

September 30, 2014

Ms. Betsy Nightingale
On-Scene Coordinator
U.S. Environmental Protection Agency
Region 5, Emergency Response Branch #1
9311 Groh Road
Grosse Ile, MI 48138-1697

**Subject: Letter Report for North Bridge Street Benzene Release
Emergency Response Site
EPA Contract No. EP-S5-13-01
Technical Direction Document No. S05-0001-1407-005
Document Tracking No. 0041**

Dear Ms. Nightingale:

On July 7, 2014, under Superfund Technical Assessment and Response Team (START) Contract No. EP-S5-13-01, the U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc., (Tetra Tech) to conduct oversight activities at the North Bridge Street Benzene Release Emergency Response site in Linden, Genesee County, Michigan. Oversight activities, which began on July 8, 2014, included the following activities:

- Recording of site conditions and response activities through photographic documentation and in a site logbook
- Air monitoring and screening of indoor and outdoor (storm and sanitary drain) conditions for carbon monoxide (CO), volatile organic compounds (VOC), hydrogen sulfide (H₂S), percent lower explosive limit (%LEL), and percent oxygen (%O₂) with a RAE Systems MultiRAE Pro five-gas meter (MultiRAE Pro) and benzene with a RAE Systems UltraRAE single-gas meter (UltraRAE)
- Air sampling at nine locations using 24-hour duration bottle-vac air samplers



This letter report describes the site's location and history, and discusses the activities performed during the emergency response. Enclosures 1 and 2 provide the figures and tables, respectively, for this letter report. Enclosure 3 provides photographic documentation of the site conditions and emergency response activities. Enclosure 4 provides the verification report and analytical data for samples collected during the emergency response.

SITE LOCATION AND HISTORY

The site is comprised of numerous commercial and residential properties and storm and sanitary drains located within the downtown area of Linden, Genesee County, Michigan (Enclosure 1, Figure 1). The commercial properties and storm and sanitary drains are located along North and South Bridge Street and East and West Broad Street. The Shiawassee River flows from east to west along the northern perimeter of downtown Linden (Enclosure 1, Figure 2).

In 2013, the Genesee County Land Bank Authority (GCLBA) requested EPA assistance at 105 North Bridge Street (a GCLBA-owned property) to help assess the source of odors in the building and in its general vicinity. EPA conducted a site assessment on September 24, 2013. Air monitoring was conducted at 18 storm and sanitary drain inlet locations, and indoor air monitoring was conducted inside the building located at 105 North Bridge Street. The monitoring was conducted with a MultiRAE Plus and an UltraRAE single-gas meter. No levels were detected above background levels inside 105 North Bridge Street. The highest outdoor VOC reading (20.3 parts per million [ppm]) and benzene reading (1.0 ppm) were detected at a sanitary drain. Based on the assessment results, EPA did not find an imminent threat to human health or the environment at the time.

On June 10, 2014, the Michigan Department of Environmental Quality (MDEQ) collected two water samples (CB1 and CB2) from the storm drain located in the sidewalk in front of the building at 208 North Bridge Street and from the sump pump located in the south basement of the building at 109 North Bridge Street. High levels of benzene (5.2 micrograms per liter [$\mu\text{g/L}$] and 710 $\mu\text{g/L}$, respectively) were detected in both samples. The source of the contamination is currently unknown.

On July 8, 2014, EPA responded to National Response Center (NRC) report #1088279 and a request for assistance from MDEQ regarding benzene odor complaints within downtown Linden. The odors were most noticeable at the commercial locations that have basement sump pumps and are located in the vicinity of storm drains.



EMERGENCY RESPONSE ACTIVITIES

From July 8 through 16, 2014, EPA and Tetra Tech mobilized to the site and conducted response activities. Enclosure 3 provides representative photographic documentation of site conditions and the response activities conducted at the site. Response activities are described in the sections below.

Air Monitoring Activities

Beginning on July 8, 2014 and concluding on July 15, 2014, Tetra Tech conducted air monitoring using a MultiRAE Pro and a benzene-specific UltraRAE. Table 1 and Table 2 (Enclosure 2) present the MultiRAE Pro and UltraRAE air monitoring results for both the indoor air monitoring activities and the screening of the storm and sanitary drains located in downtown Linden.

During the response activities, Tetra Tech conducted indoor air monitoring of the first floors, second floors (if present), and basements of the buildings at the following addresses: 211 North Bridge Street, 209B North Bridge Street, 208 North Bridge Street, 126 North Bridge Street, 123 North Bridge Street, 109 North Bridge Street, 107 North Bridge Street, 105 North Bridge Street, 106 South Bridge Street, 132 East Broad Street, 116 West Broad Street, 120 West Broad Street, and 201 North Main Street. The indoor air monitoring results ranged from 0 parts per billion (ppb) to 13,021 ppb for VOCs, and from 0 ppm to 4.85 ppm for benzene (Enclosure 1, Figure 3).

On July 8 and 9, 2014, Tetra Tech screened 37 storm drains, 11 sanitary drains, 1 utility corridor, and 1 sanitary sewer interceptor located in or near downtown Linden. The screening results for the storm drains ranged from 0 to 5,870 ppb for VOCs, 0 to 6.15 ppm for benzene, and 0% LEL. The screening results for the sanitary drains, utility corridor, and sanitary sewer interceptor ranged from 0 to 2,510 ppb for VOCs, 0 for benzene, and 0% LEL (Enclosure 1, Figure 4). Screening results of the storm drains, sanitary drains, the utility corridor, and the sanitary sewer interceptor did not conclusively provide the source of the benzene vapors that were detected at some of the addresses.

Sampling Activities and Results

Nine 24-hour duration bottle-vac air samplers were deployed and collected during the response activities. Of these nine air samples, four samples (LER-BV-01-070914 through LER-BV-04-070914) were deployed at the business located at 109 North Bridge Street. One sample (LER-BV-05-070914) was deployed in the basement of a city-owned building located at 132 East Broad Street, and one sample (LER-BV-06-071014) was deployed at the exterior southeast



corner of 132 East Broad Street. Two samples (LER-BV-07-071614 and LER-BV-08-071614) were deployed at a business/residence located at 208 North Bridge Street, and one sample (LER-BV-09-071614) was deployed on an outside picnic table located east of 208 North Bridge Street. All nine samples were submitted to RTI Laboratories, in Livonia, Michigan, and were analyzed for the full-range of TO-15 VOCs. Table 3 and Table 4 (Enclosure 4) present all detections found in the samples. Figure 5 in Enclosure 1 presents the exceedances found in both of the commercial and residential properties.

The owner of the business located at 109 North Bridge Street, and the employees at the business located at 132 East Broad Street do not live at these respective addresses. As a result, the analytical results for the air samples collected at these addresses were compared to the industrial air action levels presented in the EPA Regional Screening Levels, dated May 2014.

Given that the industrial action levels for benzene and ethylbenzene are 1.6 and 4.9 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) respectively, samples LER-BV-01-070914 and LER-BV-03-071014 had an exceedance for only benzene (10.54 and $51.11 \mu\text{g}/\text{m}^3$, respectively), while samples LER-BV-02-070914 and LER-BV-04-070914 had exceedances for both benzene (178.9 and $13.1 \mu\text{g}/\text{m}^3$, respectively) and ethylbenzene (9.99 and $5.21 \mu\text{g}/\text{m}^3$, respectively). Additionally, the Minimal Risk Level (MRL) for benzene, as provided by the Agency for Toxic Substances and Disease Registry (ATSDR), is $19.17 \mu\text{g}/\text{m}^3$. Given this MRL, samples LER-BV-03-071014 and LER-BV-02-070914 had an exceedances for benzene (51.11 and $178.9 \mu\text{g}/\text{m}^3$, respectively).

Sample LER-BV-05-070914 had an exceedance for only benzene ($3.07 \mu\text{g}/\text{m}^3$), while the air sample collected outside of 132 East Broad Street had exceedances for both benzene and ethylbenzene (51.11 and $6.95 \mu\text{g}/\text{m}^3$, respectively). Sample LER-BV-05-070914 also exceeded the MRL for benzene ($19.17 \mu\text{g}/\text{m}^3$), with a result of $51.11 \mu\text{g}/\text{m}^3$.

The owner of the business located at 208 North Bridge Street lives at this address. As a result, the analytical results for the air samples collected at this address were compared to the residential air action levels presented in the EPA Regional Screening Levels, dated May 2014.

Given that the residential action levels for 1,2,4-trimethylbenzene, benzene, carbon tetrachloride, and ethylbenzene are 7.3, 0.36, 0.47, and $1.1 \mu\text{g}/\text{m}^3$, respectively, samples LER-BV-07-071614 and LER-BV-09-071614 only had exceedances for benzene (1.41 and $1.02 \mu\text{g}/\text{m}^3$, respectively), while sample LER-BV-08-071614 had exceedances for 1,2,4-trimethylbenzene, benzene, carbon



tetrachloride, and ethylbenzene (9.83, 13.74, 4.09, and 7.82, respectively). None of the samples collected at 208 North Bridge Street exceeded the MRL for benzene.

Tetra Tech reviewed the analytical results provided by RTI laboratories. RTI's analytical results and the Data Verification Report are included with this letter report as Enclosure 4. The analytical results were shared with MDEQ to support future response activities.

If you have any questions on the emergency response activities completed at this site or require additional information, please contact me at (248) 259-4761.

Sincerely,

A handwritten signature in black ink that reads 'Michael J. Browning'.

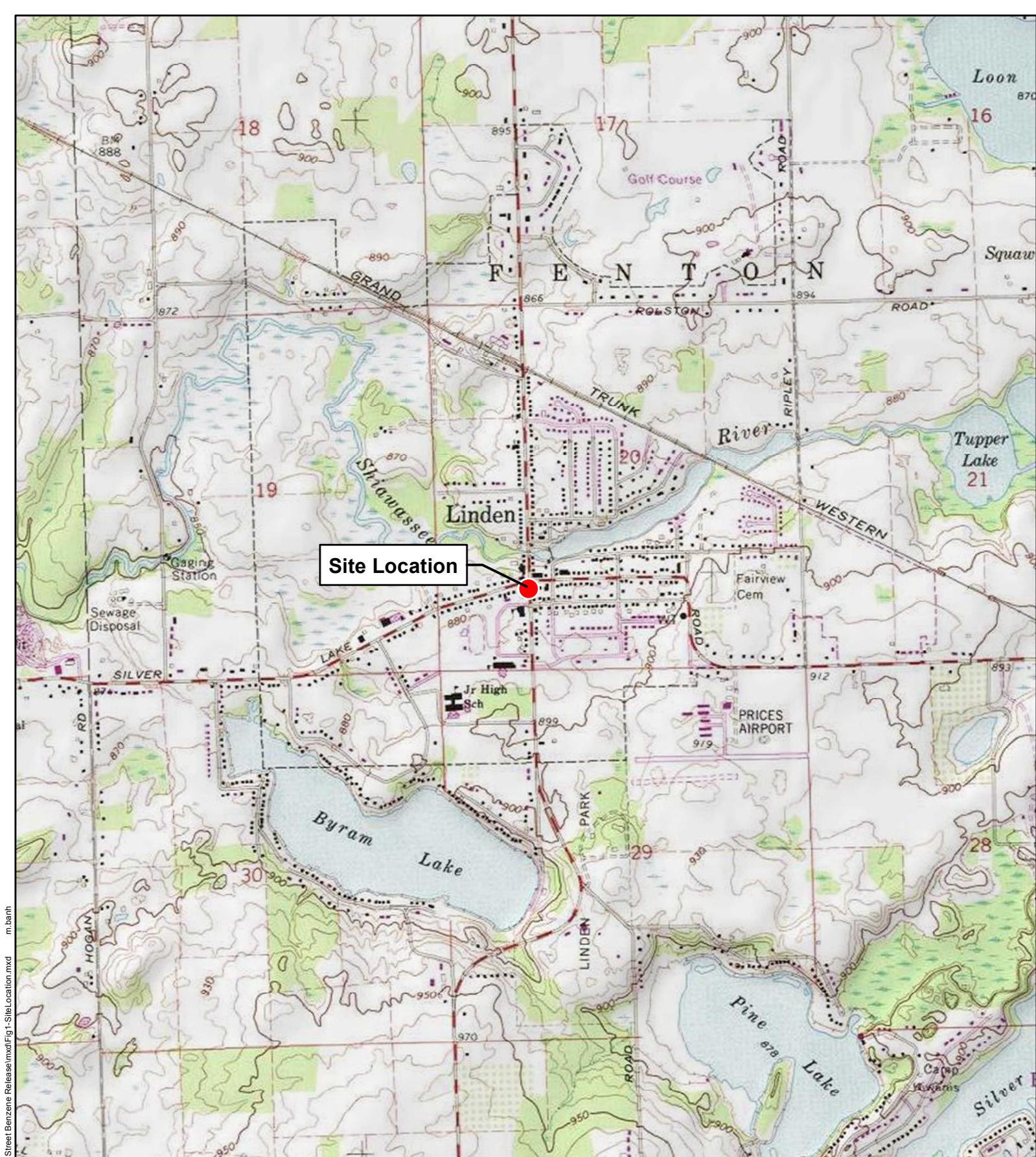
Michael Browning
Seagull Environmental Technologies Project Manager

Enclosures:

- 1 – Figures
- 2 – Tables
- 3 – Photographic Documentation Log
- 4 – Data Verification Report and Analytical Results

ENCLOSURE 1

Figures

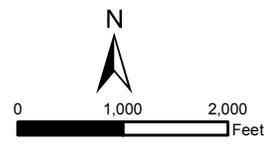


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Site Location



**NORTH BRIDGE STREET BENZENE RELEASE
EMERGENCY RESPONSE SITE
LINDEN, GENESEE COUNTY, MICHIGAN
TDD No.: S05-0001-1407-005**



**FIGURE 1
SITE LOCATION MAP**



209B North Bridge Street

211 North Bridge Street

123 North Bridge Street

107 North Bridge Street

116 West Broad Street

120 West Broad Street

106 South Bridge Street

Shiawassee River

Hamrick St

N Bridge St

S Bridge St

Mill St

Mill St

208 North Bridge Street

126 North Bridge Street

109 North Bridge Street

132 East Broad Street

Main St

S Main St

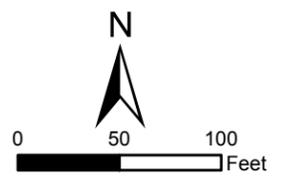
201 North Main Street

E Broad St

Shiawassee R

Tickner

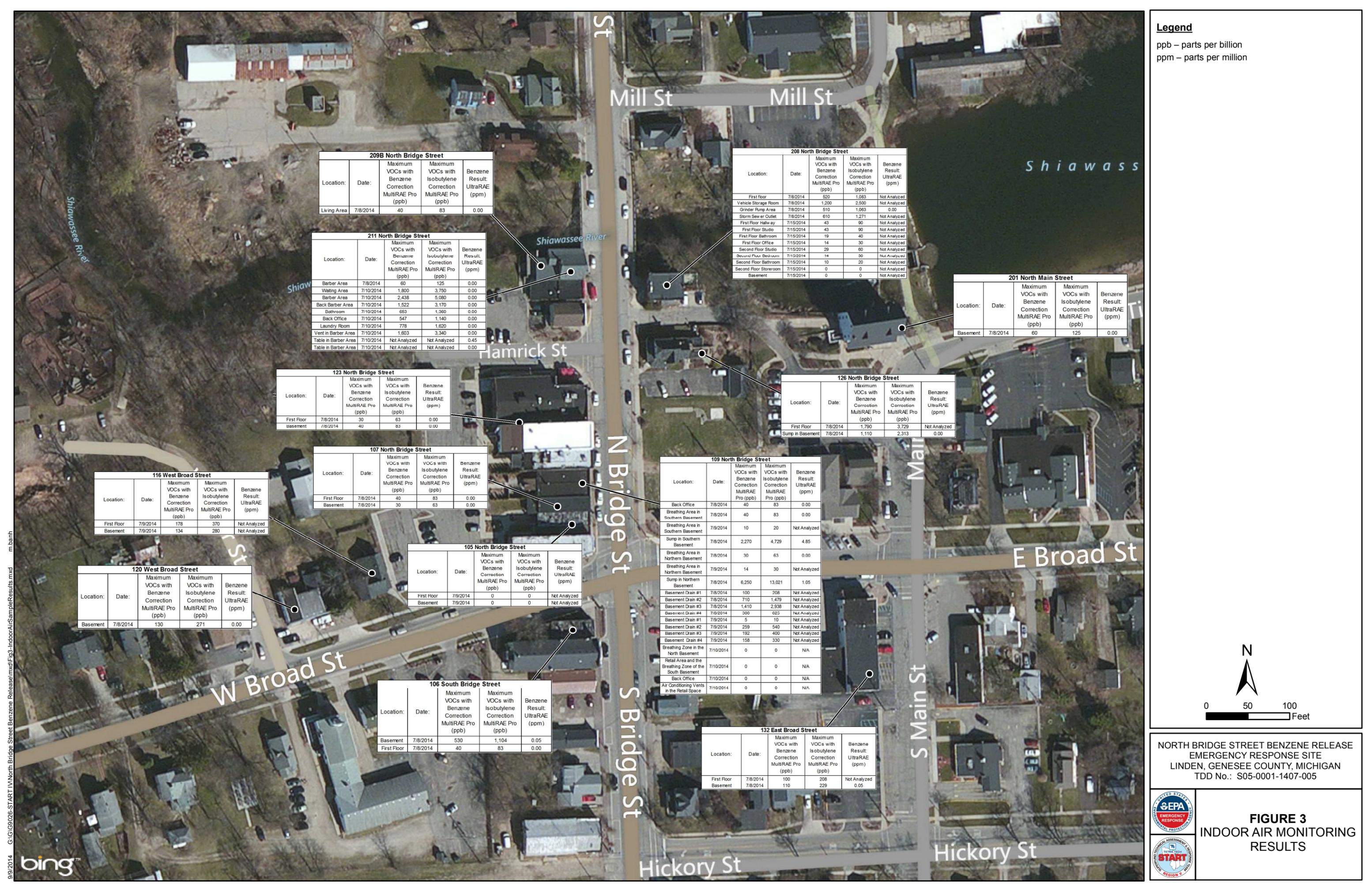
Hickory St



NORTH BRIDGE STREET BENZENE RELEASE
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FIGURE 2
SITE LAYOUT MAP



Legend

ppb – parts per billion
ppm – parts per million

209B North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Living Area	7/8/2014	40	83	0.00

