

**PROPERTY-SPECIFIC SAMPLING AND ANALYSIS CHECKLIST**  
*For Use Only With Designated Part 1 and Part 2 of Project Plan*



Cedar Rapids And Iowa City Railroad (CRANDIC) Coal Storage Area  
1<sup>ST</sup> AVENUE REVITALIZATION PROJECT  
BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT  
EPA Region 7  
Version 1.3 August 9, 2000  
Coralville, Iowa  
Project No. 42997048 - E

**I. APPROVALS**

1a. PROJECT MANAGER \_\_\_\_\_ Date \_\_\_\_\_  
David E. Koch, Iowa CGP#1200

1b. PROJECT MANAGER \_\_\_\_\_ Date \_\_\_\_\_  
City of Coralville

1c. USEPA REGION 7  
PROJECT MANAGER \_\_\_\_\_ Date \_\_\_\_\_  
Cecelia Tapia

**II. DQO/QAPP REFERENCES FOR USE AND REFERENCED BELOW**

Part 1 of Project Plan, Revision No. v1.2

Part 2 of Project Plan, Revision No. v2.3

DQO/QAPP Field Copy to accompany Field Captain or Designee to property.

**III. PROPERTY IDENTIFICATION**

2. Pilot Study Identifiers:  Zone 1  Zone 2  Zone 3  Zone 4

55 Pilot Phase I Score (Part 1, Inset 2) 2 Pilot Phase I Ranking (Part 1, 5.2)

3. City Subdivision(s): Portions of Government Lot 2 05-79-6

4. Parcel Number(s): None Subparcel Numbers: None

5. Common Address: CRANDIC Property, East 7<sup>th</sup> Street to ~East 5<sup>th</sup> Street Place

6. Project ID Number(s): 2 Phase I ESA ID Number: 42997048D

7. Access Agreement Signed By Owner and Attached  No (Pending)  Yes

8. Have Property Conditions changed since Phase 1 ?  No  Yes, Discuss & Attach.

**IV. STATEMENT OF RECOGNIZED ENVIRONMENTAL CONDITION WITH POTENTIAL TO PRODUCE ENVIRONMENTAL IMPAIRMENT** (From Phase 1 ASTM Environmental Site Assessment Report identified above):

Phase I ESA Report File identifier: N:\A\_PROJECT\1999-ri\42997048\reports\1STAVENUE\213\1008129001.doc

Terracon identified three (3) recognized environmental conditions per ASTM E1527 guidance for the subject site. These conditions are listed below and further described in detail in Section 7.2 of the July 17, 2000 Phase I assessment report.

1. **Potential Contamination Indicator:** As defined by ASTM process, a coal storage pile located on the northern portion of the site was noted as a potential contamination indicator. Based on estimated field dimensions, the volume of the pile was estimated at about 20,000 cubic yards (CY). According to the EPA<sup>1</sup>, non-combustion wastes associated with coal storage and use can include the following pollutants: chlorine, organic chemicals, metals, pH, TSS, total dissolved solids (TDS), ferrous sulfate, sulfuric acid, metals, and pyrite. Specific to coal piles and their associated runoff, EPA indicates that storm water reacting with minerals in the coal produce a leachate impacted with ferrous sulfate and sulfuric acid. The low pH of the resultant leachate accelerates dissolution of metals in the coal. Based on historical research, the subject site may have been used for coal storage since the 1930s. Staining in retention areas indicates runoff from the coal pile has occurred.



In addition to the coal storage identified at field reconnaissance, historical photography indicates coal may have been stored over the majority of the property. This likely occurred in close association with railroad spurs built for the express purpose of delivering coal to this staging area.

2. **Existing Environmental Control/Permit:** As defined by ASTM process, controlled surface water run-off is considered a pathway for potential contaminants to be introduced onto the subject site or transported from the subject site to adjoining properties. Lined retention ponds and a discharge system for the coal pile were noted during the reconnaissance as effluent discharges. According to Mr. Ferman Milster, University of Iowa, a NPDES permit requires the University to sample water discharges for total iron, pH, and TSS. Historic samples were known to have low-pH and elevated TSS. He indicated that the discharge system of retention was designed for the one hundred (100) year storm event.

---

<sup>1</sup> Profile of the Fossil Fuel Electric Power Generation Industry, EPA Office of Compliance Sector Notebook Project, September 1997.



3. **Up-gradient, Off-site Aboveground Storage Tanks (ASTs):** Two (2) large ASTs were observed on the L.L. Pelling Company property adjoining the subject site to the west. From the subject site, labels as to the contents of the tanks, if any, were not discernible. Observations of the ground surface near the ASTs for indications of spillage or leakage could not be made from the subject site.



**Potential Condition #1:** Of the issues identified as ASTM recognized environmental conditions, coal storage appears to represent the greatest potential for environmental impairment requiring study relative to the decision and feasibility of redevelopment. The primary concern is for on-site conditions of impairment resulting from more than 70 years of coal storage. Railroad activity on the property appears to have been developed for the express purpose of delivering coal to the staging area. The rail spur terminates at the storage area historically in aerial photography back to circa 1935, as do the abandoned rails today. Historical evidence of the rail area for general freight or rail/locomotive maintenance was not identified by the Phase I environmental site assessment. Other industrial or commercial rail uses traditionally associated with chemical use or spills were not identified. The nearby Iowa River is a controlled flow stream currently and historically not used for navigation or commercial transport due to the Coralville Reservoir Dam upstream and the historical water-then-electric dam immediately downstream of the property. The property was not historically constructed with structures or activity traditionally associated with potential for environmental concerns deriving from riverfront transportation and industry.

