Technical Memorandum

To:	Dale Bridgeford, MDEQ, Peter Quackenbush, MDEQ, Joseph Kelly, USEPA
From:	Stacy Metz and Graham Crockford
Subject:	**STATUS UPDATE** - Investigation of the Potential Groundwater to Surface Water Migration Pathway: Former Tecumseh Products Company Site in Tecumseh, Michigan (RCRA-05-2010-0012)
Date:	October 14, 2015
cc:	Jason Smith, Tecumseh Products Company Chris DeWetter, Tecumseh Products Company Douglas McClure, Conlin, McKenney & Philbrick, PC
Project No.:	220003.0001.0000

Tecumseh Products Company (TPC) retained TRC Environmental Corporation (TRC), to investigate soil and groundwater conditions at the former TPC site located in Tecumseh, Michigan. The potential for unacceptable risk to the environment related to the potential discharge of affected groundwater to nearby surface water and the wetlands was evaluated in the 2012 RI/EI Report. This evaluation included the development of site-specific mixing zone-based groundwater to surface water interface (GSI) criteria/*de minimis* determination on surface water, which was submitted to the Michigan Department of Environmental Quality (MDEQ) and the United Stated Environmental Protection Agency (USEPA) in June 2012 then revised and re-submitted in August 2013 to reflect MDEQ rule changes related to mixing zone determinations. MDEQ/USEPA reviewed the application and requested additional information in order to further review the mixing zone-based GSI.

Between April and June 2015, High Resolution Site Characterization (HRSC) activities were completed by TPC to supplement existing site characterization data and more precisely document the nature and extent of chlorinated volatile organic compounds (CVOCs) in groundwater. These data were useful in addressing some comments related to the GSI issues. In subsequent investigation activities completed in August and September 2015, TRC performed the following:

- **Verified the Approximate Boundary of Wetland Area:** Performed a site reconnaissance and a GPS survey to more precisely document the up gradient (western) perimeter of the wetland area, based on visual observations, prior to placement of GSI monitoring points.
- **Assessed Groundwater Quality at the Wetland Boundary:** Installed and sampled five hand-driven monitoring points (B-108 to B-112) along the up gradient perimeter of the wetland area,

down gradient from monitoring wells MW-22 and MW-31 at the locations shown on Figure 1; a conceptual cross section is attached as Figure 2. TRC collected groundwater levels relative to ground surface and adjacent wetland/surface water features to determine if water appears to be venting, or discharging to the wetlands, adjacent to the River Raisin, or directly into the river.

The laboratory report is included as Attachment A. These data are summarized on Table 1. Data showed that:

- **Groundwater data in one location exceeds generic GSI Criteria in groundwater underlying the wetland.** Groundwater samples from four of the five locations were below generic GSI criteria for all volatile organic compounds (VOCs). Samples collected from soil boring B-108 detected trichoroethene (1,200 µg/L), cis-1,2-dichloroethene (1,100 µg/L), and vinyl chloride (23 µg/L) above generic GSI criteria; but below the final acute values (FAVs). The potential venting area for VOCs to the wetland or river is limited to approximately 250 lineal feet along the western edge of the wetland from soil boring B-109, north of soil boring B-108, south to the seep sample location, as shown on Figure 1.
- **Groundwater elevation data show the potential for discharge to the wetland.** The first round of water levels have been collected, and water levels from sample location B-108 show there is a potential for venting to the wetland. Because groundwater is potentially venting to the wetland adjacent to the River Raisin above the generic GSI criteria, further investigation is appropriate.

Demonstrating GSI Pathway Compliance

In June 2014, the MDEQ released the draft guidance for GSI Pathway Compliance[1] to outline several approaches to address the GSI pathway. TRC has implemented several of these GSI compliance options at a variety of sites. Each site is unique, so it is important to consider site-specific conditions and use multiple lines of evidence in order to obtain GSI compliance, which may involve using a combination of the available options.

Because generic GSI criteria is exceeded and there is a potential for venting to a wetland, a mixing zone-based approach alone will not be successful in addressing GSI compliance, therefore, toxicity testing will be performed to demonstrate that potentially venting groundwater does not pose an ecological risk to wetland biota. If toxicity testing demonstrates that the affected groundwater does not pose an ecological risk to wetland biota, this data, in combination with a mixing-zone based approach for the River Raisin will be used to demonstrate GSI compliance. Proposed activities include:

- **Locating the area of highest VOC impacts:** Toxicity testing should be performed on the groundwater with the highest VOC concentrations that is potentially venting to the wetland. Therefore additional sampling will be completed to verify the location of highest VOC impacts. Additional VOC sampling is proposed for one additional shallower location immediately adjacent to soil boring B-108 (approximately 3-5 feet below ground surface [ft bgs]), a shallow

[1] MDEQ RRD, June 2014 Draft MDEQ Groundwater/Surface Water Interface Pathway Compliance Options, Remediation and Redevelopment Division Resource Materials.

(approximately 3-5 feet ft bgs) and a deep (approximately 6-9 ft bgs) sampling point located approximately 75 feet north of soil boring B-108, and a shallow (approximately 3-5 feet ft bgs) and a deep (approximately 6-9 ft bgs) sampling point located approximately 75 feet south of soil boring B-108.

- **Performance of Toxicity Testing:** Using the VOC sample data from these wells, TRC will select the sample location with the highest VOC concentrations for toxicity testing. At that location a groundwater sample will be collected for toxicity testing in order to determine whether or not the groundwater which has the potential to vent to the wetland poses an unacceptable ecological risk.
- **Establishment of Hydraulic Properties:** Even though the groundwater elevation data suggests that there is a potential to discharge to the wetland, because the wetland is underlain by a 2-3 foot layer of low permeability of organic rich muck, it is more likely that a bulk of the VOC mass flux is horizontal beneath the wetland and discharging to the River Raisin through the underlying more highly conductive sand layer. A professional survey of monitoring points will be used to establish groundwater elevation data so that hydraulic gradient relative to the existing monitoring well network can be established. In addition, *in situ* hydraulic conductivity testing, to facilitate calculation of groundwater discharge and mass flux through the wetland and to the River Raisin, will be completed so that precise values for these parameters can be used in the development of mixing zone based GSI criteria for compliance at the River Raisin.
- **GSI Compliance Points:** Once the aforementioned data is collected, appropriate GSI compliance points will be established so that monitoring of groundwater quality can be used to verify that GSI compliance is maintained.