211 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Barber Area	7/8/2014	60	125	0.00
Waiting Area	7/10/2014	1,800	3,750	0.00
Barber Area	7/10/2014	2,438	5,080	0.00
Back Barber Area	7/10/2014	1,522	3,170	0.00
Bathroom	7/10/2014	683	1,380	0.00
Back Office	7/10/2014	547	1,140	0.00
Laundry Room	7/10/2014	778	1,620	0.00
Vent in Barber Area	7/10/2014	1,603	3,340	0.00
Table in Barber Area	7/10/2014	Not Analyzed	Not Analyzed	0.45
Table in Barber Area	7/10/2014	Not Analyzed	Not Analyzed	0.00

208 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First floor	7/8/2014	520	1,083	Not Analyzed
Vehicle Storage Room	7/8/2014	1,200	2,500	Not Analyzed
Grinder Pump Area	7/8/2014	510	1,063	0.00
Storm Sewer Outlet	7/8/2014	610	1,271	Not Analyzed
First Floor Hallway	7/15/2014	43	90	Not Analyzed
First Floor Studio	7/15/2014	43	90	Not Analyzed
First Floor Bathroom	7/15/2014	19	40	Not Analyzed
First Floor Office	7/15/2014	14	30	Not Analyzed
Second Floor Studio	7/15/2014	29	60	Not Analyzed
Second Floor Bedroom	7/15/2014	14	30	Not Analyzed
Second Floor Bathroom	7/15/2014	10	20	Not Analyzed
Second Floor Storeroom	7/15/2014	0	0	Not Analyzed
Basement	7/15/2014	0	0	Not Analyzed

201 North Main Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Basement	7/8/2014	60	125	0.00

123 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/8/2014	30	63	0.00
Basement	7/8/2014	40	83	0.00

126 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/8/2014	1,790	3,729	Not Analyzed
Sump in Basement	7/8/2014	1,110	2,313	0.00

107 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/8/2014	40	83	0.00
Basement	7/8/2014	30	63	0.00

116 West Broad Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/9/2014	178	370	Not Analyzed
Basement	7/9/2014	134	280	Not Analyzed

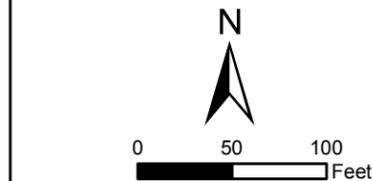
109 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Back Office	7/8/2014	40	83	0.00
Breathing Area in Southern Basement	7/8/2014	40	83	0.00
Breathing Area in Southern Basement	7/9/2014	10	20	Not Analyzed
Sump in Southern Basement	7/8/2014	2,270	4,729	4.85
Breathing Area in Northern Basement	7/8/2014	30	63	0.00
Breathing Area in Northern Basement	7/9/2014	14	30	Not Analyzed
Sump in Northern Basement	7/8/2014	6,250	13,021	1.05
Basement Drain #1	7/8/2014	100	208	Not Analyzed
Basement Drain #2	7/8/2014	710	1,479	Not Analyzed
Basement Drain #3	7/8/2014	1,410	2,938	Not Analyzed
Basement Drain #4	7/8/2014	300	623	Not Analyzed
Basement Drain #1	7/9/2014	5	10	Not Analyzed
Basement Drain #2	7/9/2014	259	540	Not Analyzed
Basement Drain #3	7/9/2014	192	400	Not Analyzed
Basement Drain #4	7/9/2014	158	330	Not Analyzed
Breathing Zone in the North Basement	7/10/2014	0	0	N/A
Retail Area and the Breathing Zone of the South Basement	7/10/2014	0	0	N/A
Back Office	7/10/2014	0	0	N/A
Air Conditioning Vents in the Retail Space	7/10/2014	0	0	N/A

105 North Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/9/2014	0	0	Not Analyzed
Basement	7/9/2014	0	0	Not Analyzed

120 West Broad Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Basement	7/8/2014	130	271	0.00

106 South Bridge Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
Basement	7/8/2014	530	1,104	0.05
First Floor	7/8/2014	40	83	0.00

132 East Broad Street				
Location:	Date:	Maximum VOCs with Benzene Correction MultiRAE Pro (ppb)	Maximum VOCs with Isobutylene Correction MultiRAE Pro (ppb)	Benzene Result: UltraRAE (ppm)
First Floor	7/8/2014	100	208	Not Analyzed
Basement	7/8/2014	110	229	0.05

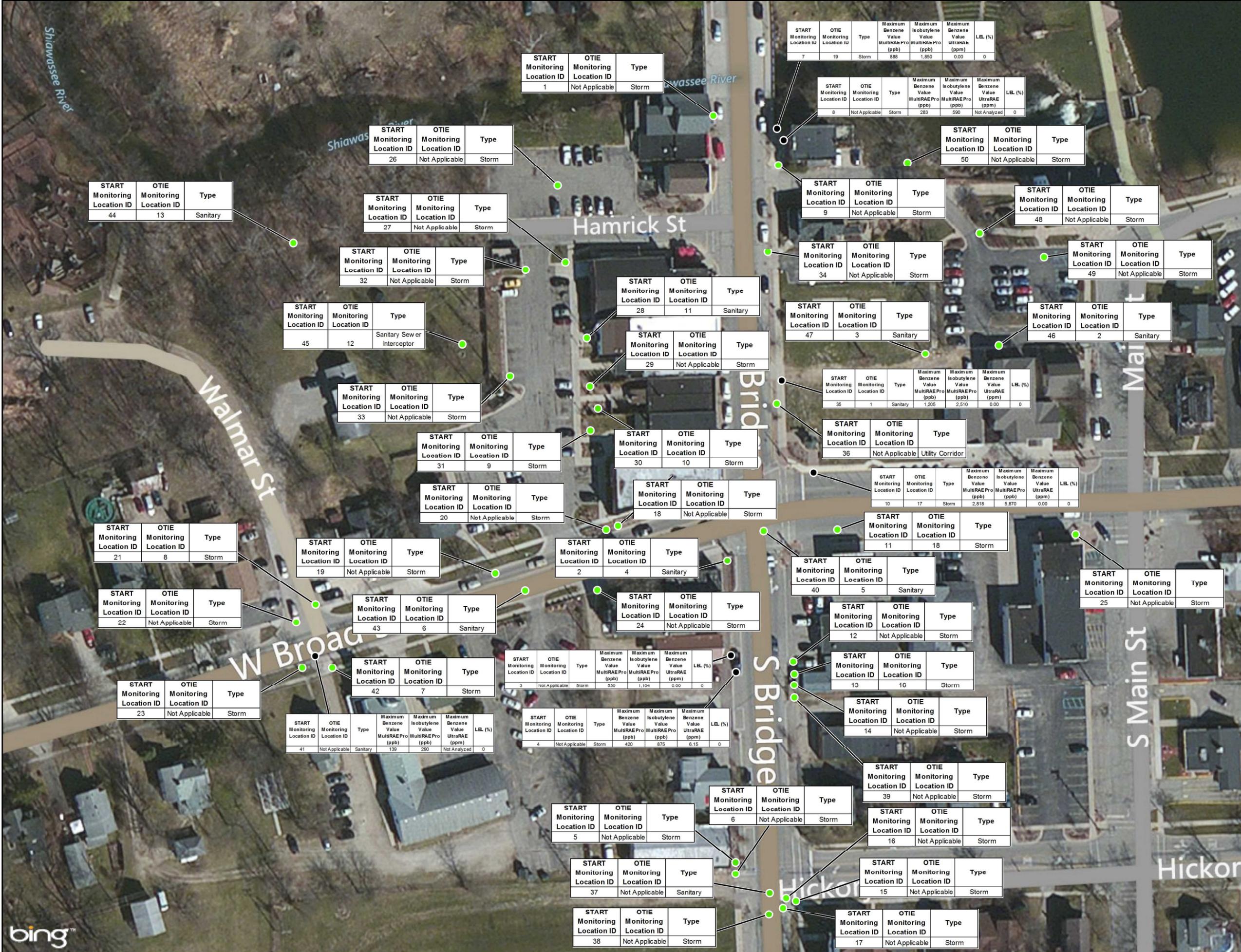


NORTH BRIDGE STREET BENZENE RELEASE
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FIGURE 3
INDOOR AIR MONITORING
RESULTS

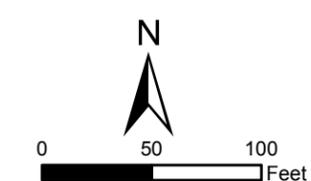




Legend

- — Non-Detect for VOCs and 0% LEL
- — VOC Detected

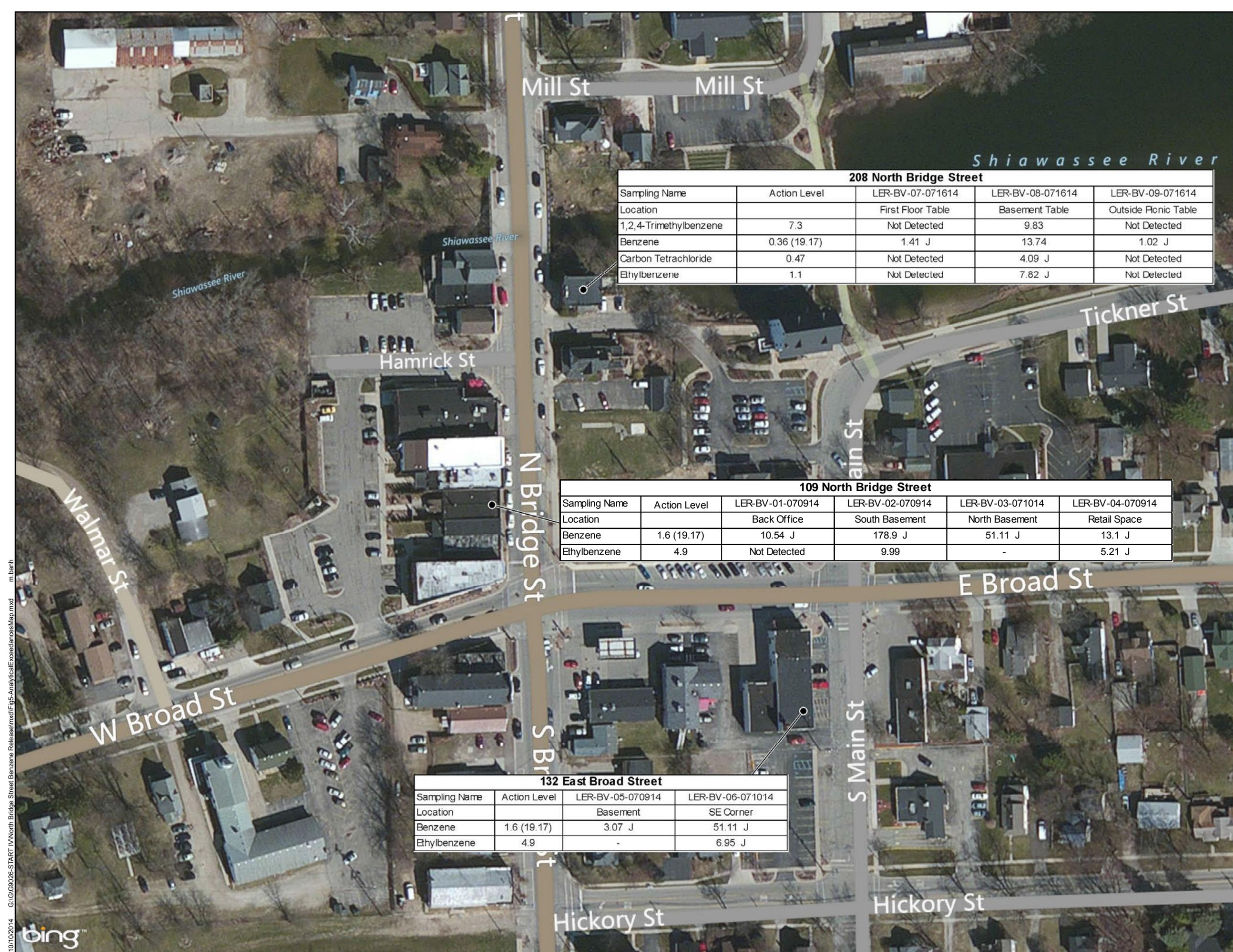
ppb – parts per billion
 ppm – parts per million
 VOC – Volatile organic compound



NORTH BRIDGE STREET BENZENE RELEASE
 EMERGENCY RESPONSE SITE
 LINDEN, GENESSEE COUNTY, MICHIGAN
 TDD No.: S05-0001-1407-005



FIGURE 4
 STORM AND SANITARY DRAIN
 AIR MONITORING RESULTS



Legend
 J qualifier – Indicates that the result was below the sample reporting limit, which corresponds to the lowest calibration standard.
 All results are in micrograms/cubic meter ($\mu\text{g}/\text{m}^3$).
 The action levels for the detected analytical parameters are the EPA Regional Screening Levels for industrial air ($1.6 \mu\text{g}/\text{m}^3$) or residential air ($0.36 \mu\text{g}/\text{m}^3$), dated May 2014.
 Note: The value of $19.17 \mu\text{g}/\text{m}^3$, provided in parentheses for benzene, denotes the Minimal Risk Level (MRL), for benzene, as provided by the Agency for Toxic Substances and Disease Registry (ATSDR).

208 North Bridge Street

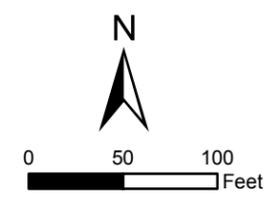
Sampling Name	Action Level	LER-BV-07-071614	LER-BV-08-071614	LER-BV-09-071614
Location		First Floor Table	Basement Table	Outside Picnic Table
1,2,4-Trimethylbenzene	7.3	Not Detected	9.83	Not Detected
Benzene	0.36 (19.17)	1.41 J	13.74	1.02 J
Carbon Tetrachloride	0.47	Not Detected	4.09 J	Not Detected
Ethylbenzene	1.1	Not Detected	7.82 J	Not Detected

109 North Bridge Street

Sampling Name	Action Level	LER-BV-01-070914	LER-BV-02-070914	LER-BV-03-071014	LER-BV-04-070914
Location		Back Office	South Basement	North Basement	Retail Space
Benzene	1.6 (19.17)	10.54 J	178.9 J	51.11 J	13.1 J
Ethylbenzene	4.9	Not Detected	9.99	-	5.21 J

132 East Broad Street

Sampling Name	Action Level	LER-BV-05-070914	LER-BV-06-071014
Location		Basement	SE Corner
Benzene	1.6 (19.17)	3.07 J	51.11 J
Ethylbenzene	4.9	-	6.95 J



NORTH BRIDGE STREET BENZENE RELEASE
 EMERGENCY RESPONSE SITE
 LINDEN, GENESSEE COUNTY, MICHIGAN
 TDD No.: S05-0001-1407-005

FIGURE 5
 ANALYTICAL EXCEEDANCES
 RESULTS



ENCLOSURE 2

Tables

Table 1
Indoor Air Locations - Air Monitoring Results
North Bridge Street Benzene Release Emergency Response
Linden, Genesee County, Michigan

Address	Property Description or Business Name	Monitoring Location	Monitoring Date	Monitoring Time	Maximum VOC Result with Benzene Correction MultiRAE Pro (ppb)	Maximum VOC Result with Isobutylene Correction MultiRAE Pro (ppb)	Maximum Benzene-Specific Result UltraRAE (ppm)
208 North Bridge Street	Gavin Smith Photography	First floor	07/08/14	1155	520	1,083	NA
		Vehicle Storage Room in Basement	07/08/14	1200	1,200	2,500	NA
		Grinder Pump Area	07/08/14	1203	510	1,063	0.00
		Storm Sewer Outlet	07/08/14	1210	610	1,271	NA
		First Floor Hallway	07/15/14	1224	43	90	NA
		First Floor Studio	07/15/14	1224	43	90	NA
		First Floor Bathroom	07/15/14	1224	19	40	NA
		First Floor Office	07/15/14	1224	14	30	NA
		Second Floor Studio	07/15/14	1224	29	60	NA
		Second Floor Bedroom	07/15/14	1224	14	30	NA
		Second Floor Bathroom	07/15/14	1224	10	20	NA
		Second Floor Storeroom	07/15/14	1224	0	0	NA
		Basement	07/15/14	1224	0	0	NA
120 West Broad Street	Former Gasoline Service Station	Basement	07/08/14	1230	130	271	0.00
106 South Bridge	Ice Cream Garage	Basement	07/08/14	1250	530	1,104	0.05
		First Floor	07/08/14	1253	40	83	0.00
109 North Bridge Street	Bridge Street Exchange	Back Office	07/08/14	1309	40	83	0.00
		Breathing Zone in the South Basement	07/08/14	1340	40	83	0.00
		Breathing Zone in the South Basement	07/09/14	1050	10	20	NA
		Sump Pump in the South Basement	07/08/14	1345	2,270	4,729	4.85
		Breathing Zone in the North Basement	07/08/14	1358	30	63	0.00
		Breathing Zone in the North Basement	07/09/14	1100	14	30	NA
		Sump Pump in the North Basement	07/08/14	1400	6,250	13,021	1.05
		Basement Floor Drain #1 in the South Basement	07/08/14	1346	100	208	NA
		Basement Floor Drain #2 in the South Basement	07/08/14	1348	710	1,479	NA
		Basement Floor Drain #3 in the South Basement	07/08/14	1349	1,410	2,938	NA
		Basement Floor Drain #4 in the South Basement	07/08/14	1352	300	625	NA
		Basement Floor Drain #1 in the South Basement	07/09/14	1102	5	10	NA
		Basement Floor Drain #2 in the South Basement	07/09/14	1105	259	540	NA
		Basement Floor Drain #3 in the South Basement	07/09/14	1106	192	400	NA
		Basement Floor Drain #4 in the South Basement	07/09/14	1106	158	330	NA
		Breathing Zone in the North Basement	07/10/14	1742	0	0	NA
		Retail Area and the Breathing Zone of South Basement	07/10/14	1755-1800	0	0	NA
		Back Office	07/10/14	1802	0	0	NA
		Air Conditioning Vents in the Retail Space	07/10/14	1807-1811	0	0	NA
123 North Bridge Street	Coney Island	First Floor	07/08/14	1535	30	63	0.00
		Basement	07/08/14	1540	40	83	0.00
209B North Bridge Street	Basement Residential Apartment	Living area	07/08/14	1600	40	83	0.00
211 North Bridge Street	Barb's Family Hair Care	Barber Area	07/08/14	1605	60	125	0.00
		Waiting Area	07/10/14	1643	1,800	3,750	0.00
		Barber Area	07/10/14	1645	2,438	5,080	0.00
		Back Barber Area	07/10/14	1647	1,522	3,170	0.00
		Bathroom	07/10/14	1648	653	1,360	0.00
		Back Office	07/10/14	1649	547	1,140	0.00
		Laundry Room	07/10/14	1650	778	1,620	0.00
		Vent in Barber Area	07/10/14	1650	1,603	3,340	0.00
		Table in Barber Area	07/10/14	1710	NA	NA	0.45
		Table in Barber Area	07/10/14	1715	NA	NA	0.00
126 North Bridge Street	Salon Bella Rose	First Floor	07/08/14	1611	1,790	3,729	NA
		Sump in Basement	07/08/14	1615	1,110	2,313	0.00
107 North Bridge Street	Conn Engineering	First Floor	07/08/14	1618	40	83	0.00
		Basement	07/08/14	1620	30	63	0.00
132 East Broad Street	City Hall	First Floor	07/08/14	1647	100	208	NA
		Basement	07/08/14	1650	110	229	0.05
201 North Main Street	Library/City Council Meeting Chambers	Basement	07/08/14	1700	60	125	0.00
116 West Broad Street	Tea Room	First Floor	07/09/14	1007	178	370	NA
		Basement	07/09/14	1010	134	280	NA
105 North Bridge Street	Bear Creek Coffee Shop	First Floor	07/09/14	1622	0	0	NA
		Basement	07/09/14	1625	0	0	NA

