Phase II Environmental Site Assessment

480 S. 3rd Street
Clinton, Clinton County, Iowa 52732

United States Environmental Protection Agency – Region 7
Brownfields Assessment Grant: BF97782001
Terracon Project No. 07207086 T19

March 3, 2022

Prepared for:
East Central Intergovernmental Association (ECIA)
7600 Commerce Drive
Dubuque, Iowa 52002

&

City of Clinton, Iowa
611 South 3rd Street
Clinton, Iowa 52732

Prepared by:
Terracon Consultants, Inc.
Bettendorf, Iowa

March 3, 2022

East Central Iowa Intergovernmental Association
7600 Commerce Park
Dubuque, IA 52002-9673

Attn: Ms. Dawn Danielson

Re: Phase II Environmental Site Assessment for Brownfields
Clinton YMCA - 480 S. 3rd Street
Clinton, Clinton County, Iowa 52732
Terracon Project No. 07207086 T19
Brownfields Assessment Grant: BF97782001

Dear Ms. Danielson:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report for the Phase II Environmental Site Assessment completed at the site referenced above. The report presents information and data obtained during field activities which included the advancement of soil borings and the collection of soil samples for chemical analysis. Groundwater samples could not be collected since a saturated zone was not encountered in soil borings prior to shallow bedrock resulting in Geoprobe® refusal.

EPA approved Property Specific Sampling and Analysis Plan (PSAP) dated December 13, 2021, the Generic Quality Assurance Project Plan (QAPP), dated April 7, 2021, the Standard Consultant Contract For Qualified Environmental Professional (QEP) dated December 3, 2020, and the ECIA notice to proceed dated January 12, 2022.

We appreciate the opportunity to perform these services for you. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Benjamin M. LaPointe, CHMM
Brownfields Project/Contract Manager

Dennis R. Sensenbrenner, PG
Senior Associate/Project Reviewer

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ECIA BROWNFIELDS ASSESSMENT SERVICES
480 S. 3rd Street
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1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) conducted a Phase II Environmental Site Assessment at the site located at 480 S. 3rd Street, Clinton, Iowa. The Phase II was completed in accordance the EPA approved Property Specific Sampling and Analysis Plan (PSAP) dated December 13, 2021, the Generic Quality Assurance Project Plan (QAPP), dated April 7, 2021, the Standard Consultant Contract For Qualified Environmental Professional (QEP) dated December 3, 2020, and the ECIA notice to proceed dated January 12, 2022.

1.1 Site Description

The site is an approximate 0.96-acre commercially zoned property located at 480 S. 3rd Street, Clinton, Clinton County, Iowa. The property is improved with an approximate 27,000 square-feet vacant structure (original portion constructed in 1906 and several building additions between the 1960s and 1970s) and associated paved parking and drives areas. The structure was historically used as a Young Men's Christian Association (YMCA) recreational facility. A topographic map depicting the general site location is included as **Exhibit 1** provided in **Appendix A**. The current site layout is provided as **Exhibit 2** in **Appendix A**.

1.2 Background

A Phase I Environmental Site Assessment (ESA) was conducted at the site in September 2021 in accordance with ASTM E1527-13 to identify recognized environmental conditions associated with the property. The following recognized environmental conditions were identified during the Phase I ESA:

- A historical petroleum filling station adjoined the site to the northeast during the 1950s and 1960s. The petroleum filling station operated prior to the period of regulatory oversight of the state.

Terracon understands that the City of Clinton requested to further assess the property for the presence of potential petroleum impacted soil and/or groundwater below the site. Terracon understands that the future use of the site and demolition/renovation plans of the onsite structure are not yet determined.

1.3 Objectives

The objectives of the proposed Phase II Environmental Site Assessment are to:

1. Identify evidence of a release to the site and assess the potential presence of contaminants of concern commonly associated with the identified RECs and/or site concerns at concentrations above laboratory reporting limits and/or Iowa Statewide Standards;
2. Provide information relevant to understand potential landowner and contractor obligations, as required by CERCLA and OSHA, to limit exposures to hazardous substances that pose a risk to human health or the environment, and/or may pose a risk (or perceived risk) of bodily injury to persons on the property;
3. Provide information to assist the landowner and/or redevelopment contractor to comply with federal, state, and local environmental laws and regulations during construction and post-construction activities when handling impacted media (i.e. legal and proper disposal of impacted excavated media); and,
4. If applicable, provide information necessary to plan and implement corrective/mitigating actions and/or controls necessary to redevelop the site.

1.4 Contaminants of Concern

- Volatile organic compounds (VOCs)
- Total Extractable Hydrocarbons (TEH)
- Lead

2.0 ASSESSMENT ACTIVITIES & METHODS

The Phase II field activities were conducted on January 25, 2022. Field activities included the advancement of three soil borings for the collection of soil and groundwater samples as summarized below. The approximate soil boring locations and areas of concern are shown on **Exhibit 2** provided in **Appendix A**.

The property-specific sampling design was set forth in the Property Specific Sampling and Analysis Plan (PSAP) previously approved by EPA 7. Terracon completed the following tasks as part of the Phase II ESA.

- Advancement of three borings, designated B-1 through B-3, at the locations shown on Exhibit 2 in Appendix A

- Continuous field screening of soils from the probe cores using a photo-ionization detector (PID)

- Collection of soil[1] samples for laboratory analysis; soil samples were collected from a shallow depth and a deeper interval based on the field screening results and/or other field observations

- Submittal of soil samples to Keystone Laboratories, Inc. for analysis

2.1 Methodology

Terracon Standard Operating Procedures (TSOPs) were followed as provided with the EPA Region 7 approved Generic QAPP, dated April 7, 2021, for sampling, physical measurements, equipment cleaning, and equipment calibration. Terracon recorded discrepancies, clarifications, and corrective actions for QA/QC, if applicable, in the field logbook.

Soil Borings and Soil Sampling

Soil borings B-1 through B-3 were advanced using a truck mounted hydraulic direct push drill rig (Geoprobe®). Based on shallow bedrock at the site, probe refusal was encountered prior to encountering the first shallow aquifer. Therefore, the maximum proposed soil boring depths became the refusal point for each boring per the PSAP. To confirm refusal depths, Terracon advanced two additional soil borings, offset within 5-feet, of each of the original soil borings locations as indicated in the PSAP.

Soil borings B-1A and its offset soil borings (B-1B & B-1C) were advanced until probe refusal at 4.5 feet below ground surface (bgs) for each of the boring location. Boring B-2A and its offset soil borings (B-2B & B-2C) were advanced until refusal at 5.5 feet bgs. Boring B-3A was advanced until probe refusal at 7-feet bgs. The first offset soil boring (B-3B) met refusal at 3-feet bgs. It is unknown whether refusal was caused by a below surface obstruction (e.g. boulder, buried construction debris, etc.) or via bedrock. The last offset soil boring (B-3C) met refusal at 7-feet bgs due to suspected bedrock.

Soil lithology (below surfacing and sub-base material) at soil boring locations B-1 and B-2 consisted of clay above the encountered bedrock. Evidence of a historical fill was encountered at the site in soil borings B-3A through B-3C located on the western portion of the site, which included various (inconsistent) amounts of crushed brick in the soil borings. During the advancement of B-3B substantial amounts of brick was encountered resulting in poor recovery likely causing the probe refusal. General soil descriptions including color, relative moisture content, specific boring depths, and pertinent observations are presented on the soil boring logs provided in **Appendix B.**

Each soil core was continuously field-screened in one-foot intervals for ionizable organic vapors using a photo-ionization detector (PID) via a closed container headspace method. Vapor measurements were recorded on the field soil boring logs.

[1] Groundwater samples could not be collected due to shallow competent bedrock.

Two soil samples were collected from each soil boring. One soil sample was collected from the 2-foot interval at surficial/near surface soils. The second soil sample was collected from the 2-foot interval most likely impacted based on highest PID readings or the bottom soil interval (above the bedrock). Due to limited soil available from sample intervals from each soil core and quantity of sample needed for each analysis, soil samples were collected from the appropriate intervals of the original borings and the offset borings. This occurred for each boring location. Soil depth intervals sampled for laboratory analysis of contaminants of concern are summarized in **Table 2-1** below.

Table 2-1 Sampling Program

Boring Number	Sample Interval Depths (feet)
B-1	(0-2), (3-5)
B-2	(0-2), (4-5)
B-3	(0-2), (3-7)
DUP-1 (B-1)	(3-5)

Temporary Monitoring Wells and Sampling

Based on shallow bedrock encountered while advancing soil borings, a saturated zone was not observed in soil cores collected. However, temporary wells were installed to confirm the lack of groundwater recharge in the excavated bore holes at the site. The temporary monitoring wells were constructed utilizing 1-inch diameter, 0.010-inch machine slotted poly-vinyl chloride (PVC) well screen with a threaded bottom cap followed by a 1-inch diameter, threaded, flush-joint PVC riser pipe to the ground surface. Temporary monitoring wells did not produce a measurable amount of groundwater during the duration of field work completed on January 25, 2022.

2.2 Deviations

During the advancement of boring B-1 through B-3 suspected bedrock/subsurface obstruction was encountered at 4.5 to 7 feet bgs. Therefor each boring was offset twice (approximately 5 feet from original boring) and advanced until refusal.

While advancing soil borings at the site, a saturated zone was not encountered within the vadose zone prior to probe refusal at bedrock. Bedrock was encountered between 4.5 and 7 feet at the site (evident based on probe refusal). Therefore, groundwater samples could not be collected as part of this investigation.

There were no other deviations from the approved PSAP.

3.0 DATA FINDINGS

3.1 Physical Measurements and Field Screening

Site-specific soil lithology consisted of damp-moist silty lean clay for soil borings advanced at the northeast and southeast corners of the site building, which extended from the near surface (immediately below surface fill material) to the termination depths (bedrock) of each of the soil borings advanced. The soil lithology for the borings at the southwest corner of the site building consisted of fill material.

Photo-ionizable vapor measurements collected while screening onsite soils using a PID were not evident of an obvious release at the site. PID measurements are presented on soil borings logs provided in **Appendix B**. Observable indicators of a release (i.e. soil staining, oil sheen, free product, odors, etc.) were not observed while advancing soil borings at the site.

3.2 Laboratory Analysis

The soil samples collected were analyzed according to the sampling program provided in the site-specific sampling and analysis plan (P07207086 T11) dated December 13, 2021. Contaminants of concern in the sampling program were based on RECs identified in Terracon's Phase I ESA for the site dated September 10, 2021. The laboratory analysis findings are discussed below and summarized in **Table 1** provided in **Appendix C**. The laboratory analytical reports and executed chain-of-custody forms are provided in **Appendix D**.

Soil samples were analyzed for concentrations of:

- Volatile organic compounds (VOCs) by EPA Method 8260,
- Total Extractable Hydrocarbons (TEH) by Iowa Method OA-2,
- Lead via EPA Method 6010

3.2.1 Soil Samples

Concentrations of detected contaminants of concern in soil samples collected is discussed below and summarized in **Table 1**, provided in **Appendix C**.

Volatile Organic Compounds

Acetone was detected in soil sample B-2 (4-5); however, the concentration (0.061 mg/kg[2]) did not exceed IDNR SWS (68,000 mg/kg) for acetone.

Other VOCs did not exceed laboratory reporting limits in soil samples collected. Laboratory reporting limits did not exceed IDNR SWS.

[2] Milligram of constituent per kilogram of soil (mg/kg)

Total Extractable Hydrocarbons

Total extractable hydrocarbons (TEH) classified within the waste oil range were detected in soil samples B-1 (0–2), B-1 (3-5), B-2 (0–2), and B-3 (0–2). However, concentrations were below the respective IDNR SWS. Gasoline profile hydrocarbons were detected in soil samples collected; however, regulated VOCs attributable to gasoline did not exceed IDNR SWS. Diesel profile hydrocarbons were not detected in soil samples collected exceeding laboratory reporting limits.

RCRA Metals (Lead)

Lead was detected at a concentration (454 mg/kg) exceeding the IDNR SWS (400 mg/kg) in soil sample B-1 (0-2 feet) collected from surface fill material at the site. Lead was detected in borings B-1 (3-5), Dup-1 (B-1, 3-5), B-2 (0-2), B-2 (4-5), B-3 (0-2), and B-3 (3-7). However, concentrations were below the respective IDNR SWS.

Refer to the Laboratory Analytical Report provided in **Appendix B** to review detected concentrations that do not exceed applicable SWSs.

3.2.2 Groundwater Samples

A saturated zone was not encountered in soil borings advanced above presumed bedrock elevations encountered between 4.5 and 7 feet at the site (based on probe refusal). Therefore, groundwater samples could not be collected as part of this investigation.