Table 1

Table 1
Summary of Detected Volatile Organic Compounds in Groundwater at GSI Boring Locations
Former Tecumseh Products Company Site
Tecumseh, Michigan

Analyte		Acetone	1,1-Dichloro-ethane	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Toluene[1]	1,1,1-Trichloroethane	Trichloroethene	Vinyl Chloride
Residential DW Criteria		730	880	70	100	1,000	200	5.0	2.0
Non-Residential DW Criteria		2100	2,500	70	100	1,000	200	5.0	2.0
Residential GWSL for Vapor Intrusion		8.20E+06	4,300	83	360	36,000	17,000	10	2.8
Non-Residential GWSL for Vapor Intrusion		3.40E+07	18,000	350	1,500	1.50E+05	71,000	41	52
GSI Criteria		1700	740	620	1,500[2]	270	89	200[2]	13[2]
Groundwater Contact Criteria		3.10E+07	2.40E+06	2.00E+05	2.20E+05	5.30E+05	1.30E+06	13,000[3]	1,000
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
B-108 (5.6-8.6')	9/1/2015	<200	**15**	**1,100**	**11**	<10	**25**	**1,200**	**23**
B-109 (7.4-10.4')	9/1/2015	<20	**6.5**	**6.9**	<1.0	<1.0	<1.0	**2.7**	<1.0
B-109 (7.4-10.4') (DUP-01)	9/1/2015	<20	**6.6**	**7.1**	<1.0	<1.0	<1.0	**2.8**	<1.0
B-110 (7.3-10.3')	9/1/2015	**41**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B-111 (3.3-6.3')	9/1/2015	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B-112 (4.4-7.4')	9/1/2015	**25**	<1.0	<1.0	<1.0	**1.1**	<1.0	<1.0	<1.0

Notes:

Health-Based Residential and Non-Residential Drinking Water (DW) Criteria and Groundwater/Surface Water Interface (GSI) Criteria from MDEQ RRD Part 201 Generic Cleanup Criteria/Part 213 Risk Based Cleanup Levels, December 30, 2013. Groundwater Contact (GC) Criteria from MDEQ RRD Part 201 Generic Cleanup Criteria/Part 213 Risk Based Cleanup Levels, September 28, 2012. Groundwater Screening Levels (GWSLs) for Vapor Intrusion were taken from the MDEQ Guidance Document for the Vapor Intrusion Pathway, May 2013.

ug/L = micrograms per liter

Bold font denotes concentrations detected above laboratory reporting limits

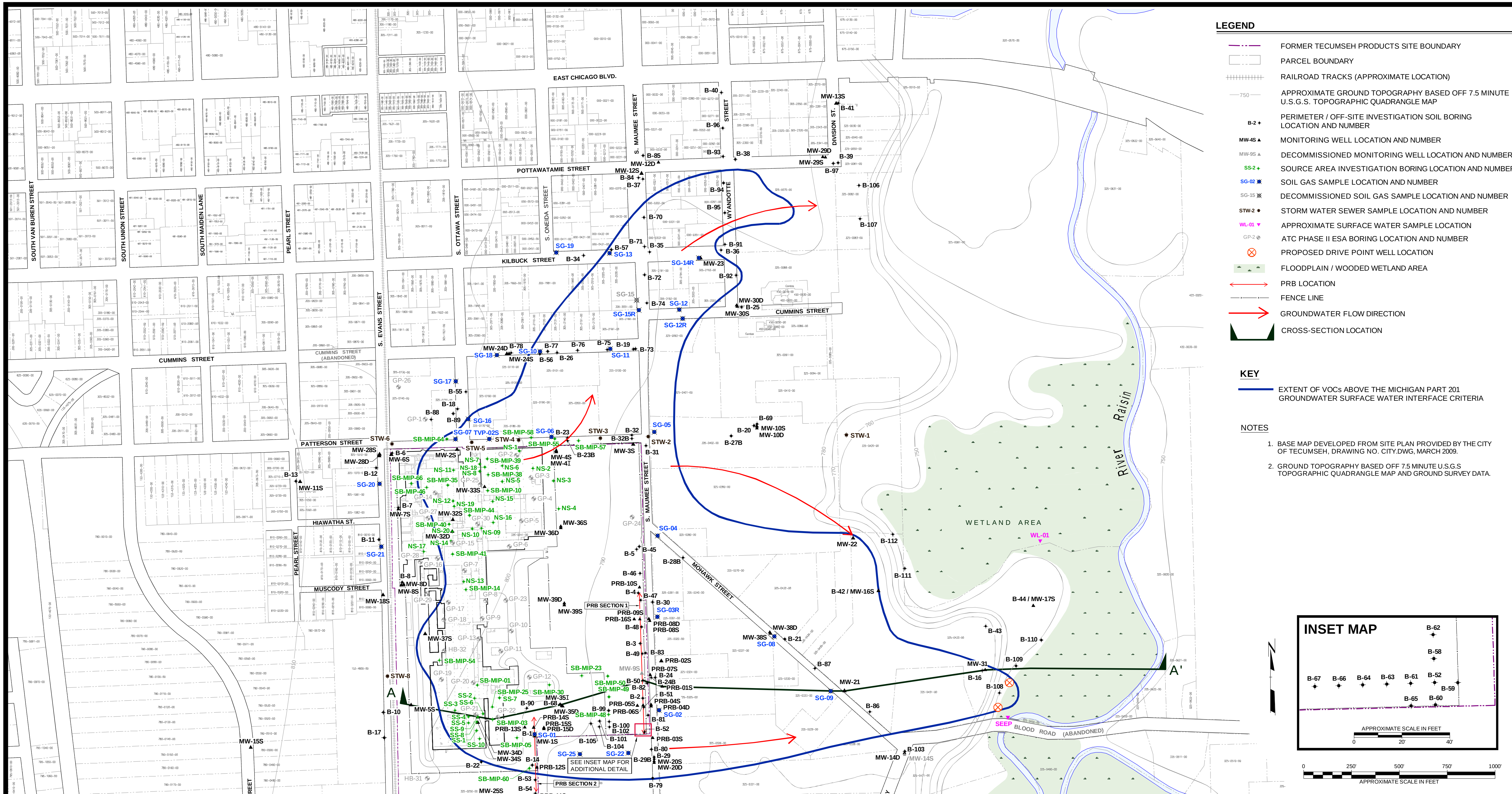
Denotes concentrations above one or more criteria

1) Compound may exhibit characteristic ignitability as defined in 40 C.F.R. § 261.21

2) Criterion is not protective for surface water used as a drinking water source as described in footnote {X} of MDEQ Op Memo 1 Part 201, Attachment 1.

3) At the request of USEPA, a site-specific groundwater contact criteria for trichloroethene (TCE) was recalculated to reflect revised TCE toxicity data which were published by USEPA on September 28, 2011.