The coal storage and rail areas of the CRANDIC property have been identified to center on or near the existing coal pile currently being depleted by the University of Iowa. Areas of other peripheral coal storage and handling have been used historically, locations shifting over time. Gravel storage has also occurred in the area and is often not visually discernible by color differences from the quality of old aerial

photography. These circumstances bring about a mixture of potential point source (modern coal pile) and non-point source (known and unknown historical areas of storage in proximity to the rail areas) conditions with potential to develop actual impairment. The Phase II identification of conditions must similarly be a combination of approaches developed in the EPA-approved project DQO/QAPPP.

The University of Iowa has indicated through their consultant representative<sup>2</sup> that as part of lease termination the existing coal pile will be removed. An undefined amount of coal fines (coal dust mixed with soil, fine-grained sediment) from the base area will be removed. The retention ponds and sediments will be removed and low areas will be back-filled by off-property borrow material.

The potential conditions of #1 for point source contribution by the existing coal pile will be addressed with a judgmental approach for sampling centered on the coal pile. Other areas of possible historical coal/material storage and handling will be addressed by statistical distribution of sampling, reduced by the number of borings at the coal pile area. DQO/QAPP-specified testing of coal storage land use parameters will identify low-volatile organic chemicals and low-pH conditions that can enhance the leaching of metals. Field screening to identify unanticipated components of volatile organic chemicals will be conducted with provision for contingency VOC testing. Previous reports of chemistry, if consistent with the needs of the DQO and QAPP, will be used quantitatively. If pre-existing data does not meet the DQO/QAPP criteria, the data will be used qualitatively in the evaluation.

Potential Condition #2: The presence of existing environmental regulatory permits on a property indicates that an inherent public concern has been identified for potential environmental impairment, or the activity would be unregulated. Many environmental permits are merely preventive in nature and stem from historical issues identified on other similar properties or commercial activities that led to development of the permit requirement. Environmental regulatory permits can be a positive factor in Phase I evaluation of a property. The key is the time at which the regulatory control went into effect. If control and monitoring is initiated at the onset of the activity regulated by the permit, it can be accepted as a positive preventive measure assisting in the preservation of site conditions from impairment. If control and monitoring are initiated after the onset of activity regulated, it may be considered that the permit is a possible response to historical problems which required intervention and control, either on-property or with the associated industry at large.

The property has an active National Pollutant Discharge Elimination System (NPDES) permit which today serves as a control and monitor of potential environmental impairment from the coal pile to the river.

The NPDES process was initiated as part of the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act Amendments of 1972). Coal pile runoff is specifically addressed in the Code of Federal Regulations for control of pollutant discharges to surface waters. Permit processes were initiated for coal storage for less than an estimated 40% of the operational time coal storage has occurred. The NPDES applies to an area of coal storage today comprising an estimated 25 – 35% of historical areas of operation identified by the Phase I assessment. The NPDES permit addresses pollutant transport to the river and does not address potential on-property impacts to soil or groundwater.

---

<sup>2</sup> Conversation by Terracon Project Manager with T. Kinney, Shive-Hattery & Associates, August 9, 2000.

The potential conditions of #2 will be addressed by judgmental and statistical sampling described in #1.

Potential Condition #3: The potential condition for petroleum fuel loss and migration from ASTs on the adjacent L.L. Pelling property is to be considered. Visual evidence of surface spill or transport residuals as staining over soils was not identified from the property boundary. No catastrophic or minor releases were identified in regulatory records. Groundwater flow appears to be from the L.L. Pelling Property to the CRANDIC property. A potential for a release of petroleum fuels on adjacent property to the groundwater table and subsequent migration on to the subject property is to be considered.

Although ASTs are not regulated under technical standards, petroleum fuel impacts to groundwater from are regulated for corrective action consistent with Iowa Administrative Code Chapter 135. Augmentation of a groundwater sample in the area of the joint property boundaries for analysis of VOCs will address petroleum compounds.

Other: The Project Manager also reconsidered the potential for impact of the Recycling Center as handling components of solid waste. The review found conditions not to appear to represent a viable potential as a recognized environmental condition, consistent with the findings of the original Phase I assessment and report.

**V. ENVIRONMENTAL CONDITIONS**

**9. Primary Pilot Study Land Use (A6,Table 1):**

**Primary: Coal Storage Area**  
**Peripheral: Aboveground Petroleum Fuel Storage**

**10. Check Target Chemical Inputs Below (A7.2.3, Table 4):**

VOC As OA-1	SVOC	Total Metals	Iowa OA-2	Iowa OA-1 Vapor	Iowa MTBE	PCBs	pH	Land Fill Gas
X <sup>A</sup>	X	X	X				X	

A: Contingent upon field indicators triggering potential VOC presence.