4.0 DATA VALIDATION & VERIFICATION (QAPP SECTION D1 & D2)

4.1 Field Methods and Measurements Review

To validate the quality and usability of data findings, a review of field activities outcomes included the following:

Table 4-1 – Field Methods and Measurements Review Summary

Review Checklist	Validated	Descriptions
Soil boring and sampling design was conducted in accordance with the approved PSAP	Yes	
Sample collection methods were conducted in accordance to Terracon Standard Operating Procedures (TSOPs) as provided in the Generic QAPP.	Yes	
Quality Assurance / Quality Control (QA/QC) Samples were collected in accordance to TSOPs.	Yes	

Sampling is considered complete if 100% of the soil samples are obtained pursuant to the PSAP design	Yes	
Sampling is considered complete if 100% of the groundwater samples were obtained pursuant to the PSAP design	No	A saturated zone was not encountered during the advancement of soil borings. Therefore, groundwater sampling and analysis could not be included as part of this investigation via the utilized boring methods.
Soil sampling is considered representative if 50% of the sample interval for soil was recovered and submitted	Yes	
Groundwater sampling is considered representative if 100% of the laboratory volume for groundwater samples is extracted and submitted	No	A saturated zone was not encountered in soil borings advanced. Therefore, groundwater sampling and analysis could not be included as part of this investigation via the utilized boring methods.
Chain of custody represents samples collected and submitted and laboratory analysis requests were made pursuant to the PSAP design	Yes	
Holding and transport times were met for the sample to be considered valid	Yes	
Calibration of instruments at bench mobilization and in the field from instrument records and field logs specific to the property eligible and assessed	Yes	The PID was calibrated in the field at 8:25 am on 1/25/2022 and was recorded in the field log book.
Concentrations of VOCs were not detected in the Trip Blank QA/QC sample, which would indicate the potential for cross-contamination between samples or other breach of sample integrity during transport.	No	Trichloroethylene (TCE) was encountered in the laboratory prepared trip blank. However, detectable concentrations of TCE was not encountered in soil samples collected; therefore, the TCE in the trip blank does not affect the viability of soil samples collected. Further discussion of the Trip Blank is presented below.

Trip Blank

The laboratory prepared Trip Blank accompanied the sample jars/cooler from the lab. The Trip Blank is used to evaluate the potential for cross contamination during shipment. The Trip Blank reported a concentration of Trichloroethylene at 5.2 µg/L. Terracon reviewed the soil results and Trichloroethylene was not reported to exceed the method reporting limit. Therefore, the soil analytical results are not considered to be impacted by transport and the results are considered viable for project decisions.

4.2 Laboratory Methods and Measurements Review

Laboratory Validation of Analytical Data

The laboratory is responsible for validating data in accordance with laboratory standard operating procedures. Discussions and notes regarding laboratory data validation; including but not limited to, laboratory surrogate recoveries, matrix spike / matrix spike duplicate (MS/MSD), qualifying statements, etc.; is provided in the laboratory report included as **Appendix D**.

Field Duplicate Sampling

In addition to laboratory provided validation data, Terracon assessed laboratory precision via a duplicate soil sample. Precision is evaluated using the relative percent difference (RPD) between concentrations reported for an actual sample and it's duplicate. A duplicate soil sample was collected from B-1 (3-5) (DUP-1). Lead and TEH relative percent difference exceeded the QA/QC RPD limit as determined in Generic QAPP. However, soils are not homogeneous and actual concentrations can vary within the same depth intervals. VOCs in soil sample B-1 (3-5) and its duplicate were below the laboratory's reporting limits; therefore, an RPD evaluation of VOC laboratory data is not applicable.

Reporting Limits

To validate appropriate sensitivity of the laboratory analysis the laboratory reporting limit must not exceed Iowa SWS. The laboratory reporting limit is the lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. Laboratory Reporting Limits were below the primary action limits (i.e. SWS) used for this Phase II ESA.

5.0 DATA EVALUATION (QAPP SECTION A7.3)

5.1 Decision Rule

The City intended to determine whether this property is or is not impacted relative to the IDNR statewide standards. Based on the outcome of the decision, there are two potential Project actions. They are as follows:

- If petroleum contaminants of concern in soil and/or groundwater do not exceed SWS, the site would not be considered environmentally impaired in regard to contaminants of concern assessed during this Phase II ESA. ECIA and the City can consider it feasible for redevelopment per the Iowa Land Recycling Program (LRP) (567 IAC 135) without considering remedy of soils and/or groundwater in regard to contaminants of concern assessed as part of this assessment. Further assessment of contaminants of concern in soil/groundwater will not be necessary.

or,

- If contaminants of concern in soil and/or groundwater exceed SWS, then potential exposure concerns associated with the SWS exceedances would require further evaluation for potential human and/or environmental exposures.

5.2 Project Data Decisions

5.2.1 Project Decision – Soils

Based on measured parameters in soil, levels of lead contamination exceed applicable SWSs in soil sample B-1 (0-2), therefore site conditions may not be suitable at this time for unrestricted land use without remedial efforts.

5.2.2 Project Decision - Groundwater

The saturated zone was not encountered during the field activities on January 25, 2022. If suspected impacted groundwater and/or stormwater (such as by contact with impacted soils) requires dewatering from excavations as part of site development, additional sampling and/or special disposal considerations may need to be considered by the excavation contractor.

5.3 Exposure Risk Evaluation

The Phase II ESA soil analytical results were evaluated for exposure risk using the IDNR LRP risk-based Statewide Standards (SWS). Maximum reported concentrations for detected analytes were entered into IDNR's cumulative risk calculator, and the results were evaluated for the following conditions.

- Impacts in soil considering site occupants
- Impacts in soil considering site workers

The comparisons were made with the following considerations.

- The property is not enrolled in the LRP, and this comparison is for planning purposes only.
- At the time of assessment, the property was mostly covered with concrete paved parking which acts as an engineered barrier. However, the green space on the property does not have restricted access to control exposures; there are no existing significant security structures, engineered barriers, or remoteness of location pursuant to the LRP rules. Additional control measures and/or considerations may be necessary where existing engineered barriers are removed (e.g. redevelopment activities, or other excavations).

Terracon entered the maximum concentrations for soil and ran the calculator for the above scenarios. Results were as follows:

Soil Calculator Results

	Cancer Risk	Non-Cancer Risk
Residential Use	0.00	1.13
Site Worker	0.00	0.41
Construction Worker	0.00	0.23

6.0 CONCLUSIONS AND RECOMMENDATIONS

This Phase II ESA was conducted to assess whether petroleum and/or hazardous substance contaminants of concern associated with the identified RECs are present at the site, to identify potential human or environment exposure concerns associated with identified contaminants, and to provide information to the landowner and redevelopment contractor regarding federal, state, and local regulations associated with site redevelopment and use (i.e. handling and disposal of contaminated media).

Conclusions

Contaminants of concern in soil samples collected that exceed IDNR's SWS for soil include lead. Therefore, soil data collected represent the following exposure concerns:

1. Occupant dermal/ingestion exposure (surface contamination)
2. Contractor dermal/ingestion exposure (during excavation)

Potential exposure concerns associated with the SWS exceedances listed above will require additional assessment and/or mitigation before or as part of site development activities to adequately address potential exposures.

Concentrations of VOCs were not encountered in soil samples collected at levels exceeding a reporting limit or Iowa SWS; therefore, VOCs do not represent a vapor intrusion concern into proposed onsite structures.

Recommendations

- Engineered controls should be implemented and maintained to mitigate the potential of dermal/ingestion exposure to site occupants. Terracon recommends that impacted soils not removed from the site during redevelopment be capped with an impermeable surface (i.e. asphalt/concrete pavement, concrete foundation, and/or 3 feet of "uncontaminated" clay) to mitigate the potential for human and/or environmental exposures to impacted soils.

- Excavation of impacted soils at the site (from site development, etc.), should be done in a manner does not present a threat to human health or the environment, and which limits potential for spread of contaminants. Excavated impacted soils should not be relocated as backfill to other areas onsite (unless the onsite area has engineering controls in place

to cap impacted soils) or offsite. Excavated soil waste should be disposed per local, state, and federal regulations at a municipal landfill permitted to accept the waste.

- Soil Management Plan: Terracon understands that proposed redevelopment at the site will include excavation activities and disposal of excavated media. Redevelopment contractors are potentially at risk of exposure to contaminated soil and groundwater during redevelopment activities. Disposal of impacted excavated media will also be subject to local disposal regulations. Because of these factors, Terracon recommends that a site-specific soil and groundwater management plan be prepared prior to groundbreaking activities.

  The purpose of the soil and groundwater management plan is to provide information necessary for redevelopment contractors to plan appropriate site development activities and incorporate health and safety into their bid package for the construction. The plan will discuss appropriate onsite soil profiling/screening, proper handling, best practices, backfilling, and disposal of excavated soil during site redevelopment activities.

7.0 REGULATORY SETTING

7.1 IDNR Land Recycling Program

The LRP is a voluntary, risk-based cleanup program for properties with environmental impacts. The LRP is designed to meet the dual objectives of addressing contaminated sites and promoting the redevelopment of these sites. The primary means of meeting these objectives are by encouraging voluntary participation to address contamination by establishing a set of risk-based response action standards, and by providing a measure of liability protection to participants and future property owners. Iowa has finalized a MOA with the EPA. Under the MOA, the EPA agrees not to act at sites enrolled in the LRP.

7.2 Iowa Statewide Comparison

The LRP establishes statewide standards that represent concentrations of contaminants in specific media of an affected area. These are values at which normal, unrestricted exposure through a specific exposure pathway are considered unlikely to pose a threat to human health, safety, or the environment. Risk-based contaminant concentrations for soil and groundwater are calculated using a formula that considers chemical specific properties concerning toxicity and assumptions about human exposure. The formula is used for each contaminant at a site, except for lead, which has default values specified in the regulations.

The comparison of reported chemical concentrations to the statewide standards is the primary project decision.

7.3 Statewide Soil Standards

Equation (1) is used to calculate the risk-based concentrations for compounds (other than lead).

$$C = \frac{RF \times AT \times 365\ days/year}{Abs \times \left[\left(ER_c \times EF_c \times ED_c\right) \div BW_c + \left(ER_a \times EF_a \times ED_a\right) \div BW_a\right] \times CF} \quad (1)$$

Where:

C = Risk-based concentration of contaminant
RF = Risk factor, which differs for carcinogenic and noncarcinogenic effects
AT = Averaging time (in years)
Abs = Absorption factor
ER_c = Exposure rate by a child
EF_c = Exposure frequency by a child
ED_c = Exposure duration by a child
BW_c = Body weight of exposed child
ER_a = Exposure rate by an adult
EF_a = Exposure frequency by an adult
ED_a = Exposure duration by an adult
BW_a = Body weight of exposed adult
CF = Conversion Factor

For lead, the IDNR has established a statewide standard of 400 mg/kg and a non-residential site-specific standard of 1,100 mg/kg for soil less than two feet in depth. For non-residential site-specific standards for soil deeper than two feet and residential site-specific standards for soil deeper than ten feet, the IDNR standard is based on EPA's Exposure Model for Assessing Risk Associated with Adult Exposures to Lead in Soil.

7.4 Statewide Groundwater Standards

Statewide groundwater standards are determined as being:

- The Safe Drinking Water Act (SDWA) Maximum Contamination Limit (MCL) established by the EPA, if one exists, or
- If no enforceable MCL exists, the lifetime HAL, or
- If no MCL or HAL exists, the standard is calculated using Equation (1) with input variables specified in the rule.

The statewide groundwater standard for a non-protected groundwater source is based on a series of tests and iterations of the formula used for soil standards, with input values that are dependent on the properties of the specific compound being evaluated.

A Protected Groundwater Source is defined as "…a saturated bed, formation, or group of formations which has a hydraulic conductivity of at least 0.44 m/day and a TDS concentration of

less than 2,500 mg/L." A Non-protected Groundwater Source is, by definition, a saturated bed, formation, or group of formations that has a hydraulic conductivity of less than 0.44 m/day or a TDS concentration in excess of 2,500 mg/L. The aquifer at the Site is conservatively assumed to be a Protected Groundwater Source; however, Terracon compared the Site chemistry in groundwater to statewide standards for both Protected and Non-protected Groundwater Sources.

The LRP requires multiple sampling and testing events before making the comparisons of groundwater chemistry to standards for final determination of compliance. The period of monitoring may vary dependent on IDNR approvals if enrolled in the LRP. A "favorable" comparison is not necessarily sufficient for enrollment and closure in the LRP.

7.5 Iowa Site-Specific Comparison – Cumulative Risk Calculator

The statewide standards assume that the property will be restored to unrestricted land use. They are protective of the most sensitive member of the population for the public exposures defined in the LRP rules. In general, this is sufficient for redevelopment or restoration for residential land use and residential occupancy by children.

The City may not require restoration to levels of chemical risk so that future residence by families can occur. Land use for commercial/industrial use must also be considered and is in fact often the primary consideration for reuse. The LRP rules recognize these considerations and include processes whereby site-specific standards can be determined for property-specific conditions of residential or non-residential land use. For sites in the LRP, IDNR requires parties to use its on-line cumulative risk calculator (http://programs.iowadnr.com/riskcalc/pages/calculator.aspx) to achieve compliance. The risk calculator allows for calculation of cumulative risk for residents, site workers, and site construction workers resulting from hypothetical exposure to contaminated groundwater, soil, or air. Site-specific data are entered into the calculator, and if the values of the "cumulative cancer risk" or non-carcinogenic "sum" are less than or equal to 1.00, the site is within acceptable risk levels. If the values exceed 1.00, IDNR allows parties to establish institutional and/or technological controls under sub rules 567 IAC 137.6(10) and (11) to prevent exposure to contaminants.

7.6 Application of the Standards

The user of this document must understand the limited applicability of the standards adopted under the authority of the LRP. The standards were developed within the narrow focus and constraints of the LRP. While the standards are based on a consideration of risk, they are different from other "risk-based" approaches.

The LRP does not contain standards that are established based on the migration of contaminants from one medium to another, which then becomes the basis for subsequent exposure. This does not mean the IDNR has no concern for these cross-media transfers. IDNR chooses to address them through direct measurement of the medium in which the exposure takes place or through

the calculation of such cross-media transfer standards only when it is determined that such an approach is appropriate in a site-specific context. The intent is to avoid the application of needlessly restrictive standards to situations where they are not a relevant concern. Implicit in the final application of the standards is IDNR concurrence that the standards applied in any given situation address all exposure pathways that are deemed to be of concern. This can only take place when the IDNR is adequately informed of the particulars of a situation. Without IDNR concurrence there should be no presumption that a standard is sufficiently protective or that it will meet the requirements of the LRP.

