Phase II Environmental Site Assessment

Former Sinclair Station-Capri Lounge

Coralville, Johnson County, Iowa

February 22, 2023 | Terracon Project No. 06177109J

EPA Region 7 Brownfields Assessment Grant

Cooperative Agreement # BF-97764301



Prepared for:

CORALVILLE
CITY OF CORALVILLE, IOWA

City of Coralville
1512 7th Street
Coralville, Iowa

Terracon
Explore with us

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

2640 12th Street SW
Cedar Rapids, IA 52404
P (319) 366-8321
F (319) 366-0032
Terracon.com

February 22, 2023

City of Coralville, Iowa
City Hall
1512 7th Street
Coralville, Iowa 52241

Attn: Ms. Scott Larson, P.E.
P: (319) 248-1720
E: slarson@ci.coralville.ia.us

Re: Phase II Environmental Site Assessment for Brownfields
605, 705, and 705.5 2nd Street
Former Sinclair Station-Capri Lounge
Coralville, Johnson County, Iowa
Terracon Project No. 06177109J

Dear Mr. Larson:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Phase II Environmental Site Assessment (ESA) report for the Former Sinclair Station-Capri Lounge site. This assessment was conducted using United States Environmental Protection Agency - Region 7 Brownfields Program funding. This property was previously approved by EPA for expenditure of grant funds and implemented a Property-Specific Sampling and Analysis Checklist (Checklist) approved by the EPA.

This Phase II ESA report presents and evaluates data from recent field activities including the drilling of four borings, installation of temporary monitoring wells and the collection of soil and groundwater samples for chemical analyses. This Phase II ESA provides information specific to the needs of the City of Coralville as part of determining redevelopment potential of the site.

Terracon appreciates this opportunity to perform these services for the City of Coralville. Please contact us at (319) 366-8321 if you have any questions regarding this report.

Sincerely,

Terracon Consultants, Inc.

Daniel M. Green, CGP
Group Manager

Dennis R. Sensenbrenner, PG
Senior Consultant

Table of Contents

1.0 INTRODUCTION 1
- 1.1 Purpose 1
- 1.2 Problem Statement 1
- 1.3 Background 2
- 1.4 Property information and Recent Environmental Reports 2

2.0 Property Description 3
- 2.1 Site Location 3
- 2.2 Natural Setting 3

3.0 Phase II ESA 3
- 3.1 Methodology 4
- 3.2 Deviations from the Checklist 4

4.0 Assessment Results 4
- 4.1 Physical Measurements and Field Screening 4
- 4.2 Field Activities 7
- 4.3 Laboratory Measurements 9

5.0 Field Data Quality 13
- 5.1 Field Audit 13
- 5.2 Precision 13
- 5.3 Representativeness 14
- 5.4 Completeness 14
- 5.5 Comparability 14

6.0 Laboratory Data Quality 14
- 6.1 Precision and Accuracy 15
- 6.2 Representativeness of Laboratory Data 15
- 6.3 Completeness 15

7.0 Comparisons Used in Making the Project Decisions 15
- 7.1 Regulatory Setting 15
- 7.2 Iowa Site-Specific Comparison – Cumulative Risk Calculator 17
- 7.3 Application of the Standards 17

8.0 Primary Project Decisions 18
- 8.1 Primary Project Decision – Soils 18
- 8.2 Primary Project Decision - Groundwater 19

