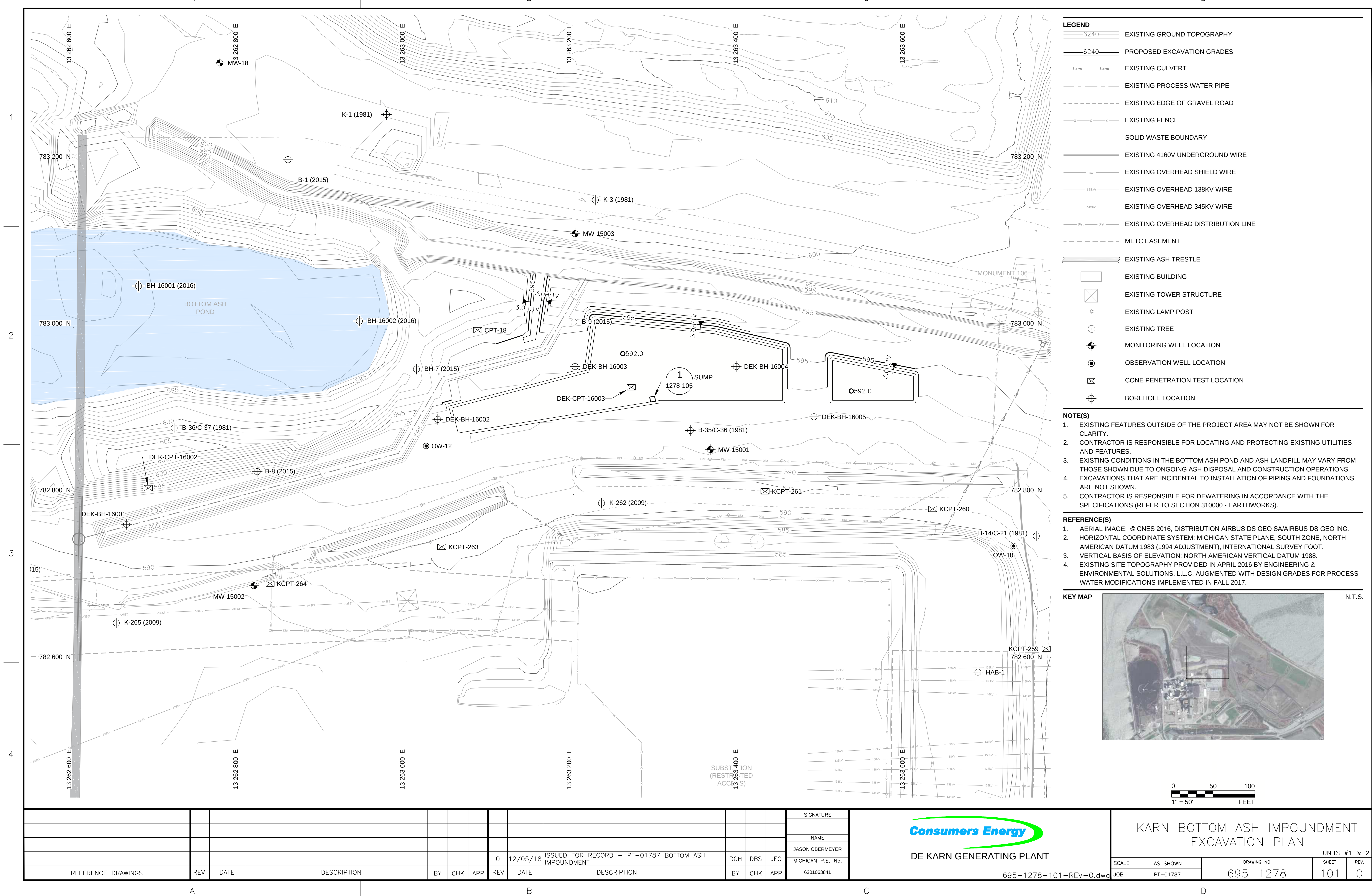
- LEGEND**
- EXISTING GROUND TOPOGRAPHY
 - AS-BUILT GRADES (TOP OF EMBANKMENT FILL)
 - PROJECT LIMITS
 - GRADING EXTENTS
 - NEW CULVERT
 - NEW HDPE PIPE
 - NEW BOTTOM ASH PIPELINE
 - NEW LIGHT POLE (LOCATIONS APPROXIMATE, DESIGN BY OTHERS)
 - NEW OVERHEAD DISTRIBUTION LINE (DESIGN BY OTHERS)
 - EXISTING PROCESS WATER PIPELINE
 - EXISTING BUILDING
 - EXISTING TOWER STRUCTURE
 - METC EASEMENT
 - EXISTING ASH TRESTLE
 - SOLID WASTE BOUNDARY
 - ASH TRESTLE DEMOLITION
 - EXISTING CULVERT
 - EXISTING OVERHEAD DISTRIBUTION LINE
 - EXISTING EDGE OF GRAVEL ROAD
 - EXISTING OVERHEAD SHIELD WIRE
 - EXISTING OVERHEAD 138KV WIRE
 - EXISTING OVERHEAD 345KV WIRE
 - EXISTING TREE
 - EXISTING LIGHT POLE

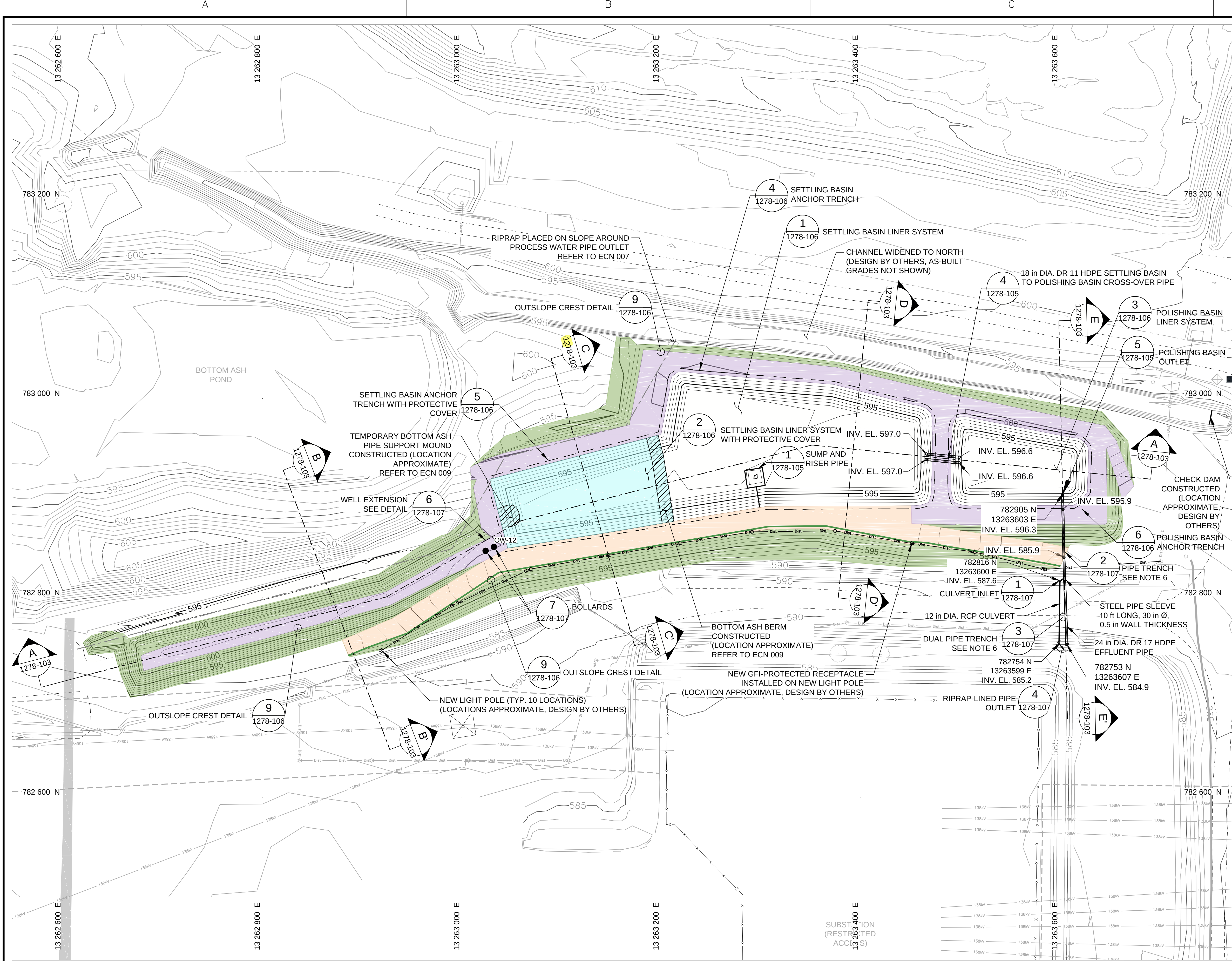
- REFERENCE(S)**
- AERIAL IMAGE: © CNES 2016, DISTRIBUTION AIRBUS DS GEO SA/AIRBUS DS GEO INC.
 - HORIZONTAL COORDINATE SYSTEM: MICHIGAN STATE PLANE, SOUTH ZONE, NORTH AMERICAN DATUM 1983 (1994 ADJUSTMENT), INTERNATIONAL SURVEY FOOT.
 - VERTICAL BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988.
 - 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.

KEY MAP N.T.S.



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--





LEGEND

- 6240 EXISTING GROUND TOPOGRAPHY
- 6240 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.

KEY MAP N.T.S.