Figures



EAST CHICAGO BLVD.
POTTAWATAMIE STREET
KILBUCK STREET
CUMMINS STREET
CUMMINS STREET (ABANDONED)
PATTERSON STREET
HIAWATHA ST.
MUSCODY STREET
MOHAWK STREET
EAST RUSSELL ROAD
BLOOD ROAD (ABANDONED)
MILL HIGHWAY
SOUTH VAN BUREN STREET
SOUTH UNION STREET
SOUTH MAIDEN LANE
PEARL STREET
S. EVANS STREET
S. OTTAWA STREET
S. ONEIDA STREET
S. MAUMEE STREET
WYANDOTTE
DIVISION ST.
S. UNION STREET
WETLAND AREA
Raisin River
SEEP
WL-01
A
A'
PRB SECTION 1
PRB SECTION 2
SEE INSET MAP FOR ADDITIONAL DETAIL
LEGEND
FORMER TECUMSEH PRODUCTS SITE BOUNDARY
PARCEL BOUNDARY
RAILROAD TRACKS (APPROXIMATE LOCATION)
APPROXIMATE GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S. TOPOGRAPHIC QUADRANGLE MAP
PERIMETER / OFF-SITE INVESTIGATION SOIL BORING LOCATION AND NUMBER
MONITORING WELL LOCATION AND NUMBER
DECOMMISSIONED MONITORING WELL LOCATION AND NUMBER
SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
SOIL GAS SAMPLE LOCATION AND NUMBER
DECOMMISSIONED SOIL GAS SAMPLE LOCATION AND NUMBER
STORM WATER SEWER SAMPLE LOCATION AND NUMBER
APPROXIMATE SURFACE WATER SAMPLE LOCATION
ATC PHASE II ESA BORING LOCATION AND NUMBER
PROPOSED DRIVE POINT WELL LOCATION
FLOODPLAIN / WOODED WETLAND AREA
PRB LOCATION
FENCE LINE
GROUNDWATER FLOW DIRECTION
CROSS-SECTION LOCATION
KEY
EXTENT OF VOCs ABOVE THE MICHIGAN PART 201 GROUNDWATER SURFACE WATER INTERFACE CRITERIA
NOTES
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY THE CITY OF TECUMSEH, DRAWING NO. CITY.DWG, MARCH 2009.
2. GROUND TOPOGRAPHY BASED OFF 7.5 MINUTE U.S.G.S TOPOGRAPHIC QUADRANGLE MAP AND GROUND SURVEY DATA.
INSET MAP
APPROXIMATE SCALE IN FEET
0 250' 500' 750' 1000'
APPROXIMATE SCALE IN FEET

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

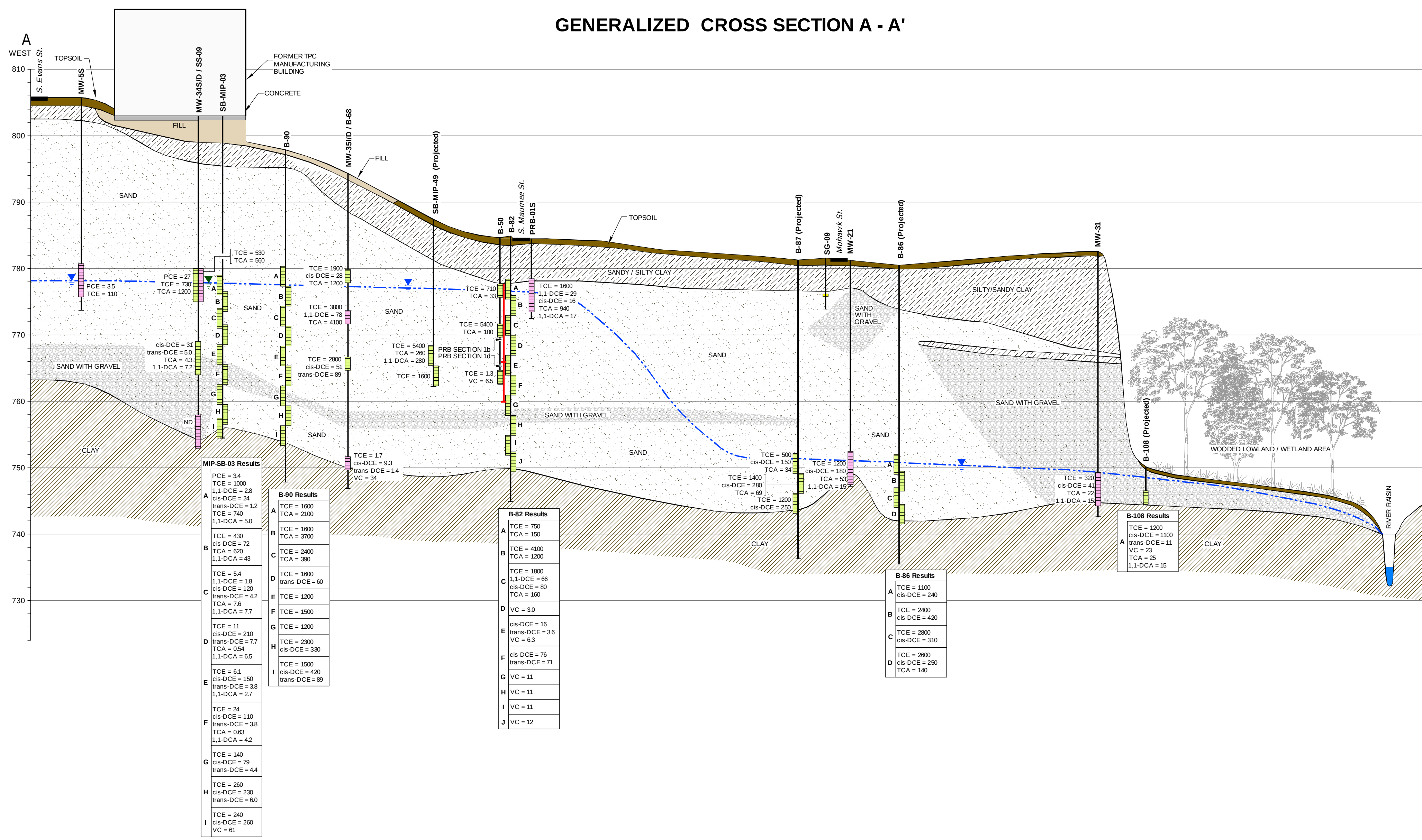
PROJ: **FORMER TECUMSEH PRODUCTS SITE**
TECUMSEH, MICHIGAN

TITLE: **EXTENT OF VOCs ABOVE GSI CRITERIA AND PROPOSED INVESTIGATION LOCATIONS**

DRAWN BY: DGS	SCALE: AS INDICATED	PROJ. NO. 220003.0000	
CHECKED BY: SEM		FILE NO. 220003.0001.01.dwg	
APPROVED BY: GC	DATE PRINTED:	**FIGURE 1**	
DATE: OCTOBER 2015			

