



RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION WORK PLAN ADDENDUM No. 2

**FORMER WILLOW RUN POWERTRAIN PLANT
YPSILANTI, MICHIGAN**

**Prepared for:
Revitalizing Auto Communities Environmental Response Trust
(RACER)**

**AUGUST 2013
REF. NO. 017358 (27)**

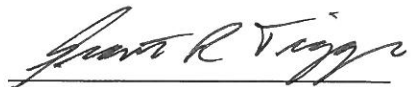
**Prepared by:
Conestoga-Rovers
& Associates**

14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Office: (734) 453-5123
Fax: (734) 453-5021

web: <http://www.CRAworld.com>

Based on my knowledge of the conditions of the property described in the remedial action plan and my inquiry of the person or persons who manage the system referenced in the operator's certification, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Grant Trigger
Michigan Cleanup Manager
Revitalizing Auto Communities
Environmental Response Trust

8-5-13

Date

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 INVESTIGATION PROGRAM	2
2.1 SOIL INVESIGATION	2
2.2 GROUNDWATER INVESTIGATION.....	2
3.0 REFERENCES.....	3

LIST OF FIGURES
(Following Text)

FIGURE 2.1	PROPOSED INVESTIGATIVE LOCATIONS
FIGURE 2.2	PROPOSED INVESTIGATIVE LOCATIONS (Manganese Delineation)

LIST OF TABLES
(Following Text)

TABLE 2.1	SOIL SAMPLING PLAN
TABLE 2.2	GROUNDWATER SAMPLING PLAN

LIST OF ACRONYMS

CRA	Conestoga-Rovers & Associates, Inc.
PCE	tetrachloroethene
RACER	Revitalizing Auto Communities Environmental Response Trust
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
Site	Willow Run Powertrain Plant Property
TCE	trichloroethene
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Conestoga-Rovers & Associates, Inc. (CRA) prepared a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (CRA, 2012) and a RFI Work Plan Addendum No. 1 (CRA, 2013) for the Former Willow Run Powertrain Plant property (Site) in Ypsilanti, Michigan. The field work associated with the RFI Work Plan and RFI Work Plan Addendum No.1 were completed in the spring of 2012 and 2013, respectively. The results of the RFI investigation have been reviewed and will be presented in the RFI Report. The results indicate some additional investigation is warranted to further delineate volatile organic compound (VOC) impacts on Site near the southeast property boundary. Also, metal concentrations in soil south of the plant warrant further investigation. CRA has prepared this Addendum No. 2 to the RFI Work Plan to address those delineation activities.

Specifically this RFI Work Plan Addendum No. 2 presents the additional investigative activities that will be conducted to:

- Delineate shallow soil exceedances for tetrachloroethene (PCE), trichloroethene (TCE), manganese, and arsenic
- Collect and evaluate shallow groundwater samples for PCE and TCE in the vicinity of shallow soil impacts. Groundwater samples will be collected from the soil boring locations

Additional background information including Site location, sampling methodology, and the Quality Assurance Project Plan are presented in the RFI Work Plan (CRA, 2012).

2.0 INVESTIGATION PROGRAM

This Addendum No. 2 addresses additional delineation activities to be completed in August of 2013.

2.1 SOIL INVESTIGATION

Twelve soil borings will be drilled to further delineate VOC impacted soil and groundwater. Five soil borings will be drilled to further delineate shallow soil exceedances for arsenic. These proposed additional soil investigative locations are presented on Figure 2.1. Figure 2.1 also provides a summary of PCE, TCE, and daughter product concentrations in the area of the VOC investigation.

Two soil borings will be drilled to further delineate shallow soil exceedances for manganese. Figure 2.2 presents these proposed locations. All locations are track mounted rig accessible. All waste generated during drilling activities will be containerized and properly disposed of.

Table 2.1 presents the soil boring installation program and includes detailed information on soil sample depths, analysis, and estimated depths of borings.