**VI. PROPERTY-SPECIFIC SAMPLING DESIGN**

11. X Point Source Condition (Complete 7a)      350 "w" (Operational Radius, Feet, A7.2.5.5, B1.5.1.1)  
 Generate Sampling Map as Attachment 1.      11a. 5 Number of Soil Sample Locations (Minimum 5)  
 Require Sample Intervals (B1.5.2): X Range 1 (<2 feet)    X Range 2 (2-10 feet)    \_\_\_ Range 3 (>10 feet)
12. X Potential Non-Point Source Condition: Type I Confidence set at 90%, Type II Confidence set at 80%)  
 30% Organic CV (A7.2.6.6, Table 6)      25% Organic MDRD (A7.2.6.6, Table 6)  
 40% Inorganic CV (A7.2.6.6, Table 7)      25% Inorganic MDRD (A7.2.6.6, Table 7)

**Property-Specific Sampling and Analysis Checklist**

**Terracon**

**Zone 1: CRANDIC Property**

**Version: 1.3**

**Page 6**

**August 9, 2000**

Generate Statistical/ Sampling Maps as Attachments 2 and 3 (B1.5.1.2).

Generate Statistical Decision Performance Goal Diagrams as Attachments 6 and 7 (B1.5.1.2).

12a.\_8\_ Number of Organic Soil Sample Locations      12b.\_13\_ Number of Inorganic Soil Sample Locations

Check Sample Intervals (B1.5.2):    \_X\_Range 1 (<2 feet)    \_X\_Range 2 (2-10 feet)    \_\_\_Range 3 (>10 feet)

**13. \_4\_ Number of Groundwater Samples (20% of higher of 11a, 12a or 12b, rounded up, B1.5.3)**

Randomly distribute number of groundwater samples, quasi-random function, plot Attachment 4 (B1.5.3).

Print site location coordinates of optimized design as Attachment 8.

**14. Optimize the design and combine the sampling locations as Attachment 5 (B1.5.4, Example F2.5).**

**VII. CHEMICAL ANALYSES NEEDED (From 10 and 11 above)**

Number To Analyze				MEDIA	CHEMICAL GROUP	LAB METHOD
Range						
1	2	3	GW			
1	1			Soil	VOCs	EPA SW-846 5035/8260B
7	10			Soil	SVOCs	EPA SW-846 8270C
12	15			Soil	Metals, Total	EPA SW-846 6010A/6020
3				Coal	SVOCs	EPA SW-846 8270C
3				Coal	Metals, Total	EPA SW-846 6010A/6020
				Soil	pH	EPA OSW – 9040A
				Soil	IAC135 Volatiles	Iowa OA-1
				Soil	IAC135 Low-Volatiles	Iowa OA-2
				Soil	IAC135 MTBE	EPA SW-846
				Water	VOCs	SW-846 8260B
		4		Water	SVOCs	SW-846 8032*/8081*/8270C
		4		Water	Metals, Total	SW-846 6010A
		1		Water	IAC135 Volatiles	Iowa OA-1
		1		Water	IAC135 Low-Volatiles	Iowa OA-2
				Water	IAC135 MTBE	EPA SW-846

**VIII. HEALTH AND SAFETY (A8.2.5, Default Approval Limited to D & DModified Levels)**

Attach completed Terracon Health and Safety Plan with appropriate signatures per Part 1 of Project Plan and referenced corporate plans and management requirements.

**15. \_X\_ Level D Personal Protective Equipment (PPE):** equip, monitor and record accordingly.

\_\_\_ Level D-Modified Personal Protective Equipment (PPE): equip, monitor and record accordingly.

\_\_\_ Level C Personal Protective Equipment (PPE): **STOP - Contact Project Manager or Safety Officer**

**IX. UNANTICIPATED DEVIATIONS FROM DQO/QAPP REFERENCED**

**Variance:**

The property contains obvious railway and rail bedding features but Land Use will not be addressed as a railroad property.

Two (2) judgmental borings are added at the existing coal pile area for sampling and analysis.

Three (3) analytical samples in the <2 Feet Interval at the coal pile area will be of source coal or residue. These samples will be taken prior to final removal of raw coal and zone of base fines accumulation.

A portion of all physical samples in <2 feet interval will be washed over a #10-micron mesh geotechnical sieve, dried and observed in the geotechnical laboratory under a mineral microscope for the visual presence of particulate raw coal residue.

**Necessity/Appropriateness To Brownfields Study:**

Historical documentation indicates the railway features on this property were not used for transportation nor storage of cargo or freight. The primary construction and use was associated with the handling and staging of coal and gravel materials. The analytical chemistry for Land Use as Coal Storage overlaps all but volatile organic chemicals for Land Use as Railroad Properties. Continuous field screening of materials for volatile impacts should provide appropriate indicators for significant unknown conditions, with contingency for adding volatile organic measurement at time of field efforts. The approach will assist in focusing limited funding on critical measurements more appropriate to historical land use and essential to the project decision.

Consistent with discussion of section IV.1 above, the existing coal pile as current and historical "center" of storage will use the judgmental approach of the DQO/QAPP, the 2 additional locations will be integrated in combination with three (3) statistical sampling locations distributed over the area.

