APPENDIX D
GHD'S CURRENT CONDITIONS INVESTIGATION REPORT
MAY 16, 2016

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Privileged and Confidential
Prepared at Request of Counsel

May 16, 2016 Reference No. 11114514

Mr. Grant P. Gilezan, Esq.
Dykema Gossett PLLC
400 Renaissance Center
Detroit, Michigan 48243-1668

Dear Mr. Gilezan:

Re: Current Conditions Investigation Report
Lower Town Project, LLC
Broadway and Maiden Lane
Ann Arbor, Michigan

GHD Services Inc. (GHD) is providing this letter report to present the results from the investigation conducted at the Lower Town Site located at Broadway and Maiden Lane in Ann Arbor, Washtenaw County, Michigan (Site). See Figure 1 for Site location map.

1. Objective

The primary objective of the investigation was to obtain current conditions associated with the previously documented volatile organic compounds (VOCs) in groundwater, principally tetrachloroethene, also known as perchloroethylene (PCE). To quickly and accurately document historic PCE impacts, a Membrane Interface Probe (MIP) was utilized to allow for nearly instant identification and delineation of PCE (and other halogenated compounds) in soil and groundwater. In addition, the MIP provided evidence of volatile organic compound (VOC) impacts via photoionization detector (PID) and flame ionization detector (FID).

A secondary component to the MIP probe included the Hydraulic Profiling Tool (HPT) technology. The HPT injects small amounts of water into the surrounding soils to identify zones of more or less permeable soils and provide estimated hydraulic conductivity values. The HPT was especially helpful in identifying optimal depths to install temporary monitoring well screen while still capturing the greatest areas of potential impact as identified by the MIP.

Temporary monitoring wells were installed and sampled at select locations based on the MIP results. The data was compared to historic data to evaluate any changes in Site conditions. Further discussion of the investigation and results are presented in the paragraphs below.

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2. Scope of Work

The scope of work defined in the December 2, 2015 proposal for professional services included the soil boring staking and utility clearance, MIP/HPT boring completion, temporary monitoring well installation, and collection and analysis of groundwater samples. These specific activities, including any deviations from the scope of work, are discussed in the following paragraphs.

2.1 Soil Boring Staking and Utility Clearances

On January 25 and 28, 2016, GHD surveyors staked and surveyed the location and elevation of each proposed soil boring location (MIPs and temporary wells). GHD subcontracted Ground Penetrating Radar Systems, Inc. (GPRS) to conduct underground utility locating to clear all on-Site drilling locations prior to drilling.

2.2 MIP and HPT Boring Investigation

Stock Drilling, Inc., with GHD oversight, conducted the MIP/HPT investigation from February 1 through February 9, 2016. In total, 25 MIP/HPT borings were completed utilizing direct push technology along transects oriented perpendicular to the previously defined groundwater flow direction to provide maximum coverage of known impacted areas. The maximum MIP/HPT boring depth ranged from 21 to 36 feet below ground surface (bgs). A summary of MIP/HPT data is presented in Table 1 and includes total depth, depth to water, elevated halogen specific detector (XSD) intervals, maximum XSD, and hydraulic conductivity summaries. Attachment A presents the MIP/HPT boring logs.

2.3 Temporary Groundwater Monitoring Well Installation

GHD installed nine temporary monitoring wells based on MIP/HPT data (the most impacted locations and depth intervals were selected). The temporary monitoring wells were installed utilizing direct push technology. Temporary monitoring well locations MIP-9, MIP-10, MIP-24, MIP-26 and MIP-34 were continuously logged to confirm geology matched the MIP/HPT boring data. Each temporary well was completed in its own borehole within 5 feet of the MIP/HPT boring and consisted of a 1-inch diameter PVC well with a 5-foot long, 0.010-inch slotted screen. All new temporary monitoring wells were sampled and then abandoned within approximately 24 hours of installation in accordance with the Washtenaw County Application for Non-Potable Well Project. See Table 1 for temporary monitoring well screen depths. Attachment B presents the stratigraphic and instrumentation logs for temporary monitoring well locations MIP-9, MIP-10, MIP-24, MIP-26 and MIP-34.