2.2 GROUNDWATER INVESTIGATION

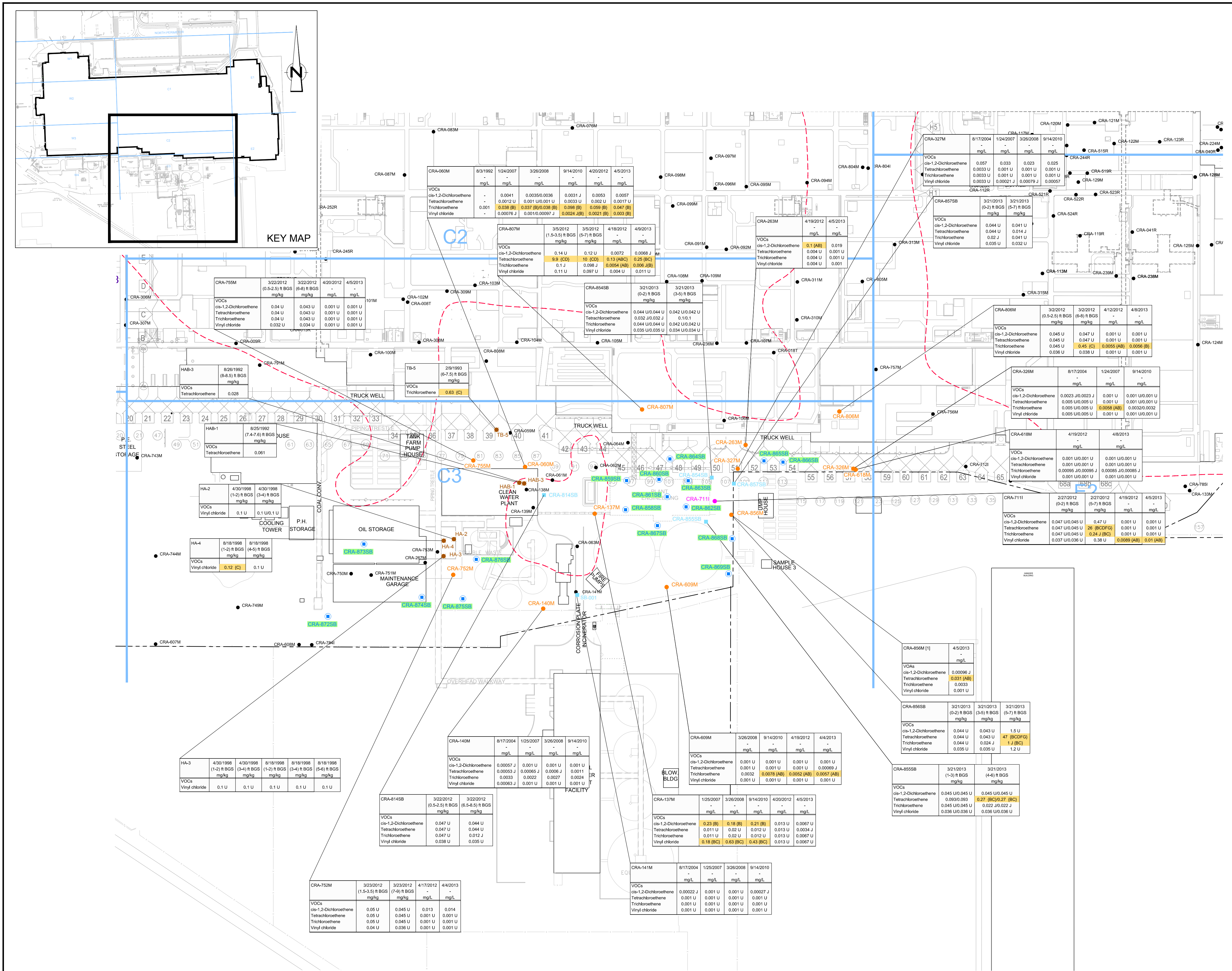
Table 2.2 includes detailed information on the planned groundwater sampling analysis at the 12 soil borings related to the PCE/TCE delineation. A water sample will be collected and analyzed for VOCs from each borehole.