Most of the standards entail very specific exposure assumptions. Site-specific standards assume that institutional controls will be put in place in order to preserve those exposure assumptions (e.g., a prohibition of residential use or well installation). Implicit in the use of such standards is the assumption that the IDNR has evaluated the exposure assumptions, along with necessary institutional controls, and determined that they are appropriate to the situation.

As a result of the integral role of IDNR in determining and approving the appropriate use of the standards, they should not routinely be used for purposes outside of the LRP, including screening to determine whether a situation is a significant problem or whether it is reportable. Exceptions to this are the statewide standards for a Protected Groundwater Source. These standards may be used in lieu of action levels set by 567 IAC Chapter 133: *Rules for Determining Cleanup Actions and Responsible Parties*. This does not prevent IDNR from making use of the standards outside of the LRP when applicable and appropriate to projects under their supervision.

8.0 GENERAL COMMENTS

The analysis presented in this report is based upon data obtained from field activities and from other information discussed in this report. This report does not reflect any variations in subsurface stratigraphy that may occur between sampling locations or across the Site. Actual subsurface conditions may vary. The extent of such variations may not become evident without additional exploration.

This report is prepared for the exclusive use of ECIA and the City of Clinton, Iowa for the specific application to this project and has been prepared in accordance with generally accepted environmental engineering practices. No warranties, express or implied, are intended or made. In the event any changes in nature or location of subsurface conditions as outlined in this report are observed, the conclusions contained in this report cannot be considered valid unless the changes are reviewed, and the conclusions of this report are modified or verified in writing by Terracon.

8.1 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the onsite activities and other services performed under this scope of

work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable or not present during these services, and we cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this Phase II ESA. Subsurface conditions may vary from those encountered at specific borings or test pits or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

8.2 Reliance

ECIA and the City of Clinton, Iowa are the principal end users of this information. Although the report may become available for review by the public, further reliance by others is beyond the scope of the grant and EPA funding.

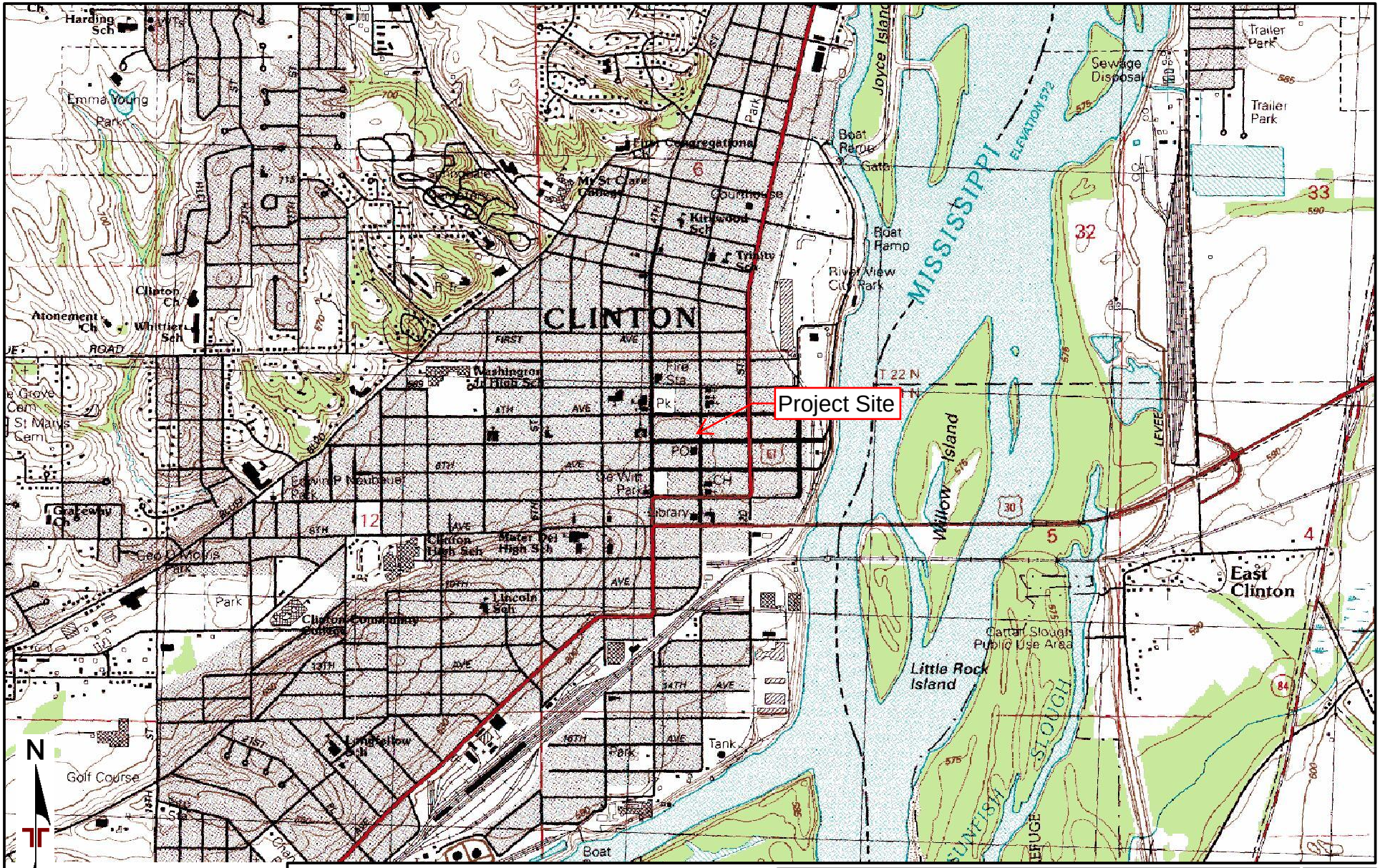
ECIA and/or the City of Clinton, Iowa will make primary use of the data to aid in decision-making relative to considering properties for redevelopment. The data will not constitute the sole or final factor in the positive or negative feasibility determination for redevelopment. It is anticipated that this Phase II ESA is for preliminary characterization and, if needed, will be used as the basis for secondary phases of remedial investigation.

The information contained in this report is for the sole benefit of the ECIA and the City of Clinton, Iowa in determining feasibility for redevelopment and restoration of the property. The information and funding expended to produce the information does not provide windfall or extraneous benefits to property owners.

APPENDIX A

Exhibit 1– Topographic Map

Exhibit 2– Soil Boring Locations Map



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: CLINTON, IA (1/1/1991).

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	BML
Drawn by:	JFC
Checked by:	BML
Approved by:	BML

Project No.	07207086
Scale:	1"=2,000'
File Name:	Site Map
Date:	2/22/2022

Terracon
870 40th Ave
Bettendorf, IA 52722-1607

TOPOGRAPHIC MAP

ECIA Brownfields Assessment Services

480 S. 3rd Street
Clinton, Iowa

Exhibit

1

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	BML
Drawn by:	JFC
Checked by:	BML
Approved by:	BML

Project No.	07207086
Scale:	AS SHOWN
File Name:	Site Map
Date:	2/22/2022

Terracon
870 40th Ave
Bettendorf, IA 52722-1607

SITE DIAGRAM

ECIA Brownfields Assessment Services

480 S. 3rd Street
Clinton, Iowa

Exhibit

2

APPENDIX B

Boring Logs

BORING LOG NO. B-1

PROJECT: Clinton YMCA Phase II

CLIENT: East Central Intergovernmental Association
7600 Commerce Drive, Dubuque, Iowa

SITE: 480 South 3rd Street
Clinton, Iowa

LOCATION See Exhibit A-2

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SOIL SAMPLE	PID (ppm)
	1.0	**CONCRETE**, Approximately 5.5 inches of concrete followed by 4.5 inches of crushed limestone subbase				9	X	0.0
	2.5	**FILL**, dark brown FILL with construction debris and gravel No construction debris or gravel below 1.9'				9		0.0
	4.1	**CL**, brown, silty, lean CLAY - native soil				9	X	0.0
	4.5	**HWL**, Highly weathered LIMESTONE				9		0.1
		Refusal				4.5		0.1
		Boring Terminated at 4.5 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 01-25-2022	Boring Completed: 01-25-2022
Drill Rig: Geoprobe	Driller: Direct Push
Project No.: 07207086	Exhibit: B-1

BORING LOG NO. B-2

PROJECT: Clinton YMCA Phase II

CLIENT: East Central Intergovernmental Association
7600 Commerce Drive, Dubuque, Iowa

SITE: 480 South 3rd Street
Clinton, Iowa

LOCATION See Exhibit A-2

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SOIL SAMPLE	PID (ppm)
	1.0	**CONCRETE**, Approximately 5.5 inches of concrete followed by 4.5 inches of crushed limestone subbase				8	X	0.2
	2.3	**CL**, Red-brown silty CLAY - native soil				8		0.1
	2.9	**SW**, Red-brown, fine-medium, well graded SAND				8		0.0
		CL, Red-Brown silty CLAY				8		0.1
						8	X	0.3
	5.5		5			8		0.0
	6.0	**HWL**, Highly weathered LIMESTONE						
		Refusal						
		Boring Terminated at 6 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 01-25-2022 | Boring Completed: 01-25-2022
Drill Rig: Geoprobe | Driller: Direct Push
Project No.: 07207086 | Exhibit: B-2

BORING LOG NO. B-3

PROJECT: Clinton YMCA Phase II

CLIENT: East Central Intergovernmental Association
7600 Commerce Drive, Dubuque, Iowa

SITE: 480 South 3rd Street
Clinton, Iowa

GRAPHIC LOG	LOCATION See Exhibit A-2 DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	SOIL SAMPLE	PID (ppm)
	1.0 **CONCRETE**, Approximately 5.5 inches of concrete followed by 4.5 inches of crushed limestone subbase				8	X	0.1
	FILL, Brown, silty, lean clay FILL with brick				8		0.1
					8		0.1
					8		0.1
	Red-brown below 4'	5			12	X	0.1
					12		0.2
	6.5						
	7.0 **HWL**, Highly weathered LIMESTONE				12		0.1
	Refusal						
	Boring Terminated at 7 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

Terracon
870 40th Ave
Bettendorf, IA

Boring Started: 01-25-2022	Boring Completed: 01-25-2022
Drill Rig: Geoprobe	Driller: Direct Push
Project No.: 07207086	Exhibit: B-3

APPENDIX C

Analytical Results Summary Tables

Table 1 - Soil Analytical Results
ECIA YMCA Clinton Iowa
480 S. 3rd Street
Clinton, Clinton County, Iowa

Analyte	Units	Iowa Statewide Standards (SWS)	B-1 0-2	B-1 3-5	B-2 0-2	B-2 4-5	B-3 0-2	B-3 3-7	DUP-1 B-1 3-5
		For Soil	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022	1/25/2022
Volatile Organic Compounds									
Acetone	mg/kg	68000	BRL	BRL	BRL	**0.061**	BRL	BRL	BRL
Other VOCs	mg/kg		BRL	BRL	BRL	BRL	BRL	BRL	BRL
Target Analyte List (TAL) Metals									
Lead	mg/kg	400	**454**	**105**	**6.2**	**7.2**	**180**	**94.7**	**181**
Total Extractable Hydrocarbons (TEH)									
Gasoline	mg/kg	---	BRL	**67**	**24**	BRL	**22**	BRL	**53**
Diesel	mg/kg	28000	BRL	BRL	BRL	BRL	BRL	BRL	BRL
Waste Oil	mg/kg	9400	**113**	**43**	**5**	BRL	**7**	BRL	**11**
Total Extractable Hydrocarbons	mg/kg	---	**113**	**110**	**29**	BRL	**29**	BRL	**63**

BRL = Below Reporting Limits
Bold = Exceeds Laboratory Reporting Limits
Bold = Exceeds SWS

APPENDIX D

Laboratory Analytical Reports

February 09 2022

Joshua F. Cox
Terracon Environmental-Bettendorf
870 40th Ave
Bettendorf, IA 52722