2.4 Collection and Analysis of Groundwater Samples

Following installation of the temporary monitoring wells, they were gauged for water levels and sampled for total compound list (TCL) VOCs using low-flow purge and sample techniques. Groundwater samples were maintained and shipped via chain of custody protocols in an iced cooler to TestAmerica in North Canton, Ohio on a normal turnaround time (2 weeks). Due to an internal laboratory issue at TestAmerica, the samples were sent on February 16, 2016 from TestAmerica to TriMatrix Laboratory in Grand Rapids, Michigan as further discussed in Section 2.5. See Table 1 for a sample analysis summary.

2.5 Deviations from the Scope of Work

GHD reviewed and analyzed MIP data on a daily basis to assess results and alter the planned locations and scope of work depending on findings. Based on the daily MIP data, deviations from the scope of work included the following:

- MIP-3, MIP-5 and MIP-7 were removed from the scope of work
- MIP-1 was moved approximately 50 feet north along Transect 1
- MIP-8 was added to Transect 2 approximately 75 feet north of MIP-10
- MIP-9 was added to Transect 2 approximately 25 feet north of MIP-10

MIP locations were re-numbered after deviations to the original scope of work. The final MIP borings, temporary monitoring well locations and transect numbers are presented on Figure 2.

Another deviation from the scope of work included the shipping of samples from TestAmerica to TriMatrix Laboratory. On Friday, February 5th, TestAmerica experienced a cyber-attack on their computer systems and was unable to process the groundwater samples. Therefore, to assure holding times were not compromised, the samples were transferred under COC from TestAmerica to TriMatrix on February 16, 2016. TriMatrix was able to complete the analysis of the groundwater samples without compromising the holding times.

3. Residuals Management

The groundwater purged during sampling, along with the decontamination water, was poured back into the temporary well where it was generated. Soils generated during the soil boring and temporary monitoring well installation were drummed and temporarily stored on-Site pending off-Site disposal. The drum was removed from the Site by US Ecology and transported to Wayne Disposal, Inc. for proper disposal on March 25, 2016. The waste manifest and associated disposal forms are presented in Attachment C.

4. Results

The results from the MIP/HPT borings and temporary monitoring wells are presented below and summarized in Tables 2 and 3 and Figure 3. The laboratory analytical reports are presented in Attachment D.

4.1 MIP Results

Generalized correlations between MIP response and laboratory sample results can be inferred, but cannot be viewed as a linear comparison. MIP response and laboratory results are collected, analyzed and reported in different units and by different procedures, so correlation is not an exact one-to-one comparison. However, based on review of the MIP logs, an interpretation of a "magnitude of impact" in saturated and unsaturated soils can be inferred from the MIP data, as discussed below. Interpretation of the MIP data was integral in determining temporary well installation locations and screen depths.

In general, MIP data indicated that the greatest "magnitude of impact" was located at the western portion of the Site and extended to the east consistent with the easterly groundwater flow direction in the area. The MIP data laterally delineated the areas of greatest impact with deviations to the north, south and east. MIP data indicated greatest magnitude of impacts were vertically delineated at each location impacts were encountered. Further discussion on lateral and vertical delineation of impacts is discussed in Section 5.

4.2 HPT Results

HPT data provided crucial information on determining the proper placement of well screens. It also provided information on the permeability of saturated soils. The HPT results in conjunction with the manually logged soils and the MIP data indicated most of the greatest areas of impact were consolidated near the base of the permeable zones and in the less permeable material directly underlying a zone of high permeability. Therefore, when selecting intervals to set well screens the screens were commonly set to straddle the less permeable material with 3 to 4 feet of screen within the base of the aquifer and the bottom 1 to 2 feet of screen within the less permeable material (aquitard material). Due to this more precise method of selecting screen intervals, higher PCE concentrations were detected in groundwater samples compared to historic results. The results of the groundwater sampling and analysis are discussed in the section below.

4.3 Groundwater Analytical Results

The groundwater analytical results were compared against the MDEQ Generic Cleanup Criteria for Residential and Nonresidential categories, Administrative Rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended (Part 201 Criteria). The following VOCs were detected above the most restrictive Part 201 Cleanup Criteria:

- PCE, cis-1,2-Dichloroethene (cis-1,2-DCE), and trichloroethene (TCE) exceeded Part 201 Residential and Non-Residential Drinking Water Criteria (DWC) and Groundwater Surface Water Interface (GSI).
- Methylene chloride exceeded Residential and Non-Residential DWC.
- Additionally, PCE exceeded Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC).