9.0 Secondary Project Decisions 19

10.0 Findings and Conclusions 19

11.0 General Comments 20
- 11.1 Additional Scope Limitations 20
- 11.2 Reliance 20

APPENDICES

Appendix A - Exhibits

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram

Appendix B – Boring Logs and Well Construction Diagrams

Appendix C - Analytical Reports and Chains of Custody

Appendix D - Completed Form C-12

ACRONYMS AND ABBREVIATIONS

ATSDR..... Agency for Toxic Substances and Disease Registry
bgs..... below ground surface
Checklist..... Property-Specific Sampling and Analysis Checklist
City..... City of Coralville, Iowa
EPA..... United States Environmental Protection Agency
EPA 7..... United States Environmental Protection Agency Region 7
EQL..... Estimated Quantitation Limit
ESA..... Environmental Site Assessment
ESC..... Environmental Science Corporation
eV..... electron-volt
FEMA..... Federal Emergency Management Agency
FIRM..... Flood Insurance Rate Map
HAL..... health advisory level
IAC..... Iowa Administrative Code
IARC..... International Agency for Research on Cancer
IDNR..... Iowa Department of Natural Resources
LRP..... Land Recycling Program
LUST..... Leaking Underground Storage Tank
MCL..... Maximum Contaminant Level
MDL..... method detection limit
mg/kg..... milligrams per kilogram, generally equivalent to ppm
mg/L..... milligrams per liter, generally equivalent to ppm
MOA..... memorandum of agreement
MS..... matrix spike
MSD..... matrix spike duplicate
NA..... not applicable
PAH..... polycyclic aromatic hydrocarbons
PID..... photoionization detector
ppm..... parts per million
ppmi..... parts per million isobutylene equivalents
PVC..... polyvinyl chloride
QA..... Quality Assurance
QAPP..... Quality Assurance Project Plan
QC..... Quality Control
RBCA..... Risk-Based Corrective Action
RCRA..... Resource Conservation and Recovery Act
REC..... Recognized Environmental Condition
RPD..... Relative percent difference
SDWA..... Safe Drinking Water Act
SF..... square foot
TDS..... total dissolved solids
TEH..... total extractable hydrocarbons
TSOPs..... Terracon Standard Operating Procedures
µg/L..... micrograms per liter
USGS..... United States Geological Survey
VOCs..... volatile organic compounds

PHASE II ENVIRONMENTAL SITE ASSESSMENT
605, 705, and 705.5 2nd STREET
FORMER SINCLAIR STATION-CAPRI LOUNGE
CORALVILLE, JOHNSON COUNTY, IOWA

EPA REGION 7 BROWNFIELDS ASSESSMENT GRANT
COOPERATIVE AGREEMENT #BF-97764301

Terracon Project No. 06177109J
February 22, 2023

1.0 INTRODUCTION

1.1 Purpose

The purpose of the City of Coralville's Brownfield initiative is to promote area development, commercial activity, and revitalization within the city of Coralville, Iowa (the City). This Phase II ESA is part of the City's evaluation of redevelopment feasibility for the properties located at 605, 705, and 705.5 2nd Street, Coralville, Johnson County, Iowa (Site).

A Phase I Environmental Site Assessment dated August 30, 2022 (Phase I ESA) identified the following Recognized Environmental Conditions (RECs) or Controlled RECs (CRECs) were identified in connection with the site.

- Potential migration of potential releases from Dusty's Precision Auto represents a REC.
- Residual contamination and closure of the former on-site LUST is considered a CREC.

The Phase II ESA field activities were conducted on January 25 and 26, 2023. The Phase II ESA compared soil and groundwater conditions to Statewide Standards (SWS) established by the IDNR under 567 IAC Chapter 137: *Iowa Land Recycling Program and Response Action Standards* implemented by IDNR through the Land Recycling Program.

The Phase II ESA was conducted in accordance with Terracon's Checklist dated December 19, 2022 and was approved by EPA Region 7 on January 17, 2023. Funding for the work is provided by the EPA petroleum and hazardous substances assessment grants under Cooperative Agreement No. BF-97764301 (the Grant).

1.2 Problem Statement

Data collected using the EPA grant funds are subject to specific QA/QC requirements. The Phase II ESA must evaluate the observed chemical concentrations relative to the primary project decision, "Is the property environmentally impacted?" The primary project decision consists of a comparison of Site conditions to statewide standards.

This report discusses other secondary, but important, decisions affecting feasibility for redevelopment, including the following.

- Can the property be considered feasible for "normal" redevelopment without environmental remedy?
- Can the property be reasonably considered for redevelopment if environmental remedy is required?

1.3 Background

The City's Brownfield program is mature, since the initial Grant award in 1998, significant planning, assessment, and preparation have occurred. Specific to this project:

- On March 12, 2014, Terracon submitted the Quality Assurance Project Plan, Revision 1 for the Project. This document provides a baseline for planning and implementation of Phase II ESAs and evaluation activities. The revised QAPP was approved by the EPA. This QAPP remains in use by agreement with the EPA.
- On December 19, 2022, Terracon submitted a Property-Specific Sampling and Analysis Plan (Checklist) outlining the investigation at this Site to EPA Region 7 for review and comment. This document guides the assessment of the Site using the procedures documented in the QAPP. The Checklist was approved by the EPA Region 7 on January 17, 2023.

1.4 Property information and Recent Environmental Reports

The site consists of approximately 2.1-acres located at 605, 705, and 705 ½ 2nd Street in Coralville, Johnson County, Iowa. The site has been developed with east and west parking lost that covers the entirety of the site. The site was unoccupied; however, a food truck does operate on the southern portion of the eastern parking lot. Not included in the site is an access road that divides the east and west parking lots.

The site location and surrounding area is provided in Appendix A, Exhibit 1. Information obtained as part of the Phase I ESA indicates the site sat vacant and unimproved until 1963, when a commercial building was constructed on the western portion of the site and two commercial buildings were constructed on the eastern portion of the site. The eastern buildings were occupied by a gas station until 2003, and the western building was occupied by Capri Motor Lodge until 1991 when it was converted to a multi-tenant residential building. In 2006, the eastern buildings were razed, but a parking lot remained. By 2019, the western buildings were also razed.