0 50 100
1" = 50' FEET

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

1

2

3

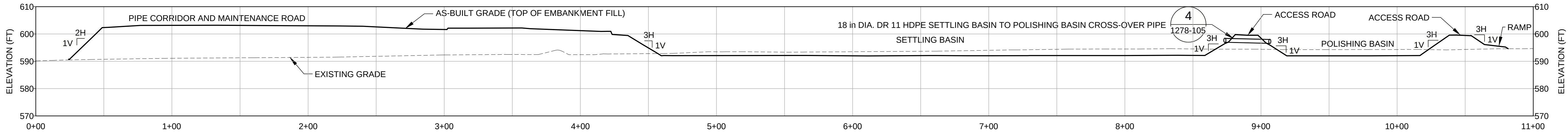
4

1

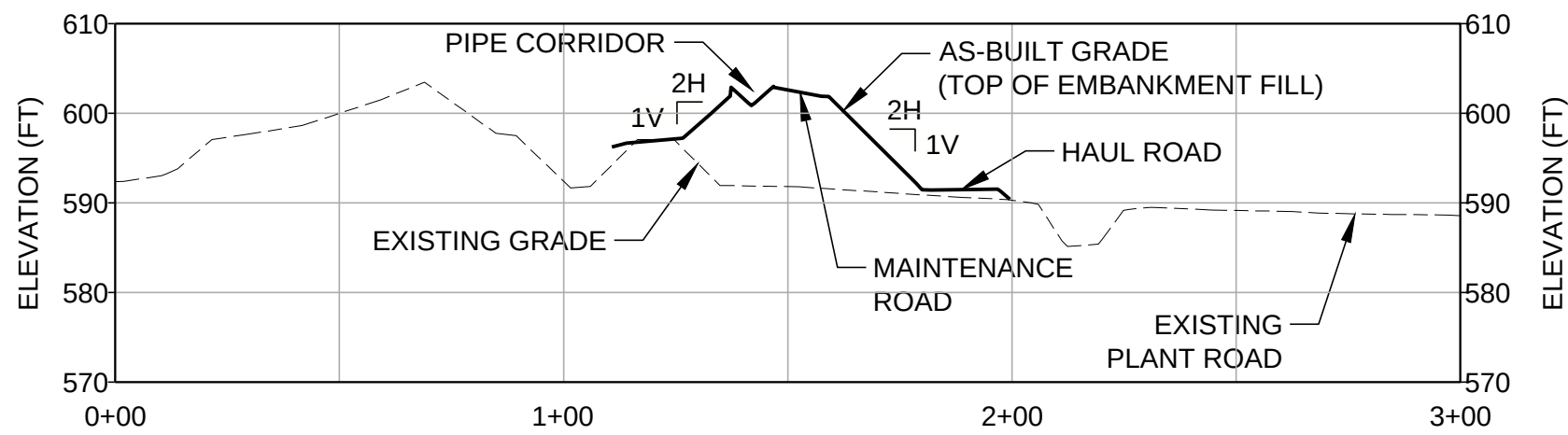
2

3

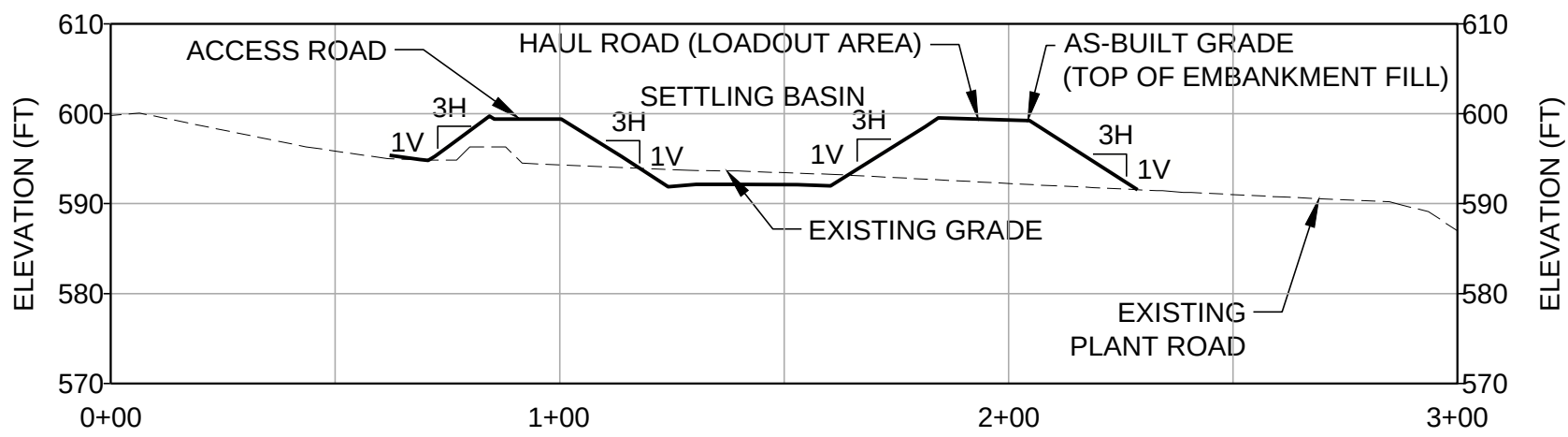
4



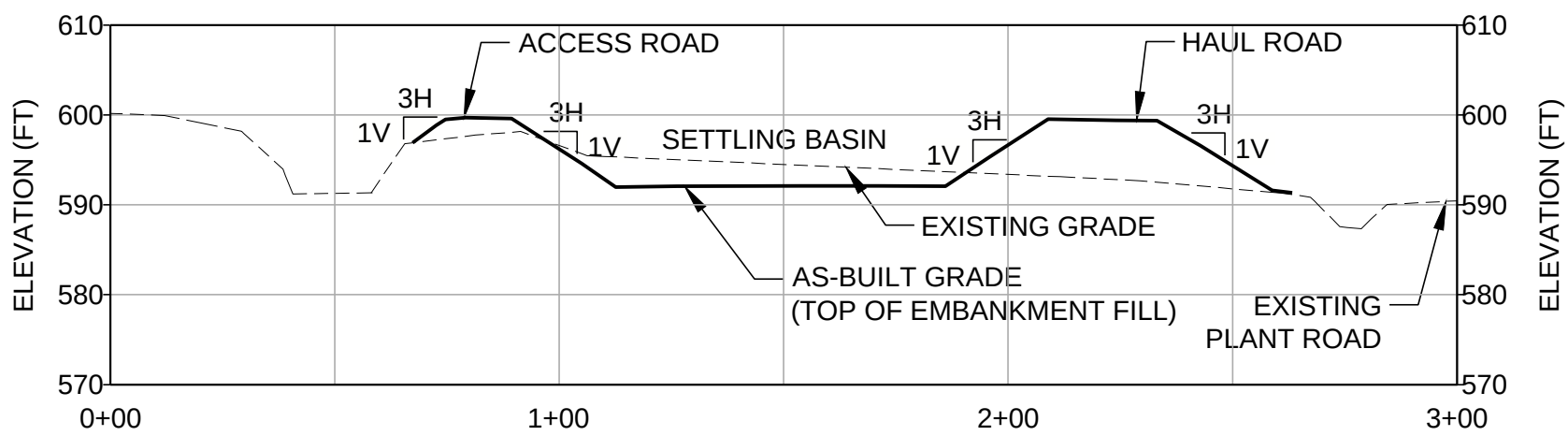
SCALE 1" = 40'
2X VERT. SECTION A-A'
1278-103



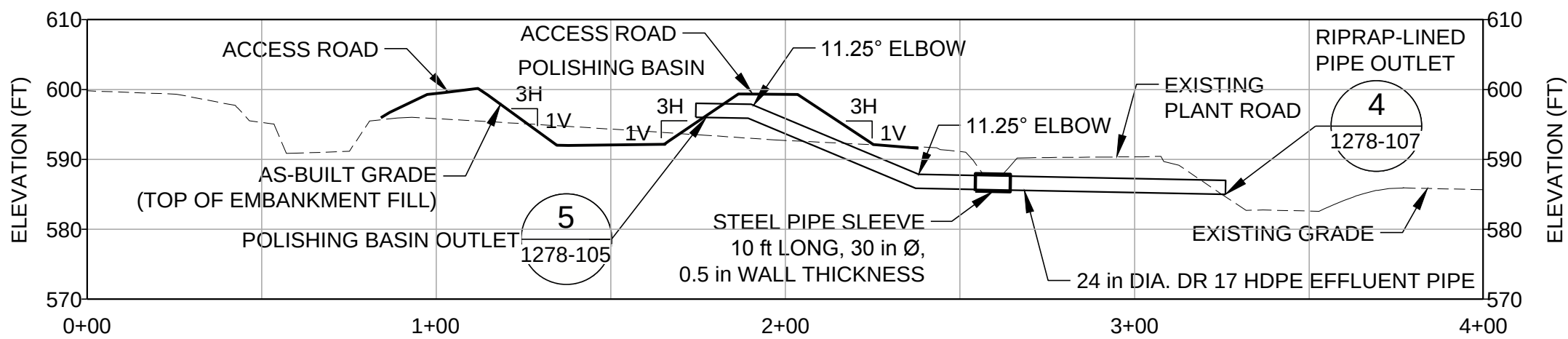
SCALE 1" = 40'
2X VERT. SECTION B-B'
1278-103



SCALE 1" = 40'
2X VERT. SECTION C-C'
1278-103

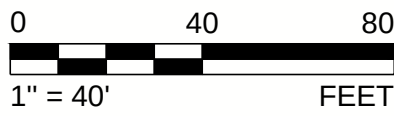


SCALE 1" = 40'
2X VERT. SECTION D-D'
1278-103



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).