On April 15, 2016, the MDEQ released newly proposed Generic Cleanup Criteria and Screening Levels. There was no change to proposed Residential and Nonresidential DWC for Site VOCs that had detections above DWC. The proposed 2016 Groundwater Vapor Intrusion (VI) Screening Levels generally became more restrictive compared to the 2013 Groundwater VI Screening Levels. Although the proposed 2016 Groundwater VI Screening Levels became more restrictive, only two VOCs (cis-1,2-DCE at MIP-26 and TCE at MIP-16) previously did not exceed 2013 Groundwater VI Screening Levels, but would exceed the proposed 2016 Groundwater VI Screening Levels. Further discussion of the VI pathway and a list of VOCs that exceed the 2013 groundwater VI screening levels are discussed in Section 5.5. Table 3 presents a summary of groundwater analytical results compared against all Part 201 Criteria.

5. Conceptual Site Model Update

A conceptual Site model (CSM) was completed as part of the 2007 Pilot Study. The 2007 CSM was created to determine the behavior of an injection solution. This CSM provides an update to the 2007 Pilot Study and focuses on the known impacts and changes from historic data collected from 2005 through 2008.

5.1 Geology

Continuous logging of soils from soil borings was conducted during the first day of temporary well installations. The soils were logged using the Unified Soil Classification System (USCS). The logged soils were compared to the readings obtained from the adjacent MIP/HPT borings that provided continuous data on general soil types and permeability. The logged soils help correlate the actual observed soil types and the readings obtained from the MIP/HPT tool. It was observed that permeable sandy soils were encountered from approximately 0-15 feet bgs (upper sand). Less permeable clay or silt was encountered at approximately 15-25 feet bgs (upper aquitard). This was underlain by a more permeable sandy soil at 25-29 feet bgs (lower sand). Below the lower sandy soils was less permeable clay at approximately 29 feet bgs (lower aquitard). The upper aquitard thinned and (at times) became non-existent in the primary source area (west to west central portion of Site).

5.2 Hydrogeology

An extensive hydrogeology study and evaluation was completed as part of the 2007 Pilot Study. Based on the 2007 Pilot Study, groundwater flow direction is to the east. In general, the information gathered during this investigation confirmed historic studies and added additional information by recording the maximum HPT water pressure and assigning hydraulic conductivity values (not including aquitards) to each of the soil groups identified in Section 5.1. In general, the average hydraulic conductivity for the upper sand was higher than the average hydraulic conductivity for the lower sand unit.

5.3 Horizontal Extent of PCE Impacts

Based on MIP data and groundwater data from temporary wells, the results are similar to historic studies, where the greatest impacts are encountered in the known source areas (MIP-3 and MIP-12) and extend easterly following the groundwater flow to the eastern edge of the property (MIP-24 and MIP-34). Impacts near the source areas appear to extend farther north than previously encountered (MIP-9) and the MIP data from MIP-8 gave a signature of impact (no groundwater was collected at MIP-8). Moving south from the source areas, MIP-5, MIP-17 and MIP-15 gave no indication of impact, but MIP-16 had evidence of impact and groundwater data confirmed elevated PCE in the well. Therefore, the PCE impacts detected at MIP-16 appear to be from a separate source, possibly from off-Site. The southern portion of the VOC plume (detected at MIP-26) may be from this separate source. The extent of on-site groundwater impacts has been characterized and appears to be fully delineated on-Site to the north by MIP-1, MIP-8, MIP-32 and historical data. PCE impacts appear to likely extend off-site to the east and may extend off-site to the west and south. The estimated PCE concentration contours based on data collected to date are presented on Figure 4.

5.4 Vertical Extent of PCE Impacts

The vertical extent of PCE impacts in groundwater has been defined throughout the Site by interpretation of MIP borings and historical data. Based on MIP data, it appeared the most heavily impacted zones were near the base of saturated sand units and directly underlying the upper and/or lower saturated sand units in the upper portions of the upper and/or lower aquitards. MIP data did not indicate the presence of any significant PCE concentrations in the unsaturated upper sand unit except in the source area. Potential impacts in the unsaturated upper sand unit were encountered at MIP-4, MIP-11 and MIP-12, which is consistent with historical data.