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

GENERALIZED CROSS SECTION A - A'



LEGEND

- TOPSOIL
- SAND
- CLAY
- SILTY SAND
- SANDY / SILTY CLAY
- CONCRETE
- FILL
- COARSE GRAINED SOILS (5)
- STRATIGRAPHIC BOUNDARY BASED ON NEAREST SOIL BORING OR MONITORING WELL (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER ELEVATION
- PIEZOMETRIC WATER LEVEL INDICATOR (DEEP WELL)
- TEMPORARY WELL SCREEN
- WELL SCREEN
- SOIL GAS SAMPLE POINT SCREEN

PCE	=	TETRACHLOROETHENE
TCE	=	TRICHLOROETHENE
TCA	=	1,1,1-TRICHLOROETHANE
1,1-DCE	=	1,1-DICHLOROETHENE
1,1-DCA	=	1,1-DICHLOROETHANE
cis-DCE	=	1,2-cis-DICHLOROETHENE
trans-DCE	=	1,2-trans-DICHLOROETHENE
VC	=	VINYL CHLORIDE

NOTES

1. GROUND SURFACE AND STRATIGRAPHIC CONTACTS ARE APPROXIMATE AND EXTRAPOLATED FROM NEAREST SOIL BORING DATA.
2. SEE FIGURE 1 FOR LOCATION / ORIENTATION OF THIS GEOLOGIC CROSS SECTION.
3. GROUNDWATER ANALYTICAL DATA AND GROUNDWATER ELEVATIONS REFLECT THE MOST RECENT SAMPLE EVENT AS OF SEPTEMBER 2015.
4. DETECTED GROUNDWATER CONCENTRATIONS FOR CONSTITUENTS OF HIGHEST CONCERN ARE PROVIDED IN MICROGRAMS PER LITER.
5. COARSE GRAINED SOILS INCLUDE FINE GRAVEL, GRAVEL WITH SAND, SAND WITH GRAVEL, AND COARSE SAND.

NO.	BY	DATE	REVISION	APP'D
3				
2				
1				

PROJECT: **FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN**

TITLE: **CROSS SECTION A - A'**

DRAWN BY: DGS	SCALE:	PROJ. NO. 220003.0000	
CHECKED BY: SM	AS INDICATED	FILE NO. 220003.0001.02.dwg	
APPROVED BY: GC	DATE PRINTED:	**FIGURE 2**	
DATE: OCTOBER 2015			

TRC
1540 Eisenhower Place
Ann Arbor, MI 48108
Phone: 734.971.7080
Fax: 734.971.9022

Attachment A
Laboratory Report

September 14, 2015

TRC Companies. - Ann Arbor Office
Attn: Ms. Stacy Metz
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: Tecumseh Products Groundwater

Dear Ms. Stacy Metz,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1509063	09/02/2015	Laboratory Services

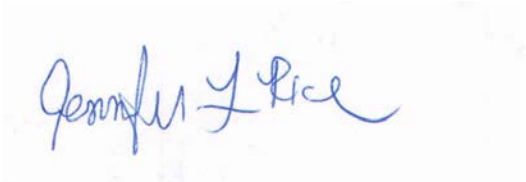
This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#88-0730/13-049-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#200026/003329); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#103068); Michigan DPH (#0034); Minnesota DPH (#491715); New York ELAP (#11776/48855); North Carolina DNRE (#659); Virginia DCLS (#460153/2592); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-12-00236).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications and Project Technical Narrative sections of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice
Project Chemist

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ 616.975.4500 ♦ Fax 616.942.7463 ♦ www.trimatrixlabs.com

PROJECT TECHNICAL NARRATIVE(s)

No Project Narrative is associated with this report.

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STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 8260B

Qualification: The sample was received at an incorrect preservation pH.

Analysis: USEPA-8260B

Sample: 1509063-01 B-110 (7.3-10.3')

Qualification: The corresponding CCV for this analytical batch had a recovery exceeding the upper control limit of the method. A positive result for this analyte in any associated samples are considered estimated. Non-detectable results are not qualified.

Analysis: USEPA-8260B

Sample/Analyte:		
1509063-01	B-110 (7.3-10.3')	Bromomethane
1509063-01	B-110 (7.3-10.3')	Carbon Disulfide
1509063-02	DUP-01	Bromomethane
1509063-02	DUP-01	Carbon Disulfide
1509063-03	B-109 (7.4-10.4')	Bromomethane
1509063-03	B-109 (7.4-10.4')	Carbon Disulfide
1509063-04	B-108 (5.6-8.6')	Bromomethane
1509063-04	B-108 (5.6-8.6')	Carbon Disulfide
1509063-05	B-111 (3.3-6.3')	Bromomethane
1509063-05	B-111 (3.3-6.3')	Carbon Disulfide
1509063-06	B-112 (4.4-7.4')	Bromomethane
1509063-06	B-112 (4.4-7.4')	Carbon Disulfide
1509063-07	TB-01	Bromomethane
1509063-07	TB-01	Carbon Disulfide

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**B-110 (7.3-10.3')**	Sampled:	09/01/15 12:20
Lab Sample ID:	**1509063-01**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:22 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

*Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	**41**	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

Continued on next page

*See Statement of Data Qualifications

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**B-110 (7.3-10.3')**	Sampled:	09/01/15 12:20
Lab Sample ID:	**1509063-01**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:22 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	<1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