Notes:
NA = Not analyzed
ppb = parts per billion
ppm = parts per million
VOC = Volatile organic compound

Table 2
Storm and Sanitary Drain Locations - Air Monitoring Results
North Bridge Street Benzene Release Emergency Response
Linden, Genesee County, Michigan

Monitoring Location Number	Monitoring Location	Monitoring Date	OTIE Monitoring Location ID	Type	Monitoring Time	Maximum VOC Result with Benzene		Maximum VOC Result with Isobutylene Correction MultiRAE Pro (ppb)	Maximum Benzene Value UltraRAE (ppm)	LEL (%)
						Correction	MultiRAE Pro (ppb)			
1	Outside 211 North Bridge Street	07/08/14	NA	Storm	1150	0	0	0	NA	0
1	Outside 211 North Bridge Street	07/09/14	NA	Storm	1133	0	0	0	NA	0
2	Southwest intersection of Bridge Street and Broad Street	07/09/14	4	Sanitary	1137	0	0	0	NA	0
3	Outside 110 South Bridge Street	07/08/14	NA	Storm	1301	530	1,104	0.00	0	0
3	Outside 110 South Bridge Street	07/09/14	NA	Storm	1141	0	0	NA	0	0
4	Outside 110 South Bridge Street	07/08/14	NA	Storm	1301	420	875	6.15	0	0
4	Outside 110 South Bridge Street	07/09/14	NA	Storm	1142	0	0	NA	0	0
5	Outside 122 South Bridge Street	07/09/14	NA	Storm	1145	0	0	NA	0	0
6	Outside 122 South Bridge Street	07/09/14	NA	Storm	1146	0	0	NA	0	0
7	Outside 208 North Bridge Street	07/08/14	19	Storm	1152	0	0	NA	0	0
7	Outside 208 North Bridge Street	07/09/14	19	Storm	1151	0	0	NA	0	0
7	Outside 208 North Bridge Street	07/10/14	19	Storm	1825	888	1,850	0.00	0	0
8	Outside 208 North Bridge Street	07/09/14	NA	Storm	1156	283	590	NA	0	0
9	Outside 126 North Bridge Street	07/09/14	NA	Sanitary	1158	0	0	NA	0	0
10	Northeast corner of Bridge Street and Broad Street	07/09/14	17	Storm	1204	2,818	5,870	0.00	0	0
11 ^a	Southeast corner of Bridge Street and Broad Street	07/09/14	18	Storm	1208	0	0	NA	0	0
12	Outside 111 South Bridge Street	07/09/14	NA	Storm	1210	0	0	NA	0	0
13	Outside 111 South Bridge Street	07/09/14	16	Storm	1211	0	0	NA	0	0
14	Outside 111 South Bridge Street	07/09/14	NA	Storm	1213	0	0	NA	0	0
15	Southeast corner of Bridge Street and Hickory Street	07/09/14	NA	Storm	1215	0	0	NA	0	0
16	Southeast corner of Bridge Street and Hickory Street	07/09/14	NA	Storm	1215	0	0	NA	0	0
17	Southeast corner of Bridge Street and Hickory Street	07/09/14	NA	Storm	1216	0	0	NA	0	0
18	Outside 109 North Bridge Street (in the landscaped area)	07/09/14	NA	Storm	1222	0	0	NA	0	0
19	Outside 116 West Broad Street	07/09/14	NA	Storm	1225	0	0	NA	0	0
20	Outside 109 North Bridge Street (along curb)	07/09/14	NA	Storm	1226	0	0	NA	0	0
21 ^b	Northeast corner of Broad Street and Walmar Street	07/08/14	8	Storm	1238	0	0	NA	0	0
21 ^b	Northeast corner of Broad Street and Walmar Street	07/09/14	8	Storm	1235	0	0	NA	0	0
22	Northwest corner of Broad Street and Walmar Street	07/08/14	NA	Storm	1240	0	0	NA	0	0
22	Northwest corner of Broad Street and Walmar Street	07/09/14	NA	Storm	1237	0	0	NA	0	0
23	Southwest corner of Broad Street and Walmar Street	07/09/14	NA	Storm	1238	0	0	NA	0	0
24	Outside 109 West Broad Street	07/09/14	NA	Storm	1240	0	0	NA	0	0
25	Outside 132 East Broad Street	07/09/14	NA	Storm	1242	0	0	NA	0	0
26	Parking lot located west of 209 North Bridge Street	07/09/14	NA	Storm	1451	0	0	NA	0	0
27	Northeastern landscaped area in the Parking lot west of 109 North Bridge Street	07/09/14	NA	Storm	1453	0	0	NA	0	0
28 ^c	West of Masonic Temple Building (in landscaped area)	07/09/14	11	Sanitary	1455	0	0	NA	0	0
29	West of 109 North Bridge Street (in landscaped area)	07/09/14	NA	Storm	1500	0	0	NA	0	0
30 ^d	West of 109 North Bridge Street (in landscaped area)	07/09/14	10	Storm	1502	0	0	NA	0	0
31	West of 105 North Bridge Street (in landscaped area)	07/09/14	9	Storm	1503	0	0	NA	0	0
32	Parking lot located west of 109 North Bridge Street	07/09/14	NA	Storm	1505	0	0	NA	0	0
33	Parking lot located west of 109 North Bridge Street	07/09/14	NA	Storm	1507	0	0	NA	0	0
34	Outside 126 North Bridge Street	07/09/14	NA	Storm	1510	0	0	NA	0	0
35	Bridge Street roadway west of vacant land	07/09/14	1	Sanitary	1515	1,205	2,510	0.00	0	0
36	Bridge Street roadway next to vacant land	07/09/14	NA	Utility Corridor	1516	0	0	NA	0	0
37	Northeast corner of Bridge Street and Hickory Street	07/09/14	NA	Sanitary	1519	0	0	NA	0	0
38	Bridge Street right of way (south of Hickory Street)	07/09/14	NA	Storm	1522	0	0	NA	0	0
39	Bridge Street right of way (Outside 111 South Bridge Street)	07/09/14	NA	Storm	1525	0	0	NA	0	0
40	Roadway at the intersection of Bridge Street and Broad Street	07/09/14	5	Sanitary	1527	0	0	NA	0	0
41	Middle of Roadway at intersection of Broad Street and Walmar Street	07/09/14	NA	Sanitary	1528	139	290	NA	0	0
42	Roadway at intersection of Broad Street and Walmar Street (outside 117 West Broad Street)	07/09/14	7	Storm	1529	0	0	NA	0	0
43	Middle of Broad Street west of Bridge Street (outside 110 West Broad Street)	07/09/14	6	Sanitary	1535	0	0	NA	0	0
44	Wooded area west of parking areas	07/09/14	13	Sanitary	1540	0	0	NA	0	0
45 ^e	Wooded area west of parking areas	07/09/14	12	Sanitary Sewer Interceptor	1544	0	0	NA	0	0
46	Near Mill Pond behind vacant lot	07/09/14	2	Sanitary	1550	0	0	NA	0	0
47	Northern portion of vacant land	07/09/14	3	Sanitary	1552	0	0	NA	0	0
48	Walkway east of 106 West Bridge Street	07/09/14	NA	Storm	1555	0	0	NA	0	0
49	Parking area east of 106 West Bridge Street	07/09/14	NA	Storm	1558	0	0	NA	0	0
50	Driveway east of 106 West Bridge Street	07/09/14	NA	Storm	1601	0	0	NA	0	0

Notes:

^aThe description provided for Monitoring Location 18 on Figure 2 of the document provided by OTIE does not correlate to OTIE's description of the point provided in Table 1 of the document provided by OTIE. However, based on the position of Monitoring Location 18 in OTIE's Figure 2, Tetra Tech correlated the catch basin located at this point to Tetra Tech Monitoring Location 11.

^bThe position provided for Monitoring Location 8 on Figure 2 of the document provided by OTIE shows that this location was located in the roadway of Walmar Street, north of Broad Street. However, no sewer manholes were observed at this location. Based on OTIE's location description provided in Table 1, OTIE's Monitoring Location 8 is likely associated with the storm water manhole located at the northeast corner of Walmar and East Broad Street. As such, Tetra Tech correlated the catch basin located at the northeast corner of Walmar and East Broad Street to Tetra Tech Monitoring Location 21.

^cThe position provided for Monitoring Location 11 on Figure 2 of the document provided by OTIE shows that this point was located behind the Linden Masonic Temple (119 North Bridge Street). However, OTIE's location description provided in Table 1 identifies Monitoring Location 11 as a sanitary sewer located west of 109 North Bridge Street. This description is likely associated with OTIE's Monitoring Location 10 on Figure 2. Tetra Tech has identified the manhole located west of 119 North Bridge as OTIE's Monitoring Location 11. As such, Tetra Tech correlated the catch basin located behind 119 North Bridge Street to Tetra Tech Monitoring Location 28.

^dThe position provided for Monitoring Location 10 on Figure 2 of the document provided by OTIE shows that this point was located in the parking lot, west of 109 North Bridge Street. However, OTIE's location description provided in Table 1 identifies Monitoring Location 10 as a sanitary sewer located behind the Linden Masonic Temple (119 North Bridge Street). This description is likely associated with OTIE's Monitoring Location 11 on Figure 2. Tetra Tech has identified the manhole located west of 109 North Bridge Street as OTIE's Monitoring Location 10. As such, Tetra Tech correlated the sanitary sewer located at this point to Tetra Tech Monitoring Location 30.

^eThe position provided for Monitoring Location 13 on Figure 2 of the document provided by OTIE shows that this point was located in the wooded area west of the parking area. However, OTIE's description of this location, provided in Table 1, indicates that Monitoring Location 13 is the site basement. This description is likely associated with OTIE's Monitoring Location 14 on Figure 2 (See Bear Creek Coffee Shop monitoring results on the Indoor Air Monitoring Data Table). Tetra Tech has identified the manhole located in the wooded area west of the parking lot as OTIE's Monitoring Location 13, which correlates to Tetra Tech monitoring location 45.

OTIE indicates that a 20th monitoring location was identified on the west side of North Bridge Street, outside 119 North Bridge Street. However, the monitoring location was not identified in OTIE's Air Monitoring Summary Table 1, and Tetra Tech did not observe any evidence of a manhole located in the area of the 20th identified monitoring location.

OTIE = Oneida Total Integrated Enterprises

NA = Not applicable or analyzed

ppb = parts per billion

ppm = parts per million

Table 3
Summary of Detected Volatile Organic Compounds (Industrial Air)
North Bridge Street Benzene Release Emergency Response
Linden, Genesee County, Michigan

Parameter	Sample Name	LER-BV-01-070914		LER-BV-02-070914		LER-BV-03-071014		LER-BV-04-070914		LER-BV-05-070914		LER-BV-06-071014	
	Sampling Date	07/09/14		07/09/14		07/10/14		07/09/14		07/09/14		07/10/14	
	Sample Matrix	Air		Air									
	Address	109 North Bridge		132 East Broad		132 East Broad							
	Location	Office		South Basement		North Basement		Retail Space		Basement		SE Corner	
Action Level (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	Original Analytical Result (ppbv)	Converted Analytical Result (µg/m ³)	
Total VOCs													
1,2,4-Trimethylbenzene	31	0.5 J	2.46 J	1.2	5.9	0.64 J	3.15 J	0.71 J	3.49 J	1.1	5.41	0.66 J	3.24 J
1,3,5-Trimethylbenzene	NL	ND	ND	ND	ND	ND	ND	ND	ND	0.33 J	1.62 J	0.39 J	1.92 J
2-Butanone	22,000	0.76 J	2.24 J	1.6	4.72	1.4	4.13	2.6	7.67	3	8.85	10	29.49
2-Hexanone	130	ND	ND	0.32 J	1.31 J	0.34 J	1.39 J	ND	ND	0.84 J	3.44 J	0.72 J	2.95 J
2-Propanol	31,000	ND	ND	6.1	14.99	14	34.41	16	39.32	11	27.03	ND	ND
4-Methyl-2-pentanone	13,000	ND	ND	ND	ND	ND	ND	ND	ND	0.61 J	2.5 J	0.42 J	1.72 J
Acetone	140,000	6.8	16.15	8.5	20.19	11	26.13	17	40.38	25	59.39	87 J	206.67 J
Benzene	1.6 (19.17)	3.3 J	10.54 J	56 J	178.9 J	16 J	51.11 J	4.1 J	13.1 J	0.96 J	3.07 J	16 J	51.11 J
Cyclohexane	26,000	ND	ND	4.9 J	16.87 J	1.4 J	4.82 J	0.71 J	2.44 J	2 J	6.88 J	5.2 J	17.9 J
Ethanol	NL	25	47.11	13	24.5	47	88.56	62 J, E	116.82 J	97 E	182.77 E	8.3	15.64
Ethylbenzene	4.9	ND	ND	2.3	9.99	0.77 J	3.34 J	1.2 J	5.21 J	0.77 J	3.34 J	1.6 J	6.95 J
Heptane	NL	ND	ND	ND	ND	0.32 J	1.31 J	ND	ND	0.93 J	3.81 J	2.3 J	9.43 J
m,p-Xylene	440	ND	ND	3.4	14.76	1.4 J	6.08 J	2.4	10.42	2.5	10.86	5.2	22.58
Methylene chloride	1,200	ND	ND	2.2 J	7.64 J	2.3 J	7.99 J	3.9 J	13.55 J	ND	ND	ND	ND
n-Hexane	3,100	ND	ND	1.2 J	4.23 J	1.2 J	4.23 J	0.93 J	3.28 J	2.2	7.75	3	10.57
o-Xylene	440	ND	ND	0.74 J	3.21 J	0.47 J	2.04 J	0.89 J	3.86 J	0.87 J	3.78 J	2.3	9.99
Styrene	4,400	ND	ND	ND	ND	ND	ND	ND	ND	0.35 J	1.49 J	ND	ND
Tetrachloroethene	47	ND	ND	ND	ND	ND	ND	ND	ND	3.9	26.45	ND	ND
Tetrahydrofuran	8,800	ND	ND	1.2 J	3.54 J	0.93 J	2.74 J	ND	ND	ND	ND	ND	ND
Toluene	22,000	0.75 J	2.83 J	2.2 J	8.29 J	3.1 J	11.68 J	5.1 J	19.22 J	4.4 J	16.58 J	28 J	105.51 J
Xylenes, Total	440	ND	ND	4.1	17.8	1.9 J	8.25 J	3.3	14.33	3.4	14.76	7.5	32.57

Notes:

(1) The action levels for the detected analytical parameters are the EPA Regional Screening Levels for industrial air, dated May 2014. The value of 19.17 µg/m³, provided in parentheses for benzene, denotes the Minimal Risk Level (MRL), for benzene, as provided by the Agency for Toxic Substances and Disease Registry (ATSDR).

(2) Cells highlighted in yellow indicate an analytical result above the corresponding action level.

(3) J qualifier: Indicates that the result was below the sample reporting limit, which corresponds to the lowest calibration standard.

(4) E qualifier: Indicates that the result exceeded the upper quantification range. There is greater uncertainty associated with these results and the data should be considered as estimated.

µg/m³ = micrograms per cubic meter

ppbv = parts per billion volume

ND = Not detected

NL = Not listed

VOC = Volatile organic compounds

Table 4
Summary of Detected Volatile Organic Compounds (Residential Air)
North Bridge Street Benzene Release Emergency Response
Linden, Genesee County, Michigan

Parameter	Sample Name	LER-BV-07-071614		LER-BV-08-071614		LER-BV-09-071614	
	Sampling Date	07/16/14		07/16/14		07/16/14	
	Sample Matrix	Air		Air		Air	
	Address	208 North Bridge		208 North Bridge		208 North Bridge	
	Location	First Floor Table		Basement Table		Outside Picnic Table	
	Action Level ($\mu\text{g}/\text{m}^3$)	Original Analytical Result (ppbv)	Converted Analytical Result ($\mu\text{g}/\text{m}^3$)	Original Analytical Result (ppbv)	Converted Analytical Result ($\mu\text{g}/\text{m}^3$)	Original Analytical Result (ppbv)	Converted Analytical Result ($\mu\text{g}/\text{m}^3$)
Total VOCs							
1,2,4-Trimethylbenzene	7.3	ND	ND	2	9.83	ND	ND
1,3,5-Trimethylbenzene	NL	ND	ND	0.52 J	2.56 J	ND	ND
2-Butanone	5,200	1.5	4.42	3.7	10.91	1.3 J	3.83 J
2-Propanol	7,300	2.5	6.14	9.3	22.86	ND	ND
4-Methyl-2-pentanone	3,100	ND	ND	0.33 J	1.35 J	ND	ND
Acetone	32,000	9.5	22.57	27	64.14	7.6 J	18.05 J
Benzene	0.36 (19.17)	0.44 J	1.41 J	4.3	13.74	0.32 J	1.02 J
Carbon Tetrachloride	0.47	ND	ND	0.65 J	4.09 J	ND	ND
Ethanol	NL	8.9	16.77	59 J	111.17 J	7.2 J	13.57 J
Ethylbenzene	1.1	ND	ND	1.8 J	7.82 J	ND	ND
Heptane	NL	ND	ND	1.2	4.92	ND	ND
m,p-Xylene	100	0.64 J	2.78 J	6.4	27.79	0.54 J	2.34 J
Methylene chloride	100	ND	ND	5.1	17.72	ND	ND
n-Hexane	730	ND	ND	2.7	9.52	ND	ND
o-Xylene	100	ND	ND	2.6	11.29	ND	ND
Styrene	1,000	ND	ND	0.51 J	2.17 J	ND	ND
Tetrachloroethene	11	ND	ND	0.15 J	1.02 J	ND	ND
Tetrahydrofuran	2,100	ND	ND	1	2.95	ND	ND
Toluene	5,200	2.2	8.29	20	75.36	1.8 J	6.78 J
Xylenes, Total	100	ND	ND	9.1	39.52	ND	ND

Notes:

(1) The action levels for the detected analytical parameters are the EPA Regional Screening Levels for residential air, dated May 2014. Note: The value of $19.17 \mu\text{g}/\text{m}^3$, provided in parentheses for benzene, denotes the Minimal Risk Level (MRL), for benzene, as provided by the Agency for Toxic Substances and Disease Registry (ATSDR).