Impacts in groundwater were generally encountered at greater depth at the western portion of the Site and gradually became shallower to the east. At the western boundary, the greatest magnitude of impacts were encountered at approximately 27-33 feet bgs compared to the eastern portion of the Site where impacts were encountered at approximately 12.5-16 feet bgs. Overall, the MIP was able to vertically delineate the areas of greatest magnitude of impacts at each boring.

5.5 Pathway Analysis

A pathway analysis was completed and documented in the MDEQ approved 2005 Due Care Plan. The pathway analysis from the 2005 Due Care Plan is still accurate and relevant for the Site; however, in 2013 the MDEQ published the "*Guidance Document for the Vapor Intrusion Pathway*" which presented new groundwater screening levels and is discussed in this Section.

If impacted groundwater is within 10 feet beneath a building floor or basement, the generic cleanup criteria are not applicable and VI screening levels (or site specific criteria) are relevant. Analytical results indicated TCE, DCE and PCE were detected above Residential VI groundwater Screening Levels and/or VI Shallow Groundwater Screening Levels (GW_{vi}) as indicated below:

- DCE and TCE exceeded GW_{vi} at MIP-9
- PCE Exceeded GW_{vi} at MIP3, MIP-9, MIP-12, MIP-14, MIP-16, MIP-24, MIP-26 and MIP-34

The exceedance of GW_{vi} does not apply for the Site since all buildings have been demolished. However, future Site buildings should address the pathway as relevant and additional investigation or mitigation may be necessary to assure VI is not a risk. Currently, PCE in groundwater above GW_{vi} extends downgradient to the eastern edge of the property (See Figure 4).

6. Summary and Conclusions

Based on the MIP/HPT data and the groundwater data collected from the temporary monitoring wells, the areas of greatest PCE impact correspond with historical data. Soil samples were not collected as part of this investigation and MIP data did not indicate the presence of any significant PCE concentrations in the unsaturated upper sand unit except in the source area which is consistent with historical data.

Sincerely,

GHD Services Inc.

Thomas M. Kinney, C.P.G.