Coal by its nature contains a number of the semi-volatile and base/neutral/acid extractable organic compounds defined by some regulatory programs as "contaminants". By its nature these compounds are bound into the coal matrix. With removal of the coal pile and base fines accumulation (coal dust mixed with soils beneath the pile) and backfill with "clean" off-property borrow materials, the <2 Feet sample interval becomes irrelevant for borings in the coal pile. Terracon will substitute three (3) samples of the raw coal and residue at elevations approaching surrounding ground surface for chemical baseline characterization in conducting the Phase II evaluation. The approach acknowledges that raw coal currently available today may not directly represent historical parent materials and chemical variations used over the long history of site use. However, the long term accumulation of raw coal fines and particulate residues immediately beneath the existing pile may reasonably be considered an area of historical accumulation and intermixing of materials over time. The remaining two (2) samples for the <2 Feet interval of the judgmental approach will be positioned at the edges of the pile, but external to raw coal and biased to the portion of the sample interval from 1-2 Feet below ground surface to avoid surface coal.

Experience shows that macroscopic-size coal does not routinely pose concerns relative to chemical risk through the exposure routes addressed under the Pilot study and Iowa Land recycling program. However, macroscopic particles of coal not readily discernible to the naked eye can be unavoidably incorporated into soil/fill samples taken from coal-handling areas. If the laboratory incorporates raw coal

in its sub-sampling of the soil/fill matrix, chemistry can be skewed by the chemical signature of the concentrated petroleum-based compounds in coal. This may not represent overall chemical contribution of the soil/fill represented by the laboratory analysis and present on the Brownfields property. To allocate greater concern to constituent components of coal not readily available to do harm is inconsistent with a practical and risk-based approach for Brownfields redevelopment. The chemical and physical contributions by coal residues on laboratory chemistry will be evaluated.

**Consistency with Data Quality Objectives:**

Phase I assessment supports the characterization of the CRANDIC property as a Coal Storage Land Use despite the physical presence of rails. Phase I assessment documents the rail siding and associated property was primarily used throughout its history in association with coal storage. The Phase II evaluation of the property under this DQO/QAPP Land Use and Chemical Association, with contingency for unknown conditions, is consistent technically and conceptually with the intent of the project objectives as they apply to this property.

Phase I assessment documents the existing coal pile area as the primary focus of greatest operational activity over the greatest amount of time. Focused additional effort at this area while integrating with more general assessment is consistent technically and conceptually with the intent of the project objectives as they apply to this property. The combination approach is consistent with the financial management of Pilot resources to optimize sampling and testing where appropriate.

The coal pile will cease to exist relative to the Brownfields feasibility evaluation for redevelopment. The residuals of coal storage in this and other areas of the property must be considered. These residuals will reflect the chemical signature of the parent raw coal. The Pilot does not provide for the opportunity to conduct an extensive study of potential chemical contribution of raw coal on evaluation. The described approach strikes a balance of technical approach with available Brownfields resources consistent with the intent of the project objectives as they apply to this property.

Industry experience shows that coal residues are likely to occur intermixed with soils/fills throughout the property. The residuals will contain particulate coal. The degree of physical presence of particulate coal in soil/fill samples relative to observations of laboratory chemistry bears on determining chemical impairment and possible methods of remedy of the property for Brownfields redevelopment. The described approach strikes a balance of technical approach with available Brownfields resources consistent with the intent of the project objectives as they apply to this property.

Property-Specific Sampling and Analysis Checklist

Terracon

Zone 1: CRANDIC Property

Version: 1.3

Page 9

August 9, 2000

**X. PHASE II FIELD OPERATIONS (Section B: Measurement and Data Acquisition)**

<b>X For Site Use</b>	<b>Procedure Reference</b>	<b>TERRACON STANDARD OPERATING PROCEDURE (TSOP) Activate Those Marked For Staffing, Equipment &amp; Mobilization</b>
X	E.100	Surface Soil Sampling - Grab
	E.200	Surface Soil Sampling - Oakfield
X	E.300	Subsurface Soil Sampling – Drilling Platforms
X	E.310	Auger Drilling and Sampling
X	E.320	Hollow-stem Auger Drilling and Sampling
	E.330	Fluid Rotary Drilling and Sampling
	E.340	Air Rotary Drilling and Sampling
	E.400	Subsurface Sampling – Geoprobe Platform
	E.450	Subsurface Soil Sampling – Xitech Sampler
X	E.460	Subsurface Sampling – Shelby Tube
X	E.465	Subsurface Sampling – Split Barrel
X	E.468	Sample Handling – Soil (Level D)
X	E.470	Sample Handling – Groundwater (Non-Hazardous)
X	E.500	pH Field Screening – Soil
	E.530	pH Field Screening – Water
	E.540	Conductivity Field Screening – Water
X	E.550	VOC Field Screening – Soil / Photoionization Detector
X	E.560	SVOC Field Screening – Soil /Ultraviolet
	E.570	Temperature
	E.600	H2S Field Screening – Field Detector
	E.605	Methane – Field Detector
	E.610	Radioactivity – Field Detector
X	E.700	Well Construction – Temporary
	E.800	Well Construction – Permanent
X	E.900	Well Security – Type A
	E.1000	Well Security – Type B
	E.1200	Well Security – Type C
X	E.1300	Well Development - Volumetric
	E.1400	Well Development - Parametric
	E.1500	Boring Abandonment – Commercial Sealant
	E.1600	Boring Abandonment – Tremie' Grout
X	E.1700	Well Abandonment – Iowa IAC39 Criteria
X	E.1800	Field Measurement – Surface Layout
X	E.1805	Field Measurement – Elevations
	E.1808	Field Measurement – Licensed Survey
X	E.1810	Field Measurement – Subsurface Soils
X	E.1820	Field Measurement – Groundwater
	E.1830	Field Measurement - Free-Phase Product
X	E.1840	Field Measurement – Hydraulic Conductivity Testing (Slug)
	E.1870	Field Measurement – Electromagnetic Survey
X	E.1900	Groundwater Sampling – Bailer
	E.2100	Soil Vapor Sampling – Iowa IAC135
X	E.2210	General Site Housekeeping
X	E.2220	Disposal of Spent Supplies
X	E.2230	Handling and Storage of Drill Cuttings (Non-Hazardous)
	E.2235	Handling and Storage of Drill Cuttings (Hazardous)
X	E.2240	Site Security Procedures
X	E.2410	Cleaning - Manual Washing
X	E.2420	Cleaning - High-Pressure, Hot-water Washing