																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

A

B

C

D

1

2

3

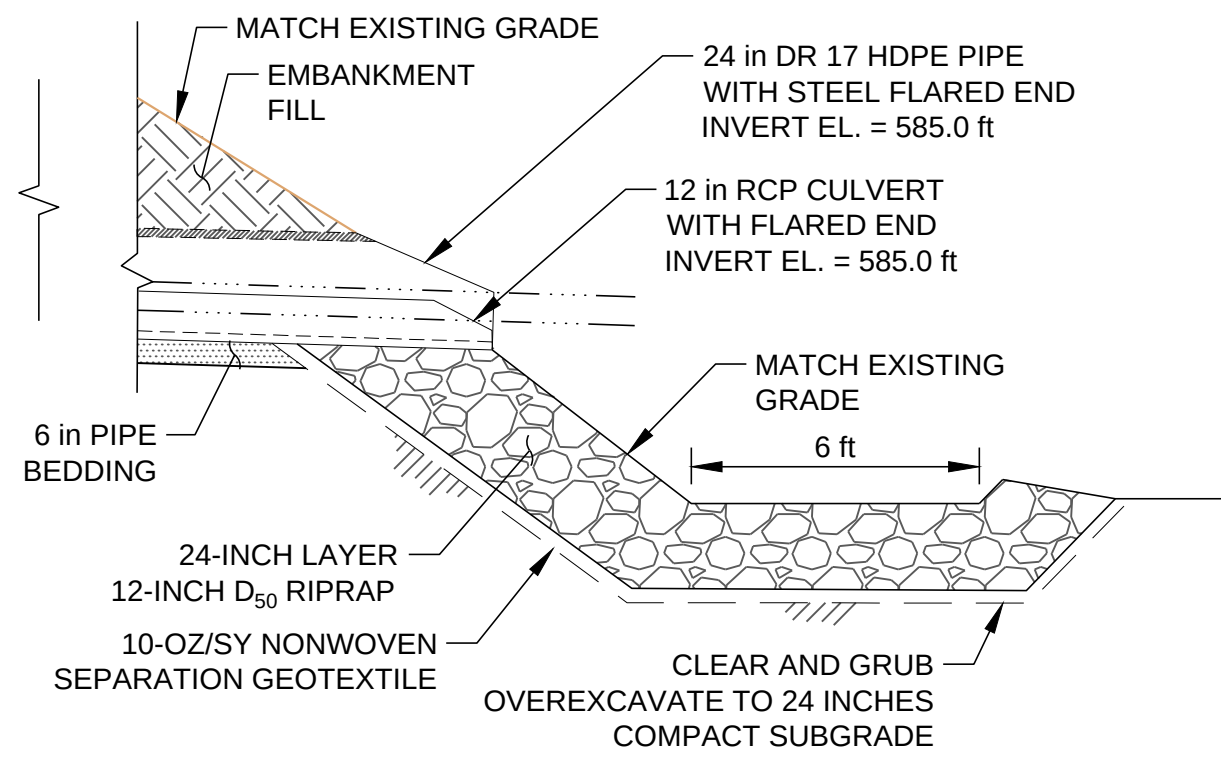
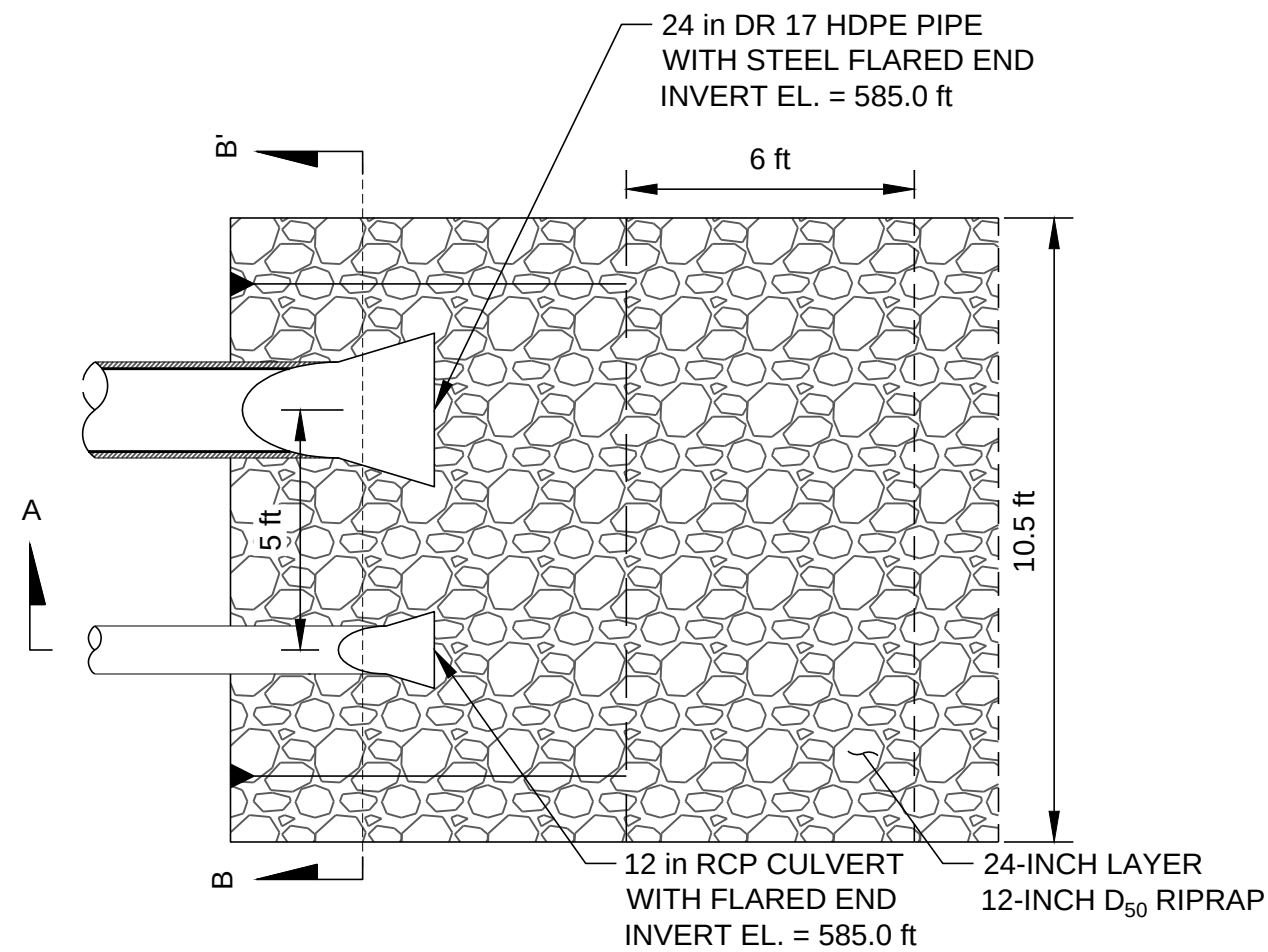
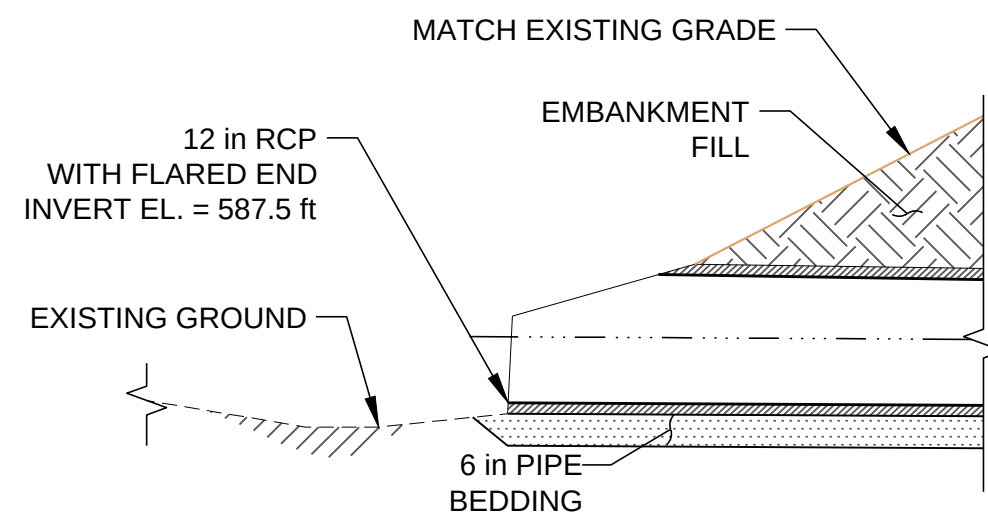
4