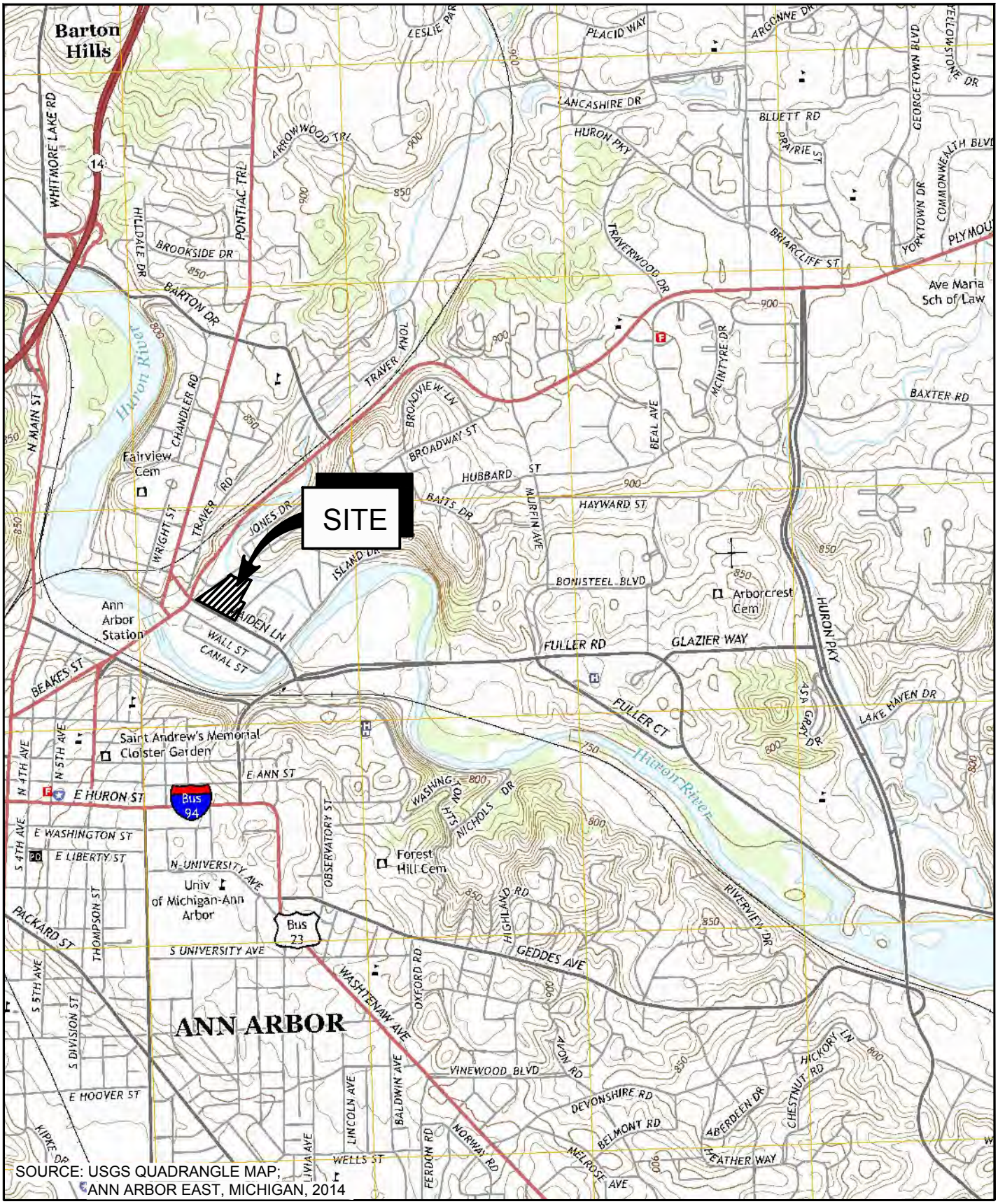
TMK/ds/1/PR

Encl: Figure 1: Site Location
Figure 2: MIP/HPT and Temporary Well Location Map
Figure 3: Site Map with Groundwater Analytical Results
Figure 4: Isoconcentration Map

Table 1: Sample Analysis Summary
Table 2: MIP/HPT Summary
Table 3: Groundwater Analytical Results

Attachment A: MIP/HPT Boring Logs
Attachment B: Stratigraphic and Instrumentation Logs
Attachment C: Waste Manifest
Attachment D: Laboratory Analytical Reports