3.0 REFERENCES

CRA, February 2012. Resource Conservation and Recovery Act Facility Investigation Work Plan, Former Willow Run Powertrain Plant, Ypsilanti, Michigan

CRA, March 2013. Resource Conservation and Recovery Act Facility Investigation Work Plan Addendum No. 1, Former Willow Run Powertrain Plant, Ypsilanti, Michigan.

FIGURES



NO

Revision

Date

Initial

0

50

100ft

LEGEND

PROPERTY BOUNDARY

TRENCHES AND FLUMES (INCLUDES COOLANT TRENCHES (AOI 28))

SITE SECTION DESIGNATION

FENCE LINE

APPROXIMATE EXTENT OF LNAPL BASED ON LIF AND IN WELL MEASUREMENTS

PROPERTY SWAP AREA

CRA-726M EXISTING WELL SHALLOW

CRA-728M EXISTING WELL INTERMEDIATE

CRA-7075B SOIL BORING

CRA-124M EXISTING MONITORING WELL LOCATION (NO PERTINENT DATA)

CRA-8655B PROPOSED SOIL BORING LOCATION

SOIL SAMPLE

GROUNDWATER SAMPLE

DATE

DEPTH

UNITS

RESULTS

EXCEEDANCES

NOTES:

ALL PROPOSED LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO CHANGE BASED ON FIELD OBSERVATIONS UTILITY CLEARANCE ETC.

[1] LOCATION SCREENED AGAINST RESIDENTIAL CRITERIA

U- CONSTITUENT NOT DETECTED ABOVE METHOD DETECTION LIMIT

J- ESTIMATED VALUE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

Soil Screening Criteria

(A) - Statewide Default Background Level

(B) - Residential Drinking Water Protection Criteria

(C) - Non-Residential Drinking Water Protection Criteria

(D) - Groundwater Surface Water Interface Protection Criteria

(E) - Groundwater Contact Protection Criteria

(F) - Residential Volatilization to Indoor Air Inhalation

(G) - Non-Residential Volatilization to Indoor Air Inhalation

(H) - Residential Infinite Source Volatile Soil Inhalation Criteria (VSI)

(I) - Non-Residential Infinite Source Volatile Soil Inhalation Criteria (VSI)