(2) Cells highlighted in yellow indicate an analytical result above the corresponding action level.

J = Indicates that the result was below the sample reporting limit, which corresponds to the lowest calibration standard.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

ppbv = parts per billion volume

ND = Not detected

NL = Not listed

VOC = Volatile organic compounds

ENCLOSURE 3

Photographic Documentation



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

<p>Photograph: 1</p> <p>Direction: North</p> <p>Date: 07/08/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: Outfall pipe, located northeast of 208 North Bridge Street, releasing water into the Shiawassee River.</p>	
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<p>Photograph: 2</p> <p>Direction: Down</p> <p>Date: 07/08/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: Storm drain located in front, and to the west, of 208 North Bridge Street.</p>	
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Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

Photograph: 3

Direction: Down

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Floor drain located inside the non-operational gas station located at 120 West Broad Street.



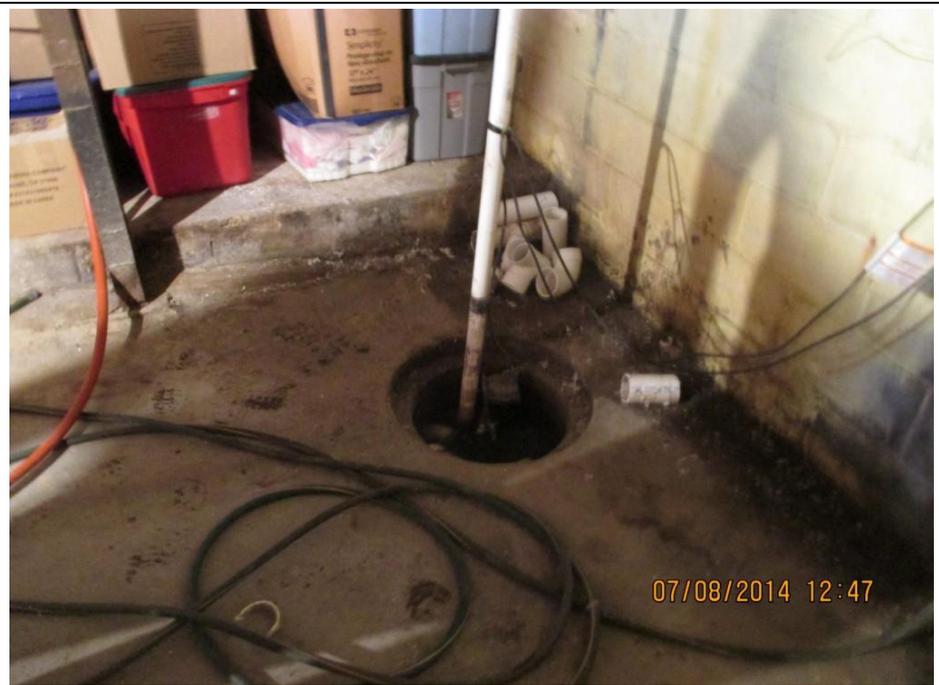
Photograph: 4

Direction: Down

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Sump pump located in the basement of 106 West Broad Street.





Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

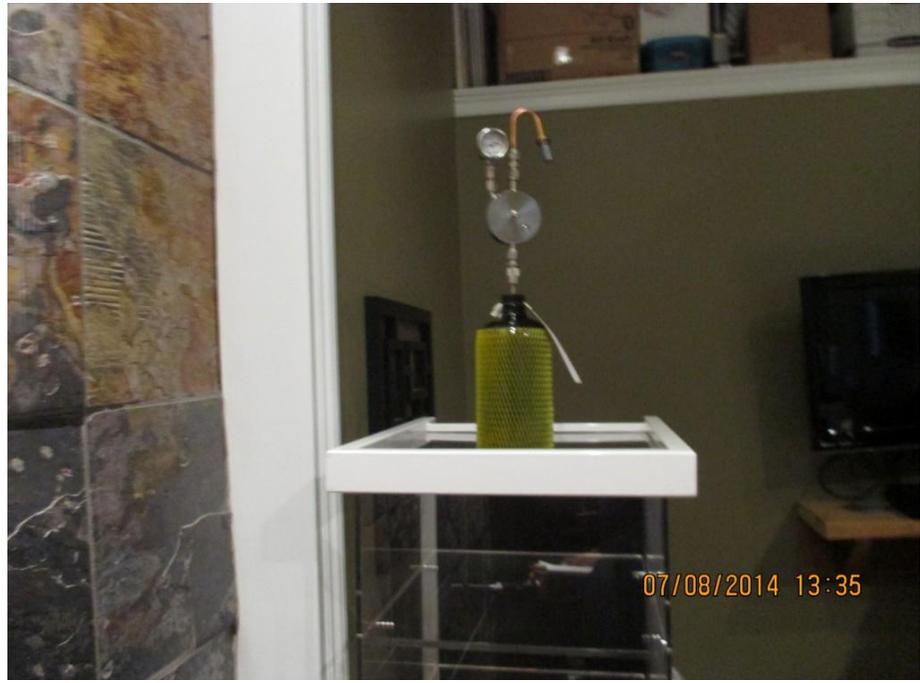
Photograph: 5

Direction: East

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Deployment location for
bottle-vac sample LER-
BV-01-070914, back
office at 109 North
Bridge Street.



Photograph: 6

Direction: Down

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Reddish material
seeping into the south
basement of 109 North
Bridge Street.





Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

<p>Photograph: 7</p> <p>Direction: Down</p> <p>Date: 07/08/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: Close-up of the reddish material seeping into the south basement of 109 North Bridge Street.</p>	 <p>07/08/2014 13:44</p>
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<p>Photograph: 8</p> <p>Direction: East</p> <p>Date: 07/08/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: Tetra Tech and MDEQ screening a floor drain located at the east end of the south basement of 109 North Bridge Street.</p>	 <p>07/08/2014 13:46</p>
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Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

Photograph: 9

Direction: Down

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Deployment location for bottle-vac sample LER-BV-02-070914, west end of the south basement of 109 North Bridge Street.



Photograph: 10

Direction: Down

Date: 07/08/14

Photographer:
Kelly Thomas

Description:
Sump pump located in the north basement of 109 North Bridge Street.





Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

Photograph: 11
Direction: Down
Date: 07/08/14
Photographer:
Kelly Thomas
Description:
Deployment location for bottle-vac sample LER-BV-04-070914, southwest corner of the retail space at 109 North Bridge Street.



Photograph: 12
Direction: East
Date: 07/08/14
Photographer:
Kelly Thomas
Description:
View of front entrance to 208 North Bridge Street.

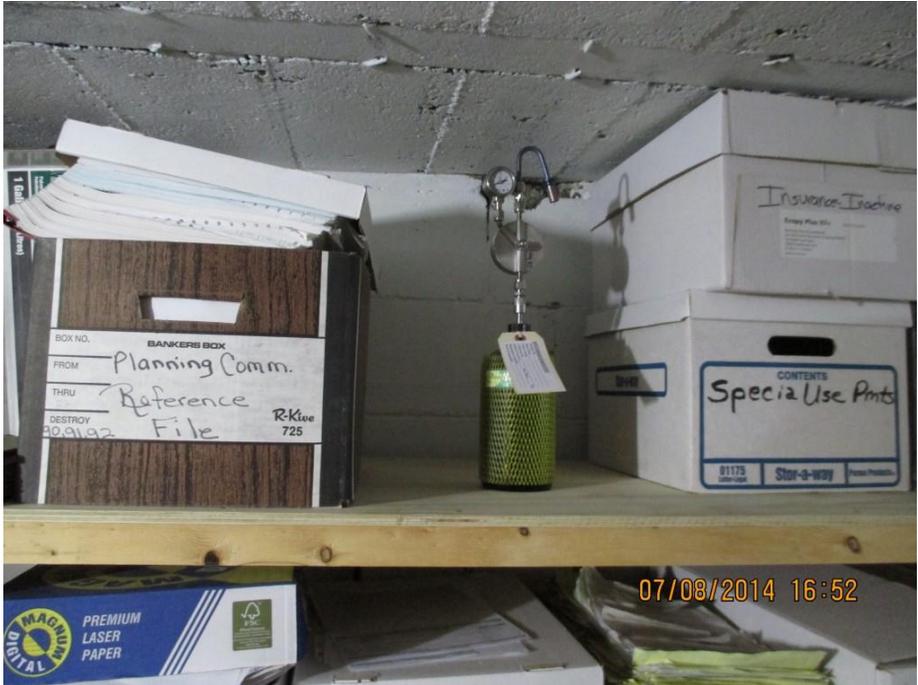




Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

Photograph: 13	
Direction: West	
Date: 07/08/14	
Photographer: Kelly Thomas	
Description: Deployment location for bottle-vac sample LER-BV-05-070914, basement of 132 East Broad Street.	

Photograph: 14	
Direction: East	
Date: 07/09/14	
Photographer: Kelly Thomas	
Description: View of the rear entrance to 109 North Bridge Street.	



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

<p>Photograph: 15</p> <p>Direction: Northeast</p> <p>Date: 07/09/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: View of the front entrance to 120 West Broad Street.</p>	
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<p>Photograph: 16</p> <p>Direction: Down</p> <p>Date: 07/09/14</p> <p>Photographer: Kelly Thomas</p> <p>Description: Deployment location for bottle-vac sample LER-BV-03-071014, west end of the north basement of 109 North Bridge Street.</p>	
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Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

<p>Photograph: 17</p> <p>Direction: Northwest</p> <p>Date: 07/10/14</p> <p>Photographer: Michael Browning</p> <p>Description: Deployment location for bottle-vac sample LER-BV-06-071014, exterior southeastern corner of 132 East Broad Street.</p>	<p>07/10/2014 18:55</p>
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<p>Photograph: 18</p> <p>Direction: Down</p> <p>Date: 07/15/14</p> <p>Photographer: Michael Browning</p> <p>Description: Deployment location for bottle-vac sample LER-BV-07-071614, table located near the front door of 208 North Bridge Street.</p>	<p>07/15/2014 12:56</p>
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Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: North Bridge Street Benzene Release E.R.
Location: Linden, Genesee County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1407-005

Photograph: 19	 A photograph showing a bottle-vac sample collection device (a green mesh cylinder with a glass bottle inside) placed on a dark coffee table. The device is connected to a vacuum pump and has a gauge. Several remote controls are scattered on the table next to it. A timestamp in the bottom right corner reads "07/15/2014 12:56".
Direction: South	
Date: 07/15/14	
Photographer: Michael Browning	
Description: Deployment location for bottle-vac sample LER-BV-08-071614, set on coffee table located in the basement of 208 North Bridge Street.	

Photograph: 20	 A photograph showing a bottle-vac sample collection device (a green mesh cylinder with a glass bottle inside) placed on a wooden picnic table. The device is connected to a vacuum pump and has a gauge. A metal toolbox is visible on the table next to it. The background shows a grassy area and a body of water. A timestamp in the bottom right corner reads "07/15/2014 12:58".
Direction: East	
Date: 07/15/14	
Photographer: Michael Browning	
Description: Deployment location for bottle-vac sample LER-BV-09-071614, set on picnic table located to the east of 208 North Bridge Street.	

ENCLOSURE 4

Data Verification Report and Analytical Data

DATA VERIFICATION REPORT

North Bridge Street Emergency Response, Linden, Michigan

This report presents a data verification of the analytical reports that cover the nine air samples collected by Tetra Tech, Inc. (Tetra Tech) during the North Bridge Street Benzene Release Emergency Response site in Linden, Michigan, in July 2014. Each day's samples were hand-delivered to RTI Laboratories, Inc. (RTI), in Livonia, Michigan, for analysis of volatile organic compounds (VOC) by U.S. Environmental Protection Agency (EPA) Method TO-15 on a rapid turnaround-time basis. RTI reported each day's samples separately as a sample delivery group (SDG). The following sections discuss each report in turn and the final section provides a general overview of the analyses. RTI's reported analytical results follow this report.

1.0 SDG No. 1407316

SDG No. 1407316 includes four air samples collected on July 9, 2014. There were no problems with sample preservation and holding time, blanks, and surrogate recoveries.

Duplicate laboratory control samples (LCS) were analyzed with these samples. The initial LCS yielded excessive recoveries for 13 of the 61 analytes, while the duplicate LCS yielded all recoveries within the laboratory's quality control (QC) limits. However, the difference in recoveries led to several analytes yielding excessive relative percent differences (RPD) between the results. For instance, benzene yielded recoveries of 120 and 111 percent, versus QC limits of 69 to 119 percent, and an RPD of 5 percent, versus its QC limit of 20 percent. Benzyl chloride yielded recoveries of 153 and 103 percent, versus QC limits of 50 to 147 percent, yielding an RPD of 39 percent, almost twice the same QC limit. Based on these uncertainties in the laboratory instrument's sensitivity, all positive results for benzene, cyclohexane, heptane, tetrahydrofuran, and toluene are qualified as estimated and are flagged "J." Nondetected results for those analytes and the other affected results, such as benzyl chloride, are not qualified.

Some detected results were less than the reporting limit, which corresponds to the lowest calibration standard. RTI correctly qualified these extrapolations as estimates (flagged "J"). In addition, a few results for benzene and ethanol exceeded the calibration range. Insufficient sample remained for re-analysis at a dilution. RTI flagged these results "E"; they are also qualified as estimated and flagged "J."

2.0 SDG No. 1407369

SDG No. 1407369 includes two air samples collected on July 10, 2014. There were no problems with sample preservation and holding time, blanks, and surrogate recoveries.

These samples were analyzed with those of SDG No. 1407316; therefore, the same LCS pair applies. The positive results for benzene, cyclohexane, heptane, tetrahydrofuran, and toluene in these samples are qualified as estimated and are flagged “J.”

Some detected results were less than the reporting limit, which corresponds to the lowest calibration standard. RTI correctly qualified these extrapolations as estimates (flagged “J”). In addition, one result for acetone exceeded the calibration range. Insufficient sample remained for re-analysis at a dilution. RTI flagged this result “E”; it is also qualified as estimated and flagged “J.”

3.0 SDG No. 1407600

SDG No. 1407600 includes three air samples collected on July 16, 2014. There were no problems with sample preservation and holding times, blanks, and surrogate recoveries.

The LCS yielded slightly high recoveries for three analytes. None of these analytes were detected in the field samples; therefore, no qualifications were applied.

The laboratory performed a duplicate analysis on sample LER-BV-09-071614. The laboratory duplicate sample yielded consistently lower concentrations, often nondetected, for all of the analytes detected in the primary (reported) analysis. Therefore all positive results for sample LER-BV-09-071614 are qualified as estimated and flagged “J.”

Some detected results were less than the reporting limit, which corresponds to the lowest calibration standard. RTI correctly qualified these extrapolations as estimates (flagged “J”). In addition, one result for ethanol exceeded the calibration range. Insufficient sample remained for re-analysis at a dilution. RTI flagged this result “E”; it is also qualified as estimated and flagged “J.” One result for tetrahydrofuran was flagged “M” to identify it as manually integrated to minimize matrix interference. This flag should be deleted.

4.0 Overall Evaluation

Overall, the analyses went well with no results rejected. A number of results were qualified as estimated for various reasons, as discussed above. The results may be used, as qualified, for any purpose.



RTI Laboratories
31628 Glendale St.
Livonia, MI 48150
TEL: (734) 422-8000
Website: www.rtilab.com

Monday, July 14, 2014

Sean Kane
Tetra Tech Inc.
26600 Telegraph Road
Suite 400
Southfield, MI 48034
TEL:
FAX:

RE: Linden E.R.
Work Order #: 1407316
Dear Sean Kane:

RTI Laboratories received 4 sample(s) on 7/10/2014 for the analyses presented in the following report. There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Chino Ortiz". The signature is written in a cursive, flowing style.

Chino Ortiz
Project Manager

RTI Laboratories - Workorder Sample Summary

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.
Project: Linden E.R.

Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1407316-001A	LER-BV-01-070914		7/9/2014 1:35 PM	7/10/2014 10:22 AM	Air
1407316-002A	LER-BV-02-070914		7/9/2014 1:53 PM	7/10/2014 10:22 AM	Air
1407316-003A	LER-BV-04-070914		7/9/2014 2:20 PM	7/10/2014 10:22 AM	Air
1407316-004A	LER-BV-05-070914		7/9/2014 4:50 PM	7/10/2014 10:22 AM	Air

Client: Tetra Tech Inc.**Project:** Linden E.R.

This report in its entirety consists of the documents listed below. All documents contain the RTI Work Order Number assigned to this report.

1. Paginated Report including: Case Narrative, Analytical Results and Applicable Quality Control Summary Reports.
2. A Cover Letter that immediately precedes the Paginated Report.
3. Paginated copies of the Chain of Custody Documents supplied with this sample set.

Concentrations reported with a J flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). There is greater uncertainty associated with these results and data should be considered as estimated.

Concentrations reported with an E flag in the Qual field are values that exceed the upper quantification range. There is greater uncertainty associated with these results and data should be considered as estimated.

Any comments or problems with the analytical events associated with this report are noted below.

Analytical Comments for EPATO-15, Sample 1407316-002A, Batch ID R69199 : Dilution was not performed due to insufficient sample amount.
Analytical Comments for EPATO-15, Sample 1407316-003A, Batch ID R69199 : Dilution was not performed due to insufficient sample amount.
Analytical Comments for EPATO-15, Sample VOA1 LCS 071014, Batch ID R69199 : 10 out of 61 LCS compounds slightly exceeded QC limits.
Analytical Comments for EPATO-15, Sample 1407316-004A, Batch ID R69217 : Dilution was not performed due to insufficient sample amount.
Analytical Comments for EPATO-15, Sample VOA1 LCS 071114, Batch ID R69217 : 13 out 61 LCS compounds slightly exceeded QC limits.
LCSD recoveries were within limits. As a result, few compounds exceeded RPD limits.
Analytical Comments for EPATO-15, Sample VOA1 CCV 071114, Batch ID R69217 : CCV results for Hexachlorobutadiene and naphthalene exceed the 30% criteria.