RE: Clinton County
07207086 T11

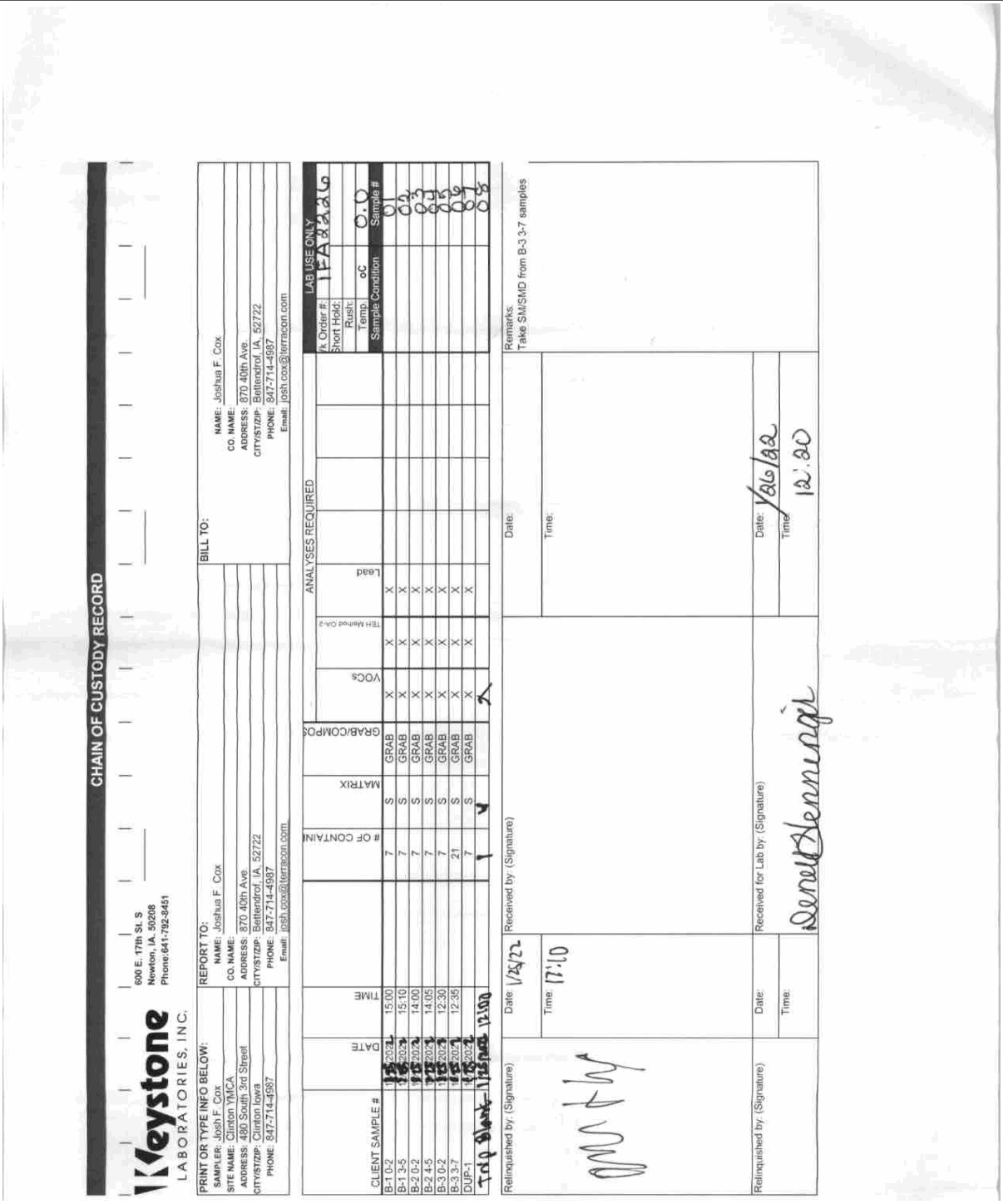
Enclosed are the results of analyses for samples received by the laboratory on 01/26/22 12:20. If you have any questions concerning this report, please feel free to contact me at 1-800-858-5227.

ANALYTICAL REPORT FOR SAMPLES

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-1 0-2	1FA2226-01	Soil	01/25/22 15:00	01/26/22 12:20
B-1 3-5	1FA2226-02	Soil	01/25/22 15:10	01/26/22 12:20
B-2 0-2	1FA2226-03	Soil	01/25/22 14:00	01/26/22 12:20
B-2 4-5	1FA2226-04	Soil	01/25/22 14:05	01/26/22 12:20
B-3 0-2	1FA2226-05	Soil	01/25/22 12:30	01/26/22 12:20
B-3 3-7	1FA2226-06	Soil	01/25/22 12:35	01/26/22 12:20
DUP-1	1FA2226-07	Soil	01/25/22 00:00	01/26/22 12:20
Trip Blank	1FA2226-08	Water	01/25/22 12:00	01/26/22 12:20

Phone 641-792-8451
600 East 17th Street South
Newton, IA 50208
Fax 641-792-7989

Terracon Environmental-Bettendorf 870 40th Ave Bettendorf, IA 52722	Project: Clinton County Project Number: 07207086 T11 Project Manager: Joshua F. Cox	Reported 02/09/22 19:24



CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

600 E. 17th St. S
Newton, IA. 50208
Phone:641-792-8451

PRINT OR TYPE INFO BELOW:
SAMPLER: Josh F. Cox
SITE NAME: Clinton YMCA
ADDRESS: 480 South 3rd Street
CITY/ST/ZIP: Clinton Iowa
PHONE: 847-714-4987

REPORT TO:
NAME: Joshua F. Cox
CO. NAME:
ADDRESS: 870 40th Ave
CITY/ST/ZIP: Bettendrof, IA. 52722
PHONE: 847-714-4987
Email: josh.cox@terracon.com

BILL TO:
NAME: Joshua F. Cox
CO. NAME:
ADDRESS: 870 40th Ave
CITY/ST/ZIP: Bettendrof, IA. 52722
PHONE: 847-714-4987
Email: josh.cox@terracon.com

ANALYSES REQUIRED

LAB USE ONLY
Pk Order #: 11A8826
Short Hold:
Rush:
Temp oC: 0.0
Sample Condition:

CLIENT SAMPLE #	DATE	TIME	# OF CONTAINERS	MATRIX	GRAB/COMPOS	VOCs	TEH Method OA-2	Lead	Sample #
B-1 0-2	1/25/2022	15:00	7	S	GRAB	X	X	X	01
B-1 3-5	1/25/2022	15:10	7	S	GRAB	X	X	X	02
B-2 0-2	1/25/2022	14:00	7	S	GRAB	X	X	X	03
B-2 4-5	1/25/2022	14:05	7	S	GRAB	X	X	X	04
B-3 0-2	1/25/2022	12:30	7	S	GRAB	X	X	X	05
B-3 3-7	1/25/2022	12:35	21	S	GRAB	X	X	X	06
DUP-1	1/25/2022		7	S	GRAB	X	X	X	07
TRIP Blank 1/25/2022 12:00			1	W		X			08

Relinquished by: (Signature) Date: 1/25/22 Time: 17:10 — Received by: (Signature) — Date: — Time: — Remarks: Take SM/SMD from B-3-7 samples

Relinquished by: (Signature) Date: — Time: — Received for Lab by: (Signature) Daniel Demuth — Date: 1/26/22 Time: 12:30

Phone 641-792-8451 | 600 East 17th Street South, Newton, IA 50208 | Fax 641-792-7989

Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 0-2

1FA2226-01 (Soil)

Date Sampled:1/25/2022 3:00:00PM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Volatile Organic Compounds									
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/04/22 15:55	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	ND	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*98.6 %*	*63-132*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*90.4 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*56.0 %*	*65-127*		"	"	"	"	*S-GC*
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	ND	25	mg/kg	1	1FB0043	02/01/22	02/04/22 19:58	Iowa OA-2	
TEH, as #2 diesel fuel	ND	25	"	"	"	"	"	"	
TEH, as waste oil	**113**	25	"	"	"	"	"	"	
Total Extractable Hydrocarbons	**113**	25	"	"	"	"	"	"	
Surrogate: Pentacosane		*83.8 %*	*15-180*		"	"	"	"	

Phone 641-792-8451 600 East 17th Street South Newton, IA 50208 Fax 641-792-7989

Terracon Environmental-Bettendorf 870 40th Ave Bettendorf, IA 52722	Project: Clinton County Project Number: 07207086 T11 Project Manager: Joshua F. Cox	Reported 02/09/22 19:24

B-1 0-2

1FA2226-01 (Soil)

Date Sampled:1/25/2022 3:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Conventional Chemistry Parameters									
% Solids	**76.8**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

Phone 641-792-8451

600 East 17th Street South
Newton, IA 50208

Fax 641-792-7989

Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 0-2

1FA2226-01RE1 (Soil)

Date Sampled:1/25/2022 3:00:00PM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Volatile Organic Compounds									
Benzene	ND	0.003	mg/kg dry	1	1FB0273	02/04/22	02/07/22 15:00	EPA 8260B	
1,2-Dichloroethane	ND	0.003	"	"	"	"	"	"	
Trichloroethylene	ND	0.003	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.003	"	"	"	"	"	"	
Bromodichloromethane	ND	0.003	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.007	"	"	"	"	"	"	
Toluene	ND	0.003	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*60.5 %*	*63-132*		"	"	"	"	*S-GC*
Surrogate: 1,2-Dichloroethane-d4		*65.2 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*96.6 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*65.6 %*	*65-127*		"	"	"	"	
Determination of Total Metals									
Lead, total	**454**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 04:47	EPA 6010B	

Phone 641-792-8451 600 East 17th Street South Newton, IA 50208 Fax 641-792-7989

Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 0-2

1FA2226-01RE2 (Soil)

Date Sampled:1/25/2022 3:00:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Tetrachloroethylene	ND	0.008	mg/kg dry	1	1FB0273	02/04/22	02/08/22 13:22	EPA 8260B	
2-Hexanone (MBK)	ND	0.020	"	"	"	"	"	"	
Dibromochloromethane	ND	0.004	"	"	"	"	"	"	
Chlorobenzene	ND	0.008	"	"	"	"	"	"	
Ethylbenzene	ND	0.008	"	"	"	"	"	"	
Xylenes, total	ND	0.016	"	"	"	"	"	"	
Bromoform	ND	0.004	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.008	"	"	"	"	"	"	IS-01
1,3-Dichlorobenzene	ND	0.008	"	"	"	"	"	"	IS-01
1,4-Dichlorobenzene	ND	0.008	"	"	"	"	"	"	IS-01
1,2-Dichlorobenzene	ND	0.008	"	"	"	"	"	"	IS-01
Surrogate: Dibromofluoromethane		*94.3 %*	*63-132*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.4 %*	*65-127*		"	"	"	"	

Phone 641-792-8451 600 East 17th Street South Newton, IA 50208 Fax 641-792-7989

Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 3-5

1FA2226-02 (Soil)

Date Sampled:1/25/2022 3:10:00PM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Volatile Organic Compounds									
Benzene	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/04/22 16:42	EPA 8260B	
1,2-Dichloroethane	ND	0.002	"	"	"	"	"	"	
Trichloroethylene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.002	"	"	"	"	"	"	
Bromodichloromethane	ND	0.002	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.0008	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.004	"	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.0008	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.0008	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*	*63-132*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*130 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.5 %*	*65-127*		"	"	"	"	
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	**67**	5	mg/kg	1	1FB0043	02/01/22	02/04/22 20:41	Iowa OA-2	D-03
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	**43**	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	**110**	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*82.0 %*	*15-180*		"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**82.9**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

Phone 641-792-8451 600 East 17th Street South Newton, IA 50208 Fax 641-792-7989

Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 3-5

1FA2226-02RE1 (Soil)

Date Sampled:1/25/2022 3:10:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/07/22 20:16	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	ND	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Tetrachloroethylene	ND	0.002	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.005	"	"	"	"	"	"	
Dibromochloromethane	ND	0.001	"	"	"	"	"	"	
Chlorobenzene	ND	0.002	"	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	"	
Xylenes, total	ND	0.004	"	"	"	"	"	"	
Bromoform	ND	0.001	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*79.9 %*	*63-132*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*89.3 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*95.8 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.3 %*	*65-127*		"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 3-5

1FA2226-02RE1 (Soil)

Date Sampled:1/25/2022 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Total Metals									
Lead, total	**105**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 04:57	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-1 3-5

1FA2226-02RE2 (Soil)

Date Sampled:1/25/2022 3:10:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Volatile Organic Compounds									
1,1,2,2-Tetrachloroethane	ND	0.005	mg/kg dry	1	1FB0273	02/04/22	02/08/22 14:14	EPA 8260B	
1,3-Dichlorobenzene	ND	0.005	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.005	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.005	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*90.6 %*		*63-132*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*110 %*		*55-137*	"	"	"	"	
Surrogate: Toluene-d8		*97.3 %*		*73-130*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.6 %*		*65-127*	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-2 0-2

1FA2226-03 (Soil)

Date Sampled:1/25/2022 2:00:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.001	mg/kg dry	1	1FB0273	02/04/22	02/04/22 17:29	EPA 8260B	
Vinyl Chloride	ND	0.001	"	"	"	"	"	"	
Bromomethane	ND	0.001	"	"	"	"	"	"	
Chloroethane	ND	0.001	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.001	"	"	"	"	"	"	
Acetone	ND	0.033	"	"	"	"	"	"	
Carbon Disulfide	ND	0.003	"	"	"	"	"	"	
Methylene Chloride	ND	0.033	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.001	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.001	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.001	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.001	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.003	"	"	"	"	"	"	
Chloroform	ND	0.001	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.001	"	"	"	"	"	"	
Benzene	ND	0.001	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.001	"	"	"	"	"	"	
Trichloroethylene	ND	0.001	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.001	"	"	"	"	"	"	
Bromodichloromethane	ND	0.001	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.0007	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.003	"	"	"	"	"	"	
Toluene	ND	0.001	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.0007	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.0007	"	"	"	"	"	"	
Tetrachloroethylene	ND	0.001	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.003	"	"	"	"	"	"	
Dibromochloromethane	ND	0.0007	"	"	"	"	"	"	
Chlorobenzene	ND	0.001	"	"	"	"	"	"	
Ethylbenzene	ND	0.001	"	"	"	"	"	"	
Xylenes, total	ND	0.003	"	"	"	"	"	"	
Bromoform	ND	0.0007	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.001	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.001	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.001	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.001	"	"	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-2 0-2

1FA2226-03 (Soil)

Date Sampled:1/25/2022 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Volatile Organic Compounds									
Surrogate: Dibromofluoromethane		*95.6 %*	*63-132*		*1FB0273*	*02/04/22*	*02/04/22 17:29*	*EPA 8260B*	
Surrogate: 1,2-Dichloroethane-d4		*117 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*93.6 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.6 %*	*65-127*		"	"	"	"	
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	**24**	5	mg/kg	1	1FB0043	02/01/22	02/04/22 21:25	Iowa OA-2	D-03
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	**5**	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	**29**	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*86.1 %*	*15-180*		"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**85.7**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-2 0-2

1FA2226-03RE1 (Soil)

Date Sampled:1/25/2022 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Total Metals									
Lead, total	**6.2**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 05:03	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-2 4-5

1FA2226-04 (Soil)

