



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



**SUNSET MOTEL / FORMER LANDFILL AREA**  
**EPA REGION 7 BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT**  
**1<sup>st</sup> AVENUE REVITALIZATION PROJECT**  
Version 2.0 November 9, 2000  
Coralville, Iowa  
Project No. 42997048 - E

**I. APPROVALS**

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

1b. CITY of CORALVILLE \_\_\_\_\_ Date \_\_\_\_\_  
Project Representative

1c. EPA REGION 7  
PROJECT MANAGER \_\_\_\_\_ Date \_\_\_\_\_  
Cecilia Tapia, SUPR/SACR

**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.

**Attachments To Checklist:**

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

**III. PROPERTY IDENTIFICATION**

2. Pilot Study Identifiers:      \_\_\_ Zone 1      \_\_\_ Zone 2      \_\_\_ Zone 3      X Zone 4

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

3. City Subdivision(s):    Folsom's Subdivision & Tract In Lot 7 of Folsom's Subdivision
4. Parcel Number(s):    127                      Subparcel Numbers:    001, 002, 003 and 004
5. Common Address:    Sunset Motel / Former Landfill - 228 to 232 1<sup>st</sup> Avenue
6. Project ID Number(s): 3 - 5                      Phase I ESA ID Number: 42997048D
7. Access Agreement Signed By Owner (Attachment 11).       No (Pending)      X   Yes
8. Have Property Conditions changed since Phase 1 ?      X   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 and below):

Phase I ESA Report File identifier: N:\A\_PROJECT\1999-ri\42997048\reports\1STAVENUE\230\1008127-001,2,3,4.doc

Terracon identified three (3) recognized environmental conditions for the subject site. These conditions are listed below and further described in Section 7.2 of this report. Phase II assessment has been conducted based on the information derived from Phase I.

1. **Underground Storage Tanks on Adjoining Property:** USTs were formerly located at 231 1<sup>st</sup> Avenue, which is east of 1<sup>st</sup> Avenue from the subject site. Although the UST registered to this property was listed as removed, file review information indicated that this site may have impacted the subject site with petroleum products.
2. **Dumped Fill Dirt and Debris:** Visual indications of hazardous materials were not observed in or around the dumped fill soils and debris located on the site, however investigation of these piles has not been conducted to confirm the absence of these materials. The western portion of the property was formerly used as a City of Coralville landfill.
3. **Groundwater Monitoring Wells on Subject Site:** Terracon observed two (2) groundwater monitoring wells on the northwestern portion of the property. These wells were likely meant to monitor the former City of Coralville landfill on the western portion of the property. Groundwater monitoring wells may provide a direct migration pathway for contaminants to reach aquifers underlying a site, and therefore become a source of environmental concern.

Of the issues identified as ASTM recognized environmental conditions, #2, the uncontrolled Dumped Fill Dirt and Debris resulting from historical landfill operations presents the greatest potential environmental impairment requiring study relative to the decision and feasibility of development. The primary concern is for on-site conditions.

The potential conditions of #1 were addressed with a statistical distribution of sampling that included sampling and testing near property boundaries in the direction of that property. DQO/QAPP-specified

testing of Landfill parameters was used to identify petroleum volatile and low-volatile components, if present.

The potential conditions of #3 were addressed with a statistical distribution of sampling that included sampling and testing on the property. Benzene and chlorobenzene were detected above statewide standards in the westernmost Phase II monitoring well. In addition, lead was detected in three (3) of the six (6) Phase II monitoring wells above the statewide standard. The groundwater samples obtained represented total groundwater; the samples were not filtered to remove suspended solids. Evaluation of impacted groundwater will make use of judgmental sampling using the benzene/chlorobenzene impacted sampling point as the potential point source. The operational area for Section 13 below is estimated as fifty (~50) feet. The existing wells will also be resampled and submitted for lead analysis using a laboratory-filtered approach.