The area directly north of the site was vacant with dwellings further north of the site in 1937. Additional dwellings were constructed northwest of the site in 1951 and multiple structures including a parking lot were constructed northeast of the site by 1970. In 2008, the dwellings northwest of the site were razed and replaced with commercial buildings in 2015. The area east of the site was vacant until commercial structures were constructed in 1970. The commercial structures east of the site have historically consisted of an auto sales and landscaping business along with other retails stores. The area south of the site was vacant followed by a railroad in 1937. The area south of the site was improved with multiple commercial buildings by 1963. These commercial buildings have historically been occupied by restaurants, a propane company, a bank,

and other retail businesses. The area west of the site sat vacant until it was graded in 1951. Dwellings were constructed northwest of the site in 1951, and by 1963, commercial buildings were constructed west of the site. These commercial structures have historically been occupied with an auto repair service and other retail businesses. An apartment building and a corresponding parking lot were constructed northwest of the site in 2015.

2.0 Property Description

2.1 Site Location

The Site location is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. A diagram of the Site with the Phase II ESA Soil Borings/Sampling Locations is included as Exhibit 2 of Appendix A.

2.2 Natural Setting

2.2.1 Soil Conditions

According to information obtained as part of the Phase I ESA, soils in the area consist of the Fayette Silt Loam and Anthroportic Udorthents series. Fayette Silt Loam soils are generally found on hillslopes. These soils are well drained and do not have a hydric soil rating. A typical stratum of these soils is comprised of silt loam from 0 - 14 inches, followed by silty clay loam from 14 - 47 inches, followed by silt loam from 47 – 79 inches. Anthroportic Udorthents soils are moderately well drained and are unranked in terms of hydric soil ratings. A typical stratum is comprised of loam throughout.

2.2.2 Geologic Conditions

As presented in the Phase I ESA, the geologic conditions at the Site consist of the Cedar Valley Limestone, primarily consisting of limestone, secondarily as dolostone (dolomite). This formation is described as consisting of finely crystalline and clastic limestone and coral and stromatoporoid-rich zones (upper part); brown, dolomitic limestone with biostromes of corals and stromatoporoids (middle part) and Argillaceous, fossiliferous limestone (lower part). Landforms are composed primarily of glacial drift or alluvial deposits.

3.0 Phase II ESA

The property-specific sampling design was set forth in the Checklist that was previously approved by EPA Region 7. Terracon completed the following tasks as part of the Phase II ESA.

- Advancement of five soil borings, designated B-1 through B-5, at the approximate locations shown on Exhibit 2 in Appendix A,
- Continuous field screening of soils from the soil borings using a PID and field screening/assessment techniques,

- Collection of soil samples for laboratory analysis; soil samples were collected from a shallow depth (less than two feet below grade) and a deeper interval (greater that two feet below grade) based on the field screening results and/or other field observations,
- Installation of temporary monitoring wells in each soil boring,
- Collection of water samples from the temporary wells using a peristaltic pump,
- Collection of duplicate samples and blanks as part of quality assurance and quality control protocols, and
- Submittal of soil and groundwater samples to Eurofins/Test America Laboratories, Inc. for analysis.

3.1 Methodology

Terracon followed TSOPs for sampling, physical measurements, equipment cleaning, and equipment calibration. The TSOPs that accompanied the sampling team incorporate industry protocols, internal procedures, and equipment operation manuals. The EPA Region 7 approved Checklist specified the appropriate TSOPs for use at the Site in accordance with the approved QAPP. Terracon recorded discrepancies, clarifications, and corrective actions for QA/QC, if applicable, in the field logbook. The results of a field audit are described in Section 5.1.

3.2 Deviations from the Checklist

There were no deviations from the approved Checklist.

4.0 Assessment Results

4.1 Physical Measurements and Field Screening

Brief lithologic descriptions, PID readings and excavation descriptions are provided in the table below.