Continued on next page

*See Statement of Data Qualifications

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TRIMATRIX LABORATORIES

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Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-110 (7.3-10.3')**	Sampled:	09/01/15 12:20		
Lab Sample ID:	**1509063-01**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:22	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	% Recovery	Control Limits
Dibromofluoromethane	*97*	*85-118*
1,2-Dichloroethane-d4	*100*	*87-122*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**DUP-01**	Sampled:	09/01/15 00:00
Lab Sample ID:	**1509063-02**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:51 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<20	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	**6.6**	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	**7.1**	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**DUP-01**	Sampled:	09/01/15 00:00
Lab Sample ID:	**1509063-02**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:51 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	<1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	**2.8**	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**DUP-01**	Sampled:	09/01/15 00:00
Lab Sample ID:	**1509063-02**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 12:51 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	*% Recovery*	*Control Limits*
Dibromofluoromethane	*97*	*85-118*
1,2-Dichloroethane-d4	*101*	*87-122*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**B-109 (7.4-10.4')**	Sampled:	09/01/15 10:48
Lab Sample ID:	**1509063-03**	Sampled By:	Javier Jasso
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 13:19 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<20	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	**6.5**	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	**6.9**	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-109 (7.4-10.4')**	Sampled:	09/01/15 10:48		
Lab Sample ID:	**1509063-03**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 13:19	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	<1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	**2.7**	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-109 (7.4-10.4')**	Sampled:	09/01/15 10:48		
Lab Sample ID:	**1509063-03**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 13:19	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	*% Recovery*	*Control Limits*
Dibromofluoromethane	*97*	*85-118*
1,2-Dichloroethane-d4	*101*	*87-122*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-108 (5.6-8.6')**	Sampled:	09/01/15 11:50		
Lab Sample ID:	**1509063-04**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	10	Analyzed:	09/08/15 15:59	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<200	200
107-13-1	Acrylonitrile	<20	20
71-43-2	Benzene	<10	10
108-86-1	Bromobenzene	<10	10
74-97-5	Bromochloromethane	<10	10
75-27-4	Bromodichloromethane	<10	10
75-25-2	Bromoform	<10	10
*74-83-9	Bromomethane	<50	50
104-51-8	n-Butylbenzene	<10	10
135-98-8	sec-Butylbenzene	<10	10
98-06-6	tert-Butylbenzene	<10	10
*75-15-0	Carbon Disulfide	<10	10
56-23-5	Carbon Tetrachloride	<10	10
108-90-7	Chlorobenzene	<10	10
75-00-3	Chloroethane	<50	50
67-66-3	Chloroform	<10	10
74-87-3	Chloromethane	<50	50
96-12-8	1,2-Dibromo-3-chloropropane	<50	50
124-48-1	Dibromochloromethane	<10	10
106-93-4	1,2-Dibromoethane	<10	10
74-95-3	Dibromomethane	<10	10
110-57-6	trans-1,4-Dichloro-2-butene	<10	10
95-50-1	1,2-Dichlorobenzene	<10	10
541-73-1	1,3-Dichlorobenzene	<10	10
106-46-7	1,4-Dichlorobenzene	<10	10
75-71-8	Dichlorodifluoromethane	<50	50
75-34-3	1,1-Dichloroethane	**15**	10
107-06-2	1,2-Dichloroethane	<10	10
75-35-4	1,1-Dichloroethene	<10	10
156-59-2	cis-1,2-Dichloroethene	**1100**	10
156-60-5	trans-1,2-Dichloroethene	**11**	10

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-108 (5.6-8.6')**	Sampled:	09/01/15 11:50		
Lab Sample ID:	**1509063-04**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	10	Analyzed:	09/08/15 15:59	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<10	10
10061-01-5	cis-1,3-Dichloropropene	<10	10
10061-02-6	trans-1,3-Dichloropropene	<10	10
100-41-4	Ethylbenzene	<10	10
60-29-7	Ethyl Ether	<50	50
591-78-6	2-Hexanone	<50	50
74-88-4	Iodomethane	<10	10
98-82-8	Isopropylbenzene	<10	10
99-87-6	4-Isopropyltoluene	<50	50
1634-04-4	Methyl tert-Butyl Ether	<50	50
75-09-2	Methylene Chloride	<50	50
78-93-3	2-Butanone (MEK)	<50	50
91-57-6	2-Methylnaphthalene	<50	50
108-10-1	4-Methyl-2-pentanone (MIBK)	<50	50
91-20-3	Naphthalene	<50	50
103-65-1	n-Propylbenzene	<10	10
100-42-5	Styrene	<10	10
630-20-6	1,1,1,2-Tetrachloroethane	<10	10
79-34-5	1,1,2,2-Tetrachloroethane	<10	10
127-18-4	Tetrachloroethene	<10	10
109-99-9	Tetrahydrofuran	<50	50
108-88-3	Toluene	<10	10
87-61-6	1,2,3-Trichlorobenzene	<50	50
120-82-1	1,2,4-Trichlorobenzene	<50	50
71-55-6	1,1,1-Trichloroethane	**25**	10
79-00-5	1,1,2-Trichloroethane	<10	10
79-01-6	Trichloroethene	**1200**	10
75-69-4	Trichlorofluoromethane	<10	10
96-18-4	1,2,3-Trichloropropane	<10	10
95-63-6	1,2,4-Trimethylbenzene	<10	10
108-67-8	1,3,5-Trimethylbenzene	<10	10

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-108 (5.6-8.6')**	Sampled:	09/01/15 11:50		
Lab Sample ID:	**1509063-04**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	10	Analyzed:	09/08/15 15:59	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	**23**	10
179601-23-1	Xylene, Meta + Para	<20	20
95-47-6	Xylene, Ortho	<10	10

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*98*	*85-118*
1,2-Dichloroethane-d4	*101*	*87-122*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-111 (3.3-6.3')**	Sampled:	09/01/15 14:25		
Lab Sample ID:	**1509063-05**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 15:31	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<20	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-111 (3.3-6.3')**	Sampled:	09/01/15 14:25		
Lab Sample ID:	**1509063-05**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 15:31	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	<1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-111 (3.3-6.3')**	Sampled:	09/01/15 14:25		
Lab Sample ID:	**1509063-05**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 15:31	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*99*	*85-118*
1,2-Dichloroethane-d4	*112*	*87-122*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*105*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-112 (4.4-7.4')**	Sampled:	09/01/15 14:10		
Lab Sample ID:	**1509063-06**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 14:45	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	**25**	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-112 (4.4-7.4')**	Sampled:	09/01/15 14:10		
Lab Sample ID:	**1509063-06**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 14:45	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	**1.1**	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**B-112 (4.4-7.4')**	Sampled:	09/01/15 14:10		
Lab Sample ID:	**1509063-06**	Sampled By:	Javier Jasso		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 14:45	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	***% Recovery***	***Control Limits***
Dibromofluoromethane	*97*	*85-118*
1,2-Dichloroethane-d4	*101*	*87-122*
Toluene-d8	*100*	*85-113*
4-Bromofluorobenzene	*100*	*82-110*