Date Sampled:1/25/2022 2:05:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/07/22 19:23	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	**0.061**	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Benzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.002	"	"	"	"	"	"	
Trichloroethylene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.002	"	"	"	"	"	"	
Bromodichloromethane	ND	0.002	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.005	"	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Tetrachloroethylene	ND	0.002	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.005	"	"	"	"	"	"	
Dibromochloromethane	ND	0.001	"	"	"	"	"	"	
Chlorobenzene	ND	0.002	"	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	"	
Xylenes, total	ND	0.004	"	"	"	"	"	"	
Bromoform	ND	0.001	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.002	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

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1FA2226-04 (Soil)

Date Sampled:1/25/2022 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Volatile Organic Compounds									
Surrogate: Dibromofluoromethane		*57.5 %*	*63-132*		*1FB0273*	*02/04/22*	*02/07/22 19:23*	*EPA 8260B*	*S-GC*
Surrogate: 1,2-Dichloroethane-d4		*67.7 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*99.1 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.5 %*	*65-127*		"	"	"	"	
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	ND	5	mg/kg	1	1FB0043	02/01/22	02/04/22 22:08	Iowa OA-2	
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	ND	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	ND	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*94.7 %*	*15-180*		"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**79.9**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-2 4-5

1FA2226-04RE1 (Soil)

Date Sampled:1/25/2022 2:05:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Total Metals									
Lead, total	**7.2**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 05:12	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-3 0-2

1FA2226-05 (Soil)

Date Sampled:1/25/2022 12:30:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/04/22 19:03	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	ND	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Benzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.002	"	"	"	"	"	"	
Trichloroethylene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.002	"	"	"	"	"	"	
Bromodichloromethane	ND	0.002	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.005	"	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Tetrachloroethylene	ND	0.002	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.005	"	"	"	"	"	"	
Dibromochloromethane	ND	0.001	"	"	"	"	"	"	
Chlorobenzene	ND	0.002	"	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	"	
Xylenes, total	ND	0.004	"	"	"	"	"	"	
Bromoform	ND	0.001	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.002	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

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1FA2226-05 (Soil)

Date Sampled:1/25/2022 12:30:00PM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Volatile Organic Compounds									
Surrogate: Dibromofluoromethane		*101 %*	*63-132*		*1FB0273*	*02/04/22*	*02/04/22 19:03*	*EPA 8260B*	
Surrogate: 1,2-Dichloroethane-d4		*123 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.8 %*	*65-127*		"	"	"	"	
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	**22**	5	mg/kg	1	1FB0043	02/01/22	02/04/22 22:51	Iowa OA-2	D-03
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	**7**	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	**29**	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*94.1 %*	*15-180*		"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**90.2**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

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1FA2226-05RE1 (Soil)

Date Sampled:1/25/2022 12:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Total Metals									
Lead, total	**180**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 05:21	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

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1FA2226-06 (Soil)

Date Sampled:1/25/2022 12:35:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/04/22 15:08	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	ND	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Benzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.002	"	"	"	"	"	"	
Trichloroethylene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.002	"	"	"	"	"	"	
Bromodichloromethane	ND	0.002	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.005	"	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Tetrachloroethylene	ND	0.002	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	0.005	"	"	"	"	"	"	
Dibromochloromethane	ND	0.001	"	"	"	"	"	"	
Chlorobenzene	ND	0.002	"	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	"	
Xylenes, total	ND	0.004	"	"	"	"	"	"	
Bromoform	ND	0.001	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.002	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-3 3-7

1FA2226-06 (Soil)

Date Sampled:1/25/2022 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Volatile Organic Compounds									
Surrogate: Dibromofluoromethane		*92.1 %*	*63-132*		*1FB0273*	*02/04/22*	*02/04/22 15:08*	*EPA 8260B*	
Surrogate: 1,2-Dichloroethane-d4		*112 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.7 %*	*65-127*		"	"	"	"	
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	ND	5	mg/kg	1	1FB0043	02/01/22	02/04/22 23:34	Iowa OA-2	
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	ND	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	ND	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*98.6 %*	*15-180*		"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**85.8**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

B-3 3-7

1FA2226-06RE1 (Soil)

Date Sampled:1/25/2022 12:35:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Total Metals									
Lead, total	**94.7**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 05:30	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

DUP-1

1FA2226-07 (Soil)

Date Sampled:1/25/2022 12:00:00AM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/04/22 19:49	EPA 8260B	
Vinyl Chloride	ND	0.002	"	"	"	"	"	"	
Bromomethane	ND	0.002	"	"	"	"	"	"	
Chloroethane	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Acetone	ND	0.050	"	"	"	"	"	"	
Carbon Disulfide	ND	0.005	"	"	"	"	"	"	
Methylene Chloride	ND	0.050	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	0.002	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.002	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	0.002	"	"	"	"	"	"	
2-Butanone (MEK)	ND	0.005	"	"	"	"	"	"	
Chloroform	ND	0.002	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.002	"	"	"	"	"	"	
Carbon Tetrachloride	ND	0.002	"	"	"	"	"	"	
Benzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.002	"	"	"	"	"	"	
Trichloroethylene	ND	0.002	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.002	"	"	"	"	"	"	
Bromodichloromethane	ND	0.002	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	0.005	"	"	"	"	"	"	
Toluene	ND	0.002	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.001	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.001	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*110 %*		*63-132*	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*132 %*		*55-137*	"	"	"	"	
Surrogate: Toluene-d8		*97.5 %*		*73-130*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*79.0 %*		*65-127*	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

DUP-1

1FA2226-07 (Soil)

Date Sampled:1/25/2022 12:00:00AM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Extractable Petroleum Hydrocarbons									
TEH, as gasoline	**53**	5	mg/kg	1	1FB0043	02/01/22	02/05/22 00:17	Iowa OA-2	D-03
TEH, as #2 diesel fuel	ND	5	"	"	"	"	"	"	
TEH, as waste oil	**11**	5	"	"	"	"	"	"	
Total Extractable Hydrocarbons	**63**	5	"	"	"	"	"	"	
Surrogate: Pentacosane		*87.0 %*		*15-180*	"	"	"	"	
Determination of Conventional Chemistry Parameters									
% Solids	**83.8**	0.10	%	1	1FA1215	01/27/22	01/27/22 13:07	SM 2540 G	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

DUP-1

1FA2226-07RE1 (Soil)

Date Sampled:1/25/2022 12:00:00AM

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Determination of Volatile Organic Compounds									
Tetrachloroethylene	ND	0.002	mg/kg dry	1	1FB0273	02/04/22	02/07/22 21:08	EPA 8260B	
2-Hexanone (MBK)	ND	0.005	"	"	"	"	"	"	
Dibromochloromethane	ND	0.001	"	"	"	"	"	"	
Chlorobenzene	ND	0.002	"	"	"	"	"	"	
Ethylbenzene	ND	0.002	"	"	"	"	"	"	
Xylenes, total	ND	0.004	"	"	"	"	"	"	
Bromoform	ND	0.001	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.002	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.002	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*62.3 %*	*63-132*		"	"	"	"	*S-GC*
Surrogate: 1,2-Dichloroethane-d4		*75.2 %*	*55-137*		"	"	"	"	
Surrogate: Toluene-d8		*106 %*	*73-130*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.3 %*	*65-127*		"	"	"	"	
Determination of Total Metals									
Lead, total	**181**	5.0	mg/kg dry	1	1FB0068	02/02/22	02/03/22 06:16	EPA 6010B	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Trip Blank

1FA2226-08 (Water)

Date Sampled:1/25/2022 12:00:00PM

Keystone Laboratories, Inc. - Newton

Determination of Volatile Organic Compounds

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloromethane	ND	1.0	ug/L	1	1FB0061	02/01/22	02/01/22 13:41	EPA 8260B	
Vinyl Chloride	ND	1.0	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
1,1-Dichloroethylene	ND	1.0	"	"	"	"	"	"	
Acetone	ND	10.0	"	"	"	"	"	"	
Carbon Disulfide	ND	1.0	"	"	"	"	"	"	
Methylene Chloride	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethylene	ND	1.0	"	"	"	"	"	"	
Methyl-t-butyl Ether (MTBE)	ND	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethylene	ND	1.0	"	"	"	"	"	"	
2-Butanone (MEK)	ND	10.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Carbon Tetrachloride	ND	1.0	"	"	"	"	"	"	
Benzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
Trichloroethylene	**5.2**	1.0	"	"	"	"	"	"	
1,2-Dichloropropane	ND	1.0	"	"	"	"	"	"	
Bromodichloromethane	ND	1.0	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
4-Methyl-2-pentanone (MIBK)	ND	5.0	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	1.0	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethylene	ND	1.0	"	"	"	"	"	"	
2-Hexanone (MBK)	ND	5.0	"	"	"	"	"	"	
Dibromochloromethane	ND	1.0	"	"	"	"	"	"	
Chlorobenzene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes, total	ND	2.0	"	"	"	"	"	"	
Bromoform	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.0	"	"	"	"	"	"	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Trip Blank

1FA2226-08 (Water)

Date Sampled:1/25/2022 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Keystone Laboratories, Inc. - Newton									
Determination of Volatile Organic Compounds									
Surrogate: Dibromofluoromethane		*108 %*	*79-130*		*1FB0061*	*02/01/22*	*02/01/22 13:41*	*EPA 8260B*	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*68-134*		*"*	*"*	*"*	*"*	
Surrogate: Toluene-d8		*104 %*	*87-116*		*"*	*"*	*"*	*"*	
Surrogate: 4-Bromofluorobenzene		*100 %*	*84-112*		*"*	*"*	*"*	*"*	