Table 1 – Soil Descriptions, PID, and Sample Information

Boring/Temporary Monitoring Well ID	Range of PID Readings (ppm[1])	Sample Intervals (feet bgs[2])	General Soil Description (feet bgs)	Depth of boring (feet bgs)
B-1/TMW-1	0.0 – 0.4	0 – 2 5 – 6	0 – 0.4 asphalt 0.4 – 0.6 crushed limestone 0.6 – 0.8 fine to coarse sand, brown/gray 0.8 – 4.0 lean clay, trace gravel, gray/brown 4.0 – 7.9 sandy lean clay, brown 7.9 – 10 very sandy silt, moist, gray/brown 10 – 11.8 silt with occasional sand seams, gray 11.8 – 16 silt, gray	16
B-2/TMW-2	0.0 – 0.4	0 – 2 8 – 9	0 – 0.4 asphalt 0.4 – 0.6 crushed limestone 0.6 – 3.8 lean clay, trace gravel, gray/brown 3.8 – 4.5 fine to coarse sand, gray 4.5 – 9 silty clay, gray/brown 9 – 14 fine to coarse sand, gray	14

[1] ppm = parts per million
[2] bgs = below ground surface

Boring/Temporary Monitoring Well ID	Range of PID Readings (ppm[1])	Sample Intervals (feet bgs[2])	General Soil Description (feet bgs)	Depth of boring (feet bgs)
B-3/TMW-3	0.0 – 0.6	0 – 2 4 – 5	0 – 0.4 asphalt 0.4 – 0.6 crushed limestone 0.6 – 6.5 very sandy silt, gray 6.5 – 8.5 silty clay, gray 8.5 – 10 very sandy silt, gray, moist 10 – 15.8 fine to coarse sand, gray	16
B-4/TMW-4	0.0 – 798.4	0 – 2 12 – 13	0 – 0.4 asphalt 0.4 – 0.6 crushed limestone 0.6 – 2.5 lean clay, trace gravel, gray 2.5 – 3.3 lean clay, dark brown 3.3 – 10 very sandy silt, brown, moist 10 – 10.5 fine to coarse sand, brown 10.5 – 12 fine to coarse sand, trace silt, gray, moist, discoloration and strong odor 12 – 16 fine to coarse sand with occasional silt layers, gray	16

Boring/Temporary Monitoring Well ID	Range of PID Readings (ppm[1])	Sample Intervals (feet bgs[2])	General Soil Description (feet bgs)	Depth of boring (feet bgs)
B-5/TMW-5	0.7 – 876.1	0 – 2 11 – 12	0 – 0.2 asphalt 0.2 – 0.6 crushed limestone 0.6 – 1 sandy lean clay, trace gravel, brown/gray 1 – 6 silty clay, trace gravel, gray (strong odor and discoloration at 4.5 to 6 feet) 6 – 11.5 very sandy silt, trace clay, brown/gray, moist 11.5 – 13.5 fine to coarse sand, gray 13.5 – 15 sandy lean clay, brown/gray 15 – 16 sandy silt, brown/gray	16

4.2 Field Activities

Field activities were conducted on January 25 and 26, 2023 by Terracon environmental personnel. As part of the approved scope of work, seven soil borings were advanced on the Site in accordance with the Single-Point Judgmental Design prescribed in Section B1.5.1.2 of the approved QAPP.

Soil borings were advanced using a CME 550 all-terrain vehicle (ATV) with 3.25-inch hollow stem augers and soil samples were collected using split spoon samplers. Terracon field personnel were HAZWOPER trained and all operations were completed under the supervision of a Terracon environmental professional. Soil samples were collected at approximate one-foot intervals for field screening, soil logging and sample collection in accordance with the approved Checklist. Dedicated sampling equipment included disposable latex gloves, disposable resealable plastic bags and laboratory supplied glassware.

Groundwater samples were collected from the Temporary Monitoring Wells using a peristaltic pump and new, dedicated polyethylene tubing, disposable latex gloves and laboratory supplied glassware.

4.2.1 Field Screening

Terracon field-screened the soil samples for organic vapors using a Mini Rae 2000 PID in accordance with TSOP E.550. This device provides a direct reading in ppm of volatile organic vapors. The PID is a nonspecific total vapor detector and cannot be used to identify unknown substances; it can only provide a relative qualitative indicator of ionizable compounds in air.

Terracon calibrated the PID in accordance with the manufacturer's recommendations before and after the field activities with 100 ppm isobutylene. Upon removal of the sampler from the borehole, Terracon cut a portion of each sample and sealed it in a plastic soil bag. After a stabilization period, Terracon screened the headspace above the soil using the PID equipped with a 10.6 eV ultraviolet lamp. The range of PID results detected in each boring are included in Table 1, above, and on the boring logs in Appendix B.

4.2.2 Soil and Groundwater Sampling

Terracon's soil sampling program involved submitting two soil samples from each boring for laboratory analysis, a shallow soil sample collected from zero to two feet bgs and a deep sample collected from greater than two feet bgs at the discretion of the environmental field personnel. Deep soil samples were collected in each boring from depths where the PID readings exhibited the highest value, if applicable. Where vapors were not detected during field screening, deep soil samples were collected from the capillary fringe zone, from the interval exhibiting a change in lithology, or from the bottom of the boring, based on the field professional's judgment. Soil samples were designated B-1, B-2, B-3, B-4, and B-5 with the number corresponding to the boring where the sample was collected. Sample intervals are indicated on the chain of custody forms included with the laboratory data included in Appendix C. Duplicate soil samples designated Dup-1 and Dup-2 were collected from boring B-4 at the 0-2 and 12-13 sample depths respectively.