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.
 Project: Linden E.R.
 Lab ID: 1407316-001
 Client Sample ID: LER-BV-01-070914

Collection Date: 7/9/2014 1:35:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,2,4-Trimethylbenzene	0.50	1.0	J	ppbv	1	7/11/2014 6:54 AM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,3-Butadiene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
1,4-Dioxane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
2-Butanone	0.76	1.0	J	ppbv	1	7/11/2014 6:54 AM
2-Hexanone	ND	1.0		ppbv	1	7/11/2014 6:54 AM
2-Propanol	ND	1.0		ppbv	1	7/11/2014 6:54 AM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Acetone	6.8	1.0		ppbv	1	7/11/2014 6:54 AM
Benzene	3.3	1.0		ppbv	1	7/11/2014 6:54 AM
Benzyl chloride	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Bromodichloromethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Bromoform	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Bromomethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Carbon disulfide	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Carbon tetrachloride	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Chlorobenzene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Chlorodibromomethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Chloroethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Chloroform	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Chloromethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Cyclohexane	ND	2.0		ppbv	1	7/11/2014 6:54 AM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Ethanol	25	5.0		ppbv	1	7/11/2014 6:54 AM
Ethyl acetate	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Ethylbenzene	ND	2.0		ppbv	1	7/11/2014 6:54 AM
Heptane	ND	1.0		ppbv	1	7/11/2014 6:54 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.
Project: Linden E.R.
Lab ID: 1407316-001
Client Sample ID: LER-BV-01-070914

Collection Date: 7/9/2014 1:35:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 6:54 AM
m,p-Xylene	ND	2.0		ppbv	1	7/11/2014 6:54 AM
Methylene chloride	ND	5.0		ppbv	1	7/11/2014 6:54 AM
n-Hexane	ND	2.0		ppbv	1	7/11/2014 6:54 AM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
o-Xylene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Propylene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Styrene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Tetrachloroethene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Tetrahydrofuran	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Toluene	0.75	1.0	J	ppbv	1	7/11/2014 6:54 AM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 6:54 AM
Xylenes, Total	ND	3.0		ppbv	1	7/11/2014 6:54 AM
Surr: 4-Bromofluorobenzene	97.8	70-130		%REC	1	7/11/2014 6:54 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.
 Project: Linden E.R.
 Lab ID: 1407316-002
 Client Sample ID: LER-BV-02-070914

Collection Date: 7/9/2014 1:53:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,2,4-Trimethylbenzene	1.2	1.0		ppbv	1	7/11/2014 9:33 AM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,3-Butadiene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
1,4-Dioxane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
2-Butanone	1.6	1.0		ppbv	1	7/11/2014 9:33 AM
2-Hexanone	0.32	1.0	J	ppbv	1	7/11/2014 9:33 AM
2-Propanol	6.1	1.0		ppbv	1	7/11/2014 9:33 AM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Acetone	8.5	1.0		ppbv	1	7/11/2014 9:33 AM
Benzene	56	1.0	E	ppbv	1	7/11/2014 9:33 AM
Benzyl chloride	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Bromodichloromethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Bromoform	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Bromomethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Carbon disulfide	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Carbon tetrachloride	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Chlorobenzene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Chlorodibromomethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Chloroethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Chloroform	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Chloromethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Cyclohexane	4.9	2.0		ppbv	1	7/11/2014 9:33 AM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Ethanol	13	5.0		ppbv	1	7/11/2014 9:33 AM
Ethyl acetate	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Ethylbenzene	2.3	2.0		ppbv	1	7/11/2014 9:33 AM
Heptane	ND	1.0		ppbv	1	7/11/2014 9:33 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc. **Collection Date:** 7/9/2014 1:53:00 PM
Project: Linden E.R.
Lab ID: 1407316-002 **Matrix:** Air
Client Sample ID: LER-BV-02-070914

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 9:33 AM
m,p-Xylene	3.4	2.0		ppbv	1	7/11/2014 9:33 AM
Methylene chloride	2.2	5.0	J	ppbv	1	7/11/2014 9:33 AM
n-Hexane	1.2	2.0	J	ppbv	1	7/11/2014 9:33 AM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
o-Xylene	0.74	1.0	J	ppbv	1	7/11/2014 9:33 AM
Propylene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Styrene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Tetrachloroethene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Tetrahydrofuran	1.2	1.0		ppbv	1	7/11/2014 9:33 AM
Toluene	2.2	1.0		ppbv	1	7/11/2014 9:33 AM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 9:33 AM
Xylenes, Total	4.1	3.0		ppbv	1	7/11/2014 9:33 AM
Surr: 4-Bromofluorobenzene	94.6	70-130		%REC	1	7/11/2014 9:33 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014

Original

Client:	Tetra Tech Inc.	Collection Date:	7/9/2014 2:20:00 PM
Project:	Linden E.R.		
Lab ID:	1407316-003	Matrix:	Air
Client Sample ID:	LER-BV-04-070914		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,2,4-Trimethylbenzene	0.71	1.0	J	ppbv	1	7/11/2014 8:38 AM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,3-Butadiene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
1,4-Dioxane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
2-Butanone	2.6	1.0		ppbv	1	7/11/2014 8:38 AM
2-Hexanone	ND	1.0		ppbv	1	7/11/2014 8:38 AM
2-Propanol	16	1.0		ppbv	1	7/11/2014 8:38 AM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Acetone	17	1.0		ppbv	1	7/11/2014 8:38 AM
Benzene	4.1	1.0		ppbv	1	7/11/2014 8:38 AM
Benzyl chloride	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Bromodichloromethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Bromoform	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Bromomethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Carbon disulfide	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Carbon tetrachloride	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Chlorobenzene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Chlorodibromomethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Chloroethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Chloroform	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Chloromethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Cyclohexane	0.71	2.0	J	ppbv	1	7/11/2014 8:38 AM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Ethanol	62	5.0	E	ppbv	1	7/11/2014 8:38 AM
Ethyl acetate	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Ethylbenzene	1.2	2.0	J	ppbv	1	7/11/2014 8:38 AM
Heptane	ND	1.0		ppbv	1	7/11/2014 8:38 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.
Project: Linden E.R.
Lab ID: 1407316-003
Client Sample ID: LER-BV-04-070914

Collection Date: 7/9/2014 2:20:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 8:38 AM
m,p-Xylene	2.4	2.0		ppbv	1	7/11/2014 8:38 AM
Methylene chloride	3.9	5.0	J	ppbv	1	7/11/2014 8:38 AM
n-Hexane	0.93	2.0	J	ppbv	1	7/11/2014 8:38 AM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
o-Xylene	0.89	1.0	J	ppbv	1	7/11/2014 8:38 AM
Propylene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Styrene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Tetrachloroethene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Tetrahydrofuran	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Toluene	5.1	1.0		ppbv	1	7/11/2014 8:38 AM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 8:38 AM
Xylenes, Total	3.3	3.0		ppbv	1	7/11/2014 8:38 AM
Surr: 4-Bromofluorobenzene	97.6	70-130		%REC	1	7/11/2014 8:38 AM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/9/2014 4:50:00 PM
Project:	Linden E.R.		
Lab ID:	1407316-004	Matrix:	Air
Client Sample ID:	LER-BV-05-070914		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,2,4-Trimethylbenzene	1.1	1.0		ppbv	1	7/11/2014 2:51 PM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,3,5-Trimethylbenzene	0.33	1.0	J	ppbv	1	7/11/2014 2:51 PM
1,3-Butadiene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
1,4-Dioxane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
2-Butanone	3.0	1.0		ppbv	1	7/11/2014 2:51 PM
2-Hexanone	0.84	1.0	J	ppbv	1	7/11/2014 2:51 PM
2-Propanol	11	1.0		ppbv	1	7/11/2014 2:51 PM
4-Methyl-2-pentanone	0.61	1.0	J	ppbv	1	7/11/2014 2:51 PM
Acetone	25	1.0		ppbv	1	7/11/2014 2:51 PM
Benzene	0.96	1.0	J	ppbv	1	7/11/2014 2:51 PM
Benzyl chloride	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Bromodichloromethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Bromoform	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Bromomethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Carbon disulfide	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Carbon tetrachloride	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Chlorobenzene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Chlorodibromomethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Chloroethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Chloroform	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Chloromethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Cyclohexane	2.0	2.0	J	ppbv	1	7/11/2014 2:51 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Ethanol	97	5.0	E	ppbv	1	7/11/2014 2:51 PM
Ethyl acetate	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Ethylbenzene	0.77	2.0	J	ppbv	1	7/11/2014 2:51 PM
Heptane	0.93	1.0	J	ppbv	1	7/11/2014 2:51 PM

RTI Laboratories - Analytical Report

WO#: 1407316

Date Reported: 7/14/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/9/2014 4:50:00 PM
Project:	Linden E.R.		
Lab ID:	1407316-004	Matrix:	Air
Client Sample ID:	LER-BV-05-070914		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 2:51 PM
m,p-Xylene	2.5	2.0		ppbv	1	7/11/2014 2:51 PM
Methylene chloride	ND	5.0		ppbv	1	7/11/2014 2:51 PM
n-Hexane	2.2	2.0		ppbv	1	7/11/2014 2:51 PM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
o-Xylene	0.87	1.0	J	ppbv	1	7/11/2014 2:51 PM
Propylene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Styrene	0.35	1.0	J	ppbv	1	7/11/2014 2:51 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Tetrachloroethene	3.9	1.0		ppbv	1	7/11/2014 2:51 PM
Tetrahydrofuran	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Toluene	4.4	1.0		ppbv	1	7/11/2014 2:51 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 2:51 PM
Xylenes, Total	3.4	3.0		ppbv	1	7/11/2014 2:51 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%REC	1	7/11/2014 2:51 PM

RTI Laboratories - DATES REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1407316-001A	LER-BV-01-070914	7/9/2014 1:35 PM	Air	EPA_TO15-Volatile Organic Compounds		7/10/2014 7:28 PM	7/10/2014 7:28 PM
				EPA_TO15-Volatile Organic Compounds		7/11/2014 6:54 AM	7/11/2014 6:54 AM
1407316-002A	LER-BV-02-070914	7/9/2014 1:53 PM	Air	EPA_TO15-Volatile Organic Compounds		7/11/2014 9:33 AM	7/11/2014 9:33 AM
1407316-003A	LER-BV-04-070914	7/9/2014 2:20 PM	Air	EPA_TO15-Volatile Organic Compounds		7/11/2014 8:38 AM	7/11/2014 8:38 AM
1407316-004A	LER-BV-05-070914	7/9/2014 4:50 PM	Air	EPA_TO15-Volatile Organic Compounds		7/11/2014 2:51 PM	7/11/2014 2:51 PM

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69199

Sample ID:	VOA1 LCS 071014	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/10/2014	RunNo:	69199
Client ID:	LCSW	Batch ID:	R69199	TestNo:	TO-15	Analysis Date:	7/10/2014	SeqNo:	1349425		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	12	1.0	10.10	0	115	68	125				
1,1,2,2-Tetrachloroethane	12	1.0	10.70	0	115	65	127				
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	9.500	0	114	66	126				
1,1,2-Trichloroethane	13	1.0	10.60	0	120	73	119				S
1,1-Dichloroethane	12	1.0	10.10	0	120	68	126				
1,1-Dichloroethene	11	1.0	9.800	0	115	61	133				
1,2,4-Trichlorobenzene	8.7	1.0	9.500	0	91.4	55	142				
1,2,4-Trimethylbenzene	12	1.0	10.40	0	116	66	132				
1,2-Dibromoethane	13	1.0	10.40	0	121	74	122				
1,2-Dichlorobenzene	11	1.0	10.00	0	108	63	129				
1,2-Dichloroethane	12	1.0	10.40	0	116	65	128				
1,2-Dichloropropane	14	1.0	10.50	0	129	69	123				S
1,3,5-Trimethylbenzene	12	1.0	10.30	0	118	67	130				
1,3-Butadiene	11	1.0	10.40	0	107	66	134				
1,3-Dichlorobenzene	11	1.0	10.10	0	112	65	130				
1,4-Dichlorobenzene	11	1.0	10.10	0	110	60	131				
1,4-Dioxane	12	1.0	10.20	0	121	71	122				
2-Butanone	13	1.0	10.50	0	122	67	130				
2-Hexanone	14	1.0	10.40	0	130	62	128				S
2-Propanol	13	1.0	10.60	0	119	52	125				
4-Methyl-2-pentanone	14	1.0	10.00	0	136	67	130				S
Acetone	12	1.0	10.50	0	114	58	128				
Benzene	12	1.0	10.40	0	118	69	119				
Benzyl chloride	12	1.0	10.10	0	123	50	147				
Bromodichloromethane	12	1.0	10.20	0	121	72	128				
Bromoform	12	1.0	10.30	0	120	66	139				
Bromomethane	9.4	1.0	10.10	0	93.2	63	134				
Carbon disulfide	11	1.0	9.800	0	111	57	134				
Carbon tetrachloride	11	1.0	10.30	0	107	68	132				
Chlorobenzene	13	1.0	10.60	0	119	70	119				
Chlorodibromomethane	12	1.0	10.20	0	119	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69199

Sample ID:	VOA1 LCS 071014	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/10/2014	RunNo:	69199
Client ID:	LCSW	Batch ID:	R69199	TestNo:	TO-15	Analysis Date:	7/10/2014	SeqNo:	1349425		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	10	1.0	9.900	0	106	63	127				
Chloroform	12	1.0	10.70	0	113	68	123				
Chloromethane	12	1.0	9.900	0	123	59	132				
cis-1,2-Dichloroethene	12	1.0	10.60	0	114	70	121				
cis-1,3-dichloropropene	13	1.0	10.70	0	124	70	128				
Cyclohexane	13	2.0	10.30	0	128	70	117				S
Dichlorodifluoromethane	11	1.0	10.00	0	106	59	128				
Ethanol	12	5.0	9.000	0	132	59	125				S
Ethyl acetate	13	1.0	10.70	0	120	65	128				
Ethylbenzene	13	2.0	10.50	0	120	70	124				
Heptane	13	1.0	10.40	0	129	69	123				S
Hexachlorobutadiene	9.6	2.0	9.600	0	99.5	56	138				
m,p-Xylene	24	2.0	20.60	0	119	61	134				
Methylene chloride	11	5.0	9.700	0	112	62	115				
n-Hexane	13	2.0	10.40	0	122	63	120				S
Naphthalene	8.7	1.0	9.900	0	88.0	57	138				
o-Xylene	12	1.0	10.70	0	113	67	125				
Propylene	12	1.0	10.50	0	118	70	130				
Styrene	13	1.0	10.60	0	122	73	127				
tert-Butyl Methyl Ether	13	1.0	10.30	0	123	24	150				
Tetrachloroethene	12	1.0	10.30	0	115	66	124				
Tetrahydrofuran	13	1.0	10.40	0	128	64	123				S
Toluene	13	1.0	10.60	0	120	66	119				S
trans-1,2-Dichloroethene	12	1.0	9.900	0	118	67	124				
trans-1,3-dichloropropene	13	1.0	11.00	0	121	75	133				
Trichloroethene	12	1.0	10.20	0	120	71	123				
Trichlorofluoromethane	11	1.0	10.80	0	97.7	62	126				
Vinyl acetate	13	1.0	10.00	0	134	56	139				
Vinyl chloride	10	1.0	10.00	0	103	64	127				
Xylenes, Total	37	3.0	31.30	0	117	70	130				
Surr: 4-Bromofluorobenzene	12		12.50		98.8	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69199

Sample ID: VOA1 MBLK2 07101	Samp Type: MBLK	Test Code: EPA_TO15	Units: ppbv	Prep Date: 7/11/2014	RunNo: 69199						
Client ID: PBW	Batch ID: R69199	TestNo: TO-15	Analysis Date: 7/11/2014	SeqNo: 1349579							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Butadiene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
1,4-Dioxane	ND	1.0									
2-Butanone	ND	1.0									
2-Hexanone	ND	1.0									
2-Propanol	ND	1.0									
4-Methyl-2-pentanone	ND	1.0									
Acetone	ND	1.0									
Benzene	ND	1.0									
Benzyl chloride	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chlorodibromomethane	ND	1.0									

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69199

Sample ID:	VOA1 MBLK2 07101	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69199
Client ID:	PBW	Batch ID:	R69199	TestNo:	TO-15			Analysis Date:	7/11/2014	SeqNo:	1349579