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TRIMATRIX LABORATORIES

ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**TB-01**	Sampled:	09/01/15 00:00		
Lab Sample ID:	**1509063-07**	Sampled By:	TML		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 11:54	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL
67-64-1	Acetone	<20	20
107-13-1	Acrylonitrile	<2.0	2.0
71-43-2	Benzene	<1.0	1.0
108-86-1	Bromobenzene	<1.0	1.0
74-97-5	Bromochloromethane	<1.0	1.0
75-27-4	Bromodichloromethane	<1.0	1.0
75-25-2	Bromoform	<1.0	1.0
*74-83-9	Bromomethane	<5.0	5.0
104-51-8	n-Butylbenzene	<1.0	1.0
135-98-8	sec-Butylbenzene	<1.0	1.0
98-06-6	tert-Butylbenzene	<1.0	1.0
*75-15-0	Carbon Disulfide	<1.0	1.0
56-23-5	Carbon Tetrachloride	<1.0	1.0
108-90-7	Chlorobenzene	<1.0	1.0
75-00-3	Chloroethane	<5.0	5.0
67-66-3	Chloroform	<1.0	1.0
74-87-3	Chloromethane	<5.0	5.0
96-12-8	1,2-Dibromo-3-chloropropane	<5.0	5.0
124-48-1	Dibromochloromethane	<1.0	1.0
106-93-4	1,2-Dibromoethane	<1.0	1.0
74-95-3	Dibromomethane	<1.0	1.0
110-57-6	trans-1,4-Dichloro-2-butene	<1.0	1.0
95-50-1	1,2-Dichlorobenzene	<1.0	1.0
541-73-1	1,3-Dichlorobenzene	<1.0	1.0
106-46-7	1,4-Dichlorobenzene	<1.0	1.0
75-71-8	Dichlorodifluoromethane	<5.0	5.0
75-34-3	1,1-Dichloroethane	<1.0	1.0
107-06-2	1,2-Dichloroethane	<1.0	1.0
75-35-4	1,1-Dichloroethene	<1.0	1.0
156-59-2	cis-1,2-Dichloroethene	<1.0	1.0
156-60-5	trans-1,2-Dichloroethene	<1.0	1.0

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**		
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services		
Client Sample ID:	**TB-01**	Sampled:	09/01/15 00:00		
Lab Sample ID:	**1509063-07**	Sampled By:	TML		
Matrix:	Water	Received:	09/02/15 17:35		
Unit:	ug/L	Prepared:	09/08/15 08:00	By:	BAG
Dilution Factor:	1	Analyzed:	09/08/15 11:54	By:	BAG
QC Batch:	1509569	Analytical Batch:	5I09017		

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
78-87-5	1,2-Dichloropropane	<1.0	1.0
10061-01-5	cis-1,3-Dichloropropene	<1.0	1.0
10061-02-6	trans-1,3-Dichloropropene	<1.0	1.0
100-41-4	Ethylbenzene	<1.0	1.0
60-29-7	Ethyl Ether	<5.0	5.0
591-78-6	2-Hexanone	<5.0	5.0
74-88-4	Iodomethane	<1.0	1.0
98-82-8	Isopropylbenzene	<1.0	1.0
99-87-6	4-Isopropyltoluene	<5.0	5.0
1634-04-4	Methyl tert-Butyl Ether	<5.0	5.0
75-09-2	Methylene Chloride	<5.0	5.0
78-93-3	2-Butanone (MEK)	<5.0	5.0
91-57-6	2-Methylnaphthalene	<5.0	5.0
108-10-1	4-Methyl-2-pentanone (MIBK)	<5.0	5.0
91-20-3	Naphthalene	<5.0	5.0
103-65-1	n-Propylbenzene	<1.0	1.0
100-42-5	Styrene	<1.0	1.0
630-20-6	1,1,1,2-Tetrachloroethane	<1.0	1.0
79-34-5	1,1,2,2-Tetrachloroethane	<1.0	1.0
127-18-4	Tetrachloroethene	<1.0	1.0
109-99-9	Tetrahydrofuran	<5.0	5.0
108-88-3	Toluene	<1.0	1.0
87-61-6	1,2,3-Trichlorobenzene	<5.0	5.0
120-82-1	1,2,4-Trichlorobenzene	<5.0	5.0
71-55-6	1,1,1-Trichloroethane	<1.0	1.0
79-00-5	1,1,2-Trichloroethane	<1.0	1.0
79-01-6	Trichloroethene	<1.0	1.0
75-69-4	Trichlorofluoromethane	<1.0	1.0
96-18-4	1,2,3-Trichloropropane	<1.0	1.0
95-63-6	1,2,4-Trimethylbenzene	<1.0	1.0
108-67-8	1,3,5-Trimethylbenzene	<1.0	1.0

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ANALYTICAL REPORT

Client:	**TRC Companies. - Ann Arbor Office**	Work Order:	**1509063**
Project:	Tecumseh Products Groundwater	Description:	Laboratory Services
Client Sample ID:	**TB-01**	Sampled:	09/01/15 00:00
Lab Sample ID:	**1509063-07**	Sampled By:	TML
Matrix:	Water	Received:	09/02/15 17:35
Unit:	ug/L	Prepared:	09/08/15 08:00 By: BAG
Dilution Factor:	1	Analyzed:	09/08/15 11:54 By: BAG
QC Batch:	1509569	Analytical Batch:	5I09017

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL
75-01-4	Vinyl Chloride	<1.0	1.0
179601-23-1	Xylene, Meta + Para	<2.0	2.0
95-47-6	Xylene, Ortho	<1.0	1.0

Surrogates:	*% Recovery*	*Control Limits*
Dibromofluoromethane	*97*	*85-118*
1,2-Dichloroethane-d4	*100*	*87-122*
Toluene-d8	*99*	*85-113*
4-Bromofluorobenzene	*99*	*82-110*

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL

QC Batch: 1509569 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank Analyzed: 09/08/2015 By: BAG
Unit: ug/L Analytical Batch: 5I09017

Acetone	<20			20
Acrylonitrile	<2.0			2.0
Benzene	<1.0			1.0
Bromobenzene	<1.0			1.0
Bromochloromethane	<1.0			1.0
Bromodichloromethane	<1.0			1.0
Bromoform	<1.0			1.0
Bromomethane	<5.0		--	5.0
n-Butylbenzene	<1.0		--	1.0
sec-Butylbenzene	<1.0		--	1.0
tert-Butylbenzene	<1.0			1.0
Carbon Disulfide	<1.0		--	1.0
Carbon Tetrachloride	<1.0			1.0
Chlorobenzene	<1.0			1.0
Chloroethane	<5.0			5.0
Chloroform	<1.0			1.0
Chloromethane	<5.0			5.0
1,2-Dibromo-3-chloropropane	<5.0			5.0
Dibromochloromethane	<1.0			1.0
1,2-Dibromoethane	<1.0			1.0
Dibromomethane	<1.0			1.0
trans-1,4-Dichloro-2-butene	<1.0			1.0
1,2-Dichlorobenzene	<1.0			1.0
1,3-Dichlorobenzene	<1.0		--	1.0
1,4-Dichlorobenzene	<1.0		--	1.0
Dichlorodifluoromethane	<5.0			5.0
1,1-Dichloroethane	<1.0			1.0
1,2-Dichloroethane	<1.0			1.0
1,1-Dichloroethene	<1.0			1.0
cis-1,2-Dichloroethene	<1.0			1.0
trans-1,2-Dichloroethene	<1.0			1.0
1,2-Dichloropropane	<1.0			1.0
cis-1,3-Dichloropropene	<1.0			1.0
trans-1,3-Dichloropropene	<1.0			1.0
Ethylbenzene	<1.0			1.0
Ethyl Ether	<5.0			5.0