**V. ENVIRONMENTAL CONDITIONS**

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

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

VOC	SVOC	Total Metals	Iowa OA-2	Iowa OA-1 Vapor	Iowa MTBE	PCBs	pH	Land Fill Gas
X	X	X						X

**VI. PROPERTY-SPECIFIC SAMPLING DESIGN**

11. \_\_\_ Point Source Condition (Complete 7a)      \_\_\_ "w" (Operational Radius, Feet, A7.2.5.5, B1.5.1.1)

Generate Sampling Map as Attachment 1.      11a. \_\_\_ Number of Soil Sample Locations (Minimum 5)

Require Sample Intervals (B1.5.2): \_\_\_ Range 1 (<2 feet) \_\_\_ Range 2 (2-10 feet) \_\_\_ Range 3 (>10 feet)

12. \_\_\_ Potential Non-Point Source Condition: Type I Confidence set at 90%, Type II Confidence set at 80%

45% 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)

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

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

13. 10 Number of Groundwater Samples (20% of higher of 11a, 12a or 12b, rounded up, B1.5.3)

Install and sample for VOCs four (4) monitoring wells at distances of fifty (50) feet in the four principal directions from the Phase II well impacted by VOCs. Re-sample the impacted well for VOCs. Re-sample all monitoring wells and submit samples for analysis of lead using laboratory-filtered method.

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			
				Soil	VOCs	EPA SW-846 5035/8260B
				Soil	SVOCs	EPA SW-846 8270C
				Soil	Metals, Total	EPA SW-846 6010A/6020
		5		Water	VOCs	SW-846 8260B
				Water	SVOCs	SW-846 8032*/8081*/8270C
		10		Water	Metals, Total	SW-846 6010A

**VIII. HEALTH AND SAFETY (A8.2.5, Default Approval Limited to D & D Modified 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.  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 (Discussion In Detail By Phase II Coordinator, Use Back If Needed)**

**Variance:**

1. Placement of four (4) additional groundwater monitoring wells and collection and analysis of groundwater samples for VOCs.
2. Collection and analysis of groundwater samples for total lead utilizing sample filtering procedures

**Necessity To Brownfields Study:**

1. Phase II assessment has identified impacts to groundwater from VOCs at one (1) groundwater monitoring well on the site. Additional assessment is necessary to identify the extent of impact for the purpose of developing representative remedial costs. The goal of the assessment is to identify possible impacts and to evaluate remedial costs associated with achieving a condition of acceptable risk under applicable regulatory programs. Remedial costs will be used to determine future suitability of the site for redevelopment.
2. Phase II assessment has identified impacts to groundwater from total lead at three (3) of six (6) groundwater monitoring wells on the site. Lead occurs naturally in soils and may cause elevated concentrations in groundwater samples due to the presence of suspended sediment within the sample. Filtering of samples prior to analysis removes suspended sediment and allows for a

determination of the total dissolved lead concentration which more accurately reflects groundwater conditions and potential impacts.

**Consistency with Data Quality Objectives:**

These Phase II issues described above for evaluation of the property under the DQO/QAPP, with contingency for unknown conditions, is consistent technically and conceptually with the intent of the project objectives as they apply to this property. These activities provide no windfall benefit to private parties, nor do they constitute a conflict with strictures of Brownfields funding and the Petroleum Exclusion. In addition and specific to the above:

1. This sampling and analysis is critical and quantitative as used. In this use it does not require adjustment relative to the DQO/QAPP v1.3 for implementation. The VOC sampling and analysis supplements the other quantitative sampling being done with greater targetability specific to VOCs as an indicator of former landfill impacts. Terracon TSOPs will be used in the construction and sampling of monitoring wells. Standard EPA analytical methods as incorporated into Prairie Analytical's Quality Assurance and Management Plan will be utilized.
2. This sampling and analysis is critical, and quantitative as used. In this use it does not require adjustment relative to the DQO/QAPP v1.3 for implementation. The sample filtering method supplements the other quantitative analysis being done with greater targetability specific to total lead concentrations an indicator of groundwater impacts. Terracon TSOPs will be used in the sampling of monitoring wells. Standard EPA analytical methods as incorporated into Prairie Analytical's Quality Assurance and Management Plan will be utilized.