cc: Gavin O'Neill, GHD



SOURCE: USGS QUADRANGLE MAP; ANN ARBOR EAST, MICHIGAN, 2014

0 1000 2000ft

GHD

1150 BROADWAY STREET
ANN ARBOR MICHIGAN

11114514-01

Mar 17, 2016

SITE LOCATION

FIGURE 1

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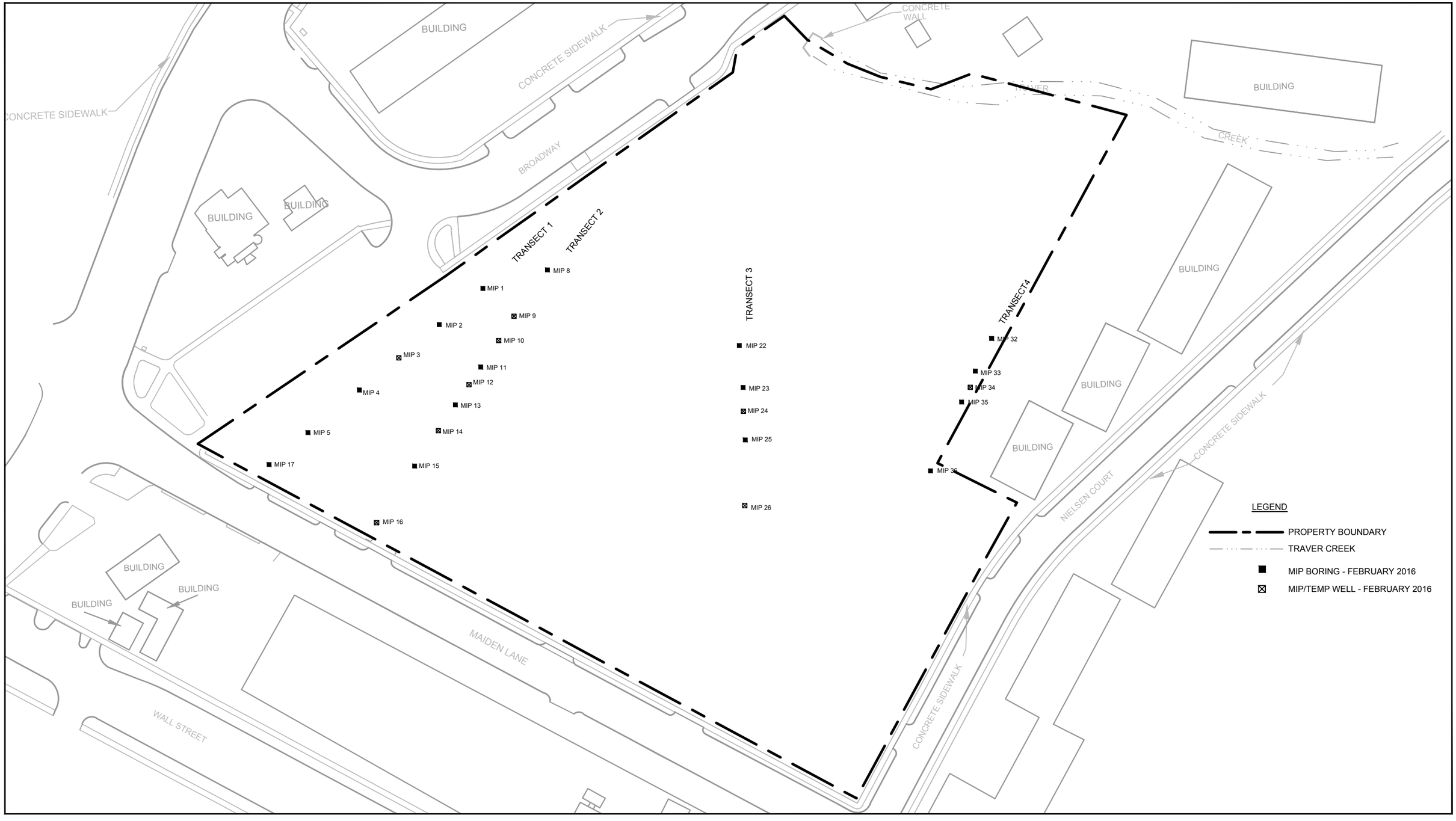

0 40 80ft

LOWER TOWN PROJECT
ANN ARBOR, MICHIGAN

11114514-01
Mar 17, 2016

MIP/HPT AND TEMPORARY WELL LOCATION MAP

FIGURE 2

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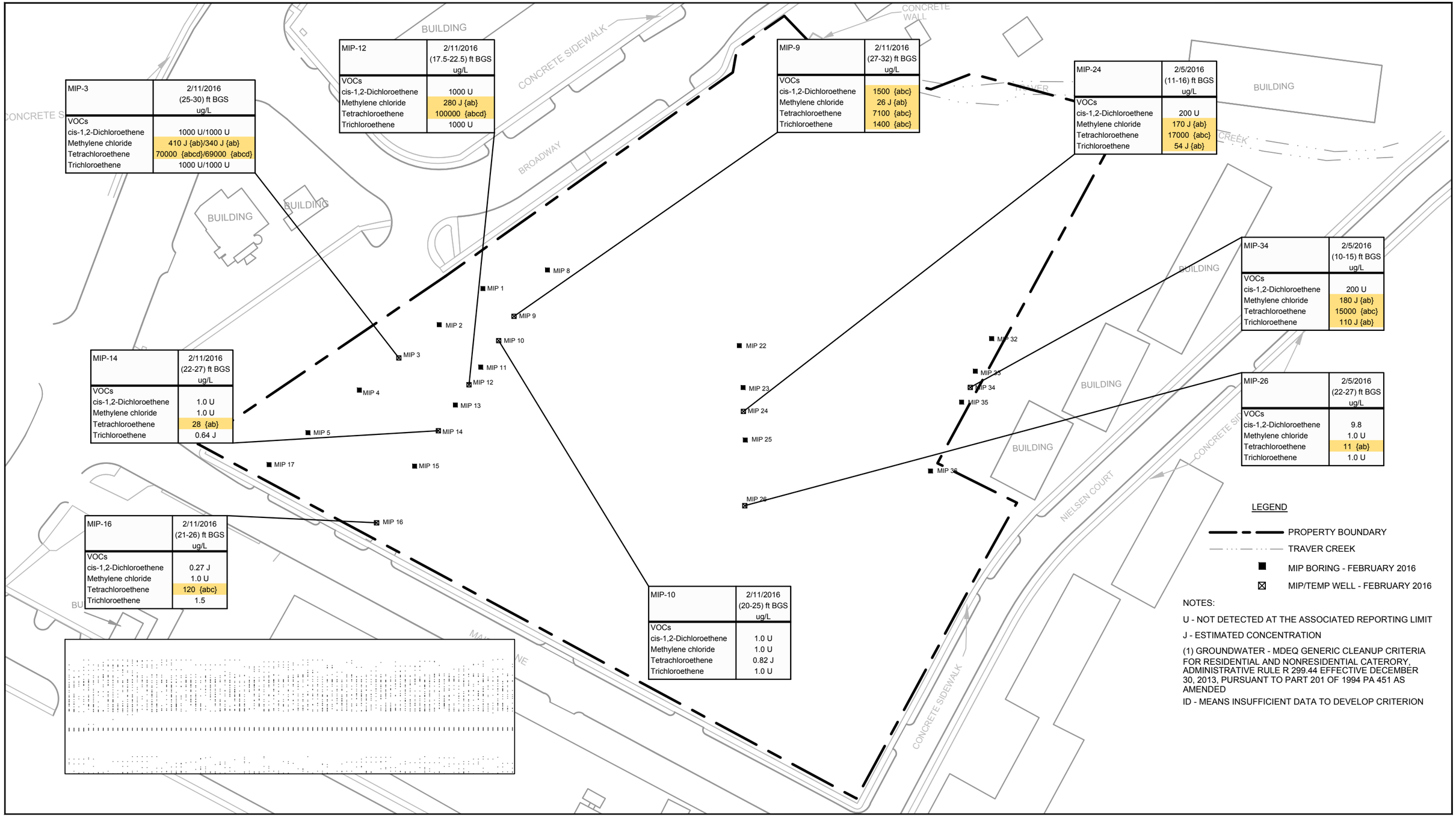