Groundwater samples were collected using a low flow peristaltic pump and new, disposable polyethylene tubing in accordance with TSOP E.2000. Groundwater samples were given designations according to the borings/temporary monitoring wells from which they were collected; groundwater sample TMW-1 was collected from the boring B-1, etc. A duplicate groundwater sample designated Dup-3 was collected from TWM-5 for laboratory analysis.

A decontamination blank was collected from non-dedicated sampling equipment, which included the down-hole split-spoon sampler. Following sampling and decontamination activities, Terracon applied and collected deionized water and placed it into laboratory provided containers. The decontamination blank samples were relinquished to Eurofins/TestAmerica Laboratories in Cedar Falls, Iowa for standard laboratory analysis.

Excluding the decontamination blank, soil and groundwater samples were collected in accordance with TSOPs E.468 and E.470, respectively, and placed in laboratory prepared glassware, labeled with the time, date and sample designation, and then placed on ice in a cooler which was secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to Eurofins/TestAmerica Laboratories in Cedar Falls, Iowa for standard turnaround laboratory analysis.

A trip blank prepared by the analytical laboratory accompanied the sample containers (including the decontamination blank sample) during transport to and from the field. This trip blank then accompanied the samples to the laboratory to evaluate for potential cross-contamination between samples.

4.3 Laboratory Measurements

Soil and groundwater samples were analyzed for concentrations of:

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

The trip blank was analyzed for concentrations of VOCs to evaluate potential cross-contamination between samples during transport. The laboratory report and executed chain-of-custody forms are provided in Appendix C.

4.3.1 Laboratory Reporting Limits

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. The Reporting Limits used by the laboratory were generally below the primary action limits (SWS) used for this Phase II ESA. Some VOCs have extremely low risk thresholds, below the laboratory Reporting Limits. The laboratory therefore reported VOCs concentrations to the Method Detection Limit as estimated values below the instrument calibration range (below the laboratory Reporting Limits). VOC concentrations between the Reporting Limit and Method Detection Limit are J-coded to indicate a possible bias because the result is below the calibrated range of the instrument and are estimated results. Analytes that were not measured to exceed the Reporting Limit or Method Detection Limit in soil and groundwater samples were assumed not present.

4.3.2 VOC Analysis

4.3.2.1 Background

The ATSDR describes VOCs as substances containing carbon and varying proportions of other elements such as hydrogen, oxygen, fluorine, chlorine, bromine, sulfur, or nitrogen. These substances are commonly used as solvents (paint thinners, lacquer thinner, degreasers, and dry-cleaning fluids) or in petroleum hydrocarbon fuels (e.g., gasoline). When released into the atmosphere, VOCs can have adverse effects on human health. Some health effects from overexposure to VOCs are dizziness, headaches, and nausea, and long-term exposures to certain VOCs may also cause cancer. VOCs readily become vapors or gases at room temperature, and project methods provided a level of care in the field and laboratory to avoid significant loss of VOCs before analysis.

4.3.2.2 Results

Soil results are presented in Table 2, below, shows detected concentrations in samples collected from the soil borings. Results are compared to the Land Recycling Program Statewide Standards (SWS) for soil and groundwater (Iowa Administrative Code [IAC] Chapter 137) and Tier 1 Risk Based Corrective Action Levels (IAC Chapter 135) and will be referred to as the SWS and Tier 1 Action Levels respectively in this report.

Table 2 – VOC Concentrations Reported for Soil Samples (mg/Kg[3])

Boring/Sample ID	B-4	B-5	Dup-2	SWS	Tier 1 Action Levels
Sample Interval	12-13	11-12	B-4, 12-13		
Parameter					
Ethylbenzene	4.48	<0.0118	4.22	7600	15
n-Butylbenzene	1.86	0.0705	1.56	3800	NA
Toluene	3.06	<0.0118	**3.48**[4]	6100	3.2
Naphthalene	2.5	<0.0592	1.96	1100	NA
Hexane	4.36	<0.0592	5.67	4600	NA
1,2,4-Trimethylbenzene	14.9	0.0417	12.1	760	NA
Xylenes, Total	21.7	<0.0237	20	15000	52
sec-Butylbenzene	0.32	0.0245	0.256	NA	NA
Isopropylbenzene	0.534	<0.0118	0.461	7600	NA
n-Propylbenzene	2.54	0.0352	2.16	7600	NA
p-Isopropyltoluene	0.145	0.0157	<0.126	NA	NA
1,3,5-Trimethylbenzene	4.54	0.02	3.76	760	NA

As shown in Table 2, several VOCs were detected in the deep soil samples collected from borings B-4 and B-5 as well as the duplicate of the B-4 deep sample (Dup-2). Of the detected VOCs, only toluene in the Dup-2 sample exceeded the most stringent Tier 1 Action Level. The remaining detected concentrations of VOCs in the soil samples were below the SWS and/or Tier 1 Action Levels.