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-dichloropropene	ND	1.0									
Cyclohexane	ND	2.0									
Dichlorodifluoromethane	ND	1.0									
Ethanol	ND	5.0									
Ethyl acetate	ND	1.0									
Ethylbenzene	ND	2.0									
Heptane	ND	1.0									
Hexachlorobutadiene	ND	2.0									
m,p-Xylene	ND	2.0									
Methylene chloride	ND	5.0									
n-Hexane	ND	2.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
Propylene	ND	1.0									
Styrene	ND	1.0									
tert-Butyl Methyl Ether	ND	1.0									
Tetrachloroethene	ND	1.0									
Tetrahydrofuran	ND	1.0									
Toluene	ND	1.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl acetate	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 4-Bromofluorobenzene	11		12.50		88.1	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCS 071114	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSW	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349829		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	12	1.0	10.10	0	116	68	125				
1,1,2,2-Tetrachloroethane	13	1.0	10.70	0	121	65	127				
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	9.500	0	113	66	126				
1,1,2-Trichloroethane	13	1.0	10.60	0	123	73	119				S
1,1-Dichloroethane	12	1.0	10.10	0	118	68	126				
1,1-Dichloroethene	11	1.0	9.800	0	114	61	133				
1,2,4-Trichlorobenzene	14	1.0	9.500	0	145	55	142				S
1,2,4-Trimethylbenzene	14	1.0	10.40	0	130	66	132				
1,2-Dibromoethane	13	1.0	10.40	0	121	74	122				
1,2-Dichlorobenzene	14	1.0	10.00	0	141	63	129				S
1,2-Dichloroethane	12	1.0	10.40	0	116	65	128				
1,2-Dichloropropane	13	1.0	10.50	0	126	69	123				S
1,3,5-Trimethylbenzene	13	1.0	10.30	0	125	67	130				
1,3-Butadiene	12	1.0	10.40	0	116	66	134				
1,3-Dichlorobenzene	13	1.0	10.10	0	129	65	130				
1,4-Dichlorobenzene	13	1.0	10.10	0	130	60	131				
1,4-Dioxane	12	1.0	10.20	0	122	71	122				
2-Butanone	12	1.0	10.50	0	116	67	130				
2-Hexanone	13	1.0	10.40	0	124	62	128				
2-Propanol	12	1.0	10.60	0	115	52	125				
4-Methyl-2-pentanone	13	1.0	10.00	0	126	67	130				
Acetone	12	1.0	10.50	0	112	58	128				
Benzene	12	1.0	10.40	0	120	69	119				S
Benzyl chloride	15	1.0	10.10	0	153	50	147				S
Bromodichloromethane	12	1.0	10.20	0	119	72	128				
Bromoform	13	1.0	10.30	0	124	66	139				
Bromomethane	12	1.0	10.10	0	119	63	134				
Carbon disulfide	11	1.0	9.800	0	116	57	134				
Carbon tetrachloride	11	1.0	10.30	0	110	68	132				
Chlorobenzene	13	1.0	10.60	0	121	70	119				S
Chlorodibromomethane	12	1.0	10.20	0	121	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCS 071114	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSW	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349829		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	12	1.0	9.900	0	121	63	127				
Chloroform	12	1.0	10.70	0	114	68	123				
Chloromethane	12	1.0	9.900	0	119	59	132				
cis-1,2-Dichloroethene	12	1.0	10.60	0	117	70	121				
cis-1,3-dichloropropene	13	1.0	10.70	0	122	70	128				
Cyclohexane	12	2.0	10.30	0	120	70	117				S
Dichlorodifluoromethane	11	1.0	10.00	0	111	59	128				
Ethanol	10	5.0	9.000	0	116	59	125				
Ethyl acetate	12	1.0	10.70	0	113	65	128				
Ethylbenzene	13	2.0	10.50	0	120	70	124				
Heptane	13	1.0	10.40	0	123	69	123				S
Hexachlorobutadiene	13	2.0	9.600	0	139	56	138				S
m,p-Xylene	24	2.0	20.60	0	118	61	134				
Methylene chloride	11	5.0	9.700	0	109	62	115				
n-Hexane	12	2.0	10.40	0	117	63	120				
Naphthalene	16	1.0	9.900	0	161	57	138				S
o-Xylene	12	1.0	10.70	0	114	67	125				
Propylene	12	1.0	10.50	0	116	70	130				
Styrene	13	1.0	10.60	0	124	73	127				
tert-Butyl Methyl Ether	12	1.0	10.30	0	121	24	150				
Tetrachloroethene	12	1.0	10.30	0	120	66	124				
Tetrahydrofuran	13	1.0	10.40	0	123	64	123				S
Toluene	13	1.0	10.60	0	120	66	119				S
trans-1,2-Dichloroethene	11	1.0	9.900	0	116	67	124				
trans-1,3-dichloropropene	13	1.0	11.00	0	118	75	133				
Trichloroethene	12	1.0	10.20	0	122	71	123				
Trichlorofluoromethane	11	1.0	10.80	0	99.7	62	126				
Vinyl acetate	13	1.0	10.00	0	129	56	139				
Vinyl chloride	11	1.0	10.00	0	109	64	127				
Xylenes, Total	37	3.0	31.30	0	117	70	130				
Surr: 4-Bromofluorobenzene	12		12.50		98.5	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCSD 071114	Samp Type:	LCSD	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217		
Client ID:	LCSS02	Batch ID:	R69217	TestNo:	TO-15			Analysis Date:	7/11/2014	SeqNo:	1349830		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual		
1,1,1-Trichloroethane	12	1.0	10.50	0	110	68	125	11.71	1.64	20			
1,1,2,2-Tetrachloroethane	12	1.0	11.00	0	109	65	127	12.93	7.71	20			
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	10.20	0	106	66	126	10.78	0.0928	20			
1,1,2-Trichloroethane	12	1.0	10.90	0	113	73	119	13.02	5.44	20			
1,1-Dichloroethane	12	1.0	10.50	0	110	68	126	11.91	2.98	20			
1,1-Dichloroethene	11	1.0	10.40	0	106	61	133	11.13	0.903	20			
1,2,4-Trichlorobenzene	8.0	1.0	10.50	0	76.7	55	142	13.75	52.3	20			R
1,2,4-Trimethylbenzene	12	1.0	11.00	0	105	66	132	13.54	15.9	20			
1,2-Dibromoethane	12	1.0	11.00	0	110	74	122	12.56	3.81	20			
1,2-Dichlorobenzene	10	1.0	10.90	0	95.9	63	129	14.10	29.7	20			R
1,2-Dichloroethane	12	1.0	10.80	0	107	65	128	12.08	4.66	20			
1,2-Dichloropropane	12	1.0	11.00	0	113	69	123	13.19	5.61	20			
1,3,5-Trimethylbenzene	12	1.0	11.00	0	105	67	130	12.89	10.5	20			
1,3-Butadiene	12	1.0	10.90	0	110	66	134	12.11	0.580	20			
1,3-Dichlorobenzene	11	1.0	11.00	0	99.9	65	130	13.04	17.1	20			
1,4-Dichlorobenzene	11	1.0	10.90	0	97.8	60	131	13.17	21.1	20			R
1,4-Dioxane	12	1.0	10.70	0	111	71	122	12.42	4.19	20			
2-Butanone	12	1.0	11.00	0	108	67	130	12.16	2.41	20			
2-Hexanone	12	1.0	11.00	0	111	62	128	12.91	5.16	20			
2-Propanol	12	1.0	11.00	0	108	52	125	12.17	2.66	20			
4-Methyl-2-pentanone	12	1.0	11.00	0	109	67	130	12.62	4.70	20			
Acetone	11	1.0	10.90	0	104	58	128	11.77	3.37	20			
Benzene	12	1.0	10.70	0	111	69	119	12.49	5.09	20			
Benzyl chloride	11	1.0	11.00	0	103	50	147	15.42	30.8	20			R
Bromodichloromethane	12	1.0	10.70	0	110	72	128	12.18	3.85	20			
Bromoform	12	1.0	10.80	0	114	66	139	12.76	3.83	20			
Bromomethane	12	1.0	10.40	0	116	63	134	12.04	0.166	20			
Carbon disulfide	11	1.0	10.00	0	113	57	134	11.39	0.705	20			
Carbon tetrachloride	11	1.0	10.40	0	108	68	132	11.36	1.33	20			
Chlorobenzene	12	1.0	11.00	0	111	70	119	12.83	4.79	20			
Chlorodibromomethane	12	1.0	10.70	0	111	70	130	12.31	3.47	20			

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCSD 071114	Samp Type:	LCSD	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSS02	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349830		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	12	1.0	10.30	0	114	63	127	12.01	1.85	20	
Chloroform	12	1.0	10.80	0	110	68	123	12.25	2.98	20	
Chloromethane	12	1.0	10.30	0	117	59	132	11.74	2.36	20	
cis-1,2-Dichloroethene	12	1.0	10.80	0	113	70	121	12.45	2.27	20	
cis-1,3-dichloropropene	12	1.0	10.60	0	117	70	128	13.02	5.20	20	
Cyclohexane	12	2.0	10.90	0	114	70	117	12.39	0.483	20	
Dichlorodifluoromethane	11	1.0	10.10	0	109	59	128	11.10	0.451	20	
Ethanol	11	5.0	10.40	0	103	59	125	10.41	3.21	20	
Ethyl acetate	12	1.0	10.80	0	107	65	128	12.08	4.23	20	
Ethylbenzene	12	2.0	11.00	0	109	70	124	12.62	5.04	20	
Heptane	13	1.0	11.00	0	115	69	123	12.81	1.02	20	
Hexachlorobutadiene	9.1	2.0	10.90	0	83.7	56	138	13.39	37.9	20	R
m,p-Xylene	23	2.0	21.60	0	107	61	134	24.38	5.09	20	
Methylene chloride	11	5.0	10.40	0	101	62	115	10.54	0.0948	20	
n-Hexane	12	2.0	11.00	0	109	63	120	12.13	0.828	20	
Naphthalene	7.9	1.0	10.70	0	74.1	57	138	15.94	67.1	20	R
o-Xylene	12	1.0	11.00	0	106	67	125	12.21	4.78	20	
Propylene	13	1.0	11.00	0	114	70	130	12.15	3.56	20	
Styrene	13	1.0	11.00	0	114	73	127	13.15	4.91	20	
tert-Butyl Methyl Ether	12	1.0	11.00	0	108	24	150	12.47	5.01	20	
Tetrachloroethene	12	1.0	10.70	0	112	66	124	12.31	2.63	20	
Tetrahydrofuran	12	1.0	11.00	0	113	64	123	12.82	3.41	20	
Toluene	12	1.0	11.00	0	111	66	119	12.72	4.01	20	
trans-1,2-Dichloroethene	11	1.0	10.40	0	109	67	124	11.47	0.876	20	
trans-1,3-dichloropropene	12	1.0	11.00	0	113	75	133	12.96	4.34	20	
Trichloroethene	12	1.0	10.70	0	113	71	123	12.40	2.20	20	
Trichlorofluoromethane	11	1.0	10.80	0	99.4	62	126	10.77	0.279	20	
Vinyl acetate	12	1.0	11.00	0	111	56	139	12.91	5.66	20	
Vinyl chloride	11	1.0	10.40	0	103	64	127	10.92	2.41	20	
Xylenes, Total	35	3.0	32.60	0	107	70	130	36.59	4.99	20	
Surr: 4-Bromofluorobenzene	13		12.50		100	70	130		0	20	

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 MBLK 071114	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	PBW	Batch ID:	R69217	TestNo:	TO-15			Analysis Date:	7/11/2014	SeqNo:	1350009

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Butadiene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
1,4-Dioxane	ND	1.0									
2-Butanone	ND	1.0									
2-Hexanone	ND	1.0									
2-Propanol	ND	1.0									
4-Methyl-2-pentanone	ND	1.0									
Acetone	ND	1.0									
Benzene	ND	1.0									
Benzyl chloride	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chlorodibromomethane	ND	1.0									

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407316

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 MBLK 071114	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	PBW	Batch ID:	R69217	TestNo:	TO-15			Analysis Date:	7/11/2014	SeqNo:	1350009

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-dichloropropene	ND	1.0									
Cyclohexane	ND	2.0									
Dichlorodifluoromethane	ND	1.0									
Ethanol	ND	5.0									
Ethyl acetate	ND	1.0									
Ethylbenzene	ND	2.0									
Heptane	ND	1.0									
Hexachlorobutadiene	ND	2.0									
m,p-Xylene	ND	2.0									
Methylene chloride	ND	5.0									
n-Hexane	ND	2.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
Propylene	ND	1.0									
Styrene	ND	1.0									
tert-Butyl Methyl Ether	ND	1.0									
Tetrachloroethene	ND	1.0									
Tetrahydrofuran	ND	1.0									
Toluene	ND	1.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl acetate	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 4-Bromofluorobenzene	11		12.50		90.8	70	130				

DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

PL: Permit limit;; Not included on all reports. Used primarily for wastewater discharge permits.

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported

RL: Reporting Limit: See PQL

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

QUALIFIERS:

*X: Reported value exceeds the maximum allowed concentration by regulation or permit

B: Analyte detected in the associated Method Blank at a concentration > RL.

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H: Holding time for preparation or analysis has been exceeded

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the established MDL. Greater uncertainty is associated with this result and data reported is estimated. These analytes are not routinely reviewed nor narrated as to their potential for being laboratory artifacts.

M: Manual Integration used to determine area response

ND: Not detected at the Reporting Limit

P: Second column RPD exceeds 40%

R: % RPD exceeds control limits

S: % REC exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL.



RTI Laboratories
31628 Glendale St.
Livonia, MI 48150
TEL: (734) 422-8000
Website: www.rtilab.com

Monday, July 14, 2014

Sean Kane
Tetra Tech Inc.
26600 Telegraph Road
Suite 400
Southfield, MI 48034
TEL:
FAX:

RE: Linden E.R.
Work Order #: 1407369
Dear Sean Kane:

RTI Laboratories received 2 sample(s) on 7/11/2014 for the analyses presented in the following report. There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Chino Ortiz". The signature is written in a cursive, flowing style.

Chino Ortiz
Project Manager

RTI Laboratories - Workorder Sample Summary

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1407369-001A	LER-BV-03-071014		7/10/2014 3:42 PM	7/11/2014 9:05 AM	Air
1407369-002A	LER-BV-06-071014		7/10/2014 6:56 PM	7/11/2014 9:05 AM	Air

Client: Tetra Tech Inc.

Project: Linden E.R.

This report in its entirety consists of the documents listed below. All documents contain the RTI Work Order Number assigned to this report.

1. Paginated Report including: Case Narrative, Analytical Results and Applicable Quality Control Summary Reports.
2. A Cover Letter that immediately precedes the Paginated Report.
3. Paginated copies of the Chain of Custody Documents supplied with this sample set.

Concentrations reported with a J flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). There is greater uncertainty associated with these results and data should be considered as estimated.

Concentrations reported with an E flag in the Qual field are values that exceed the upper quantification range. There is greater uncertainty associated with these results and data should be considered as estimated.

Any comments or problems with the analytical events associated with this report are noted below.

Analytical Comments for EPATO-15, Sample 1407369-002A, Batch ID R69217 : Dilution was not performed due to insufficient sample amount.
Analytical Comments for EPATO-15, Sample VOA1 LCS 071114, Batch ID R69217 : 13 out of 61 LCS compounds slightly exceeded QC limits. LCSD recoveries were within limits. As a result, few compounds exceeded RPD limits.
Analytical Comments for EPATO-15, Sample VOA1 CCV 071114, Batch ID R69217 : CCV results for Hexachlorobutadiene and naphthalene exceed the 30% criteria.

RTI Laboratories - Analytical Report

WO#: 1407369

Date Reported: 7/14/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/10/2014 3:42:00 PM
Project:	Linden E.R.		
Lab ID:	1407369-001	Matrix:	Air
Client Sample ID:	LER-BV-03-071014		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,2,4-Trimethylbenzene	0.64	1.0	J	ppbv	1	7/11/2014 3:46 PM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,3-Butadiene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
1,4-Dioxane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
2-Butanone	1.4	1.0		ppbv	1	7/11/2014 3:46 PM
2-Hexanone	0.34	1.0	J	ppbv	1	7/11/2014 3:46 PM
2-Propanol	14	1.0		ppbv	1	7/11/2014 3:46 PM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Acetone	11	1.0		ppbv	1	7/11/2014 3:46 PM
Benzene	16	1.0		ppbv	1	7/11/2014 3:46 PM
Benzyl chloride	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Bromodichloromethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Bromoform	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Bromomethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Carbon disulfide	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Carbon tetrachloride	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Chlorobenzene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Chlorodibromomethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Chloroethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Chloroform	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Chloromethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Cyclohexane	1.4	2.0	J	ppbv	1	7/11/2014 3:46 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Ethanol	47	5.0		ppbv	1	7/11/2014 3:46 PM
Ethyl acetate	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Ethylbenzene	0.77	2.0	J	ppbv	1	7/11/2014 3:46 PM
Heptane	0.32	1.0	J	ppbv	1	7/11/2014 3:46 PM

RTI Laboratories - Analytical Report

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc. **Collection Date:** 7/10/2014 3:42:00 PM
Project: Linden E.R.
Lab ID: 1407369-001 **Matrix:** Air
Client Sample ID: LER-BV-03-071014

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 3:46 PM
m,p-Xylene	1.4	2.0	J	ppbv	1	7/11/2014 3:46 PM
Methylene chloride	2.3	5.0	J	ppbv	1	7/11/2014 3:46 PM
n-Hexane	1.2	2.0	J	ppbv	1	7/11/2014 3:46 PM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
o-Xylene	0.47	1.0	J	ppbv	1	7/11/2014 3:46 PM
Propylene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Styrene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Tetrachloroethene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Tetrahydrofuran	0.93	1.0	J	ppbv	1	7/11/2014 3:46 PM
Toluene	3.1	1.0		ppbv	1	7/11/2014 3:46 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 3:46 PM
Xylenes, Total	1.9	3.0	J	ppbv	1	7/11/2014 3:46 PM
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	1	7/11/2014 3:46 PM

RTI Laboratories - Analytical Report

WO#: 1407369

Date Reported: 7/14/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/10/2014 6:56:00 PM
Project:	Linden E.R.		
Lab ID:	1407369-002	Matrix:	Air
Client Sample ID:	LER-BV-06-071014		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/11/2014 4:40 PM
m,p-Xylene	5.2	2.0		ppbv	1	7/11/2014 4:40 PM
Methylene chloride	ND	5.0		ppbv	1	7/11/2014 4:40 PM
n-Hexane	3.0	2.0		ppbv	1	7/11/2014 4:40 PM
Naphthalene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
o-Xylene	2.3	1.0		ppbv	1	7/11/2014 4:40 PM
Propylene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Styrene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Tetrachloroethene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Tetrahydrofuran	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Toluene	28	1.0		ppbv	1	7/11/2014 4:40 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Trichloroethene	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Vinyl acetate	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Vinyl chloride	ND	1.0		ppbv	1	7/11/2014 4:40 PM
Xylenes, Total	7.5	3.0		ppbv	1	7/11/2014 4:40 PM
Surr: 4-Bromofluorobenzene	95.8	70-130		%REC	1	7/11/2014 4:40 PM

RTI Laboratories - DATES REPORT

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1407369-001A	LER-BV-03-071014	7/10/2014 3:42 PM	Air	EPA_TO15-Volatile Organic Compounds		7/11/2014 3:46 PM	7/11/2014 3:46 PM
1407369-002A	LER-BV-06-071014	7/10/2014 6:56 PM	Air	EPA_TO15-Volatile Organic Compounds		7/11/2014 4:40 PM	7/11/2014 4:40 PM