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0061 - EPA 5030B										
Blank (1FB0061-BLK1)				Prepared & Analyzed: 02/01/22						
Chloromethane	ND	1.0	ug/L							
Vinyl Chloride	ND	1.0	"							
Bromomethane	ND	1.0	"							
Chloroethane	ND	1.0	"							
1,1-Dichloroethylene	ND	1.0	"							
Acetone	ND	10.0	"							
Carbon Disulfide	ND	1.0	"							
Methylene Chloride	ND	5.0	"							
trans-1,2-Dichloroethylene	ND	1.0	"							
Methyl-t-butyl Ether (MTBE)	ND	2.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethylene	ND	1.0	"							
2-Butanone (MEK)	ND	10.0	"							
Chloroform	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
Carbon Tetrachloride	ND	1.0	"							
Benzene	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
Trichloroethylene	ND	1.0	"							
1,2-Dichloropropane	ND	1.0	"							
Bromodichloromethane	ND	1.0	"							
cis-1,3-Dichloropropene	ND	1.0	"							
4-Methyl-2-pentanone (MIBK)	ND	5.0	"							
Toluene	ND	1.0	"							
trans-1,3-Dichloropropene	ND	1.0	"							
1,1,2-Trichloroethane	ND	1.0	"							
Tetrachloroethylene	ND	1.0	"							
2-Hexanone (MBK)	ND	5.0	"							
Dibromochloromethane	ND	1.0	"							
Chlorobenzene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes, total	ND	2.0	"							
Bromoform	ND	1.0	"							
1,1,2,2-Tetrachloroethane	ND	1.0	"							
1,3-Dichlorobenzene	ND	1.0	"							
1,4-Dichlorobenzene	ND	1.0	"							
1,2-Dichlorobenzene	ND	1.0	"							
Surrogate: Dibromofluoromethane	*54.2*		*"*	*50.2280*		*108*	*79-130*			
Surrogate: 1,2-Dichloroethane-d4	*56.2*		*"*	*50.3120*		*112*	*68-134*			
Surrogate: Toluene-d8	*52.0*		*"*	*50.2360*		*104*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*50.5*		*"*	*50.4000*		*100*	*84-112*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0061 - EPA 5030B										
LCS (1FB0061-BS1)				Prepared & Analyzed: 01/31/22						
Chloromethane	31.43	1.0	ug/L	30.0000		105	57-130			
Vinyl Chloride	35.94	1.0	"	30.0000		120	61-134			
Bromomethane	37.02	1.0	"	30.0000		123	61-140			
Chloroethane	32.58	1.0	"	30.0000		109	68-135			
1,1-Dichloroethylene	53.57	1.0	"	50.0000		107	77-136			
Acetone	120.6	10.0	"	102.200		118	54-150			
Carbon Disulfide	124.2	1.0	"	104.400		119	73-147			
Methylene Chloride	50.12	5.0	"	50.0000		100	70-138			
trans-1,2-Dichloroethylene	58.84	1.0	"	50.0000		118	71-134			
Methyl-t-butyl Ether (MTBE)	123.2	2.0	"	103.000		120	72-140			
1,1-Dichloroethane	51.61	1.0	"	50.0000		103	70-131			
cis-1,2-Dichloroethylene	59.46	1.0	"	49.4750		120	76-138			
2-Butanone (MEK)	104.1	10.0	"	100.000		104	63-137			
Chloroform	57.91	1.0	"	50.0000		116	77-130			
1,1,1-Trichloroethane	52.86	1.0	"	49.9750		106	66-120			
Carbon Tetrachloride	56.81	1.0	"	50.0000		114	72-131			
Benzene	56.38	1.0	"	50.0000		113	77-124			
1,2-Dichloroethane	55.83	1.0	"	50.0000		112	78-122			
Trichloroethylene	57.38	1.0	"	50.0000		115	78-123			
1,2-Dichloropropane	56.86	1.0	"	50.0000		114	77-125			
Bromodichloromethane	54.35	1.0	"	50.0000		109	76-120			
cis-1,3-Dichloropropene	49.42	1.0	"	50.3250		98.2	76-119			
4-Methyl-2-pentanone (MIBK)	119.9	5.0	"	104.100		115	70-134			
Toluene	56.81	1.0	"	50.0000		114	75-128			
trans-1,3-Dichloropropene	50.46	1.0	"	50.4250		100	76-122			
1,1,2-Trichloroethane	54.08	1.0	"	50.0000		108	75-125			
Tetrachloroethylene	50.86	1.0	"	50.0000		102	76-121			
2-Hexanone (MBK)	115.1	5.0	"	111.800		103	64-136			
Dibromochloromethane	51.62	1.0	"	49.5000		104	78-126			
Chlorobenzene	54.10	1.0	"	50.0000		108	77-119			
Ethylbenzene	50.81	1.0	"	50.0000		102	72-119			
Xylenes, total	151.4	2.0	"	150.000		101	73-118			
Bromoform	53.56	1.0	"	50.0000		107	76-123			
1,1,2,2-Tetrachloroethane	52.52	1.0	"	49.8500		105	63-129			
1,3-Dichlorobenzene	47.79	1.0	"	50.0000		95.6	72-125			
1,4-Dichlorobenzene	49.50	1.0	"	50.0000		99.0	72-127			
1,2-Dichlorobenzene	47.54	1.0	"	50.0000		95.1	72-123			
Surrogate: Dibromofluoromethane	*49.4*		"	*50.2280*		*98.4*	*79-130*			
Surrogate: 1,2-Dichloroethane-d4	*49.8*		"	*50.3120*		*99.0*	*68-134*			
Surrogate: Toluene-d8	*50.4*		"	*50.2360*		*100*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*51.0*		"	*50.4000*		*101*	*84-112*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0061 - EPA 5030B										
LCS Dup (1FB0061-BSD1)				Prepared & Analyzed: 01/31/22						
Chloromethane	31.41	1.0	ug/L	30.0000		105	57-130	0.0637	24	
Vinyl Chloride	35.64	1.0	"	30.0000		119	61-134	0.838	25	
Bromomethane	35.16	1.0	"	30.0000		117	61-140	5.15	25	
Chloroethane	32.39	1.0	"	30.0000		108	68-135	0.585	26	
1,1-Dichloroethylene	52.82	1.0	"	50.0000		106	77-136	1.41	24	
Acetone	120.0	10.0	"	102.200		117	54-150	0.507	30	
Carbon Disulfide	120.0	1.0	"	104.400		115	73-147	3.44	24	
Methylene Chloride	48.82	5.0	"	50.0000		97.6	70-138	2.63	22	
trans-1,2-Dichloroethylene	56.87	1.0	"	50.0000		114	71-134	3.41	23	
Methyl-t-butyl Ether (MTBE)	124.3	2.0	"	103.000		121	72-140	0.864	23	
1,1-Dichloroethane	50.85	1.0	"	50.0000		102	70-131	1.48	25	
cis-1,2-Dichloroethylene	58.90	1.0	"	49.4750		119	76-138	0.946	23	
2-Butanone (MEK)	47.75	10.0	"	100.000		47.8	63-137	74.3	25	QS-01
Chloroform	56.31	1.0	"	50.0000		113	77-130	2.80	24	
1,1,1-Trichloroethane	50.10	1.0	"	49.9750		100	66-120	5.36	24	
Carbon Tetrachloride	53.89	1.0	"	50.0000		108	72-131	5.28	24	
Benzene	54.54	1.0	"	50.0000		109	77-124	3.32	23	
1,2-Dichloroethane	55.40	1.0	"	50.0000		111	78-122	0.773	23	
Trichloroethylene	54.34	1.0	"	50.0000		109	78-123	5.44	23	
1,2-Dichloropropane	55.20	1.0	"	50.0000		110	77-125	2.96	22	
Bromodichloromethane	53.02	1.0	"	50.0000		106	76-120	2.48	21	
cis-1,3-Dichloropropene	48.91	1.0	"	50.3250		97.2	76-119	1.04	21	
4-Methyl-2-pentanone (MIBK)	120.6	5.0	"	104.100		116	70-134	0.574	21	
Toluene	54.50	1.0	"	50.0000		109	75-128	4.15	25	
trans-1,3-Dichloropropene	52.05	1.0	"	50.4250		103	76-122	3.10	21	
1,1,2-Trichloroethane	53.84	1.0	"	50.0000		108	75-125	0.445	22	
Tetrachloroethylene	46.90	1.0	"	50.0000		93.8	76-121	8.10	25	
2-Hexanone (MBK)	107.6	5.0	"	111.800		96.2	64-136	6.76	25	
Dibromochloromethane	51.24	1.0	"	49.5000		104	78-126	0.739	21	
Chlorobenzene	52.70	1.0	"	50.0000		105	77-119	2.62	22	
Ethylbenzene	48.56	1.0	"	50.0000		97.1	72-119	4.53	25	
Xylenes, total	147.6	2.0	"	150.000		98.4	73-118	2.58	25	
Bromoform	54.03	1.0	"	50.0000		108	76-123	0.874	21	
1,1,2,2-Tetrachloroethane	55.14	1.0	"	49.8500		111	63-129	4.87	24	
1,3-Dichlorobenzene	49.02	1.0	"	50.0000		98.0	72-125	2.54	26	
1,4-Dichlorobenzene	50.92	1.0	"	50.0000		102	72-127	2.83	26	
1,2-Dichlorobenzene	49.83	1.0	"	50.0000		99.7	72-123	4.70	24	
Surrogate: Dibromofluoromethane	*49.4*		"	*50.2280*		*98.3*	*79-130*			
Surrogate: 1,2-Dichloroethane-d4	*49.2*		"	*50.3120*		*97.8*	*68-134*			
Surrogate: Toluene-d8	*49.8*		"	*50.2360*		*99.1*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*50.7*		"	*50.4000*		*101*	*84-112*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0061 - EPA 5030B										
Matrix Spike (1FB0061-MS1)	**Source: 1FB0055-01**			Prepared & Analyzed: 02/01/22						
Chloromethane	342.0	10.0	ug/L	300.000	ND	114	51-129			
Vinyl Chloride	372.4	10.0	"	300.000	ND	124	59-132			
Bromomethane	382.9	10.0	"	300.000	ND	128	51-142			
Chloroethane	342.2	10.0	"	300.000	ND	114	70-133			
1,1-Dichloroethylene	556.6	10.0	"	500.000	ND	111	79-132			
Acetone	1193	100	"	1022.00	ND	117	53-160			
Carbon Disulfide	1235	10.0	"	1044.00	ND	118	76-141			
Methylene Chloride	501.3	50.0	"	500.000	ND	100	71-137			
trans-1,2-Dichloroethylene	598.6	10.0	"	500.000	ND	120	75-127			
Methyl-t-butyl Ether (MTBE)	1239	20.0	"	1030.00	ND	120	66-142			
1,1-Dichloroethane	519.8	10.0	"	500.000	ND	104	73-125			
cis-1,2-Dichloroethylene	690.7	10.0	"	494.750	ND	140	74-136			QS-02
2-Butanone (MEK)	1244	100	"	1000.00	ND	124	71-136			
Chloroform	576.5	10.0	"	500.000	ND	115	77-128			
1,1,1-Trichloroethane	523.3	10.0	"	499.750	ND	105	69-115			
Carbon Tetrachloride	558.1	10.0	"	500.000	ND	112	75-126			
Benzene	541.4	10.0	"	500.000	ND	108	77-121			
1,2-Dichloroethane	565.3	10.0	"	500.000	ND	113	79-119			
Trichloroethylene	557.8	10.0	"	500.000	ND	112	82-115			
1,2-Dichloropropane	554.4	10.0	"	500.000	ND	111	80-118			
Bromodichloromethane	528.0	10.0	"	500.000	ND	106	76-116			
cis-1,3-Dichloropropene	487.0	10.0	"	503.250	ND	96.8	74-113			
4-Methyl-2-pentanone (MIBK)	1208	50.0	"	1041.00	ND	116	69-134			
Toluene	550.1	10.0	"	500.000	ND	110	76-124			
trans-1,3-Dichloropropene	481.3	10.0	"	504.250	ND	95.4	76-113			
1,1,2-Trichloroethane	540.1	10.0	"	500.000	ND	108	77-120			
Tetrachloroethylene	498.8	10.0	"	500.000	ND	99.8	80-114			
2-Hexanone (MBK)	1216	50.0	"	1118.00	ND	109	66-133			
Dibromochloromethane	510.5	10.0	"	495.000	ND	103	80-119			
Chlorobenzene	540.0	10.0	"	500.000	ND	108	80-112			
Ethylbenzene	503.0	10.0	"	500.000	ND	101	74-113			
Xylenes, total	1525	20.0	"	1500.00	ND	102	76-112			
Bromoform	525.7	10.0	"	500.000	ND	105	76-120			
1,1,2,2-Tetrachloroethane	571.4	10.0	"	498.500	ND	115	61-129			
1,3-Dichlorobenzene	522.7	10.0	"	500.000	ND	105	71-122			
1,4-Dichlorobenzene	536.6	10.0	"	500.000	ND	107	71-125			
1,2-Dichlorobenzene	538.0	10.0	"	500.000	ND	108	70-123			
Surrogate: Dibromofluoromethane	*508*		"	*502.280*		*101*	*79-130*			
Surrogate: 1,2-Dichloroethane-d4	*518*		"	*503.120*		*103*	*68-134*			
Surrogate: Toluene-d8	*496*		"	*502.360*		*98.7*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*505*		"	*504.000*		*100*	*84-112*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0061 - EPA 5030B										
Matrix Spike Dup (1FB0061-MSD1)	**Source: 1FB0055-01**			Prepared & Analyzed: 02/01/22						
Chloromethane	342.8	10.0	ug/L	300.000	ND	114	51-129	0.234	23	
Vinyl Chloride	383.0	10.0	"	300.000	ND	128	59-132	2.81	22	
Bromomethane	378.2	10.0	"	300.000	ND	126	51-142	1.24	30	
Chloroethane	343.3	10.0	"	300.000	ND	114	70-133	0.321	27	
1,1-Dichloroethylene	556.9	10.0	"	500.000	ND	111	79-132	0.0539	19	
Acetone	1174	100	"	1022.00	ND	115	53-160	1.66	21	
Carbon Disulfide	1247	10.0	"	1044.00	ND	119	76-141	1.03	18	
Methylene Chloride	507.4	50.0	"	500.000	ND	101	71-137	1.21	16	
trans-1,2-Dichloroethylene	603.9	10.0	"	500.000	ND	121	75-127	0.882	16	
Methyl-t-butyl Ether (MTBE)	1256	20.0	"	1030.00	ND	122	66-142	1.35	15	
1,1-Dichloroethane	527.1	10.0	"	500.000	ND	105	73-125	1.39	15	
cis-1,2-Dichloroethylene	629.6	10.0	"	494.750	ND	127	74-136	9.26	16	
2-Butanone (MEK)	1228	100	"	1000.00	ND	123	71-136	1.31	12	
Chloroform	574.6	10.0	"	500.000	ND	115	77-128	0.330	13	
1,1,1-Trichloroethane	520.9	10.0	"	499.750	ND	104	69-115	0.460	13	
Carbon Tetrachloride	572.9	10.0	"	500.000	ND	115	75-126	2.62	13	
Benzene	548.9	10.0	"	500.000	ND	110	77-121	1.38	12	
1,2-Dichloroethane	563.9	10.0	"	500.000	ND	113	79-119	0.248	11	
Trichloroethylene	548.1	10.0	"	500.000	ND	110	82-115	1.75	12	
1,2-Dichloropropane	554.5	10.0	"	500.000	ND	111	80-118	0.0180	10	
Bromodichloromethane	534.9	10.0	"	500.000	ND	107	76-116	1.30	11	
cis-1,3-Dichloropropene	489.0	10.0	"	503.250	ND	97.2	74-113	0.410	11	
4-Methyl-2-pentanone (MIBK)	1180	50.0	"	1041.00	ND	113	69-134	2.40	13	
Toluene	545.0	10.0	"	500.000	ND	109	76-124	0.931	10	
trans-1,3-Dichloropropene	489.3	10.0	"	504.250	ND	97.0	76-113	1.65	10	
1,1,2-Trichloroethane	533.9	10.0	"	500.000	ND	107	77-120	1.15	11	
Tetrachloroethylene	479.7	10.0	"	500.000	ND	95.9	80-114	3.90	17	
2-Hexanone (MBK)	1144	50.0	"	1118.00	ND	102	66-133	6.12	13	
Dibromochloromethane	506.1	10.0	"	495.000	ND	102	80-119	0.866	14	
Chlorobenzene	526.3	10.0	"	500.000	ND	105	80-112	2.57	14	
Ethylbenzene	488.5	10.0	"	500.000	ND	97.7	74-113	2.92	15	
Xylenes, total	1490	20.0	"	1500.00	ND	99.4	76-112	2.29	15	
Bromoform	508.3	10.0	"	500.000	ND	102	76-120	3.37	15	
1,1,2,2-Tetrachloroethane	532.0	10.0	"	498.500	ND	107	61-129	7.14	26	
1,3-Dichlorobenzene	494.2	10.0	"	500.000	ND	98.8	71-122	5.61	26	
1,4-Dichlorobenzene	508.5	10.0	"	500.000	ND	102	71-125	5.38	23	
1,2-Dichlorobenzene	493.4	10.0	"	500.000	ND	98.7	70-123	8.65	25	
Surrogate: Dibromofluoromethane	*515*		"	*502.280*		*103*	*79-130*			
Surrogate: 1,2-Dichloroethane-d4	*517*		"	*503.120*		*103*	*68-134*			