Results presented in Table 3, below, show the detected concentrations of VOCs in the groundwater samples collected from the temporary monitoring wells. The SWS for a Protected Groundwater Source (PGWS) and Non-Protected Groundwater Source (NPGWS) and Tier 1 Action Levels are presented in the table for comparison.

[3] mg/Kg = milligrams per kilogram
[4] Bolded = exceedance of SWS or Tier 1 Action Level

Table 3 – VOC Concentrations Reported for Groundwater Samples (mg/L[5])

Boring/Sample ID / Parameter	TMW-4	TMW-5	Dup-3	SWS for a PGWS	SWS for a NPGWS	Tier 1 Action Levels
Benzene	**1.9**	0.00118	0.00117	0.005	0.064	0.005
Ethylbenzene	**1.36**	0.00821	0.00677	0.7	3.5	0.7
Methyl tert-butyl ether	<0.01	0.00632	0.00687	0.21	1	NA
n-Butylbenzene	0.0451	<0.001	0.00173	0.35	1.8	NA
Toluene	**3.95**	0.00151	0.00149	1	5	1
Naphthalene	**0.49**	0.00582	<0.005	0.1	0.7	NA
Hexane	0.173	<0.001	<0.001	0.42	2.1	NA
1,2,4-Trimethylbenzene	**1.16**	0.0311	0.0254	0.07	0.35	NA
Xylenes, Total	6.44	0.0125	0.0103	10	50	10
Isopropylbenzene	0.0633	0.00249	0.002	0.7	3.5	NA
n-Propylbenzene	0.193	0.00653	0.00539	3.4	17	NA
1,3,5-Trimethylbenzene	**0.311**	0.00943	0.0076	0.07	0.35	NA

As shown in Table 3, several VOCs were detected in the groundwater samples collected from borings B-4 (TMW-4) and B-5 (TMW-5) as well as the duplicate sample collected from TMW-5 (Dup-3). Of the detected VOCs, benzene, ethylbenzene, toluene, naphthalene, 1,2,4 trimethylbenzene, and 1,3,5 trimethylbenzene were detected at concentrations above applicable SWSs and/or the most stringent Tier 1 Action Levels. The remaining detected concentrations of VOCs in the groundwater samples were below the SWSs and/or Tier 1 Action Levels.

The City of Coralville has an Ordinance (Ordinance 90.07) prohibiting in use of potable water wells if public water supply is available at any abutting public street, alley or right of way. Based on the Ordinance and our understanding of potable water distribution in the City, Terracon believes the non-protected SWS is the applicable standard for the site.

4.3.3 Petroleum Hydrocarbons

4.3.3.1 Background

According to the ASTDR, total petroleum hydrocarbons are the measurable amount of hydrogen and carbon containing compounds originating from crude oil. Soil and groundwater samples were analyzed by Iowa Method OA-2 for concentrations of gasoline, diesel, and oil range organics, as well as other "total extractable hydrocarbons" with chromatographic responses that are uncharacteristic of typical fuel patterns.

[5] mg/L = milligrams per liter

4.3.3.2 Results

Table 4, below, shows detected concentrations in soil samples collected from the soil borings. Results are compared to the SWS and Tier 1 Action Levels respectively in this report.

Table 4 – TEH Concentrations Reported for Soil Samples (mg/Kg)

Boring/Sample ID	B-1	B-1	B-2	B-2	B-3	B-3	B-4	B-4	B-5	B-5	Dup-1	Dup-2	SWS	Tier 1 Action Levels
Sample Interval	0-2	5-6	0-2	9-10	0-2	4-5	0-2	12-13	0-2	11-12	B-4, 0-2	B-4, 12-13		
Parameter														
Gasoline	<9.7	<9.8	<9.6	<9.92	<9.81	<9.84	<9.65	2080	<9.7	577	<9.77	1710	NA	NA
Waste Oil	15.1	14.7	14.7	<9.92	42.6	444	54.8	29.4	54.6	<9.92	45.8	31.0	9400	NA

As shown in Table 4, gasoline range organics were detected in the deep samples collected from borings B-4 and B-5 (12-13 feet and 11-12 feet respectively). Gasoline range organics were also reported in the duplicate soil sample of deep sample collected from boring B-4 (Dup-2). Presently a SWS or Tier 1 Action Level has not been established for gasoline range organics in soil. Waste oil range organics were detected in all of the soil samples except for the deep soil sample collected from boring B-2 (9-10 feet) and the deep soil sample collected from boring B-5 (11-12 feet). The detected concentrations of waste oil range organics are below the established SWS. A Tier 1 Action Level for waste range organics in soil has not been established.