1

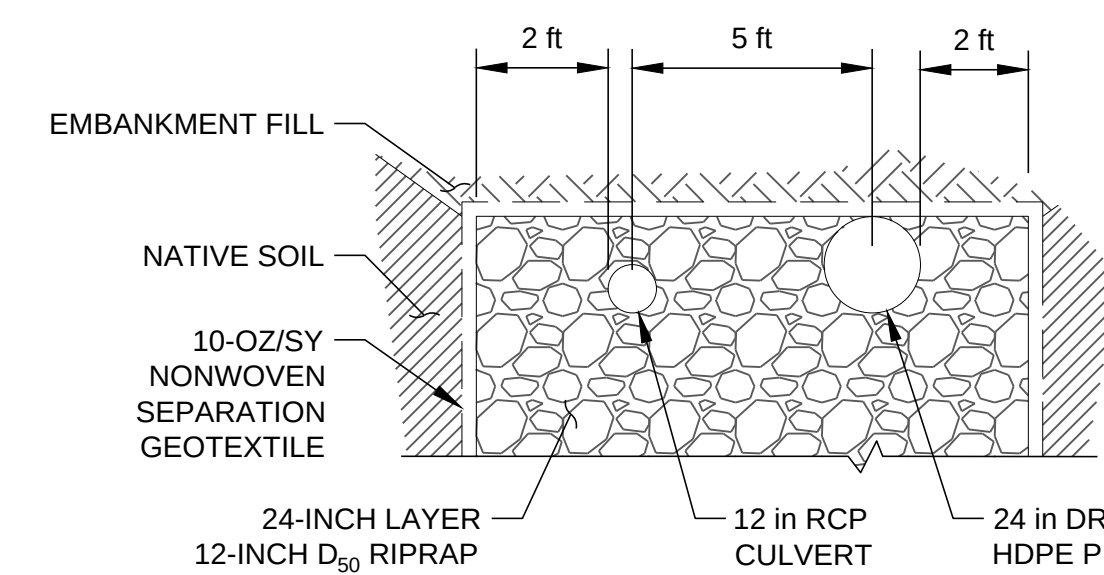
2

3

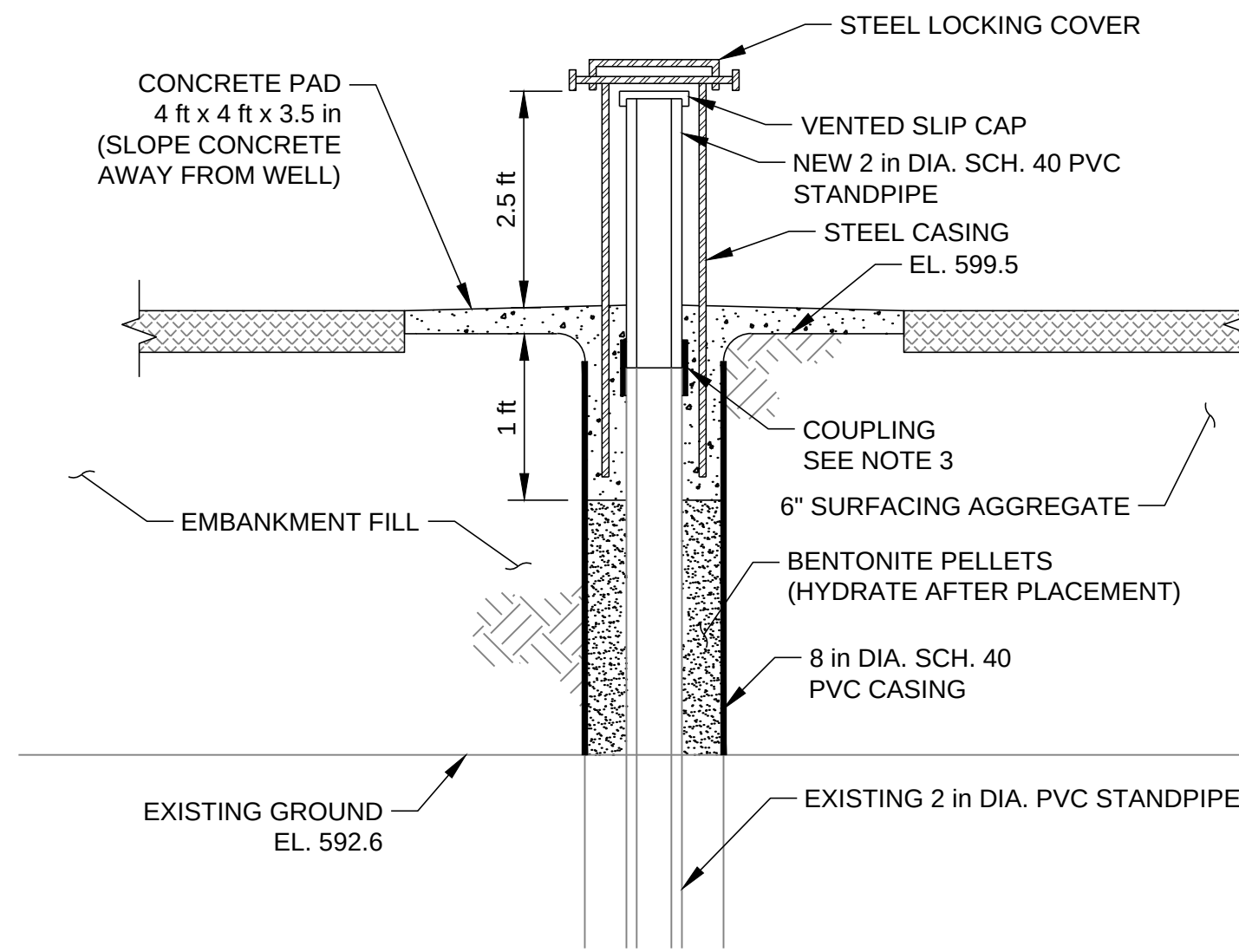
4



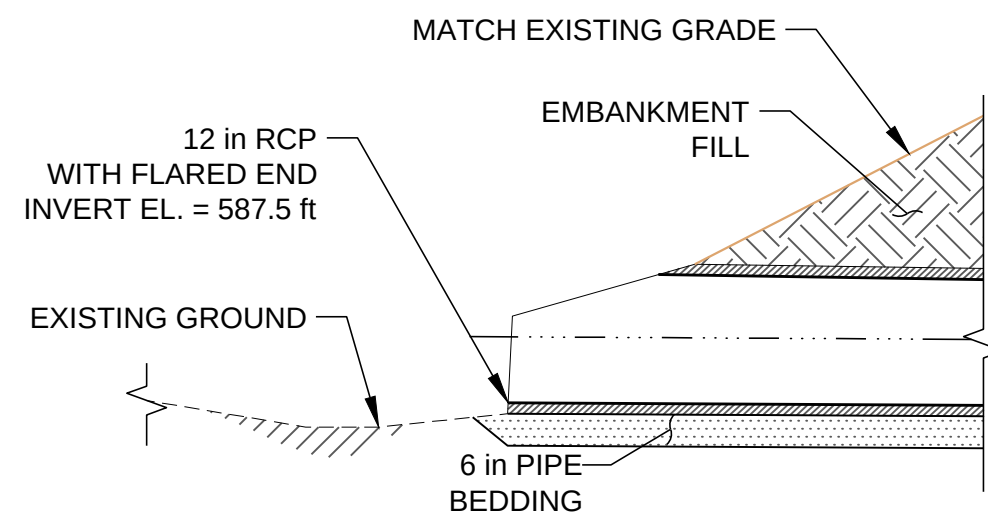
SECTION A-A'



SECTION B-B'

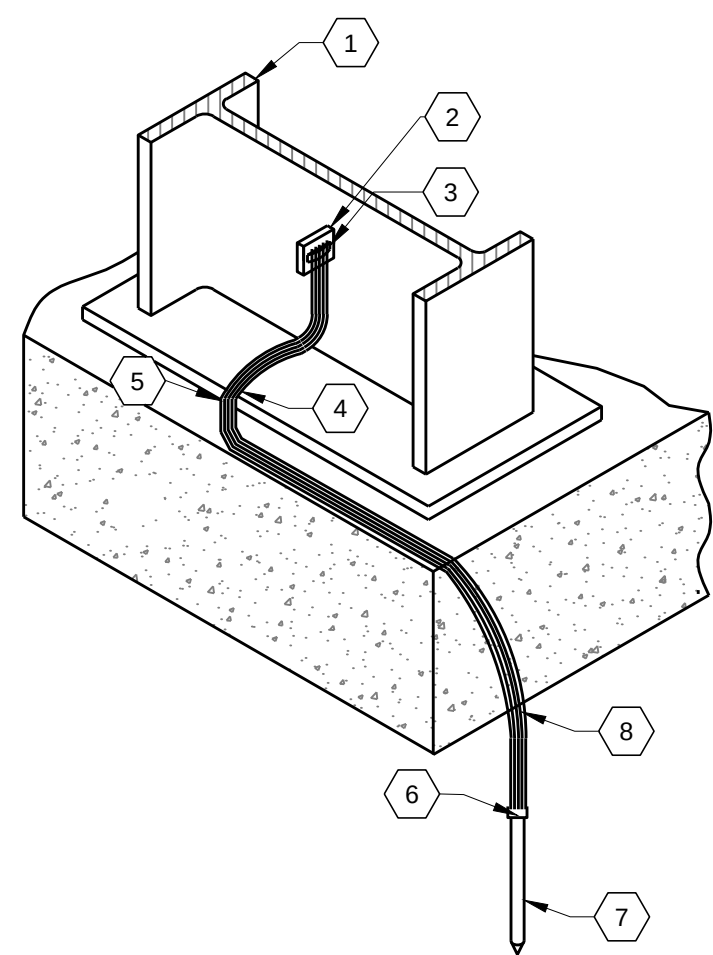


N.T.S. 7 BOLLARD DETAIL
1278-107



N.T.S. 1 CULVERT INLET
1278-107

N.T.S. 2 PIPE TRENCH
1278-107



N.T.S. 3 DUAL PIPE TRENCH
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.

N.T.S. 5 STRUCTURAL STEEL GROUNDING
1278-107

N.T.S. 6 WELL EXTENSION
1278-107

- 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.