Property-Specific Sampling and Analysis Checklist

Terracon

Zone 1: CRANDIC Property

Version: 1.3

Page 10

August 9, 2000

**XI. QUALITY CONTROL CHECKS**

(References to Section B5, Table 9 and QAPP Appendix E)

Number For This Site	QC ASSESSMENT ACTIVITY	AGENCY TO DO	QAPP FREQUENCY OF ACTIVITY
1	Field Blank	Terracon	1 per Pilot Study week of on-site activity, minimum
1	Blind Replicate Sample	Terracon	1 per property-specific mobilization
1	Field Replicate Sample	Terracon	1 per property-specific mobilization
	Soil Gas Duplicate (IAC135)	Terracon	Minimum 1 per sampling event
1	Trip Blank	Laboratory	As specified in Appendix E, Attachment 5
Per B5.2	Lab Reagent Blank	Laboratory	As specified in Appendix E, Attachment 8
Per B5.2	Method Blank	Laboratory	As specified in standard method SOP, Appendix E, Attachment 16
Per B5.2	Matrix Spike/Matrix Spike Duplicate	Laboratory	As specified in standard method SOP, Appendix E, Attachment 16
Per B5.2	Laboratory Control Sample	Laboratory	As specified in Appendix E, Attachment 8
Per B5.2	General Bottle Control	Laboratory	1 per each Lot 50, Appendix E, Attachment 8
Per B5.2	VOA Bottle Control	Laboratory	1 per each Lot 25, Appendix E, Attachment 8

**INSERT PROJECT-SPECIFIC ATTACHMENTS:**

- #1  Point Source Sampling Map
- #2  Non-point Source Sampling Map (Organic)
- #3  Non-point Source Sampling Map (Inorganic)
- #4  Groundwater Sampling Map
- #5  Optimized Sampling Location Map
- #6  Statistical Decision Performance Diagram (Organic)
- #7  Statistical Decision Performance Diagram (Inorganic)
- #8  Optimized Sampling Coordinates Sheet
- #9  Signed Access Agreement
- #10  Schedule For Phase II Assessment
- #11  Health and Safety Plan
- #12  Changed Conditions (See Section 8)

# **Terracon**

## **SAFETY AND HEALTH PLAN**

As Attachment 11 To

### **PROPERTY-SPECIFIC SAMPLING AND ANALYSIS CHECKLIST** *For Use Only With Designated Part 1 and Part 2 of Project Plan*

**Cedar Rapids And Iowa City Railroad (CRANDIC) Property**  
**1<sup>st</sup> AVENUE REVITALIZATION PROJECT**  
**BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT**  
**EPA Region 7 - Coralville, Iowa**  
**Project No. 42997048 - E**

**APPROVED:**            **July 24, 2000**

**BY:**

\_\_\_\_\_  
David E. Koch, Project Manager

#### **1.0 APPLICABILITY**

This Site Safety and Health Plan (SHP) has been developed to define the protocols and requirements to be followed by Terracon personnel while performing field observation and assessment activities required for determining closure requirements for the municipal solid waste landfill indicated above. Immediately prior to site activities, the designated Site Safety and Health Officer (SSO) will conduct a safety briefing and review the contents of this Plan with all Terracon site personnel. Terracon employees participating in this project will review this Plan and sign the Acknowledgment of Instruction page prior to the start of project activity.

Site activities performed by Terracon personnel will be conducted in accordance with applicable provisions of the Occupational Safety and Health Act of 1970 and the standards issued thereunder, including but not limited to the Hazardous Waste Site Operations and Emergency Response standard (OSHA 29 CFR 1910.120) and the Respiratory Protection standard (29 CFR 1910.134).

#### **2.0 SAFETY AND HEALTH ADMINISTRATION**

The Terracon Project Manager will be ultimately responsible for ensuring that Terracon personnel at this project site perform their duties in accordance with the safety and health provisions contained in this Plan. The designated Site Safety and Health Officer (SSO) will monitor compliance with this Plan during field activities. The Project Manager and/or SSO will ensure that

site emergency telephone numbers are completed and that the location of and directions to the nearest emergency medical facility are included in this Plan prior to site mobilization. All Terracon field team members engaged in project activities will be required to sign the "Acknowledgment of Instruction" form upon completion of the initial site briefing. The SSO will ensure that a copy of this Plan is available on site for the duration of project activities.

The individuals listed below are responsible for implementation and enforcement of this Safety and Health Plan.