Table 5, below, shows the detected concentrations of gasoline and waste oil range organics in the groundwater samples collected from the temporary monitoring wells. The SWS for a PGWS and NPGWS and Tier 1 Action Levels are presented in the table for comparison.

Table 5 – VOC Concentrations Reported for Groundwater Samples (mg/L)

Boring/Sample ID	TMW-4	TMW-5	Dup-3	SWS for a PGWS	SWS for NPGWS	Tier 1 Action Levels
Parameter						
Gasoline	46.4	2.32	3.07	NA	NA	NA
Waste Oil	<0.288	<0.3	**0.673**	0.73	15	0.4

As shown in Table 5, gasoline range organics were reported in the groundwater samples collected from borings B-4 and B-5 (TMW-4 and TMW-5 respectively) and the duplicate sample collected from TMW-5 (Dup-3). Presently a SWS or Tier 1 Action Level has not been established for gasoline range organics in groundwater. Waste oil range organics were detected in the duplicate sample collected from TMW-5 (Dup-3) only. The reported concentration of waste oil does not exceed the PGWS or NPGWS SWS but does exceed the most stringent Tier 1 Action Level.

5.0 Field Data Quality

To assess whether QA objectives for this Phase II ESA have been achieved, the following QA parameters were considered: precision, representativeness, comparability, and completeness. Accuracy is evaluated in the laboratory by comparing a measured value in a known sample to the actual value of the known sample as described in Section 6.1. Sensitivity is also a function of the laboratory and is discussed in Section 5.3.

5.1 Field Audit

In accordance with the QAPP, a field methods audit was performed during the field services. The field methods audit was performed on January 25, 2023. The field methods audit resulted in one completed Form C.12 (Quality Control Field Audit Corrective Action Report). The field audit did not indicate deviations from the TSOPs included in the Checklist and is included as Appendix D.

5.2 Precision

Sampling precision is evaluated using the RPD between an actual sample and a duplicate sample. The RPD is the difference between the values reported for two samples, such as a field sample and its duplicate, calculated as a percent relative to the mean of the two values using equation (1).

$$RPD = \frac{|D_1 - D_2|}{(D_1 + D_2)/2} \times 100 \quad (1)$$

D_1 = First sample value D_2 = Second sample value (duplicate)

As provided in Section A7.2.1.1 of the QAPP, the RPD objective for a duplicate soil sample is within 35% of the concentration reported for the original soil sample. Section A7.2.1.1 of the QAPP specifies an RPD objective of within 20% for aqueous field duplicates.

Duplicate soil samples were collected from a shallow interval (0-2 feet bgs) and deep interval (12-13 feet bgs) from boring B-4 and labeled Dup-1 and Dup-2 respectively. A duplicate of the groundwater sample from TMW-5 was collected for laboratory analysis to evaluate field precision (Dup-3). RPD calculations for the soil sample duplicates (Dup-1 and Dup-2) are within the precision criteria of 35% specified in the QAPP. The RPD measurements for the duplicate groundwater sample (Dup-3) are within and just above the specified precision criteria of 20%. While the precision criteria for the groundwater samples were not strictly met, most RPD calculations were within 1% and 2% of the threshold for acceptance. Consequently, Terracon believes the groundwater samples to be acceptable for consideration of primary project decisions.

It should be noted that waste oil range organics, naphthalene, and n-butylbenzene were only reported in the duplicate groundwater sample (Dup-3) or in the original sample collected from TMW-5 and not both. Therefore, RPD calculations for these analytes could not be made.

5.3 Representativeness

Terracon has evaluated the Phase II ESA activities to document the degree to which the sample data represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. The QA goal was to have the samples and measurements representative of the media sampled.

A trip blank prepared by the analytical laboratory accompanied the sample containers, including the decontamination blank, during transport to the field and on the trip to the laboratory. The trip blank was analyzed for concentrations of VOCs to evaluate potential cross-contamination between samples. No VOCS were detected in the trip blank or field samples. The VOC analysis of the samples and trip blank indicates cross contamination of VOCs did not occur.

A decontamination blank was collected and submitted to the laboratory for analysis of VOCs and TEH. VOCs and TEH were not detected in the decontamination blank.