Consumers Energy
DE KARN GENERATING PLANT

KARN BOTTOM ASH IMPOUNDMENT
CIVIL AND PIPING SECTIONS AND
DETAILS (3 OF 4)

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

SIGNATURE
NAME
JASON OBERMEYER
MICHIGAN P.E. No.
6201063841

SCALE	AS SHOWN	DRAWING NO.	SHEET	REV.
JOB	PT-01787	695-1278	107	0

695-1278-107-REV-0.dwg

APPENDIX B

Daily Field Reports



DAILY FIELD REPORT

Date:	August 05, 2024			On Site: 0700	Off Site: 1600
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	69 °F	High Temp:	75 °F	Wind:	0 - 10 MPH NE
Cloud Cover:	Mostly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (5 people) Jason O'Dell (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 07, 2024		On Site: 0700	Off Site: 1600
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	56 °F	High Temp:	77 °F	Wind: 0 - 10 MPH N to E
Cloud Cover:	Partly Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (6 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 08, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	58 °F	High Temp:	84 °F	Wind:	0 - 5 MPH Calm
Cloud Cover:	Mostly Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (6 people) Jon Giffel/Joe Kusmierz (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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 12th 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

Date:	August 09, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	63 °F	High Temp:	78 °F	Wind:	5 - 15 MPH W gusts to 20
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (6 people) Joe Kusmierz (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 12, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	53 °F	High Temp:	80 °F	Wind:	0 - 10 MPH variable Westerly
Cloud Cover:	Mostly Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (6 people) Jason O'Dell (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 13, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	59 °F	High Temp:	81 °F	Wind:	0 - 5 MPH NE
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 14, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	59 °F	High Temp:	81 °F	Wind:	0 - 5 MPH W
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 15, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	59 °F	High Temp:	81 °F	Wind:	0 - 5 MPH S
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 16, 2024		On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	66 °F	High Temp:	76 °F	Wind: 0 - 5 MPH S
Cloud Cover:	Overcast		Precipitation	Rain 1030 – 1330 0.5"

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 19, 2024		On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	57 °F	High Temp:	67 °F	Wind: 10 - 20 MPH N gust to 26
Cloud Cover:	Partly to Mostly Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 20, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	51 °F	High Temp:	70 °F	Wind:	6 - 12 MPH N gust to 25
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personal (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personal Construction Manager 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

Date:	August 21, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	48 °F	High Temp:	74 °F	Wind:	5 - 13 MPH variable
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	August 22, 2024			On Site: 0700	Off Site: 1730
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	51 °F	High Temp:	78 °F	Wind:	0 - 10 MPH S to W
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
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

Date:	August 23, 2024			On Site: 0700	Off Site: 1200
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	55 °F	High Temp:	76 °F	Wind:	5 - 10 MPH SW
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
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

Date:	August 26, 2024			On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	70 °F	High Temp:	92 °F	Wind:	5 - 10 MPH S to SW
Cloud Cover:	Mostly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (8 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	August 28, 2024			On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	69 °F	High Temp:	72 °F	Wind:	5 - 15 MPH NE
Cloud Cover:	Cloudy			Precipitation	None. (1.12" rain previous day)

Personnel on Site/Company	Responsibility
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.

DAILY FIELD REPORT

Project: GL21489845

Date: August 28, 2024

- 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

Date:	August 29, 2024			On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	63 °F	High Temp:	73 °F	Wind:	0 - 10 MPH E
Cloud Cover:	Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	August 30, 2024			On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	65 °F	High Temp:	84 °F	Wind:	5 - 15 MPH S
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 03, 2024		On Site: 0700	Off Site: 1400
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	49 °F	High Temp:	73 °F	Wind: 3 - 12 MPH SW
Cloud Cover:	Partly Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (4 people) Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

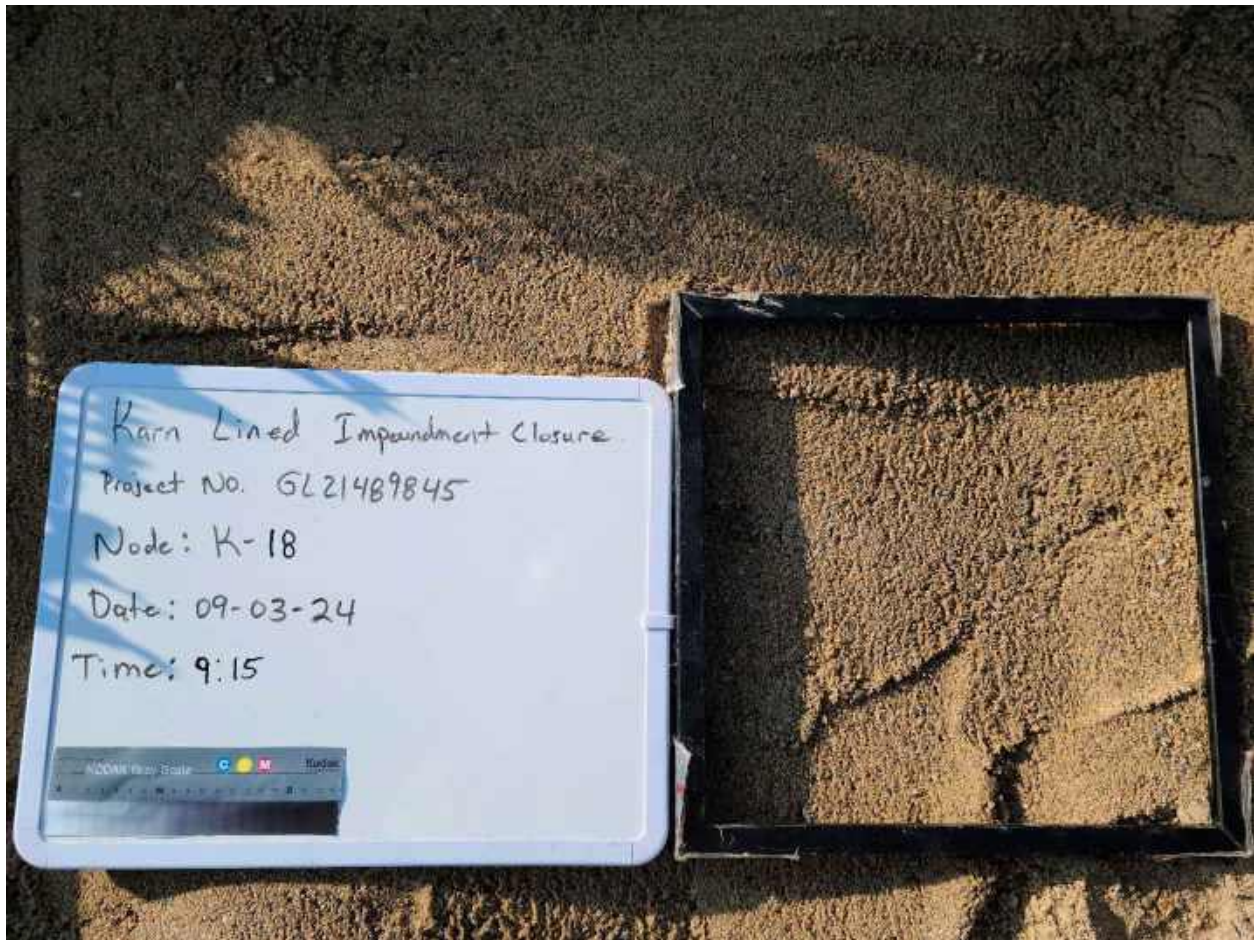


Photo 1: Typical photo documentation from the non-concrete-lined portion of the Settling Basin.

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

Date:	September 06, 2024		On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	60 °F	High Temp:	63 °F	Wind: 10 - 20 MPH NW gusts to 23
Cloud Cover:	Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (4 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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.

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.

DAILY FIELD REPORT

Project: GL21489845
Date: September 6, 2024



Photo 2: Fisher removed the discharge piping from the Polishing Basin.



DAILY FIELD REPORT

Date:	September 09, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	58 °F	High Temp:	72 °F	Wind:	10 - 20 MPH SW gusts to 25
Cloud Cover:	Mostly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (7 people) Jason O'Dell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 10, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	51 °F	High Temp:	81 °F	Wind:	0 - 10 MPH SE
Cloud Cover:	Partly Cloudy			Precipitation	None. (early morning fog)

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (8 people) Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 11, 2024		On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	59 °F	High Temp:	83 °F	Wind: 0 - 10 MPH S
Cloud Cover:	Partly Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 12, 2024		On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition			
Location:	Essexville, MI		Job No.:	GL21489845
Owner:	Consumers Energy Company		Contractor:	Fisher Contracting (Fisher)
Low Temp:	57 °F	High Temp:	83 °F	Wind: 0 - 5 MPH SW
Cloud Cover:	Partly Cloudy		Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (7 people) Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 13, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	57 °F	High Temp:	78 °F	Wind:	5 - 15 MPH E to NE
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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 was 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

Date:	September 16, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	55 °F	High Temp:	86 °F	Wind:	0 - 10 MPH SE
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (8 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 17, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	57 °F	High Temp:	83 °F	Wind:	0 - 15 MPH SE
Cloud Cover:	Sunny			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (8 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 18, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	57 °F	High Temp:	81 °F	Wind:	0 - 10 MPH E
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (9 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 19, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	56 °F	High Temp:	80 °F	Wind:	0 - 5 MPH ESE to ENE
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (5 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 20, 2024			On Site: 0700	Off Site: 1500
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	62 °F	High Temp:	84 °F	Wind:	5 - 10 MPH S
Cloud Cover:	Partly Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (5 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 23, 2024			On Site: 0700	Off Site: 1400
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	56 °F	High Temp:	65 °F	Wind:	10 - 15 MPH N
Cloud Cover:	Cloudy			Precipitation	None.