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Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL

QC Batch: 1509569 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank (Continued) Analyzed: 09/08/2015 By: BAG

Unit: ug/L Analytical Batch: 5I09017

2-Hexanone	<5.0					5.0
Iodomethane	<1.0					1.0
Isopropylbenzene	<1.0					1.0
4-Isopropyltoluene	<5.0				--	5.0
Methyl tert-Butyl Ether	<5.0					5.0
Methylene Chloride	<5.0				--	5.0
2-Butanone (MEK)	<5.0					5.0
2-Methylnaphthalene	<5.0				--	5.0
4-Methyl-2-pentanone (MIBK)	<5.0				--	5.0
Naphthalene	<5.0				--	5.0
n-Propylbenzene	<1.0					1.0
Styrene	<1.0					1.0
1,1,1,2-Tetrachloroethane	<1.0					1.0
1,1,2,2-Tetrachloroethane	<1.0					1.0
Tetrachloroethene	<1.0					1.0
Tetrahydrofuran	<5.0					5.0
Toluene	<1.0					1.0
1,2,3-Trichlorobenzene	<5.0				--	5.0
1,2,4-Trichlorobenzene	<5.0				--	5.0
1,1,1-Trichloroethane	<1.0					1.0
1,1,2-Trichloroethane	<1.0					1.0
Trichloroethene	<1.0					1.0
Trichlorofluoromethane	<1.0					1.0
1,2,3-Trichloropropane	<1.0					1.0
1,2,4-Trimethylbenzene	<1.0				--	1.0
1,3,5-Trimethylbenzene	<1.0					1.0
Vinyl Chloride	<1.0					1.0
Xylene, Meta + Para	<2.0					2.0
Xylene, Ortho	<1.0					1.0
Surrogates:						
Dibromofluoromethane				*97*	*85-118*	
1,2-Dichloroethane-d4				*100*	*87-122*	
Toluene-d8				*99*	*85-113*	

Continued on next page

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Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
QC Batch: 1509569 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B								
Method Blank (Continued)					Analyzed:	09/08/2015		By: BAG
Unit: ug/L					Analytical Batch:	5I09017		
Surrogates (Continued):								
4-Bromofluorobenzene				*100*	*82-110*			
Laboratory Control Sample					Analyzed:	09/08/2015		By: BAG
Unit: ug/L					Analytical Batch:	5I09017		
Benzene		40.0	**41.0**	103	84-119	--		1.0
Chlorobenzene		40.0	**40.3**	101	84-118	--		1.0
1,1-Dichloroethene		40.0	**43.0**	108	77-123	--		1.0
Toluene		40.0	**41.0**	103	85-118	--		1.0
Trichloroethene		40.0	**38.8**	97	82-119	--		1.0
Surrogates:								
Dibromofluoromethane				*100*	*85-118*			
1,2-Dichloroethane-d4				*101*	*87-122*			
Toluene-d8				*100*	*85-113*			
4-Bromofluorobenzene				*99*	*82-110*			
Matrix Spike 1509063-06 B-112 (4.4-7.4')					Analyzed:	09/08/2015		By: BAG
Unit: ug/L					Analytical Batch:	5I09017		
Benzene	<1.0	40.0	**40.9**	102	80-129	--		1.0
Chlorobenzene	<1.0	40.0	**38.9**	97	80-121	--		1.0
1,1-Dichloroethene	<1.0	40.0	**43.6**	109	74-134	--		1.0
Toluene	1.12	40.0	**41.8**	102	79-129	--		1.0
Trichloroethene	0.290	40.0	**37.7**	94	75-127	--		1.0
Surrogates:								
Dibromofluoromethane				*102*	*85-118*			
1,2-Dichloroethane-d4				*101*	*87-122*			
Toluene-d8				*101*	*85-113*			
4-Bromofluorobenzene				*100*	*82-110*			
Matrix Spike Duplicate 1509063-06 B-112 (4.4-7.4')					Analyzed:	09/08/2015		By: BAG
Unit: ug/L					Analytical Batch:	5I09017		
Benzene	<1.0	40.0	**42.8**	107	80-129	4	9	1.0

Continued on next page

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL
QC Batch: 1509569 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B								
Matrix Spike Duplicate (Continued) 1509063-06 B-112 (4.4-7.4')					Analyzed:	09/08/2015	By: BAG	
Unit: ug/L					Analytical Batch:	5I09017		
Chlorobenzene	<1.0	40.0	**41.4**	104	80-121	6	8	1.0
1,1-Dichloroethene	<1.0	40.0	**45.2**	113	74-134	4	11	1.0
Toluene	1.12	40.0	**44.2**	108	79-129	6	9	1.0
Trichloroethene	0.290	40.0	**40.2**	100	75-127	6	10	1.0
Surrogates:								
Dibromofluoromethane				*101*	*85-118*			
1,2-Dichloroethane-d4				*100*	*87-122*			
Toluene-d8				*100*	*85-113*			
4-Bromofluorobenzene				*101*	*82-110*			

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TRIMATRIX LABORATORIES

5560 Corporate Exchange Court SE
Grand Rapids, MI 49512
Phone (616) 975-4500 Fax (616) 942-7463
www.trimatrixlabs.com

Chain of Custody Record

COC No. 151249

Pg. 1 of ___

For Lab Use Only
Cart: —

VOA Rack/Tray: 326-BLUE
Receipt Log No.: 14-30
Project Chemist: 1509083
Work Order No.: ~~1508003~~

Client Name: TRC
Address: 1540 Eisenhower Place
City, State Zip: Ann Arbor MI 48108
Phone/Fax: 734 971 7080 734 971 9013
Email:

Project Name: T.P.C. (GSI)
Client Project No. / PO No.: ~~220003.0001~~
Invoice To: ☑ Client ☐ Other (comments)
Contact/Report To: Stacy Metz