**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>
	E.100	Surface Soil Sampling - Grab
	E.200	Surface Soil Sampling - Oakfield
	E.300	Subsurface Soil Sampling – Drilling Platforms
X	E.310	Auger Drilling and Sampling
	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
	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)
	E.500	pH Field Screening – Soil
X	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
X	E.570	Temperature
X	E.600	H2S Field Screening – Field Detector
X	E.605	Methane – Field Detector

**Property-Specific Sampling and Analysis Checklist**  
**Zone 4: Sunset Motel / Landfill Area**  
**Version: 2.0**  
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Terracon

X	E.610	Radioactivity – Field Detector
	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
X	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
	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

**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

**Property-Specific Sampling and Analysis Checklist**  
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- #2 \_\_\_ Non-point Source Sampling Map (Organic)
- #3 \_\_\_ Non-point Source Sampling Map (Inorganic)
- #4 **X** 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 **X** Signed Access Agreement
- #10 **X** Schedule For Phase II Assessment
- #11 **X** Health and Safety Plan
- #12 \_\_\_ Changed Conditions (See Section 8)

**THIS PROPERTY IS OWNED BY THE CITY OF CORALVILLE.**

***Access to City of Coralville and public properties to conduct Phase I and Phase II activity was granted as part of the Engineering Services Agreement enacted between Terracon, Inc. and City of Coralville, Iowa of May 19, 2000.***

***Confirmation or review of a copy of this agreement may be accomplished by contacting the City Project Director, Kelly Hayworth, or the Brownfields Coordinator, Mr. Dustin Nilsen.***

**ATTACHMENT 9:  
Phase II Access Agreement**



**Attachment 10**  
**SCHEDULE OF ACTIVITIES**

**The following schedule is proposed to implement the Phase II Environmental Site Assessment and Evaluation on this property consistent with Sections A6.2.5 and B1.2 of the Generic DQO/QAPP and services of contract for this EPA Brownfields Assessment Demonstration Pilot.**

**All reasonable attempts will be made by parties to expedite the schedule indicated below in order that City efforts of acquisition or determination of redevelopment feasibility may be best sustained.**

**Factors of weather, response times by public service, responses by regulatory agencies or other logistical influences external to Terracon control will extend the project milestones by equivalent days of delay beyond dates estimated.**

November 10, 2000	Complete Final Checklist, v2.0 for EPA Brownfields Project Manager review & approval
December 1, 2000	EPA approval of Checklist, v2.0 and initiation of mobilization
December 8, 2000	Notification to EPA Brownfields Project Manager on final field schedules
December 15, 2000	Completion of utility clearances
December 22, 2000	Commencement of on-site field services
December 23, 2000	Completion of on-site field services
January 5, 2001	Receipt of preliminary laboratory reports
January 19, 2001	Receipt of written laboratory reports
February 2, 2001	Phase II Report to City and EPA 7

# **Terracon**

## **SAFETY AND HEALTH PLAN**

### **Attachment 11**

**SUNSET MOTEL / FORMER LANDFILL AREA  
1<sup>st</sup> AVENUE REVITALIZATION PROJECT  
BROWNFIELDS ASSESSMENT DEMONSTRATION PILOT  
EPA Region 7 - Coralville, Iowa  
Project No. 42997048 - E**

**DEVELOPED:**           **Gary K. Bradley, Corporate Director of Safety & Health**  
Standard Approval & TerraNet Distribution To Level D Modified

**APPROVED:**           **June 14, 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 landfill has been closed for \_\_\_years. Information supplied by a former operator at the project site indicates that some materials such as automobiles, tires, etc. were relocated at the time of closure.. Terracon personnel will mobilize to the site to conduct the following services:

- Soil borings and sample collection within probable fill areas. 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**

Complete records of wastes buried at this landfill are not available. Although it is not believed that drummed chemical wastes have been deposited in the landfill, their presence cannot be ruled out. Buried solid wastes such as agricultural chemicals, automotive and paint-related compounds and solvents, discarded batteries, etc. may be encountered during soil boring activities. Drilling personnel will remain alert to staining of drill tools, the presence of granular materials, chemical odors or other signs of subsurface encounters with potentially hazardous

materials. Impermeable gloves will be donned prior to handling drilling tools which are suspected to have encountered subsurface contaminants.