Personnel on Site/Company	Responsibility
Stephen Thumma (WSP) Fisher Personnel (5 people) Jason Odell/Jon Giffel (Consumers Energy) Terry Foley (Fisher)	CQA Various Personnel Construction Manager 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

Date:	September 24, 2024			On Site: 0700	Off Site: 1700
Project:	Lined Impoundment Demolition				
Location:	Essexville, MI			Job No.:	GL21489845
Owner:	Consumers Energy Company			Contractor:	Fisher Contracting (Fisher)
Low Temp:	58 °F	High Temp:	72 °F	Wind:	0 - 5 MPH NNE
Cloud Cover:	Mostly Cloudy			Precipitation	Rain from 8 to 11 AM. (0.10")

Personnel on Site/Company	Responsibility
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

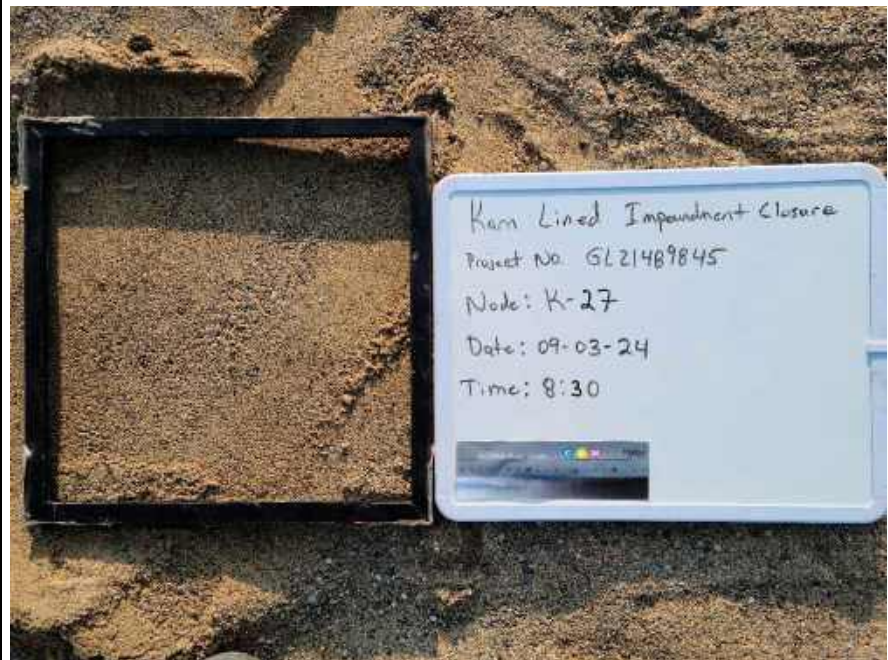


PHOTO 14

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

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

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

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 fluid and cursive, with the first name "Victoria" being the most prominent.

Victoria Jennings
Senior Petrographer
Vicki@MJ2consulting.com
Cell: 773-659-9711

Attachments: Figures



Figure 1 – Provided reference materials, processed and sieved to pass a No. 16 mesh.

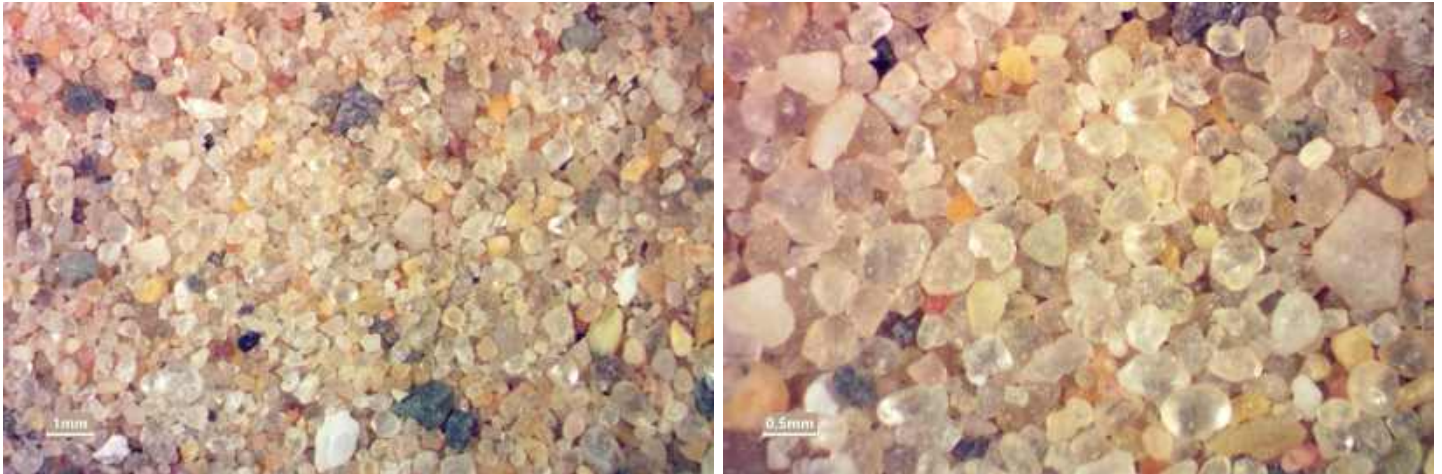


Figure 2 – Magnified views of processed 2NS reference sand.

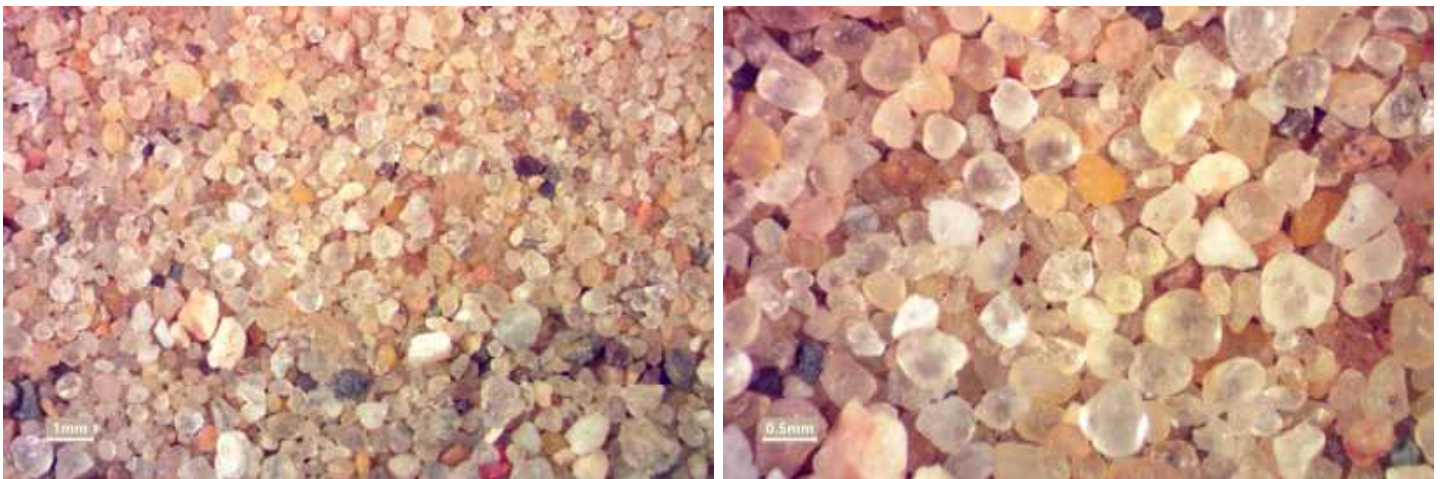


Figure 3 – Magnified views of processed Class II reference sand.

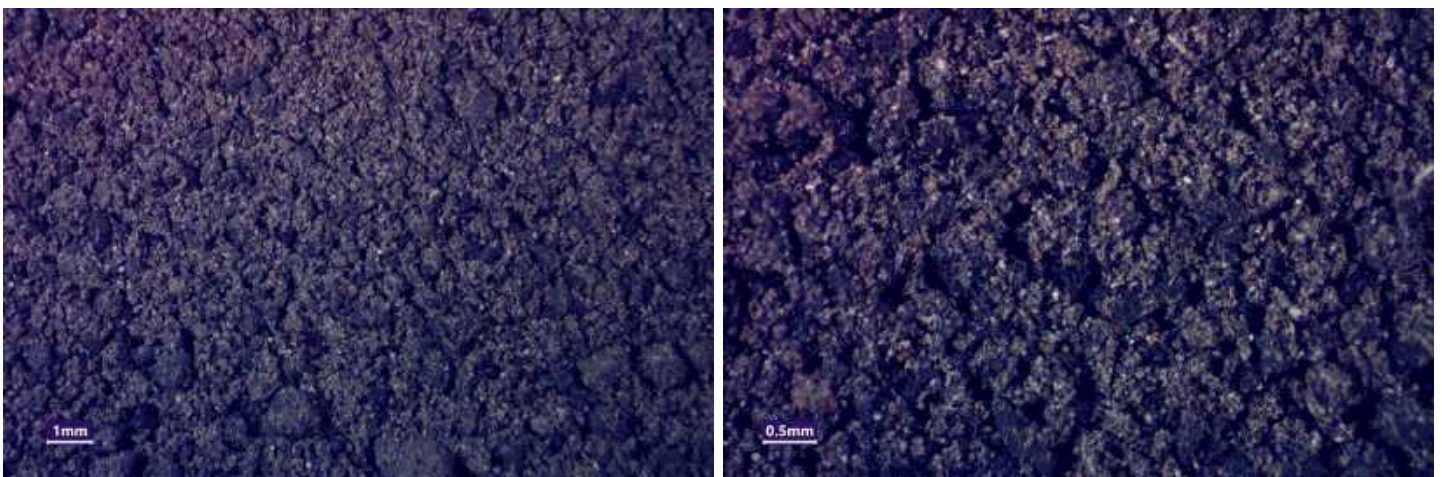


Figure 4 – Magnified views of processed Ash reference sample.