<u>TITLE</u>	<u>NAME</u>	<u>PHONE</u>
Project Manager:	Dave Koch	309-788-1500
Corporate Safety and Health Manager:	Gary K. Bradley, CSP, CHMM	913-599-6886
Site Safety and Health Officer:	Brian Porter, Field Captain	309-788-1500
Drilling Safety Supervisor	Tom Salm	319-366-8321

If hazardous conditions develop or appear imminent during the course of project activity, the SSO in conjunction with the Terracon Corp. Safety and Health Manager, will coordinate actions required to safeguard Terracon personnel. Additional safety measures will be verbally communicated to Terracon project participants, recorded in writing and appended to this SHP.

The Terracon Project Manager and/or SSO are responsible for:

- Ensuring that subordinate personnel have read and understood this Plan.
- Ensuring that subordinate personnel adhere to applicable provisions of this Plan.
- Ensuring that corrective actions are enforced.

### **3.0 MEDICAL SURVEILLANCE REQUIREMENTS**

Subsurface contamination may be encountered during the course of this investigation. All Terracon personnel participating in this project shall be enrolled in a health monitoring program in accordance with the provisions of OSHA 29 CFR 1910.120 and 1910.134. Each project participant shall be certified by a Doctor of Medicine as fit for respirator and semi-permeable/impermeable protective equipment use. All personnel shall have received an environmental physical examination within one year prior to the start of project activities. The content of acceptable physical examinations will be determined by a consulting physician. Follow-up medical examinations will also be provided in the event of job site injury or unprotected exposure to contaminants in excess of eight-hour time weighted average permissible exposure

limits. Certificates of medical examination will be maintained by the Corporate Safety and Health Manager.

#### **4.0 EMPLOYEE TRAINING REQUIREMENTS**

All Terracon personnel participating in this project must have completed 40 hour Hazardous Waste Operations Training and at least three days of supervised field activity per requirements of OSHA 29 CFR 1910.120. In addition, a current 8-hour annual refresher training certificate will be required for all personnel. Training certificates for all project personnel will be maintained by the Corporate Safety and Health Manager and/or the SSO at the project command center. The SSO and at least one other Terracon site participant shall maintain a current certification in basic First Aid training as provided by the American Red Cross or US Bureau of Mines.

Prior to the start of site activities, all Terracon project personnel will participate in a pre-project safety and health briefing outlining the contents of this SHP. The personnel responsible for project safety and health will be addressed, as will site history, scope of work, site control measures, emergency procedures and site communications. Daily "tailgate" safety and health briefings will be presented by the SSO at the start of each work day. Records of safety and health briefings will be maintained for the duration of this project.

#### **5.0 SITE HISTORY/SCOPE OF SERVICES**

Phase I assessment under an EPA Brownfields Assessment Demonstration Pilot indicated this project site to require additional Phase II assessment (reference the preceding Section IV of the Project-Specific Sampling and Analysis Checklist). Terrain surrounding the site is flat, and access will be via existing, active roadways.

The property has historically been used as a coal storage area. Rail spurs carried raw coal to the area. The existing coal pile is being removed. The coal pile operations may have been as much as three to five times (3x-5x) larger than current operations and may have occurred in other areas than the visible pile seen at Phase I assessment. Terracon personnel will mobilize to the site to conduct the following services:

- Soil borings and sample collection for general characterization. Borings will also be conducted outside fill materials in attempting to delineate the horizontal extent of fill areas.

Anticipated site activities governed by this SHP will require approximately 5 days for completion.

#### **6.0 HAZARD ASSESSMENT**

Terracon will obtain soil samples from this project site formerly used as a coal storage area. Near surface soil sampling at selected locations will be conducted using a truck-mounted drilling rig platform. Industry experience shows metals and semi-volatile compounds are chemically bound into raw coal. Other sources of chemical contribution have not been identified through previous Phase I assessment. Terracon personnel will mobilize to the project site to obtain samples of the raw coal material with a hand auger.

The dark color of coal residues mixed with soil/fills limits the ability to recognize staining under field conditions, field screening will occur. Should any unusual odor or other indications of potential contamination inconsistent with the above information be observed during the assessment, site personnel will leave the site and notify the project manager of site conditions. The project manager will contact the Safety and Health Manager at (913) 599-6886 to discuss personal protective equipment requirements and use of personnel under medical surveillance.

The potential for health risk from exposure to this site is expected to be negligible. All Terracon personnel who mobilize to the project site will wear Level D personal protective equipment consisting of a standard work uniform, abrasion resistant gloves (leather, heavy PVC), safety footwear (ANSI-Z41) and hard hat if overhead hazards are present. Impermeable gloves (nitrile, PVC or Silver Shield) should be worn by site personnel when collecting and containerizing soil samples. Additional requirements for air monitoring and personal protective requirements for personnel engaged in intrusive operations are outlined below.

### **6.1 Physical/Biological Hazards**

No biological hazards are indicated by previous Phase I assessment or anticipated for this site assessment.

Partially buried sharp or jagged debris, broken glass and rusty metal pose trip, puncture and potential laceration hazards can occur in rail areas. Safety footwear is required for this project. Smoking is banned while within 50 feet of sampling activities.

Activities to be performed on site will involve truck-mounted drill rigs. Personnel should be aware that as personal protective equipment increases, dexterity and visibility may be impacted and performing some tasks may be more difficult. Personnel must remain outside the swing radius of drill equipment at all times. Operators will ascertain the direction of prevailing winds at each boring location. Drill rigs will be positioned to the upwind side of each proposed bore hole.