Surrogate: Toluene-d8	*497*		"	*502.360*		*99.0*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*506*		"	*504.000*		*100*	*84-112*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0273 - EPA 5035										
Blank (1FB0273-BLK1)			Prepared & Analyzed: 02/04/22							
Chloromethane	ND	0.002	mg/kg wet							
Vinyl Chloride	ND	0.002	"							
Bromomethane	ND	0.002	"							
Chloroethane	ND	0.002	"							
1,1-Dichloroethylene	ND	0.002	"							
Acetone	ND	0.050	"							
Carbon Disulfide	ND	0.005	"							
Methylene Chloride	ND	0.050	"							
trans-1,2-Dichloroethylene	ND	0.002	"							
Methyl-t-butyl Ether (MTBE)	ND	0.002	"							
1,1-Dichloroethane	ND	0.002	"							
cis-1,2-Dichloroethylene	ND	0.002	"							
2-Butanone (MEK)	ND	0.005	"							
Chloroform	ND	0.002	"							
1,1,1-Trichloroethane	ND	0.002	"							
Carbon Tetrachloride	ND	0.002	"							
Benzene	ND	0.002	"							
1,2-Dichloroethane	ND	0.002	"							
Trichloroethylene	ND	0.002	"							
1,2-Dichloropropane	ND	0.002	"							
Bromodichloromethane	ND	0.002	"							
cis-1,3-Dichloropropene	ND	0.001	"							
4-Methyl-2-pentanone (MIBK)	ND	0.005	"							
Toluene	ND	0.002	"							
trans-1,3-Dichloropropene	ND	0.001	"							
1,1,2-Trichloroethane	ND	0.001	"							
Tetrachloroethylene	ND	0.002	"							
2-Hexanone (MBK)	ND	0.005	"							
Dibromochloromethane	ND	0.001	"							
Chlorobenzene	ND	0.002	"							
Ethylbenzene	ND	0.002	"							
Xylenes, total	ND	0.004	"							
Bromoform	ND	0.001	"							
1,1,2,2-Tetrachloroethane	ND	0.002	"							
1,3-Dichlorobenzene	ND	0.002	"							
1,4-Dichlorobenzene	ND	0.002	"							
1,2-Dichlorobenzene	ND	0.002	"							
Surrogate: Dibromofluoromethane	*0.04296*		*"*	*0.0502280*		*85.5*	*63-132*			
Surrogate: 1,2-Dichloroethane-d4	*0.04382*		*"*	*0.0503120*		*87.1*	*55-137*			
Surrogate: Toluene-d8	*0.04896*		*"*	*0.0502360*		*97.5*	*73-130*			
Surrogate: 4-Bromofluorobenzene	*0.04789*		*"*	*0.0504000*		*95.0*	*65-127*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0273 - EPA 5035										
LCS (1FB0273-BS1)				Prepared & Analyzed: 02/04/22						
Chloromethane	0.0298	0.002	mg/kg wet	0.0300000		99.2	47-145			
Vinyl Chloride	0.0286	0.002	"	0.0300000		95.5	43-160			
Bromomethane	0.0338	0.002	"	0.0300000		113	35-151			
Chloroethane	0.0293	0.002	"	0.0300000		97.6	23-155			
1,1-Dichloroethylene	0.0463	0.002	"	0.0500000		92.7	59-151			
Acetone	0.1252	0.050	"	0.102200		123	31-180			
Carbon Disulfide	0.0991	0.005	"	0.104400		94.9	54-154			
Methylene Chloride	0.0453	0.050	"	0.0500000		90.5	62-134			
trans-1,2-Dichloroethylene	0.0437	0.002	"	0.0500000		87.5	55-143			
Methyl-t-butyl Ether (MTBE)	0.1010	0.002	"	0.103000		98.1	62-143			
1,1-Dichloroethane	0.0443	0.002	"	0.0500000		88.6	52-142			
cis-1,2-Dichloroethylene	0.0460	0.002	"	0.0494750		92.9	65-139			
2-Butanone (MEK)	0.1143	0.005	"	0.100000		114	66-137			
Chloroform	0.0470	0.002	"	0.0500000		94.1	57-144			
1,1,1-Trichloroethane	0.0419	0.002	"	0.0499750		83.8	59-123			
Carbon Tetrachloride	0.0458	0.002	"	0.0500000		91.5	60-137			
Benzene	0.0512	0.002	"	0.0500000		102	73-128			
1,2-Dichloroethane	0.0474	0.002	"	0.0500000		94.7	68-123			
Trichloroethylene	0.0488	0.002	"	0.0500000		97.6	72-124			
1,2-Dichloropropane	0.0488	0.002	"	0.0500000		97.7	72-123			
Bromodichloromethane	0.0473	0.002	"	0.0500000		94.5	71-117			
cis-1,3-Dichloropropene	0.0478	0.001	"	0.0503250		95.0	72-118			
4-Methyl-2-pentanone (MIBK)	0.1046	0.005	"	0.104100		100	70-125			
Toluene	0.0528	0.002	"	0.0500000		106	70-132			
trans-1,3-Dichloropropene	0.0490	0.001	"	0.0504250		97.1	74-118			
1,1,2-Trichloroethane	0.0502	0.001	"	0.0500000		100	74-120			
Tetrachloroethylene	0.0482	0.002	"	0.0500000		96.3	70-129			
2-Hexanone (MBK)	0.1105	0.005	"	0.111800		98.8	56-142			
Dibromochloromethane	0.0492	0.001	"	0.0495000		99.4	70-124			
Chlorobenzene	0.0492	0.002	"	0.0500000		98.3	70-122			
Ethylbenzene	0.0498	0.002	"	0.0500000		99.7	62-129			
Xylenes, total	0.1376	0.004	"	0.150000		91.8	66-124			
Bromoform	0.0527	0.001	"	0.0500000		105	68-124			
1,1,2,2-Tetrachloroethane	0.0624	0.002	"	0.0498500		125	52-128			
1,3-Dichlorobenzene	0.0598	0.002	"	0.0500000		120	59-127			
1,4-Dichlorobenzene	0.0610	0.002	"	0.0500000		122	61-130			
1,2-Dichlorobenzene	0.0577	0.002	"	0.0500000		115	60-127			
Surrogate: Dibromofluoromethane	*0.05125*		"	*0.0502280*		*102*	*63-132*			
Surrogate: 1,2-Dichloroethane-d4	*0.04975*		"	*0.0503120*		*98.9*	*55-137*			
Surrogate: Toluene-d8	*0.04928*		"	*0.0502360*		*98.1*	*73-130*			
Surrogate: 4-Bromofluorobenzene	*0.04456*		"	*0.0504000*		*88.4*	*65-127*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0273 - EPA 5035										
Matrix Spike (1FB0273-MS1)	**Source: 1FA2226-06**			Prepared: 02/04/22 Analyzed: 02/07/22						
Chloromethane	0.0382	0.002	mg/kg dry	0.0423154	ND	90.4	39-144			
Vinyl Chloride	0.0290	0.002	"	0.0423154	ND	68.6	34-155			
Bromomethane	0.0374	0.002	"	0.0423154	ND	88.4	21-148			
Chloroethane	0.0300	0.002	"	0.0423154	ND	70.8	10-155			
1,1-Dichloroethylene	0.0364	0.002	"	0.0705256	ND	51.7	46-149			
Acetone	0.2321	0.050	"	0.144154	ND	161	22-193			
Carbon Disulfide	0.0910	0.005	"	0.147258	ND	61.8	24-162			
Methylene Chloride	0.0465	0.050	"	0.0705256	0.0034	61.2	42-147			
trans-1,2-Dichloroethylene	0.0391	0.002	"	0.0705256	ND	55.4	44-141			
Methyl-t-butyl Ether (MTBE)	0.0909	0.002	"	0.145283	ND	62.5	53-145			
1,1-Dichloroethane	0.0402	0.002	"	0.0705256	ND	57.0	39-143			
cis-1,2-Dichloroethylene	0.0462	0.002	"	0.0697851	ND	66.2	55-137			
2-Butanone (MEK)	0.1346	0.005	"	0.141051	ND	95.4	21-173			
Chloroform	0.0435	0.002	"	0.0705256	ND	61.6	54-135			
1,1,1-Trichloroethane	0.0361	0.002	"	0.0704904	ND	51.2	47-122			
Carbon Tetrachloride	0.0380	0.002	"	0.0705256	ND	53.8	51-132			
Benzene	0.0679	0.002	"	0.0705256	ND	96.3	59-127			
1,2-Dichloroethane	0.0717	0.002	"	0.0705256	ND	102	59-124			
Trichloroethylene	0.0600	0.002	"	0.0705256	ND	85.1	40-151			
1,2-Dichloropropane	0.0720	0.002	"	0.0705256	ND	102	62-124			
Bromodichloromethane	0.0673	0.002	"	0.0705256	ND	95.4	62-117			
cis-1,3-Dichloropropene	0.0651	0.001	"	0.0709840	ND	91.7	60-118			
4-Methyl-2-pentanone (MIBK)	0.1710	0.005	"	0.146834	ND	116	66-134			
Toluene	0.0737	0.002	"	0.0705256	ND	105	61-128			
trans-1,3-Dichloropropene	0.0776	0.001	"	0.0711251	ND	109	61-119			
1,1,2-Trichloroethane	0.0786	0.001	"	0.0705256	ND	111	66-121			
Tetrachloroethylene	0.0542	0.002	"	0.0705256	ND	76.9	51-130			
2-Hexanone (MBK)	0.1784	0.005	"	0.157695	ND	113	37-168			
Dibromochloromethane	0.0655	0.001	"	0.0698204	ND	93.9	67-122			
Chlorobenzene	0.0661	0.002	"	0.0705256	ND	93.7	57-120			
Ethylbenzene	0.0635	0.002	"	0.0705256	ND	90.0	42-137			
Xylenes, total	0.1777	0.004	"	0.211577	ND	84.0	53-123			
Bromoform	0.0796	0.001	"	0.0705256	ND	113	57-129			
1,1,2,2-Tetrachloroethane	0.0820	0.002	"	0.0703140	ND	117	33-141			
1,3-Dichlorobenzene	0.0637	0.002	"	0.0705256	ND	90.3	49-124			
1,4-Dichlorobenzene	0.0656	0.002	"	0.0705256	ND	93.0	50-128			
1,2-Dichlorobenzene	0.0671	0.002	"	0.0705256	ND	95.2	44-126			
Surrogate: Dibromofluoromethane	*0.04608*		"	*0.0708472*		*65.0*	*63-132*			
Surrogate: 1,2-Dichloroethane-d4	*0.05395*		"	*0.0709657*		*76.0*	*55-137*			
Surrogate: Toluene-d8	*0.07782*		"	*0.0708585*		*110*	*73-130*			
Surrogate: 4-Bromofluorobenzene	*0.07452*		"	*0.0710898*		*105*	*65-127*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Volatile Organic Compounds - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0273 - EPA 5035										
Matrix Spike Dup (1FB0273-MSD1)	**Source: 1FA2226-06**			Prepared: 02/04/22 Analyzed: 02/07/22						
Chloromethane	0.0405	0.002	mg/kg dry	0.0342822	ND	118	39-144	5.80	30	
Vinyl Chloride	0.0355	0.002	"	0.0342822	ND	103	34-155	19.9	30	
Bromomethane	0.0383	0.002	"	0.0342822	ND	112	21-148	2.36	30	
Chloroethane	0.0381	0.002	"	0.0342822	ND	111	10-155	24.0	30	
1,1-Dichloroethylene	0.0469	0.002	"	0.0571370	ND	82.1	46-149	25.2	30	
Acetone	0.3154	0.050	"	0.116788	ND	270	22-193	30.4	30	QM-07
Carbon Disulfide	0.1155	0.005	"	0.119302	ND	96.8	24-162	23.7	30	
Methylene Chloride	0.0607	0.050	"	0.0571370	0.0034	100	42-147	26.4	30	
trans-1,2-Dichloroethylene	0.0516	0.002	"	0.0571370	ND	90.3	44-141	27.6	30	
Methyl-t-butyl Ether (MTBE)	0.1357	0.002	"	0.117702	ND	115	53-145	39.6	30	QR-02
1,1-Dichloroethane	0.0545	0.002	"	0.0571370	ND	95.3	39-143	30.1	30	QR-02
cis-1,2-Dichloroethylene	0.0514	0.002	"	0.0565370	ND	90.9	55-137	10.6	30	
2-Butanone (MEK)	0.1807	0.005	"	0.114274	ND	158	21-173	29.2	30	
Chloroform	0.0551	0.002	"	0.0571370	ND	96.4	54-135	23.6	30	
1,1,1-Trichloroethane	0.0486	0.002	"	0.0571084	ND	85.2	47-122	29.7	30	
Carbon Tetrachloride	0.0508	0.002	"	0.0571370	ND	88.9	51-132	28.9	30	
Benzene	0.0656	0.002	"	0.0571370	ND	115	59-127	3.54	30	
1,2-Dichloroethane	0.0594	0.002	"	0.0571370	ND	104	59-124	18.8	25	
Trichloroethylene	0.0564	0.002	"	0.0571370	ND	98.7	40-151	6.18	30	
1,2-Dichloropropane	0.0676	0.002	"	0.0571370	ND	118	62-124	6.18	29	
Bromodichloromethane	0.0583	0.002	"	0.0571370	ND	102	62-117	14.4	29	
cis-1,3-Dichloropropene	0.0596	0.001	"	0.0575084	ND	104	60-118	8.79	28	
4-Methyl-2-pentanone (MIBK)	0.1621	0.005	"	0.118959	ND	136	66-134	5.33	30	QS-02
Toluene	0.0644	0.002	"	0.0571370	ND	113	61-128	13.6	28	
trans-1,3-Dichloropropene	0.0656	0.001	"	0.0576226	ND	114	61-119	16.8	28	
1,1,2-Trichloroethane	0.0690	0.001	"	0.0571370	ND	121	66-121	13.0	27	
Tetrachloroethylene	0.0609	0.002	"	0.0571370	ND	107	51-130	11.6	30	
2-Hexanone (MBK)	0.2240	0.005	"	0.127758	ND	175	37-168	22.6	30	QS-02
Dibromochloromethane	0.0672	0.001	"	0.0565656	ND	119	67-122	2.45	26	
Chlorobenzene	0.0638	0.002	"	0.0571370	ND	112	57-120	3.44	30	
Ethylbenzene	0.0649	0.002	"	0.0571370	ND	114	42-137	2.26	30	
Xylenes, total	0.1881	0.004	"	0.171411	ND	110	53-123	5.65	30	
Bromoform	0.0705	0.001	"	0.0571370	ND	123	57-129	12.2	29	
1,1,2,2-Tetrachloroethane	0.0829	0.002	"	0.0569655	ND	146	33-141	1.04	30	QS-02
1,3-Dichlorobenzene	0.0645	0.002	"	0.0571370	ND	113	49-124	1.22	30	
1,4-Dichlorobenzene	0.0700	0.002	"	0.0571370	ND	122	50-128	6.48	29	
1,2-Dichlorobenzene	0.0692	0.002	"	0.0571370	ND	121	44-126	3.14	27	
Surrogate: Dibromofluoromethane	*0.04973*		"	*0.0573975*		*86.6*	*63-132*			
Surrogate: 1,2-Dichloroethane-d4	*0.06386*		"	*0.0574935*		*111*	*55-137*			
Surrogate: Toluene-d8	*0.05199*		"	*0.0574066*		*90.6*	*73-130*			
Surrogate: 4-Bromofluorobenzene	*0.05991*		"	*0.0575940*		*104*	*65-127*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Extractable Petroleum Hydrocarbons - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0043 - 3550B OA-2 Sonic										
Blank (1FB0043-BLK1)				Prepared: 02/01/22 Analyzed: 02/04/22						
TEH, as gasoline	ND	5	mg/kg							
TEH, as #2 diesel fuel	ND	5	"							
TEH, as waste oil	ND	5	"							
Total Extractable Hydrocarbons	ND	5	"							
Surrogate: Pentacosane	*1.29*		*"*	*2.50000*		*51.4*	*15-180*			
LCS (1FB0043-BS1)				Prepared: 02/01/22 Analyzed: 02/04/22						
TEH, as #2 diesel fuel	50.7	5	mg/kg	101.680		49.9	29-114			
Surrogate: Pentacosane	*1.77*		*"*	*2.50000*		*71.0*	*15-180*			
MRL Check (1FB0043-MRL1)				Prepared: 02/01/22 Analyzed: 02/04/22						
TEH, as gasoline	25.4	5	mg/kg	51.2300		49.7	0-200			
TEH, as waste oil	41.5	5	"	51.5300		80.6	0-200			
Surrogate: Pentacosane	*2.27*		*"*	*2.50000*		*90.7*	*15-180*			
MRL Check (1FB0043-MRL2)				Prepared: 02/01/22 Analyzed: 02/04/22						
TEH, as #2 diesel fuel	20.1	5	mg/kg	52.8600		38.0	0-200			
Surrogate: Pentacosane	*2.06*		*"*	*2.50000*		*82.3*	*15-180*			
Matrix Spike (1FB0043-MS1)		**Source: 1FA2226-06**		Prepared: 02/01/22 Analyzed: 02/05/22						
TEH, as #2 diesel fuel	37.1	5	mg/kg	101.680	ND	36.5	13-114			
Surrogate: Pentacosane	*1.62*		*"*	*2.50000*		*64.6*	*15-180*			
Matrix Spike Dup (1FB0043-MSD1)		**Source: 1FA2226-06**		Prepared: 02/01/22 Analyzed: 02/05/22						
TEH, as #2 diesel fuel	44.0	5	mg/kg	101.680	ND	43.2	13-114	17.0	30	
Surrogate: Pentacosane	*1.88*		*"*	*2.50000*		*75.2*	*15-180*			
Reference (1FB0043-SRM1)				Prepared: 02/01/22 Analyzed: 02/05/22						
TEH, as #2 diesel fuel	103.8	5	mg/kg	101.680		102	0-200			
Surrogate: Pentacosane	*2.75*		*"*	*2.50000*		*110*	*15-180*			