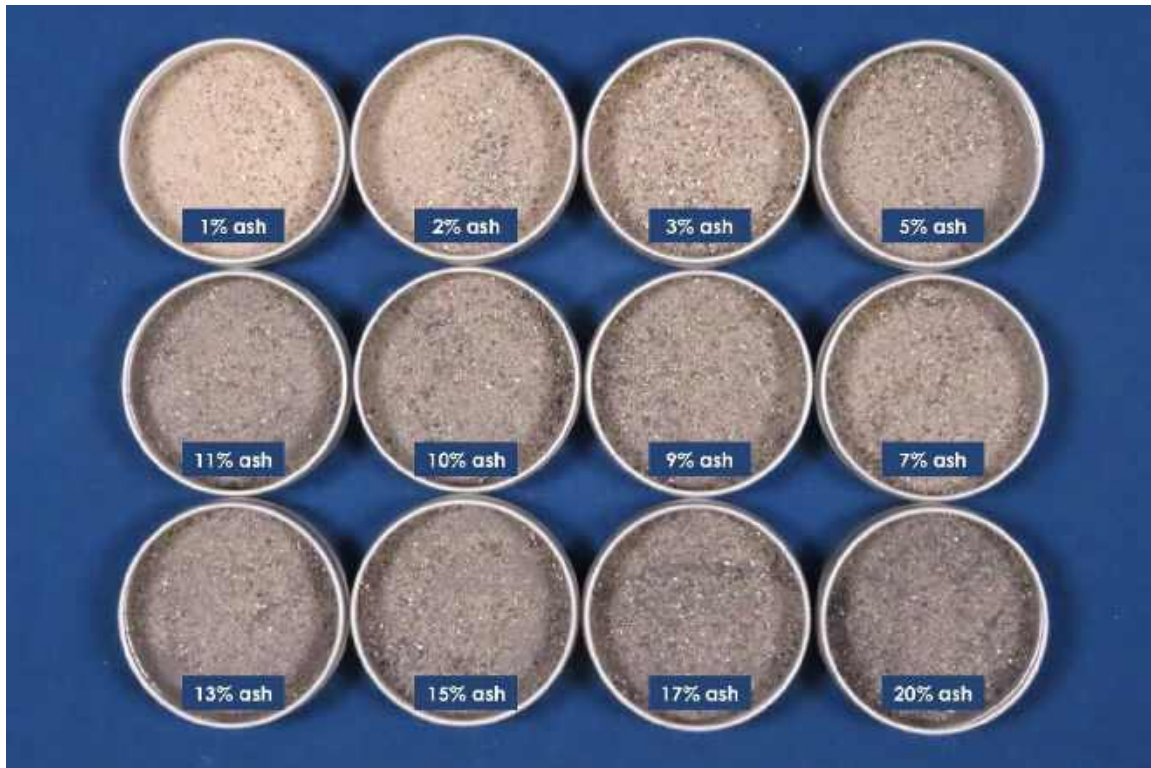


Figure 5 – Prepared reference standards for 2NS sand type.



Figure 6 – Prepared reference standards for Class II sand type.

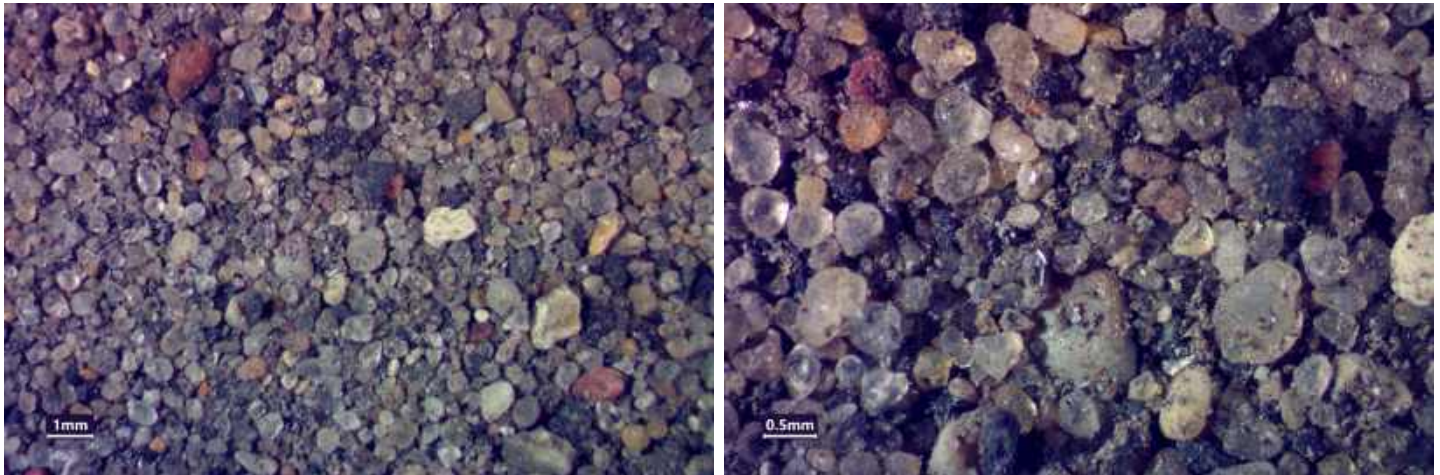


Figure 7 – Magnified views of 10% ash reference standard (threshold ash content) for 2NS sand type.

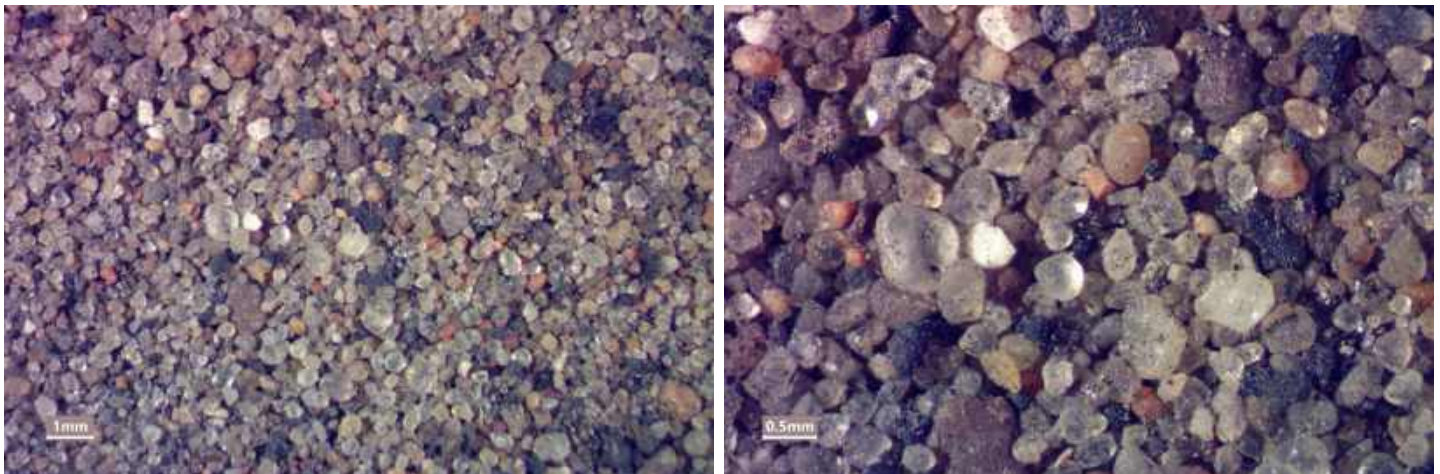


Figure 8 – Magnified views of 10% ash reference standard (threshold ash content) for Class II sand type.



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).

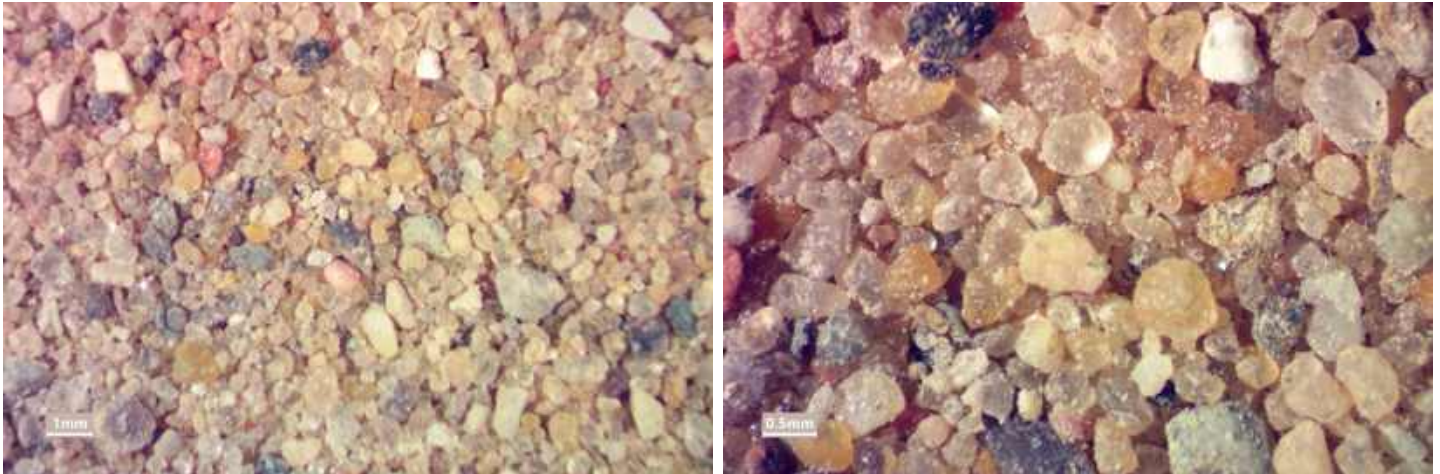


Figure 11 – Magnified views of processed sample K-7, representative of 2NS sand type.