Analyses Requested

Schedule	Matrix Code	Sample Number		Field Sample ID	Cooler ID	Sample Date	Sample Time	COMP	GRAB	Matrix	Number of Containers Submitted (VOC 8260 D)	Total	Sample Comments
01		01	1	B-110 (7.3-10.3')		9/1/15	1220		✓	GW	2	2	
		02	2	~~Dup #01~~ DUP-01		9/1/15	—		✓	GW	2	2	
		03	3	B-109 (7.4-10.4')		9/1/15	1040		✓	GW	2	2	
		04	4	B-108 (5.6-8.6')		9/1/15	1120		✓	GW	2	2	
		05	5	B-111 (3.3-6.3')		9/1/15	1425		✓	GW	2	2	
		06	6	B-112 (4.4-7.4')		9/1/15	1410		✓	GW	2	2	
02		06	7	B-112 matrix spike (4.4-7.4')		9/1/15	1420		✓	GW	3	3	
03		07	8	~~Trip Blank~~ TB-01						DI	1	1	
			9										
			10										

Container Type (corresponds to Container Packing List): 1

PRESERVATIVES
A NONE pH~7
B HNO_3 pH<2
C H_2SO_4 pH<2
D 1+1 HCl pH<2
E NaOH pH>12
F ZnAc/NaOH pH>9
G MeOH
H Other (note below)

Sampled By (print): Javier Jasso
Sampler's Signature:
Company: TRC

How Shipped? Hand ___ Carrier ___
Tracking No.:

Comments: P.O. 220003.0001

	Relinquished By	Date	Time	Received By	Date	Time
1		9/1/15	1600	R. Krumm	9/2/15	2:30
2		9/1/15	1600	Ray Johnson	9/2/15	1430
3	Ray Johnson	9/2/15	1730	J. Lodin	9/2/15	1730

WHITE COPY - REPORT YELLOW COPY - LABORATORY PINK COPY - FIELD

SAMPLE RECEIVING / LOG-IN CHECKLIST

1509063

TRIMATRIX LABORATORIES

Client: TRC

Receipt Record Page/Line #: 14-30

Work Order #: ~~1508~~

New / Add To

Project Chemist:

Sample #s:

Recorded by (initials/date): DN 9/2/15

☒ Cooler
☐ Box
☐ Other______

Qty Received: 1

Thermometer Used:
☒ IR Gun (#202)
☐ Digital Thermometer (#54)
☐ Other (#______)

☐ See Additional Cooler Information Form

Cooler #: Buffalo
Time: 2003

Custody Seals:
☒ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Type:
☒ Loose Ice
☐ Bagged Ice
☐ Blue Ice
☐ None

Coolant Location:
[✓ Dispersed] / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is:
☐ Representative ☐ Not Representative

	Observed °C	Correction Factor °C	Actual °C
Temp Blank:	2.5	0	2.5
Sample 1:	5.4	0	5.4
Sample 2:	6.0	0	6.0
Sample 3:	6.4	0	6.4

3 Sample Average °C: 5.9

☐ Cooler ID on COC?
☒ VOC Trip Blank received?

Cooler #:
Time:

Custody Seals:
☐ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Type:
☐ Loose Ice
☐ Bagged Ice
☐ Blue Ice
☐ None

Coolant Location:
Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is:
☐ Representative ☐ Not Representative

	Observed °C	Correction Factor °C	Actual °C
Temp Blank:			
Sample 1:			
Sample 2:			
Sample 3:			

3 Sample Average °C:

☐ Cooler ID on COC?
☐ VOC Trip Blank received?

Cooler #:
Time:

Custody Seals:
☐ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Type:
☐ Loose Ice
☐ Bagged Ice
☐ Blue Ice
☐ None

Coolant Location:
Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is:
☐ Representative ☐ Not Representative

	Observed °C	Correction Factor °C	Actual °C
Temp Blank:			
Sample 1:			
Sample 2:			
Sample 3:			

3 Sample Average °C:

☐ Cooler ID on COC?
☐ VOC Trip Blank received?

Cooler #:
Time:

Custody Seals:
☐ None
☐ Present / Intact
☐ Present / Not Intact

Coolant Type:
☐ Loose Ice
☐ Bagged Ice
☐ Blue Ice
☐ None

Coolant Location:
Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is:
☐ Representative ☐ Not Representative

	Observed °C	Correction Factor °C	Actual °C
Temp Blank:			
Sample 1:			
Sample 2:			
Sample 3:			

3 Sample Average °C:

☐ Cooler ID on COC?
☐ VOC Trip Blank received?

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

Paperwork Received

Yes	No	
☒	☐	Chain of Custody record(s)? If No, Initiated By ______
☒		Received for Lab Signed/Date/Time?
☐	☒	Shipping document?
☐	☒	Other ______

COC Information

☒ TriMatrix COC ☐ Other______

COC ID Numbers: 151249

Check COC for Accuracy

Yes	No	
☒	☐	Analysis Requested?
☒	☐	Sample ID matches COC?
☒	☐	Sample Date and Time matches COC?
☒		Container type completed on COC?
☒	☐	All container types indicated are received?

Sample Condition Summary

N/A	Yes	No	
	☐	☒	Broken containers/lids?
	☐	☒	Missing or incomplete labels?
	☐	☒	Illegible information on labels?
	☐	☒	Low volume received?
	☐	☒	Inappropriate or non-TriMatrix containers received?
☐	☒	☐	VOC vials / TOX containers have headspace?
☒	☐	☐	Extra sample locations / containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
	☐	☒	Temperature Blank OR average sample temperature, ≥6° C?
☒	☐	☐	If either is ≥6° C, was thermal preservation required?
☒	☐		If "Yes", Project Chemist Approval Initials:______
☒	☐		If "Yes" Completed Non Con Cooler - Cont Inventory Form?
☒	☐		Completed Sample Preservation Verification Form?
☒	☐	☐	Samples chemically preserved correctly?
☒	☐		If "No", added orange tag?
	☐	☒	Received pre-preserved VOC soils?

☐ MeOH ☐ Na_2SO_4

Check for Short Hold-Time Prep/Analyses

☐ Bacteriological
☐ Air Bags
☐ EnCores / Methanol Pre-Preserved
☐ Formaldehyde/Aldehyde
☐ Green-tagged containers
☐ Yellow/White-tagged 1 L ambers (SV Prep-Lab)

AFTER HOURS ONLY:
COPIES OF COC TO LAB AREA(S)
☒ NONE RECEIVED
☐ RECEIVED, COCs TO LAB(S)

Notes

☐ Trip Blank received ☐ Trip Blank not listed on COC

Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	≤1 Hour Goal Met?
DN 9/2/15	9/2/15	Yes / No