### **7.0 Air Monitoring Requirements**

The designated Site Safety Officer will ensure that both a photoionization detector (PID) are mobilized to the project site on each day of boring activity. Photoionization detectors will be calibrated with isobutylene calibration gas (100--250 ppm). A response factor of 1.0 will be

used during calibration and field operation of photoionization detectors used on this project site. Operator manuals will accompany each instrument to the project site.

### **7.1 Organic Vapors**

Frequent photoionization detector readings will be taken in the breathing zone of site personnel during soil boring activities. If sustained (> 5 minutes continuous) breathing zone OVM readings exceed **5 ppm** above background or if any unusual chemical odors are noted, personnel will halt, allow ventilation to occur while they contact the project Safety Officer for direction.

## **8.0 PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS**

Intrusive site activities may begin in **LEVEL D** personal protective equipment to include:

- **Standard Work Uniform**
- **Hard Hat**
- **Rubberized Safety Foot Wear (Steel Toe/Shank per ANSI Z-41)**
- **Impermeable Gloves (PVC, Neoprene or Nitrile)**
- **Safety Eye Wear (ANSI Z-87 approved)**

## **9.0 SITE CONTROL**

The area within a 20 foot radius of each boring will be considered the site contaminant zone. Anyone entering this area must be wearing the appropriate personal protective equipment as described in this plan or any addendum to this plan. Personnel entering the contaminant zone must have the authorization of the Terracon SSO. All personnel allowed within the contaminant zone must meet the training and medical surveillance requirements of OSHA 29 CFR 1910.120 (see Section 3.0 and Section 4.0 of this Plan).

Safety cones, barrier fencing or barrier tape will be established at the 20 foot radius if the use of such barricade could reasonably prevent unauthorized access of, and potential injury to, non-authorized personnel. No eating, drinking or smoking will be permitted in either the contaminant or contaminant reduction zones.

## **10.0 DECONTAMINATION**

### **10.1 Personnel Decontamination**

Personnel decontamination is necessary on all potentially contaminated intrusive projects. Personnel decontamination for this project will consist of washing off safety footwear, proper cleaning or disposal of outer and inner gloves and thorough washing of face, arms and hands.

A full body shower will be required as soon as possible upon leaving the project site.

Expendable personal protective equipment will be placed in plastic trash bags, sealed and disposed of per client agreement. Decontamination solutions will be containerized or disposed of as arranged by Project Manager.

### **10.2 Equipment Decontamination**

Decontamination of equipment will be performed to limit the migration of contaminants off-site. All equipment will be cleaned prior to site entry to remove grease, oil and encrusted soil. Decontamination of large equipment will consist of physically removing gross contamination with shovels, brushes etc. followed by detergent and water high pressure wash with a clean water rinse. Cuttings and decontamination fluids will be handled as outlined in the project work plan.

### **11.0 SITE COMMUNICATIONS**

Communication between personnel within the Exclusion Zone will be via verbal communication or hand signals. Visual contact between members of task teams should be possible throughout the course of project activities. Contact with the SSO will be through direct verbal communication. The hand signals listed below will be used by personnel wherever respiratory protection and/or equipment noise limit verbal communication.

<u>Signal</u>	<u>Meaning</u>
Thumbs Up	OK, all is well
Grab throat with both hands	Can't breathe
Shake head, thumbs down	NO, negative
Point right (When facing equipment operator)	Move/steer left
Point left (When facing equipment operator)	Move/steer right
Grab partner's wrist	Leave area immediately

### **12.0 EMERGENCY RESPONSE PROCEDURES**

#### **12.1 Emergency Notification**

The Project Manager is responsible for obtaining and recording the following emergency information prior to site mobilization:

**Location of Nearest Telephone:** On-site Cellular, Unit #\_\_\_\_(Complete At Mobilization)

**Nearest Hospital/Clinic:** University of Iowa Medical Center   **Phone:** 356-2233

**Estimated Drive Time:** Approximately 10 minutes

**Directions From Site:**

*Use the detachable Hospital Route Diagram and Directions attached as last two (2) pages of this document.*

For briefing purposes; Leave the site to the west directly to 1<sup>st</sup> Avenue. Turn left and proceed south to U.S. 6 at approximately .5 miles, turn left onto U.S. 6. Take U.S. 6 to Newton Road, follow Newton Road approximately .8 miles, Medical Center is on the left.

### **EMERGENCY TELEPHONE CONTACTS**

<b>Ambulance:</b>	<b>911</b>
<b>Fire Department:</b>	<b>911</b>
<b>Police:</b>	<b>911</b>
<b>Project Manager:</b>	<b>(309)788-1500 Work</b> <b>(319)355-2994 Home</b>
<b>Safety and Health Manager:</b>	<b>(913)599-6886</b>

#### **12.2 Emergency Equipment**

The Site Safety Officer will ensure that at least one 10# B/C-rated fire extinguisher is mobilized to the project site during intrusive activity. In addition, a 10-unit (minimum) first aid kit and a supply of clean water will be immediately available at the project site at all times.