5.4 Completeness

According to Section A7.2.4 of the QAPP, although a completeness goal of 100 percent is desirable, an overall completeness goal of 90 percent may be realistically achieved under normal field sampling and laboratory analysis conditions.

Fourteen soil samples and one duplicate were included in the checklist and were successfully collected in the field. Five groundwater samples and one duplicate were included in the checklist and were successfully collected in the field.

The Checklist outlined a total of 5 groundwater and 10 soil analytical methods (excluding duplicates and blanks) as part of the investigation. Therefore, Terracon estimates completeness of the investigation as defined in the Checklist at 100 percent.

5.5 Comparability

To produce comparable data, the units specified for analytical results obtained during the field activities are consistent throughout this project and standardized analytical methods have been used for each parameter.

6.0 Laboratory Data Quality

The laboratory completed verification of laboratory processes and data and delivered a data quality package to the Terracon Project Manager. The laboratory report and the QC information contained therein document compliance with the approved QAPP. Terracon reviewed the information and deemed the laboratory information of sufficient quality to support the project decisions.

8.2 Primary Project Decision - Groundwater

Based on measured parameters in groundwater, Site conditions may not be suitable at this time for unrestricted land use. The groundwater sample from boring B-4 (TMW-4) reportedly had benzene, ethylbenzene, naphthalene, toluene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene at concentrations above applicable SWSs and/or Tier 1 Action Levels. Based on measured conditions of environmental impairment, the property is impacted and would require additional evaluation above that normally exercised in considering a property as feasible for redevelopment.

9.0 Secondary Project Decisions

The data collection and analysis have been conducted to levels sufficient to support the primary project decision for soil and groundwater. The primary decision criteria have determined that soil and groundwater at the site is environmentally impaired above statewide standards and Tier 1 Action Levels and may not be suitable for unrestricted land use if the impairment does not undergo corrective action or control of potential chemical risk. The IDNR has approved City Ordinance No. 90.07 which prohibits any type of well if public water is available at any abutting street, alley or right-of-way. City Ordinance No. 90.07 may serve as an institutional control to preclude future groundwater use in the area.

10.0 Findings and Conclusions

Terracon has conducted field work and evaluation for the Phase II ESA portion of the Project for this property. Terracon makes the following conclusions:

- The Phase II ESA was conducted in a manner consistent with the QAPP, approved by EPA.
- The objectives of the Checklist were achieved to 100 percent.
- This Phase II ESA has produced data of a quality sufficient to make the project decisions set forth in the approved QAPP.
- Consistent with the findings of the Phase I ESA, this Phase II ESA did not identify conditions of imminent threat or public hazard from hazardous substances or petroleum.
- This Phase II ESA has determined that the RECs identified in the 2022 Phase I ESA are realized as measurable chemical impacts on the Site.
- For soil and groundwater, the primary project decision has determined that the site may not be suitable for unrestricted redevelopment without remedy. The secondary project decision has reaffirmed that the Site is environmentally impaired in relation to groundwater, and City Ordinance No. 90.07 may serve as an institutional control to preclude future groundwater use in the area.
- The Phase II ESA supports the City's due diligence efforts to avail themselves of the Brownfields liability defenses for a bona fide prospective purchaser as set forth in the Small Business Liability Relief and Brownfields Revitalization Act of 2002.
- Minor continuing obligations, such as zoning and/or land use controls, will be required in support of these defenses.

QUALITY CONTROL FIELD AUDIT CORRECTIVE ACTION REPORT
EPA 7 Brownfields Assessment
Terracon Project No. 06177109J

Property ID: 06177109J

Property Name: Former Capri Lounge/Sinclair
605 2nd Street, Coralville, Iowa

Auditor Name: Jordan M. Smith **Title:** Staff Scientist

Signature: Jordan M. Smith **Date/Time:** 1-25-23/0830

Activity Audited (Give specific QAPP, Checklist or TSOP reference):

Position/Name With Immediate Responsiblity For Compliance: Jordan Smith

Check and Initial As Appropriate:

- ☑ **Field Activity**
- ☐ **Management Activity**
- ☐ **File/Record Activity**
- ☑ **Found Compliant**
- ☐ **Found Non-Compliant**
- ☐ **Corrected, Copy To QA**

Describe Briefly:

Corrective Action Response (Describe in detail the remedy, including response consistent with Terracon Management Plan for reporting. Use Back If Needed):

No deviations noted.

Reported To: Dan Green **Date/Time:**

Project Title: Project Manager **Response ID:**

Check and Initial As Appropriate:

- ☐ Critical Measurement
- ☑ Qualitative Measurement
- ☐ Data Loss or Can't Be Repeated
- ☐ Entered To Field Logbook