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCS 071114	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSW	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349829		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	12	1.0	10.10	0	116	68	125				
1,1,2,2-Tetrachloroethane	13	1.0	10.70	0	121	65	127				
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	9.500	0	113	66	126				
1,1,2-Trichloroethane	13	1.0	10.60	0	123	73	119				S
1,1-Dichloroethane	12	1.0	10.10	0	118	68	126				
1,1-Dichloroethene	11	1.0	9.800	0	114	61	133				
1,2,4-Trichlorobenzene	14	1.0	9.500	0	145	55	142				S
1,2,4-Trimethylbenzene	14	1.0	10.40	0	130	66	132				
1,2-Dibromoethane	13	1.0	10.40	0	121	74	122				
1,2-Dichlorobenzene	14	1.0	10.00	0	141	63	129				S
1,2-Dichloroethane	12	1.0	10.40	0	116	65	128				
1,2-Dichloropropane	13	1.0	10.50	0	126	69	123				S
1,3,5-Trimethylbenzene	13	1.0	10.30	0	125	67	130				
1,3-Butadiene	12	1.0	10.40	0	116	66	134				
1,3-Dichlorobenzene	13	1.0	10.10	0	129	65	130				
1,4-Dichlorobenzene	13	1.0	10.10	0	130	60	131				
1,4-Dioxane	12	1.0	10.20	0	122	71	122				
2-Butanone	12	1.0	10.50	0	116	67	130				
2-Hexanone	13	1.0	10.40	0	124	62	128				
2-Propanol	12	1.0	10.60	0	115	52	125				
4-Methyl-2-pentanone	13	1.0	10.00	0	126	67	130				
Acetone	12	1.0	10.50	0	112	58	128				
Benzene	12	1.0	10.40	0	120	69	119				S
Benzyl chloride	15	1.0	10.10	0	153	50	147				S
Bromodichloromethane	12	1.0	10.20	0	119	72	128				
Bromoform	13	1.0	10.30	0	124	66	139				
Bromomethane	12	1.0	10.10	0	119	63	134				
Carbon disulfide	11	1.0	9.800	0	116	57	134				
Carbon tetrachloride	11	1.0	10.30	0	110	68	132				
Chlorobenzene	13	1.0	10.60	0	121	70	119				S
Chlorodibromomethane	12	1.0	10.20	0	121	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCS 071114	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSW	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349829		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	12	1.0	9.900	0	121	63	127				
Chloroform	12	1.0	10.70	0	114	68	123				
Chloromethane	12	1.0	9.900	0	119	59	132				
cis-1,2-Dichloroethene	12	1.0	10.60	0	117	70	121				
cis-1,3-dichloropropene	13	1.0	10.70	0	122	70	128				
Cyclohexane	12	2.0	10.30	0	120	70	117				S
Dichlorodifluoromethane	11	1.0	10.00	0	111	59	128				
Ethanol	10	5.0	9.000	0	116	59	125				
Ethyl acetate	12	1.0	10.70	0	113	65	128				
Ethylbenzene	13	2.0	10.50	0	120	70	124				
Heptane	13	1.0	10.40	0	123	69	123				S
Hexachlorobutadiene	13	2.0	9.600	0	139	56	138				S
m,p-Xylene	24	2.0	20.60	0	118	61	134				
Methylene chloride	11	5.0	9.700	0	109	62	115				
n-Hexane	12	2.0	10.40	0	117	63	120				
Naphthalene	16	1.0	9.900	0	161	57	138				S
o-Xylene	12	1.0	10.70	0	114	67	125				
Propylene	12	1.0	10.50	0	116	70	130				
Styrene	13	1.0	10.60	0	124	73	127				
tert-Butyl Methyl Ether	12	1.0	10.30	0	121	24	150				
Tetrachloroethene	12	1.0	10.30	0	120	66	124				
Tetrahydrofuran	13	1.0	10.40	0	123	64	123				S
Toluene	13	1.0	10.60	0	120	66	119				S
trans-1,2-Dichloroethene	11	1.0	9.900	0	116	67	124				
trans-1,3-dichloropropene	13	1.0	11.00	0	118	75	133				
Trichloroethene	12	1.0	10.20	0	122	71	123				
Trichlorofluoromethane	11	1.0	10.80	0	99.7	62	126				
Vinyl acetate	13	1.0	10.00	0	129	56	139				
Vinyl chloride	11	1.0	10.00	0	109	64	127				
Xylenes, Total	37	3.0	31.30	0	117	70	130				
Surr: 4-Bromofluorobenzene	12		12.50		98.5	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014

Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCSD 071114	Samp Type:	LCSD	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSS02	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349830		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	12	1.0	10.50	0	110	68	125	11.71	1.64	20	
1,1,2,2-Tetrachloroethane	12	1.0	11.00	0	109	65	127	12.93	7.71	20	
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	10.20	0	106	66	126	10.78	0.0928	20	
1,1,2-Trichloroethane	12	1.0	10.90	0	113	73	119	13.02	5.44	20	
1,1-Dichloroethane	12	1.0	10.50	0	110	68	126	11.91	2.98	20	
1,1-Dichloroethene	11	1.0	10.40	0	106	61	133	11.13	0.903	20	
1,2,4-Trichlorobenzene	8.0	1.0	10.50	0	76.7	55	142	13.75	52.3	20	R
1,2,4-Trimethylbenzene	12	1.0	11.00	0	105	66	132	13.54	15.9	20	
1,2-Dibromoethane	12	1.0	11.00	0	110	74	122	12.56	3.81	20	
1,2-Dichlorobenzene	10	1.0	10.90	0	95.9	63	129	14.10	29.7	20	R
1,2-Dichloroethane	12	1.0	10.80	0	107	65	128	12.08	4.66	20	
1,2-Dichloropropane	12	1.0	11.00	0	113	69	123	13.19	5.61	20	
1,3,5-Trimethylbenzene	12	1.0	11.00	0	105	67	130	12.89	10.5	20	
1,3-Butadiene	12	1.0	10.90	0	110	66	134	12.11	0.580	20	
1,3-Dichlorobenzene	11	1.0	11.00	0	99.9	65	130	13.04	17.1	20	
1,4-Dichlorobenzene	11	1.0	10.90	0	97.8	60	131	13.17	21.1	20	R
1,4-Dioxane	12	1.0	10.70	0	111	71	122	12.42	4.19	20	
2-Butanone	12	1.0	11.00	0	108	67	130	12.16	2.41	20	
2-Hexanone	12	1.0	11.00	0	111	62	128	12.91	5.16	20	
2-Propanol	12	1.0	11.00	0	108	52	125	12.17	2.66	20	
4-Methyl-2-pentanone	12	1.0	11.00	0	109	67	130	12.62	4.70	20	
Acetone	11	1.0	10.90	0	104	58	128	11.77	3.37	20	
Benzene	12	1.0	10.70	0	111	69	119	12.49	5.09	20	
Benzyl chloride	11	1.0	11.00	0	103	50	147	15.42	30.8	20	R
Bromodichloromethane	12	1.0	10.70	0	110	72	128	12.18	3.85	20	
Bromoform	12	1.0	10.80	0	114	66	139	12.76	3.83	20	
Bromomethane	12	1.0	10.40	0	116	63	134	12.04	0.166	20	
Carbon disulfide	11	1.0	10.00	0	113	57	134	11.39	0.705	20	
Carbon tetrachloride	11	1.0	10.40	0	108	68	132	11.36	1.33	20	
Chlorobenzene	12	1.0	11.00	0	111	70	119	12.83	4.79	20	
Chlorodibromomethane	12	1.0	10.70	0	111	70	130	12.31	3.47	20	

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 LCSD 071114	Samp Type:	LCSD	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	LCSS02	Batch ID:	R69217	TestNo:	TO-15	Analysis Date:	7/11/2014	SeqNo:	1349830		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	12	1.0	10.30	0	114	63	127	12.01	1.85	20	
Chloroform	12	1.0	10.80	0	110	68	123	12.25	2.98	20	
Chloromethane	12	1.0	10.30	0	117	59	132	11.74	2.36	20	
cis-1,2-Dichloroethene	12	1.0	10.80	0	113	70	121	12.45	2.27	20	
cis-1,3-dichloropropene	12	1.0	10.60	0	117	70	128	13.02	5.20	20	
Cyclohexane	12	2.0	10.90	0	114	70	117	12.39	0.483	20	
Dichlorodifluoromethane	11	1.0	10.10	0	109	59	128	11.10	0.451	20	
Ethanol	11	5.0	10.40	0	103	59	125	10.41	3.21	20	
Ethyl acetate	12	1.0	10.80	0	107	65	128	12.08	4.23	20	
Ethylbenzene	12	2.0	11.00	0	109	70	124	12.62	5.04	20	
Heptane	13	1.0	11.00	0	115	69	123	12.81	1.02	20	
Hexachlorobutadiene	9.1	2.0	10.90	0	83.7	56	138	13.39	37.9	20	R
m,p-Xylene	23	2.0	21.60	0	107	61	134	24.38	5.09	20	
Methylene chloride	11	5.0	10.40	0	101	62	115	10.54	0.0948	20	
n-Hexane	12	2.0	11.00	0	109	63	120	12.13	0.828	20	
Naphthalene	7.9	1.0	10.70	0	74.1	57	138	15.94	67.1	20	R
o-Xylene	12	1.0	11.00	0	106	67	125	12.21	4.78	20	
Propylene	13	1.0	11.00	0	114	70	130	12.15	3.56	20	
Styrene	13	1.0	11.00	0	114	73	127	13.15	4.91	20	
tert-Butyl Methyl Ether	12	1.0	11.00	0	108	24	150	12.47	5.01	20	
Tetrachloroethene	12	1.0	10.70	0	112	66	124	12.31	2.63	20	
Tetrahydrofuran	12	1.0	11.00	0	113	64	123	12.82	3.41	20	
Toluene	12	1.0	11.00	0	111	66	119	12.72	4.01	20	
trans-1,2-Dichloroethene	11	1.0	10.40	0	109	67	124	11.47	0.876	20	
trans-1,3-dichloropropene	12	1.0	11.00	0	113	75	133	12.96	4.34	20	
Trichloroethene	12	1.0	10.70	0	113	71	123	12.40	2.20	20	
Trichlorofluoromethane	11	1.0	10.80	0	99.4	62	126	10.77	0.279	20	
Vinyl acetate	12	1.0	11.00	0	111	56	139	12.91	5.66	20	
Vinyl chloride	11	1.0	10.40	0	103	64	127	10.92	2.41	20	
Xylenes, Total	35	3.0	32.60	0	107	70	130	36.59	4.99	20	
Surr: 4-Bromofluorobenzene	13		12.50		100	70	130		0	20	

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID: VOA1 MBLK 071114	Samp Type: MBLK	Test Code: EPA_TO15	Units: ppbv	Prep Date: 7/11/2014	RunNo: 69217
Client ID: PBW	Batch ID: R69217	TestNo: TO-15	Analysis Date: 7/11/2014	SeqNo: 1350009	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Butadiene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
1,4-Dioxane	ND	1.0									
2-Butanone	ND	1.0									
2-Hexanone	ND	1.0									
2-Propanol	ND	1.0									
4-Methyl-2-pentanone	ND	1.0									
Acetone	ND	1.0									
Benzene	ND	1.0									
Benzyl chloride	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chlorodibromomethane	ND	1.0									

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407369

Date Reported: 7/14/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69217

Sample ID:	VOA1 MBLK 071114	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/11/2014	RunNo:	69217
Client ID:	PBW	Batch ID:	R69217	TestNo:	TO-15			Analysis Date:	7/11/2014	SeqNo:	1350009

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-dichloropropene	ND	1.0									
Cyclohexane	ND	2.0									
Dichlorodifluoromethane	ND	1.0									
Ethanol	ND	5.0									
Ethyl acetate	ND	1.0									
Ethylbenzene	ND	2.0									
Heptane	ND	1.0									
Hexachlorobutadiene	ND	2.0									
m,p-Xylene	ND	2.0									
Methylene chloride	ND	5.0									
n-Hexane	ND	2.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
Propylene	ND	1.0									
Styrene	ND	1.0									
tert-Butyl Methyl Ether	ND	1.0									
Tetrachloroethene	ND	1.0									
Tetrahydrofuran	ND	1.0									
Toluene	ND	1.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl acetate	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 4-Bromofluorobenzene	11		12.50		90.8	70	130				

DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

PL: Permit limit;; Not included on all reports. Used primarily for wastewater discharge permits.

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported

RL: Reporting Limit: See PQL

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

QUALIFIERS:

*X: Reported value exceeds the maximum allowed concentration by regulation or permit

B: Analyte detected in the associated Method Blank at a concentration > RL.

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H: Holding time for preparation or analysis has been exceeded

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the established MDL. Greater uncertainty is associated with this result and data reported is estimated. These analytes are not routinely reviewed nor narrated as to their potential for being laboratory artifacts.

M: Manual Integration used to determine area response

ND: Not detected at the Reporting Limit

P: Second column RPD exceeds 40%

R: % RPD exceeds control limits

S: % REC exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL.



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

RTI LABORATORIES, INC.



A2LA Cert #570.01/02



NELAC Cert #000973



MBE Cert #R-8150-2-424



8(a) / SDB

MAIN LAB

RTI LABORATORIES, INC.

31628 Glendale Street
Livonia, MI 48150-1827

Phone (734) 422-8000

Fax (734) 422-5342

www.rtilab.com

1407369

Please Include Email Address of Report Recipient !!!

SUBMITTING COMPANY: Tetra Tech, Inc.			REPORT TO: Michael Browning			BILL TO:			P.O. #								
PROJECT NAME: Linden E.R.		PROJECT #:		QUOTE #:		COMPANY: Tetra Tech, Inc.			COMPANY: Same								
SAMPLING LOCATION (STATE or COUNTRY): Linden, MI						ADDRESS: 25213 Deguindre Road											
SPECIAL INSTRUCTIONS / COMMENTS: 24-Hour (Next Day) TAT						CITY, STATE, ZIP: Madison Heights, MI											
SAMPLER'S PRINTED NAME: Michael T. Browning						SAMPLER'S SIGNATURE: <i>Michael T. Browning</i>											
PHONE: 248-259-4761						EMAIL (OR FAX IF NO EMAIL AVAILABLE): mbrowning@seagullenvirotech.com											
ANALYTICAL PARAMETERS																	
ITEM NUMBER	SAMPLE I.D.	DATE SAMPLED	Time	MATRIX CODE (see codes below)	NBR OF BOTTLES	NBR OF CONTAINERS AND PRESERVATIVES							TO 15 VOCs	pH Acceptable? Y N N/A	COMMENTS		
						NONE	HCL	HNO3	H2SO4	NaOH	Methanol	OTHER					
1	LER-BV-03-071014	7/16/14	1542	A	1	✓											
2	LER-BV-06-071014	7/16/14	1856	A	1	✓											
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
Relinquished By: <i>Michael T. Browning</i>		Date: 7/11/14	Time: 0905	Received By: <i>[Signature]</i>		Date: 7/11/14	Time: 905	REPORT TRANSMITTAL DESIRED:									
Relinquished By:		Date:	Time:	Received By:		Date:	Time:	<input type="checkbox"/> HARDCOPY (extra cost)					<input type="checkbox"/> FAX				
Relinquished By:		Date:	Time:	Received By:		Date:	Time:	<input type="checkbox"/> EMAIL					<input type="checkbox"/> ONLINE				
TURNAROUND DESIRED:							FOR LAB USE ONLY										
Standard <input type="checkbox"/>							RUSH: Next BD <input checked="" type="checkbox"/>					Temp of samples: NA °C					
							2nd BD <input type="checkbox"/>					On Wet Ice? NA					
							3rd BD <input type="checkbox"/>					Comments:					
Note: RUSH requests will incur surcharges!																	
Distribution: White - Lab; Pink - Field												See reverse side for Laboratory Terms and Conditions of Service					
MATRIX CODES:																	
A = AIR			DW = DRINKING WATER			GW = GROUNDWATER			L = LIQUID			O = OIL					
SD = SOLID			SL = SLUDGE			SV = SOLVENT WASTE			W = WATER			WP = WIPE					
						WW = WASTE WATER			S = SOIL								
						SW = SURFACE WATER											



RTI Laboratories
31628 Glendale St.
Livonia, MI 48150
TEL: (734) 422-8000
Website: www.rtilab.com

Friday, July 18, 2014

Sean Kane
Tetra Tech Inc.
26600 Telegraph Road
Suite 400
Southfield, MI 48034
TEL:
FAX:

RE: Linden E.R.
Work Order #: 1407600

Dear Sean Kane:

RTI Laboratories received 3 sample(s) on 7/16/2014 for the analyses presented in the following report. There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Katherine Griffin". The signature is written in a cursive style.

Katherine Griffin
Project Manager

RTI Laboratories - Workorder Sample Summary

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1407600-001A	LER-BV-07-071614		7/16/2014 1:00 PM	7/16/2014 2:57 PM	Air
1407600-002A	LER-BV-08-071614		7/16/2014 1:01 PM	7/16/2014 2:57 PM	Air
1407600-003A	LER-BV-09-071614		7/16/2014 1:04 PM	7/16/2014 2:57 PM	Air

Client: Tetra Tech Inc.

Project: Linden E.R.

Concentrations reported with a J flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). There is greater uncertainty associated with these results and data should be considered as estimated. These analytes are not routinely reviewed nor narrated below as to their potential for being laboratory artifacts.

Concentrations reported with an E flag in the Qual field are values that exceed the upper quantification range. There is greater uncertainty associated with these results and data should be considered as estimated.

Any comments or problems with the analytical events associated with this report are noted below.

Analytical Comments for EPATO-15, Sample 1407600-003ADUP, Batch ID R69406 : RPD outside control limits for Ethanol, m,p-Xylene, Toluene, 2-Butanone, Acetone, and Benzene.

Analytical Comments for EPATO-15, Sample 1407600-002A, Batch ID R69406 : Ethanol above upper calibration standard. Insufficient sample to reanalyze.

Analytical Comments for EPATO-15, Sample VOA1 LCS 071614, Batch ID R69406 : LCS outside control limits for 1,2-Dichloropropane, Cyclohexane, Naphthalene.