(J) - Residential Finite VSI for 5 M Source Thickness

(K) - Non-Residential Finite VSI for 5 M Source Thickness

(L) - Residential Finite VSI for 2 M Source Thickness

(M) - Non-Residential Finite VSI for 2 M Source Thickness

(N) - Residential Particulate Soil Inhalation Criteria

(O) - Non-Residential Particulate Soil Inhalation Criteria

(P) - Residential Direct Contact Criteria

(Q) - Non-Residential Direct Contact Criteria

(R) - Soil Saturation Concentration Screening

DRAWING STATUS

Status

Date

Initial

PROPOSED SOIL BORING LOCATIONS

YPSILANTI, MICHIGAN

RFI WORK PLAN ADDENDUM NO. 2

WILLOW RUN POWERTRAIN

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager: B. LANDALE

Reviewed By: D. BECK

Date: AUGUST 2013

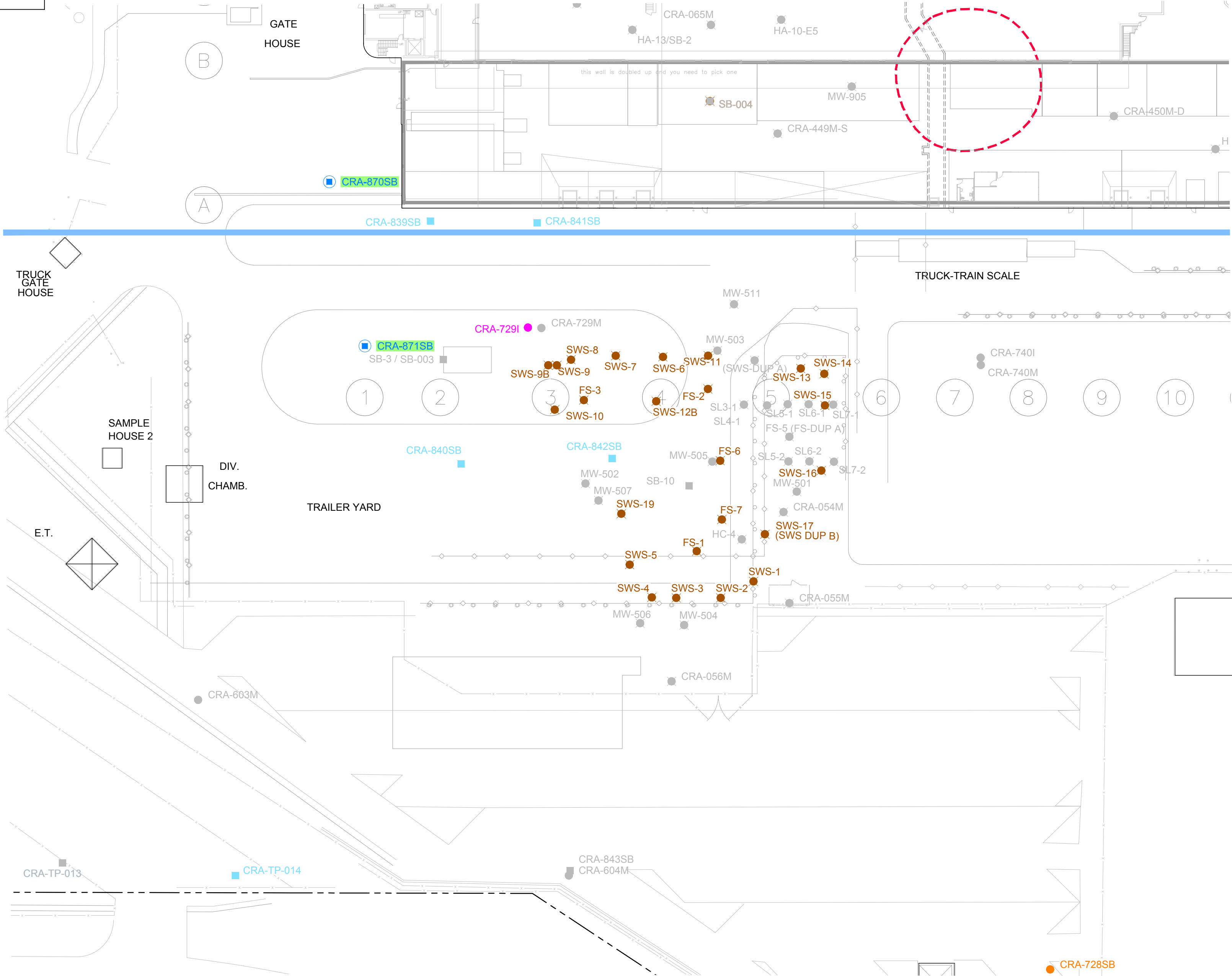
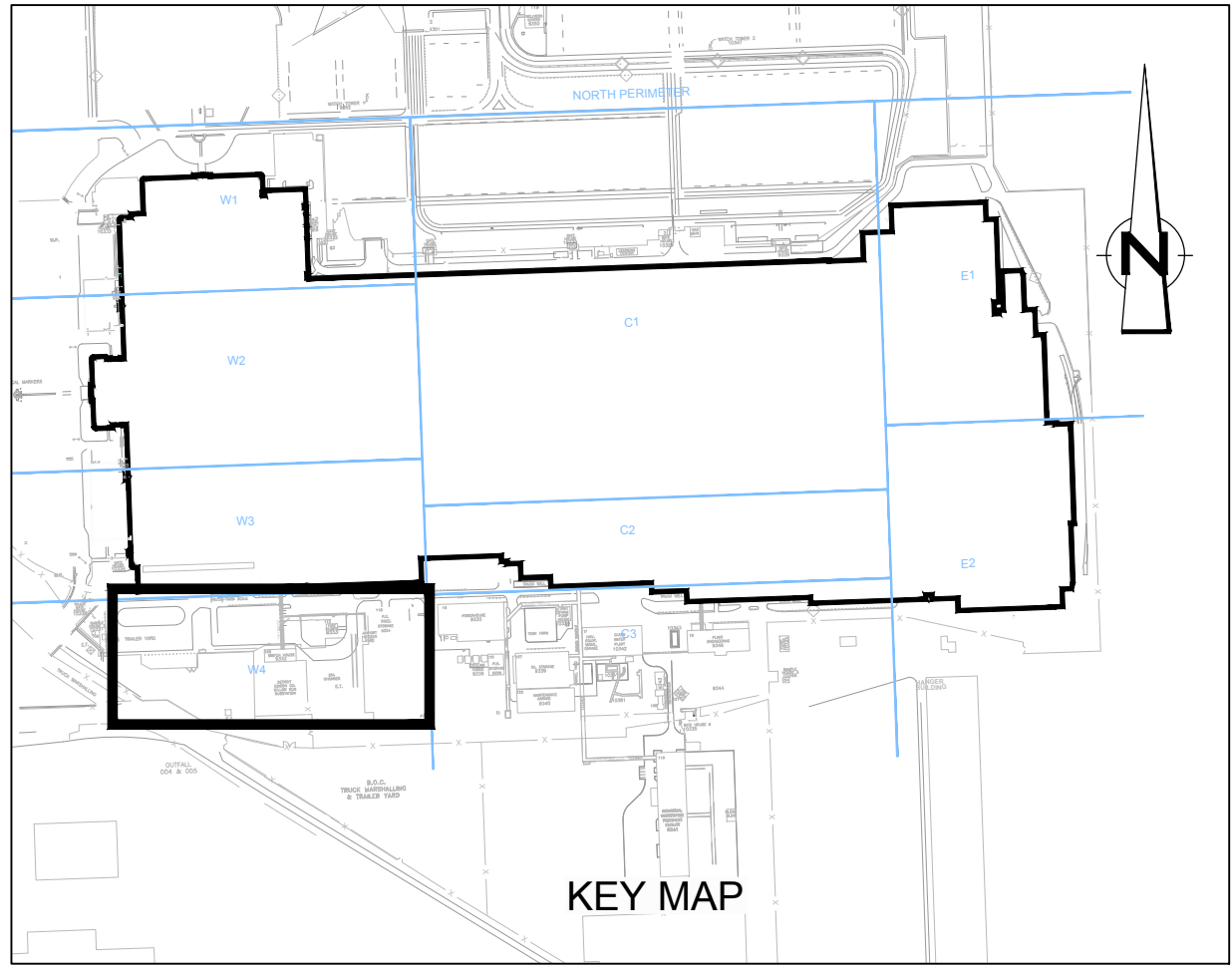
Scale: 1"=100'