Site personnel performing soil borings at this project site may be exposed to biological, as well as slip, trip and fall hazards as outlined below. Air monitoring as outlined below will only be required during boring in proximity to fill areas. 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. Additional requirements for air monitoring and personal protective requirements for personnel engaged in intrusive operations are outlined below.

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

In addition to the chemical contaminants identified in site groundwater, disease-causing microorganisms (bacteria, fungus, viruses, molds) may exist in decaying organic materials which may be present in fill materials. Illness may result from inadvertent ingestion of these microorganisms. Partially buried sharp or jagged debris, broken glass and rusty metal pose trip, puncture and potential laceration hazards. Safety footwear is MANDATORY for this project. Landfills attract rodents, wild dogs, raccoons and other wild animals which could bite or carry diseases. Do not approach animals on any landfill site. Decaying organic material in fill areas will potentially yield flammable methane gas. Off-gassing of methane generated in sub-surface fill areas can also bring organic vapors from buried chemical substances to the surface. Due to the potential presence of methane being liberated to the surface during drilling and excavation in fill areas, smoking is banned while within 50 feet of fill areas on landfill projects.

### **6.2 Methane**

Methane is a non-toxic, colorless, odorless and tasteless gas. Methane is lighter than air. Methane is produced by the anaerobic decomposition of organic matter. Methane is considered a simple asphyxiant (i.e., is toxic only in its ability to displace normal oxygen. Methane is extremely flammable; the explosive range is indicated below.

- **Lower Flammable Limit--5% (concentration in air)**
- **Upper Flammable Limit--15% (concentration in air)**

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 backhoes 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) and a combustible gas indicator are mobilized to the landfill project site on each day of boring activity. The combustible gas indicator (CGI) and photoionization detector will be calibrated in accordance with manufacturers instructions daily prior to use. The CGI will be calibrated to 50% LEL methane calibration gas. 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. Operators 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 don full face air purifying respirators as described below.

Respirators will be equipped with combination organic vapor/HEPA cartridges. If sustained breathing zone readings photoionization detector readings exceed **25 ppm**, personnel will move to the upwind side of the project site and contact the Safety and Health Manager to report conditions and to discuss enhanced monitoring and personal protective equipment.

### **7.2 Methane Monitoring**

CGI readings will be taken at the bore hole and in the work zone during advancement of each soil boring. **If CGI readings at the bore holes exceed 20% of the Lower Explosive Limit (LEL), discontinue drilling and allow the boring to vent.** Eliminate any possible ignition sources in the vicinity. After approximately 5 minutes, repeat CGI reading. If CGI readings have fallen below 20% LEL, drilling may proceed with caution and continuous combustible gas monitoring. If CGI readings fail to move below 20% LEL after venting for 10-15 minutes, establish fans to blow vapors away from hot parts of drill rig and continue drilling using continuous monitoring.

### **7.3 Hydrogen Sulfide Monitoring**

Readings using portable field monitor will be taken for field screening measurements. These will be considered during ambient air monitoring if positive indications of H<sub>2</sub>S are identified in samples collected for field screening. If identified, the ventilation procedures of 7.2 will be enforced.

## **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)**

If organic vapor (PID) readings during intrusive site activities exceed the action level of 5 ppm specified above, site personnel will upgrade to **LEVEL C** personal protective equipment to include:

- **Full Face Air Purifying Respirators equipped with**
- **Combination Organic Vapor/Acid Gas/HEPA cartridges**

## **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, # \_\_\_\_\_

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

**Estimated Drive Time:** Approximately 5 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 East directly to 1<sup>st</sup> Avenue. Turn right and proceed south to U.S. 6, turn left. 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:**     **SUNSET MOTEL / FORMER LANDFILL 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. Methane gas and/or organic vapors may be encountered during the course of project activities. . If organic vapors or methane 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.**

<b><u>Name:</u></b> (Please Print)	<b><u>Signature:</u></b>	<b><u>Date:</u></b>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

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

**Personal Protective Equipment:**  
**LEVEL D/D Mod**  **LEVEL C**  (Stand-by)

**- END OF SAMPLING AND ANALYSIS CHECKLIST -**