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/16/2014 1:00:00 PM
Project:	Linden E.R.		
Lab ID:	1407600-001	Matrix:	Air
Client Sample ID:	LER-BV-07-071614		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2,4-Trimethylbenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,3-Butadiene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
1,4-Dioxane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
2-Butanone	1.5	1.0		ppbv	1	7/17/2014 2:36 PM
2-Hexanone	ND	1.0		ppbv	1	7/17/2014 2:36 PM
2-Propanol	2.5	1.0		ppbv	1	7/17/2014 2:36 PM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Acetone	9.5	1.0		ppbv	1	7/17/2014 2:36 PM
Benzene	0.44	1.0	J	ppbv	1	7/17/2014 2:36 PM
Benzyl chloride	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Bromodichloromethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Bromoform	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Bromomethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Carbon disulfide	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Carbon tetrachloride	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Chlorobenzene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Chlorodibromomethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Chloroethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Chloroform	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Chloromethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Cyclohexane	ND	2.0		ppbv	1	7/17/2014 2:36 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Ethanol	8.9	5.0		ppbv	1	7/17/2014 2:36 PM
Ethyl acetate	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Ethylbenzene	ND	2.0		ppbv	1	7/17/2014 2:36 PM
Heptane	ND	1.0		ppbv	1	7/17/2014 2:36 PM

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014

Original

Client: Tetra Tech Inc.
Project: Linden E.R.
Lab ID: 1407600-001
Client Sample ID: LER-BV-07-071614

Collection Date: 7/16/2014 1:00:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/17/2014 2:36 PM
m,p-Xylene	0.64	2.0	J	ppbv	1	7/17/2014 2:36 PM
Methylene chloride	ND	5.0		ppbv	1	7/17/2014 2:36 PM
n-Hexane	ND	2.0		ppbv	1	7/17/2014 2:36 PM
Naphthalene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
o-Xylene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Propylene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Styrene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Tetrachloroethene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Tetrahydrofuran	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Toluene	2.2	1.0		ppbv	1	7/17/2014 2:36 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Trichloroethene	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Vinyl acetate	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Vinyl chloride	ND	1.0		ppbv	1	7/17/2014 2:36 PM
Xylenes, Total	ND	3.0		ppbv	1	7/17/2014 2:36 PM
Surr: 4-Bromofluorobenzene	94.1	70-130		%REC	1	7/17/2014 2:36 PM

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014

Original

Client:	Tetra Tech Inc.	Collection Date:	7/16/2014 1:01:00 PM
Project:	Linden E.R.		
Lab ID:	1407600-002	Matrix:	Air
Client Sample ID:	LER-BV-08-071614		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,2,4-Trimethylbenzene	2.0	1.0		ppbv	1	7/17/2014 3:24 PM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,3,5-Trimethylbenzene	0.52	1.0	J	ppbv	1	7/17/2014 3:24 PM
1,3-Butadiene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
1,4-Dioxane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
2-Butanone	3.7	1.0		ppbv	1	7/17/2014 3:24 PM
2-Hexanone	ND	1.0		ppbv	1	7/17/2014 3:24 PM
2-Propanol	9.3	1.0		ppbv	1	7/17/2014 3:24 PM
4-Methyl-2-pentanone	0.33	1.0	J	ppbv	1	7/17/2014 3:24 PM
Acetone	27	1.0		ppbv	1	7/17/2014 3:24 PM
Benzene	4.3	1.0		ppbv	1	7/17/2014 3:24 PM
Benzyl chloride	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Bromodichloromethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Bromoform	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Bromomethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Carbon disulfide	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Carbon tetrachloride	0.65	1.0	J	ppbv	1	7/17/2014 3:24 PM
Chlorobenzene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Chlorodibromomethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Chloroethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Chloroform	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Chloromethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Cyclohexane	ND	2.0		ppbv	1	7/17/2014 3:24 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Ethanol	59	5.0	E	ppbv	1	7/17/2014 3:24 PM
Ethyl acetate	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Ethylbenzene	1.8	2.0	J	ppbv	1	7/17/2014 3:24 PM
Heptane	1.2	1.0		ppbv	1	7/17/2014 3:24 PM

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014

Original

Client: Tetra Tech Inc.
 Project: Linden E.R.
 Lab ID: 1407600-002
 Client Sample ID: LER-BV-08-071614

Collection Date: 7/16/2014 1:01:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/17/2014 3:24 PM
m,p-Xylene	6.4	2.0		ppbv	1	7/17/2014 3:24 PM
Methylene chloride	5.1	5.0		ppbv	1	7/17/2014 3:24 PM
n-Hexane	2.7	2.0		ppbv	1	7/17/2014 3:24 PM
Naphthalene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
o-Xylene	2.6	1.0		ppbv	1	7/17/2014 3:24 PM
Propylene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Styrene	0.51	1.0	J	ppbv	1	7/17/2014 3:24 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Tetrachloroethene	0.15	1.0	J	ppbv	1	7/17/2014 3:24 PM
Tetrahydrofuran	1.0	1.0	m	ppbv	1	7/17/2014 3:24 PM
Toluene	20	1.0		ppbv	1	7/17/2014 3:24 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Trichloroethene	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Vinyl acetate	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Vinyl chloride	ND	1.0		ppbv	1	7/17/2014 3:24 PM
Xylenes, Total	9.1	3.0		ppbv	1	7/17/2014 3:24 PM
Surr: 4-Bromofluorobenzene	105	70-130		%REC	1	7/17/2014 3:24 PM

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014

Original

Client: Tetra Tech Inc.
 Project: Linden E.R.
 Lab ID: 1407600-003
 Client Sample ID: LER-BV-09-071614

Collection Date: 7/16/2014 1:04:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2,4-Trimethylbenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2-Dibromoethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,3,5-Trimethylbenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,3-Butadiene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,3-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,4-Dichlorobenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
1,4-Dioxane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
2-Butanone	1.3	1.0		ppbv	1	7/17/2014 4:19 PM
2-Hexanone	ND	1.0		ppbv	1	7/17/2014 4:19 PM
2-Propanol	ND	1.0		ppbv	1	7/17/2014 4:19 PM
4-Methyl-2-pentanone	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Acetone	7.6	1.0		ppbv	1	7/17/2014 4:19 PM
Benzene	0.32	1.0	J	ppbv	1	7/17/2014 4:19 PM
Benzyl chloride	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Bromodichloromethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Bromoform	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Bromomethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Carbon disulfide	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Carbon tetrachloride	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Chlorobenzene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Chlorodibromomethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Chloroethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Chloroform	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Chloromethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Cyclohexane	ND	2.0		ppbv	1	7/17/2014 4:19 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Ethanol	7.2	5.0		ppbv	1	7/17/2014 4:19 PM
Ethyl acetate	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Ethylbenzene	ND	2.0		ppbv	1	7/17/2014 4:19 PM
Heptane	ND	1.0		ppbv	1	7/17/2014 4:19 PM

RTI Laboratories - Analytical Report

WO#: 1407600

Date Reported: 7/18/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	7/16/2014 1:04:00 PM
Project:	Linden E.R.		
Lab ID:	1407600-003	Matrix:	Air
Client Sample ID:	LER-BV-09-071614		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	7/17/2014 4:19 PM
m,p-Xylene	0.54	2.0	J	ppbv	1	7/17/2014 4:19 PM
Methylene chloride	ND	5.0		ppbv	1	7/17/2014 4:19 PM
n-Hexane	ND	2.0		ppbv	1	7/17/2014 4:19 PM
Naphthalene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
o-Xylene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Propylene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Styrene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Tetrachloroethene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Tetrahydrofuran	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Toluene	1.8	1.0		ppbv	1	7/17/2014 4:19 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Trichloroethene	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Vinyl acetate	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Vinyl chloride	ND	1.0		ppbv	1	7/17/2014 4:19 PM
Xylenes, Total	ND	3.0		ppbv	1	7/17/2014 4:19 PM
Surr: 4-Bromofluorobenzene	100	70-130		%REC	1	7/17/2014 4:19 PM

RTI Laboratories - DATES REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1407600-001A	LER-BV-07-071614	7/16/2014 1:00 PM	Air	EPA_TO15-Volatile Organic Compounds		7/17/2014 2:36 PM	7/17/2014 2:36 PM
1407600-002A	LER-BV-08-071614	7/16/2014 1:01 PM	Air	EPA_TO15-Volatile Organic Compounds		7/17/2014 3:24 PM	7/17/2014 3:24 PM
1407600-003A	LER-BV-09-071614	7/16/2014 1:04 PM	Air	EPA_TO15-Volatile Organic Compounds		7/17/2014 4:19 PM	7/17/2014 4:19 PM

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID: VOA1 MBLK 071614	Samp Type: MBLK	Test Code: EPA_TO15	Units: ppbv	Prep Date: 7/16/2014	RunNo: 69406
Client ID: PBW	Batch ID: R69406	TestNo: TO-15		Analysis Date: 7/16/2014	SeqNo: 1353516

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Butadiene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
1,4-Dioxane	ND	1.0									
2-Butanone	ND	1.0									
2-Hexanone	ND	1.0									
2-Propanol	ND	1.0									
4-Methyl-2-pentanone	ND	1.0									
Acetone	ND	1.0									
Benzene	ND	1.0									
Benzyl chloride	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chlorodibromomethane	ND	1.0									

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID:	VOA1 MBLK 071614	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/16/2014	RunNo:	69406
Client ID:	PBW	Batch ID:	R69406	TestNo:	TO-15			Analysis Date:	7/16/2014	SeqNo:	1353516

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-dichloropropene	ND	1.0									
Cyclohexane	ND	2.0									
Dichlorodifluoromethane	ND	1.0									
Ethanol	ND	5.0									
Ethyl acetate	ND	1.0									
Ethylbenzene	ND	2.0									
Heptane	ND	1.0									
Hexachlorobutadiene	ND	2.0									
m,p-Xylene	ND	2.0									
Methylene chloride	ND	5.0									
n-Hexane	ND	2.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
Propylene	ND	1.0									
Styrene	ND	1.0									
tert-Butyl Methyl Ether	ND	1.0									
Tetrachloroethene	ND	1.0									
Tetrahydrofuran	ND	1.0									
Toluene	ND	1.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl acetate	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 4-Bromofluorobenzene	11		12.50		85.4	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID:	VOA1 LCS 071614	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/17/2014	RunNo:	69406
Client ID:	LCSW	Batch ID:	R69406	TestNo:	TO-15	Analysis Date:	7/17/2014	SeqNo:	1353517		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	11	1.0	10.10	0	110	68	125				
1,1,2,2-Tetrachloroethane	12	1.0	10.70	0	115	65	127				
1,1,2-Trichloro-1,2,2-trifluoroethane	10	1.0	9.500	0	108	66	126				
1,1,2-Trichloroethane	13	1.0	10.60	0	119	73	119				
1,1-Dichloroethane	11	1.0	10.10	0	113	68	126				
1,1-Dichloroethene	10	1.0	9.800	0	107	61	133				
1,2,4-Trichlorobenzene	13	1.0	9.500	0	139	55	142				
1,2,4-Trimethylbenzene	13	1.0	10.40	0	120	66	132				
1,2-Dibromoethane	12	1.0	10.40	0	117	74	122				
1,2-Dichlorobenzene	13	1.0	10.00	0	128	63	129				
1,2-Dichloroethane	11	1.0	10.40	0	110	65	128				
1,2-Dichloropropane	13	1.0	10.50	0	124	69	123				S
1,3,5-Trimethylbenzene	12	1.0	10.30	0	118	67	130				
1,3-Butadiene	10	1.0	10.40	0	100	66	134				
1,3-Dichlorobenzene	12	1.0	10.10	0	118	65	130				
1,4-Dichlorobenzene	12	1.0	10.10	0	117	60	131				
1,4-Dioxane	12	1.0	10.20	0	119	71	122				
2-Butanone	12	1.0	10.50	0	115	67	130				
2-Hexanone	13	1.0	10.40	0	123	62	128				
2-Propanol	12	1.0	10.60	0	111	52	125				
4-Methyl-2-pentanone	13	1.0	10.00	0	128	67	130				
Acetone	11	1.0	10.50	0	108	58	128				
Benzene	12	1.0	10.40	0	113	69	119				
Benzyl chloride	15	1.0	10.10	0	146	50	147				
Bromodichloromethane	12	1.0	10.20	0	116	72	128				
Bromoform	12	1.0	10.30	0	117	66	139				
Bromomethane	11	1.0	10.10	0	105	63	134				
Carbon disulfide	10	1.0	9.800	0	107	57	134				
Carbon tetrachloride	11	1.0	10.30	0	103	68	132				
Chlorobenzene	12	1.0	10.60	0	116	70	119				
Chlorodibromomethane	12	1.0	10.20	0	115	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID:	VOA1 LCS 071614	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/17/2014	RunNo:	69406
Client ID:	LCSW	Batch ID:	R69406	TestNo:	TO-15	Analysis Date:	7/17/2014	SeqNo:	1353517		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	10	1.0	9.900	0	104	63	127				
Chloroform	12	1.0	10.70	0	109	68	123				
Chloromethane	11	1.0	9.900	0	113	59	132				
cis-1,2-Dichloroethene	12	1.0	10.60	0	111	70	121				
cis-1,3-dichloropropene	12	1.0	10.70	0	116	70	128				
Cyclohexane	12	2.0	10.30	0	119	70	117				S
Dichlorodifluoromethane	10	1.0	10.00	0	100	59	128				
Ethanol	11	5.0	9.000	0	117	59	125				
Ethyl acetate	12	1.0	10.70	0	108	65	128				
Ethylbenzene	12	2.0	10.50	0	116	70	124				
Heptane	13	1.0	10.40	0	121	69	123				
Hexachlorobutadiene	13	2.0	9.600	0	135	56	138				
m,p-Xylene	24	2.0	20.60	0	115	61	134				
Methylene chloride	10	5.0	9.700	0	104	62	115				
n-Hexane	12	2.0	10.40	0	113	63	120				
Naphthalene	15	1.0	9.900	0	156	57	138				S
o-Xylene	12	1.0	10.70	0	111	67	125				
Propylene	11	1.0	10.50	0	109	70	130				
Styrene	13	1.0	10.60	0	120	73	127				
tert-Butyl Methyl Ether	12	1.0	10.30	0	115	24	150				
Tetrachloroethene	12	1.0	10.30	0	114	66	124				
Tetrahydrofuran	13	1.0	10.40	0	120	64	123				
Toluene	12	1.0	10.60	0	116	66	119				
trans-1,2-Dichloroethene	11	1.0	9.900	0	110	67	124				
trans-1,3-dichloropropene	13	1.0	11.00	0	114	75	133				
Trichloroethene	12	1.0	10.20	0	116	71	123				
Trichlorofluoromethane	10	1.0	10.80	0	93.1	62	126				
Vinyl acetate	12	1.0	10.00	0	125	56	139				
Vinyl chloride	9.5	1.0	10.00	0	95.0	64	127				
Xylenes, Total	36	3.0	31.30	0	113	70	130				
Surr: 4-Bromofluorobenzene	12		12.50		99.8	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID:	1407600-003ADUP	Samp Type:	DUP	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/17/2014	RunNo:	69406
Client ID:	LER-BV-09-071614	Batch ID:	R69406	TestNo:	TO-15	Analysis Date:	7/17/2014	SeqNo:	1353524		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0						0	0	25	
1,1,2,2-Tetrachloroethane	ND	1.0						0	0	25	
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0						0	0	25	
1,1,2-Trichloroethane	ND	1.0						0	0	25	
1,1-Dichloroethane	ND	1.0						0	0	25	
1,1-Dichloroethene	ND	1.0						0	0	25	
1,2,4-Trichlorobenzene	ND	1.0						0	0	25	
1,2,4-Trimethylbenzene	ND	1.0						0	0	25	
1,2-Dibromoethane	ND	1.0						0	0	25	
1,2-Dichlorobenzene	ND	1.0						0	0	25	
1,2-Dichloroethane	ND	1.0						0	0	25	
1,2-Dichloropropane	ND	1.0						0	0	25	
1,3,5-Trimethylbenzene	ND	1.0						0	0	25	
1,3-Butadiene	ND	1.0						0	0	25	
1,3-Dichlorobenzene	ND	1.0						0	0	25	
1,4-Dichlorobenzene	ND	1.0						0	0	25	
1,4-Dioxane	ND	1.0						0	0	25	
2-Butanone	ND	1.0						1.290	200	25	R
2-Hexanone	ND	1.0						0	0	25	
2-Propanol	ND	1.0						0	0	25	
4-Methyl-2-pentanone	ND	1.0						0	0	25	
Acetone	1.7	1.0						7.550	126	25	R
Benzene	ND	1.0						0.3200	200	25	R
Benzyl chloride	ND	1.0						0	0	25	
Bromodichloromethane	ND	1.0						0	0	25	
Bromoform	ND	1.0						0	0	25	
Bromomethane	ND	1.0						0	0	25	
Carbon disulfide	ND	1.0						0	0	25	
Carbon tetrachloride	ND	1.0						0	0	25	
Chlorobenzene	ND	1.0						0	0	25	
Chlorodibromomethane	ND	1.0						0	0	25	

RTI Laboratories - QC SUMMARY REPORT

WO#: 1407600

Date Reported: 7/18/2014
Original

Client: Tetra Tech Inc.

Project: Linden E.R.

Batch ID: R69406

Sample ID:	1407600-003ADUP	Samp Type:	DUP	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	7/17/2014	RunNo:	69406
Client ID:	LER-BV-09-071614	Batch ID:	R69406	TestNo:	TO-15	Analysis Date:	7/17/2014	SeqNo:	1353524		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0						0	0	25	
Chloroform	ND	1.0						0	0	25	
Chloromethane	ND	1.0						0	0	25	
cis-1,2-Dichloroethene	ND	1.0						0	0	25	
cis-1,3-dichloropropene	ND	1.0						0	0	25	
Cyclohexane	ND	2.0						0	0	25	
Dichlorodifluoromethane	ND	1.0						0	0	25	
Ethanol	ND	5.0						7.230	200	25	R
Ethyl acetate	ND	1.0						0	0	25	
Ethylbenzene	ND	2.0						0	0	25	
Heptane	ND	1.0						0	0	25	
Hexachlorobutadiene	ND	2.0						0	0	25	
m,p-Xylene	ND	2.0						0.5400	200	25	R
Methylene chloride	ND	5.0						0	0	25	
n-Hexane	ND	2.0						0	0	25	
Naphthalene	ND	1.0						0	0	25	
o-Xylene	ND	1.0						0	0	25	
Propylene	ND	1.0						0	0	25	
Styrene	ND	1.0						0	0	25	
tert-Butyl Methyl Ether	ND	1.0						0	0	25	
Tetrachloroethene	ND	1.0						0	0	25	
Tetrahydrofuran	ND	1.0						0	0	25	
Toluene	0.40	1.0						1.770	126	25	JR
trans-1,2-Dichloroethene	ND	1.0						0	0	25	
trans-1,3-dichloropropene	ND	1.0						0	0	25	
Trichloroethene	ND	1.0						0	0	25	
Trichlorofluoromethane	ND	1.0						0	0	25	
Vinyl acetate	ND	1.0						0	0	25	
Vinyl chloride	ND	1.0						0	0	25	
Xylenes, Total	ND	3.0						0	0	25	
Surr: 4-Bromofluorobenzene	12		12.50		95.0	70	130		0	25	

DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

PL: Permit limit;; Not included on all reports. Used primarily for wastewater discharge permits.

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported

RL: Reporting Limit: See PQL

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

QUALIFIERS:

*X: Reported value exceeds the maximum allowed concentration by regulation or permit

B: Analyte detected in the associated Method Blank at a concentration > RL.

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H: Holding time for preparation or analysis has been exceeded

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the established MDL. Greater uncertainty is associated with this result and data reported is estimated. These analytes are not routinely reviewed nor narrated as to their potential for being laboratory artifacts.

M: Manual Integration used to determine area response

ND: Not detected at the Reporting Limit

P: Second column RPD exceeds 40%

R: % RPD exceeds control limits

S: % REC exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL.