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
870 40th Ave	Project Number: 07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Conventional Chemistry Parameters - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FA1215 - Wet Chem Preparation										
Duplicate (1FA1215-DUP1)		**Source: 1FA2226-01**		Prepared & Analyzed: 01/27/22						
% Solids	81.0	0.10	%		76.8			5.35	11	

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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Total Metals - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FA1306 - EPA 3050B Digestion										
Blank (1FA1306-BLK1)				Prepared: 01/31/22 Analyzed: 02/01/22						
Lead, total	ND	5.0	mg/kg wet							
LCS (1FA1306-BS1)				Prepared: 01/31/22 Analyzed: 02/01/22						
Lead, total	50.8	5.0	mg/kg wet	60.0000		84.7	80-120			
Matrix Spike (1FA1306-MS1)		**Source: 1FA2226-06**		Prepared: 01/31/22 Analyzed: 02/01/22						
Lead, total	118	5.0	mg/kg dry	65.3354	466	NR	75-125			QM-07
Matrix Spike Dup (1FA1306-MSD1)		**Source: 1FA2226-06**		Prepared: 01/31/22 Analyzed: 02/01/22						
Lead, total	384	5.0	mg/kg dry	63.3351	466	NR	75-125	106	20	QM-07
Post Spike (1FA1306-PS1)		**Source: 1FA2226-06**		Prepared: 01/31/22 Analyzed: 02/01/22						
Lead, total	8.11		mg/kg dry	4.00000	4.09	101	80-120			
Batch 1FB0068 - EPA 3050B Digestion										
Blank (1FB0068-BLK1)				Prepared: 02/02/22 Analyzed: 02/03/22						
Lead, total	ND	5.0	mg/kg wet							
LCS (1FB0068-BS1)				Prepared: 02/02/22 Analyzed: 02/03/22						
Lead, total	54.8	5.0	mg/kg wet	60.0000		91.3	80-120			
Matrix Spike (1FB0068-MS1)		**Source: 1FA2226-06RE1**		Prepared: 02/02/22 Analyzed: 02/03/22						
Lead, total	91.6	5.0	mg/kg dry	66.2265	94.7	NR	75-125			QM-07
Matrix Spike Dup (1FB0068-MSD1)		**Source: 1FA2226-06RE1**		Prepared: 02/02/22 Analyzed: 02/03/22						
Lead, total	83.8	5.0	mg/kg dry	68.5912	94.7	NR	75-125	NR	20	QM-07

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Terracon Environmental-Bettendorf	Project: Clinton County	Reported
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Bettendorf, IA 52722	Project Manager: Joshua F. Cox	

Determination of Total Metals - Quality Control

Keystone Laboratories, Inc. - Newton

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1FB0068 - EPA 3050B Digestion										
Post Spike (1FB0068-PS1)	**Source: 1FA2226-06RE1**			Prepared: 02/02/22 Analyzed: 02/03/22						
Lead, total	5.0		mg/kg dry	4.00000	0.8	105	80-120			

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Terracon Environmental-Bettendorf 870 40th Ave Bettendorf, IA 52722	Project: Clinton County Project Number: 07207086 T11 Project Manager: Joshua F. Cox	Reported 02/09/22 19:24

Certified Analyses Included in This Report

Method/Matrix	Analyte	Certifications
EPA 6010B in Sludge		
	Lead, total	SIA1X,KS-NT
EPA 6010B in Soil		
	Lead, total	SIA1X,KS-NT
EPA 8260B in Soil		
	Chloromethane	KS-NT,SIA1X
	Vinyl Chloride	KS-NT,SIA1X
	Bromomethane	KS-NT,SIA1X
	Chloroethane	KS-NT,SIA1X
	1,1-Dichloroethylene	KS-NT,SIA1X
	Acetone	KS-NT,SIA1X
	Carbon Disulfide	KS-NT,SIA1X
	Methylene Chloride	KS-NT,SIA1X
	trans-1,2-Dichloroethylene	KS-NT,SIA1X
	Methyl-t-butyl Ether (MTBE)	KS-NT,SIA1X
	1,1-Dichloroethane	KS-NT,SIA1X
	cis-1,2-Dichloroethylene	KS-NT,SIA1X
	2-Butanone (MEK)	KS-NT,SIA1X
	Chloroform	KS-NT,SIA1X
	1,1,1-Trichloroethane	KS-NT,SIA1X
	Carbon Tetrachloride	KS-NT,SIA1X
	Benzene	KS-NT,SIA1X
	1,2-Dichloroethane	KS-NT,SIA1X
	Trichloroethylene	KS-NT,SIA1X
	1,2-Dichloropropane	KS-NT,SIA1X
	Bromodichloromethane	KS-NT,SIA1X
	cis-1,3-Dichloropropene	KS-NT,SIA1X
	4-Methyl-2-pentanone (MIBK)	KS-NT,SIA1X
	Toluene	KS-NT,SIA1X
	trans-1,3-Dichloropropene	KS-NT,SIA1X
	1,1,2-Trichloroethane	KS-NT,SIA1X
	Tetrachloroethylene	KS-NT,SIA1X
	2-Hexanone (MBK)	KS-NT,SIA1X
	Dibromochloromethane	KS-NT,SIA1X
	Chlorobenzene	KS-NT,SIA1X
	Ethylbenzene	KS-NT,SIA1X
	Xylenes, total	KS-NT,SIA1X
	Bromoform	KS-NT,SIA1X
	1,1,2,2-Tetrachloroethane	KS-NT,SIA1X
	1,3-Dichlorobenzene	KS-NT,SIA1X
	1,4-Dichlorobenzene	KS-NT,SIA1X
	1,2-Dichlorobenzene	KS-NT,SIA1X
EPA 8260B in Water		
	Chloromethane	KS-NT,SIA1X
	Vinyl Chloride	KS-NT,SIA1X
	Bromomethane	KS-NT,SIA1X

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Terracon Environmental-Bettendorf 870 40th Ave Bettendorf, IA 52722	Project: Clinton County Project Number: 07207086 T11 Project Manager: Joshua F. Cox	Reported 02/09/22 19:24

	Chloroethane	KS-NT,SIA1X
	1,1-Dichloroethylene	KS-NT,SIA1X
	Acetone	KS-NT,SIA1X
	Carbon Disulfide	KS-NT,SIA1X
	Methylene Chloride	KS-NT,SIA1X
	trans-1,2-Dichloroethylene	KS-NT,SIA1X
	Methyl-t-butyl Ether (MTBE)	KS-NT,SIA1X
	1,1-Dichloroethane	KS-NT,SIA1X
	cis-1,2-Dichloroethylene	KS-NT,SIA1X
	2-Butanone (MEK)	KS-NT,SIA1X
	Chloroform	KS-NT,SIA1X
	1,1,1-Trichloroethane	KS-NT,SIA1X
	Carbon Tetrachloride	KS-NT,SIA1X
	Benzene	KS-NT,SIA1X
	1,2-Dichloroethane	KS-NT,SIA1X
	Trichloroethylene	KS-NT,SIA1X
	1,2-Dichloropropane	KS-NT,SIA1X
	Bromodichloromethane	KS-NT,SIA1X
	cis-1,3-Dichloropropene	KS-NT,SIA1X
	4-Methyl-2-pentanone (MIBK)	KS-NT,SIA1X
	Toluene	KS-NT,SIA1X
	trans-1,3-Dichloropropene	KS-NT,SIA1X
	1,1,2-Trichloroethane	KS-NT,SIA1X
	Tetrachloroethylene	KS-NT,SIA1X
	2-Hexanone (MBK)	KS-NT,SIA1X
	Dibromochloromethane	KS-NT,SIA1X
	Chlorobenzene	KS-NT,SIA1X
	Ethylbenzene	KS-NT,SIA1X
	Xylenes, total	KS-NT,SIA1X
	Bromoform	KS-NT,SIA1X
	1,1,2,2-Tetrachloroethane	KS-NT,SIA1X
	1,3-Dichlorobenzene	KS-NT,SIA1X
	1,4-Dichlorobenzene	KS-NT,SIA1X
	1,2-Dichlorobenzene	KS-NT,SIA1X
Iowa OA-2 in Soil		
	Total Extractable Hydrocarbons	SIA1X
SM 2540 G in Soil		
	% Solids	SIA1X

Code	Certifying Authority	Certificate Number	Expires
KS-KC	Kansas Department of Health and Environment-KC	E-10110	04/30/2022
KS-NT	Kansas Department of Health and Environment (NELAP	E-10287	10/31/2022
MO-KC	Missouri Department of Natural Resources	140	04/30/2022
SIA1X	Iowa Dept. of Natural Resources (updated certifica	95	02/01/2024

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Terracon Environmental-Bettendorf	Project:	Clinton County	Reported
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Bettendorf, IA 52722	Project Manager:	Joshua F. Cox	

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QS-02	The spike recovery for this QC sample exceeded established acceptance limits. However, all samples were below the reporting and/or regulatory limit so the data is acceptable.
QS-01	The blank spike recovery and/or blank spike duplicate recovery were outside the established acceptance limits. Batch was accepted based on acceptable MS/MSD/RPD results.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery and/or RPD was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
IS-01	The recovery for this internal standard was outside the established acceptance limits. The analytes associated with this internal standard were re-assigned to another internal standard with a passing recovery that met the method criteria.
D-03	The result for this hydrocarbon is elevated due to the presence of single analyte peak(s) in the quantitation range.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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Terracon Environmental-Bettendorf	Project:	Clinton County	Reported
870 40th Ave	Project Number:	07207086 T11	02/09/22 19:24
Bettendorf, IA 52722	Project Manager:	Joshua F. Cox	

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