#### **12.3 Personal Injury**

For minor injuries, such as cuts, burns, exhaustion, heat cramps, insect stings, etc., the affected employee will be removed to an uncontaminated area. The SSO or other designated employee will administer appropriate first aid. All lacerations, abrasions or punctures incurred on landfill project sites must be cleaned, disinfected and bandaged as soon as possible. If the injury warrants additional medical attention (lacerations requiring sutures, direct puncture wounds, etc.) , the wounds will be disinfected and bandaged and the employee will be transported to the nearest hospital or emergency medical facility.

For injuries which may involve spinal injuries, the Site Safety Officer or designee will summon an ambulance to the project site. No attempt will be made by Terracon personnel to move the victim without the aid and/or instructions of qualified medical personnel. In the absence of toxic gases or vapors, the ambulance will be directed to the affected employee. If site conditions warrant and as time permits, the wheels of the ambulance will be decontaminated with high pressure wash.

The SSO or designee will accompany the ambulance to the medical facility, and provide guidance concerning additional decontamination which may be required for the injured

employee, ambulance or attendants. If rescuer(s) assess that the victim cannot be removed without a stretcher or other specialized equipment, the victim will be removed at the earliest possible moment by appropriately attired Terracon personnel with the direction and/or assistance of qualified medical response personnel. The injured employee will be immediately decontaminated and transported to the nearest medical facility. A crew member designated by the SSO will inform the ambulance crew of known site contaminants and will provide assistance with decontamination if required.

#### **12.4 Heat or Cold Stress**

All Terracon personnel participating in site activities will re-familiarize themselves with the Heat and Cold Stress section (Chapter 5) of The Terracon Companies, Inc. Safety and Health Policy and Procedures Manual prior to mobilizing to the site. The Project Site Safety and Health Officer will contact the Terracon Corporate Safety and Health Manager for consultation and recommendations prior to initiating project activities if ambient temperatures below freezing are anticipated. Site personnel will wear thermal gloves over impermeable gloves indicated in the Personal Protective Equipment section of this plan where necessary. Also, insulated hard hat liners, coveralls and boot liners will be mobilized to the site in company issued response bags.

#### **13.0 STANDARD SAFE OPERATING PROCEDURES**

- Terracon personnel will remain to the UPWIND side and at least 2 feet from the edge of all excavations during observation and monitoring activities.
- If site activities interrupt the normal flow of pedestrian or vehicular traffic, appropriate barricades will be erected around the project site. Safety orange work vests will be worn by personnel working within 10 feet of any active roadway.
- The Site Safety Officer will ensure that unauthorized personnel do not enter the work zone. Authorized visitors will be briefed on site contaminants, personal protective equipment requirements and decontamination provisions of this SHP.
- The Site Safety Officer will continually inspect the work area for infractions of safety and health requirements contained in this plan.
- The Site Safety Officer will investigate and immediately report all accidents to the Corporate Safety and Health Manager.
- Site activities will be conducted only during daylight hours unless adequate portable lighting is mobilized to the project site.

#### **14.0 Drilling Safety Procedures**

***All personnel working in proximity to a drill rig will be familiarized with the location and operation of emergency kill switches prior to equipment start-up.***

Because heavy equipment can create major hazards at the job site, the following procedures shall be followed during soil boring activities: Personnel are advised that as the level of personal protection increases, mobility, visibility and communication may become impaired.

- Prior to mobilization to the project site, all underground utilities will be located and properly marked.
- No loose fitting clothing, jewelry or unsecured long hair is permitted near the rig.
- Keep hands and feet AWAY from all moving parts while drilling is in progress. Persons shall not pass under or over a moving stem or auger.
- Daily inspection of all ropes, cables and moving parts is mandatory.
- A first aid kit and fire extinguisher (10 # class B/C, minimum) will be available at all times.
- All crews shall consist of at least two persons.
- No drilling is permitted during impending electrical storms, tornadoes or when rain or icing creates a hazardous work environment.
- Keep drill at least 10 feet from all overhead power lines; use spotters to assist driver in positioning rigs when overhead power lines or other obstructions are near.
- Personnel are not allowed on a mast while the auger is in operation.
- When a drill rig is moved from one location to another, drill steel, tools and other equipment shall be secured and the mast placed in a safe position.
- Bore holes large enough to constitute a hazard shall be plugged, covered or barricaded to prevent injury.

**ACKNOWLEDGMENT OF INSTRUCTION**

The following must be completed prior to performing site activities. The following acknowledgment must be completed as accurately as possible. It is not a waiver. It is the only method used to compile your environmental on-the-job training and experience records. By written request you may obtain a copy of your environmental work record from the Safety and Health Manager.

**PROJECT NAME:** Cedar Rapids And Iowa City Railroad (CRANDIC) Coal Storage Area  
1<sup>st</sup> AVENUE REVITALIZATION PROJECT  
BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT  
Coralville, Iowa

**JOB NUMBER:** #42997048-E

I understand that this project involves drilling at a municipal solid waste landfill site. If organic vapors are detected, I will refer to and abide by the personal protective equipment requirements contained in this plan. Potential for health risk from exposure to the site is expected to be low.

I have read this Site Safety and Health Plan and have received instructions for procedures to be followed. I have had my questions answered regarding safety and health.

**Name:** (Please Print)

**Signature:**

**Date:**

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**Safety Briefing Performed by:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Personal Protective Equipment:**

LEVEL D/D Mod  X

LEVEL C  (Stand-by)

**Safety & Health Appendices:**

Hospital Route Map, 1 page

Directions to Hospital, 1 page

**END OF CHECKLIST**