Figure 12 – Magnified views of processed sample K-24, also representative of 2NS sand type.

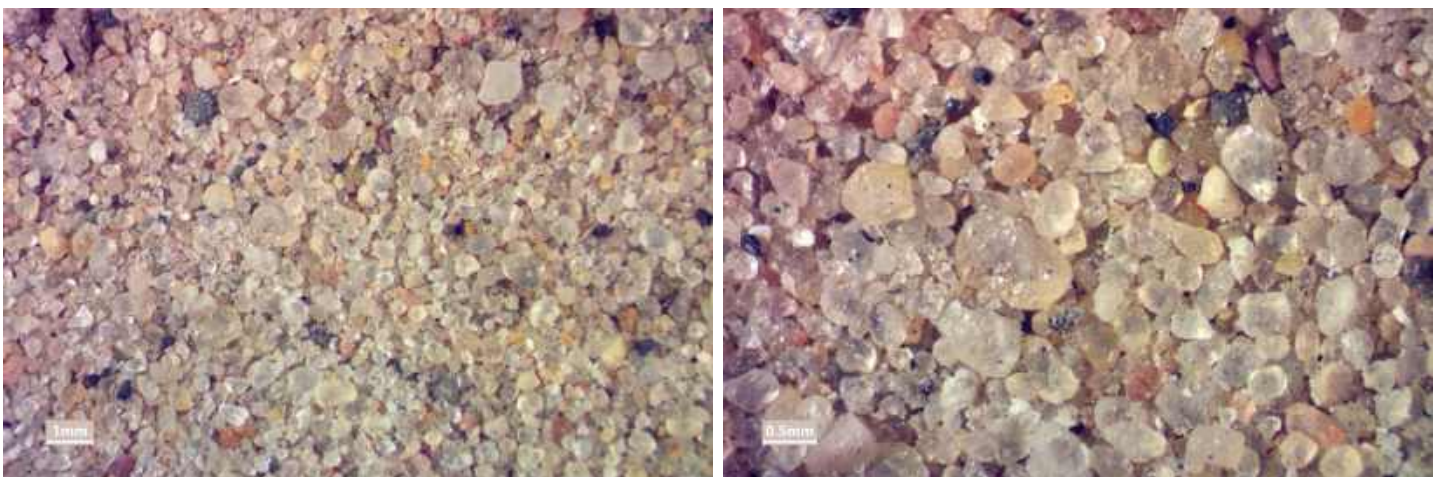


Figure 13 – Magnified views of 1% ash reference standard for 2NS sand type, for comparison.

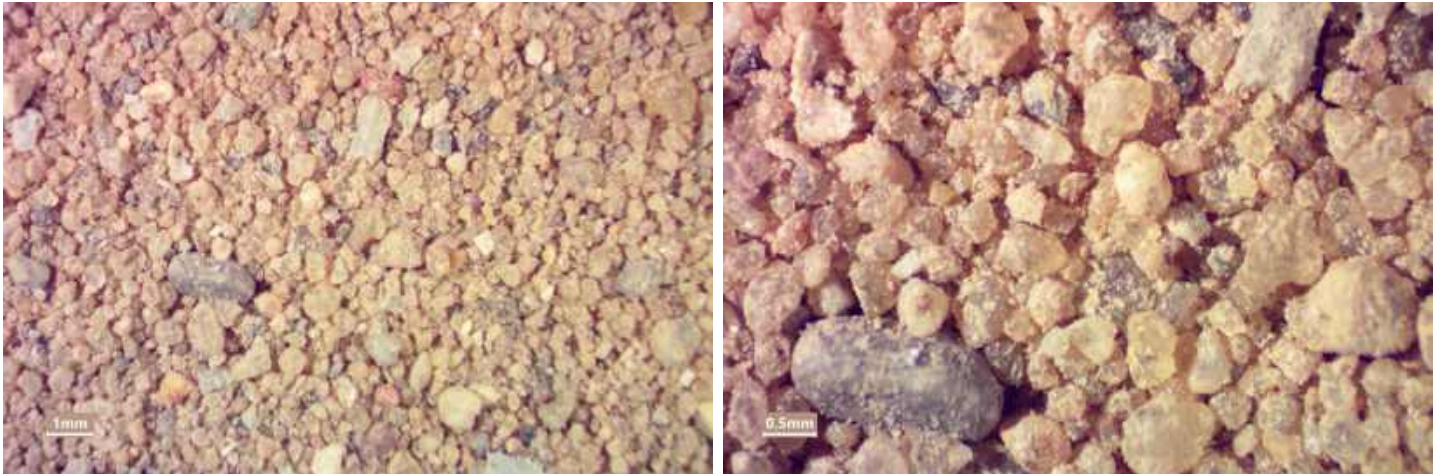


Figure 14 – Magnified views of processed sample K-31, representative of Class II sand type.

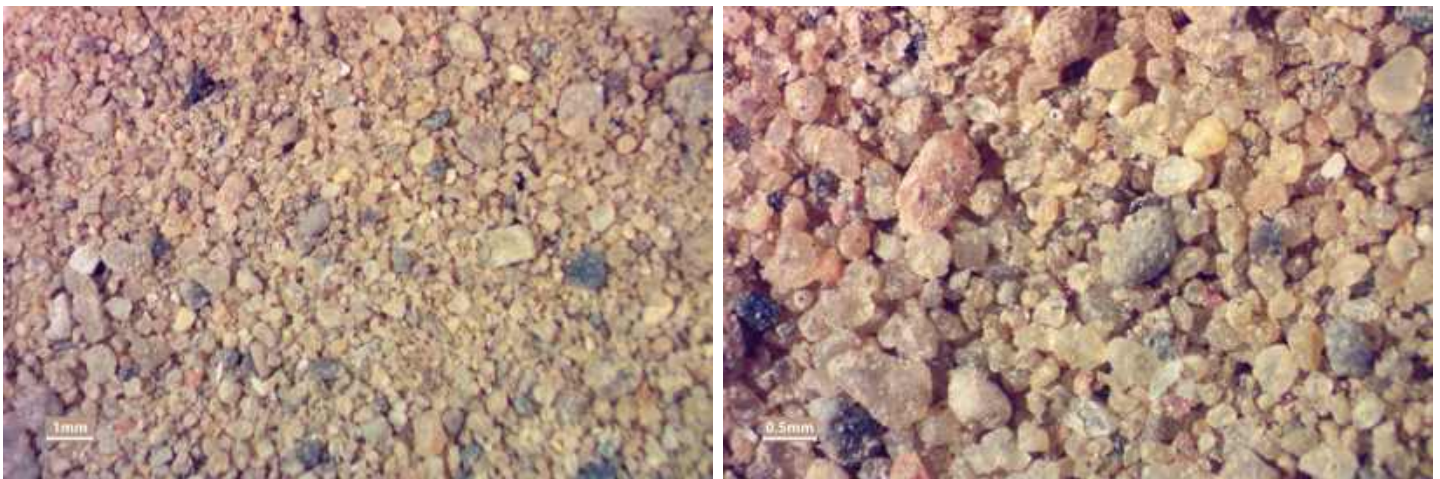


Figure 15 – Magnified views of processed sample K-44, also representative of Class II sand type.

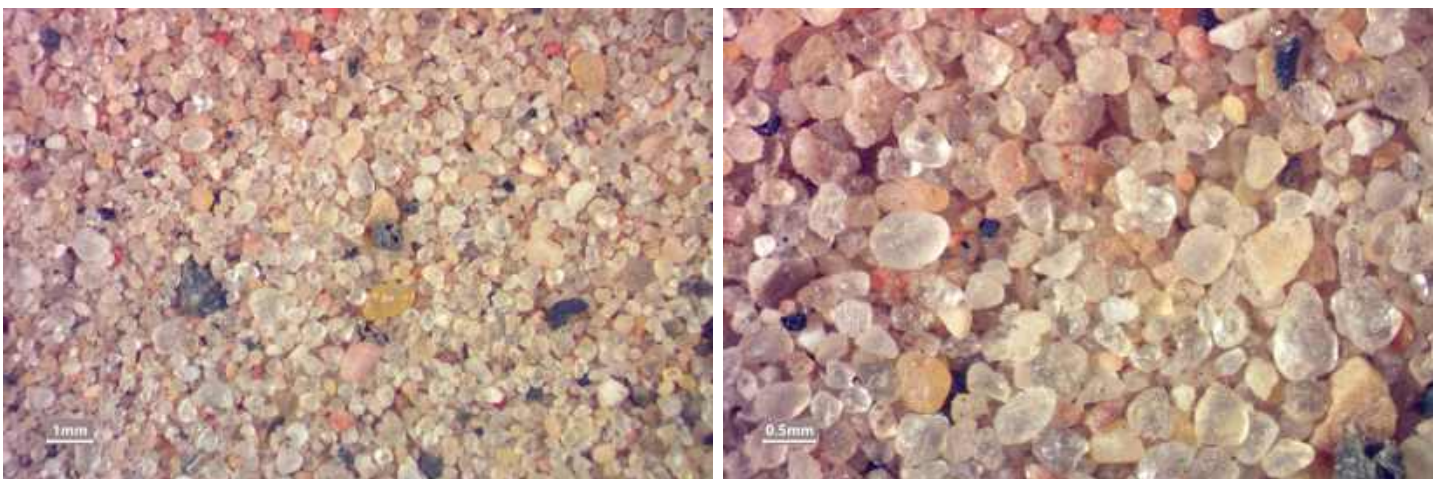


Figure 16 – Magnified views of 1% ash reference standard for Class II sand type, for comparison.



wsp.com