Project N°: 017358-T01

Report N°: 027

Drawing N°: 2.1

107358-T01(027)GN-DE002 AUG 2/2013



No	Revision	Date	Initial

LEGEND

PROPERTY BOUNDARY

TRENCHES AND FLUMES
(INCLUDES COOLANT TRENCHES
(AOI 28))

SITE SECTION DESIGNATION

FENCE LINE

APPROXIMATE EXTENT OF LNAPL BASED ON LIF AND IN WELL
MEASUREMENTS

PROPERTY SWAP AREA

CRA-728M
EXISTING WELL SHALLOW

CRA-726I
EXISTING WELL INTERMEDIATE

CRA-409M-S
ABANDONED WELL SHALLOW

CRA-421M-D
ABANDONED WELL INTERMEDIATE

CRA-707SB
SOIL BORING

CRA-866SB
PROPOSED SOIL BORING LOCATION

0

20

60ft

N

NOTE: AOI 38 - HISTORICAL TANK FARMS
INCLUDES AOI 18, AOI 17, AOI 27

NOTES:
[1] LOCATION SCREENED AGAINST RESIDENTIAL CRITERIA
U- CONSTITUENT NOT DETECTED ABOVE METHOD DETECTION LIMIT
J- ESTIMATED VALUE

NOTE: DATA PRESENTED IN THE DATABOXES IS ONLY FOR THE CONSTITUENTS
OF CONCERN (COC) AS DEFINED IN THE REPORT TEXT. IF A COC WAS NEVER
SAMPLED FOR AT A LOCATION, THAT COC IS NOT SHOWN IN THE DATABOX
FOR THAT LOCATION.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved		
DRAWING STATUS		
Status	Date	Initial

PROPOSED SOIL BORING LOCATIONS

YPSILANTI, MICHIGAN

RFI WORK PLAN ADDENDUM NO. 2
WILLOW RUN POWERTRAIN

CRA

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:
B. LANDALE

Reviewed By:
D. BECK

Date:
AUGUST 2013

Scale:
1"=60'

Project N°:
017358-T01

Report N°:
027

Drawing N°:
2.2

TABLES

TABLE 2.1

**SOIL SAMPLING PLAN
RFI WORK PLAN ADDENDUM 2
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN**

Boring Number	Target Depth	Soil Sample Intervals (feet bgs)	Soil Analysis. ¹	Screen Installation Interval	Sampling Reason
CRA-858SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-859SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-860SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-861SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-862SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-863SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-864SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-865SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-866SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-867SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-868SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building

TABLE 2.1

**SOIL SAMPLING PLAN
RFI WORK PLAN ADDENDUM 2
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN**

Boring Number	Target Depth	Soil Sample Intervals (feet bgs)	Soil Analysis. ¹	Screen Installation Interval	Sampling Reason
CRA-869SB	0.5 foot into upper clay layer	• 1-3³ • 3-5 • 5-7⁴ • Up to one additional interval with high PID, staining, etc.²	TCL VOCs	--	Further delineation of PCE and TCE near Former Plant Engineering Building
CRA-870SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Manganese	--	Further delineation of Manganese near CRA-839SB and CRA-729I
CRA-871SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Manganese	--	Further delineation of Manganese near CRA-839SB and CRA-729I
CRA-872SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Arsenic	--	Further delineation of Arsenic near CRA-750M and CRA-752M
CRA-873SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Arsenic	--	Further delineation of Arsenic near CRA-750M and CRA-752M
CRA-874SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Arsenic	--	Further delineation of Arsenic near CRA-750M and CRA-752M
CRA-875SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Arsenic	--	Further delineation of Arsenic near CRA-750M and CRA-752M
CRA-876SB	Water table	• 0-2³ • 2-4 • 4-6⁴ • Up to one additional interval with high PID, staining, etc.²	Arsenic	--	Further delineation of Arsenic near CRA-750M and CRA-752M

Notes

SB - soil boring

¹"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW846, 3rd Edition, updated November 1986
VOCs U.S. EPA Method SW846-8260

² If an additional sample is collected due to high PID, staining, etc, the sample will be analyzed for TCL VOCs, TCL SVOCs, Site-Specific TAL Metals, PCBs,

³ 1-3 and 0-2 feet bgs interval will be based on field conditions and will represent a 1 foot interval beneath the concrete and subslab fill

⁴ Collect sample from the unsaturated zone only

TABLE 2.2

**GROUNDWATER SAMPLING PROGRAM
RFI WORK PLAN ADDENDUM 2
FORMER WILLOW RUN PLANT
YPSILANTI, MICHIGAN**

Boring Number	Boring Water Analysis ¹	Sampling Reason	Sampling Frequency
New Location			
CRA-858SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-859SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-860SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-861SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-862SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-863SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-864SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-865SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-866SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-867SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-868SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time
CRA-869SB	TCL VOCs	Delineation of impacts (PCE, TCE) in shallow zone	One - time

Notes

¹Samples will be collected from the mid-point of the saturated zone based on field observations

"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods"

SW846, 3rd Edition, updated November 1986

VOCs U.S. EPA Method SW846-8260