MIP-3	2/11/2016 (25-30) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	1000 U/1000 U
Methylene chloride	410 J {ab}/340 J {ab}
Tetrachloroethene	70000 {abcd}/69000 {abcd}
Trichloroethene	1000 U/1000 U

MIP-12	2/11/2016 (17.5-22.5) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	1000 U
Methylene chloride	280 J {ab}
Tetrachloroethene	100000 {abcd}
Trichloroethene	1000 U

MIP-9	2/11/2016 (27-32) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	1500 {abc}
Methylene chloride	26 J {ab}
Tetrachloroethene	7100 {abc}
Trichloroethene	1400 {abc}

MIP-24	2/5/2016 (11-16) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	200 U
Methylene chloride	170 J {ab}
Tetrachloroethene	17000 {abc}
Trichloroethene	54 J {ab}

MIP-34	2/5/2016 (10-15) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	200 U
Methylene chloride	180 J {ab}
Tetrachloroethene	15000 {abc}
Trichloroethene	110 J {ab}

MIP-26	2/5/2016 (22-27) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	9.8
Methylene chloride	1.0 U
Tetrachloroethene	11 {ab}
Trichloroethene	1.0 U

MIP-14	2/11/2016 (22-27) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	1.0 U
Methylene chloride	1.0 U
Tetrachloroethene	28 {ab}
Trichloroethene	0.64 J

MIP-16	2/11/2016 (21-26) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	0.27 J
Methylene chloride	1.0 U
Tetrachloroethene	120 {abc}
Trichloroethene	1.5

MIP-10	2/11/2016 (20-25) ft BGS ug/L
VOCs	
cis-1,2-Dichloroethene	1.0 U
Methylene chloride	1.0 U
Tetrachloroethene	0.82 J
Trichloroethene	1.0 U

LEGEND

- PROPERTY BOUNDARY
- TRAVER CREEK
- MIP BORING - FEBRUARY 2016
- MIP/TEMP WELL - FEBRUARY 2016

NOTES:

U - NOT DETECTED AT THE ASSOCIATED REPORTING LIMIT

J - ESTIMATED CONCENTRATION

(1) GROUNDWATER - MDEQ GENERIC CLEANUP CRITERIA FOR RESIDENTIAL AND NONRESIDENTIAL CATERORY, ADMINISTRATIVE RULE R 299.44 EFFECTIVE DECEMBER 30, 2013, PURSUANT TO PART 201 OF 1994 PA 451 AS AMENDED

ID - MEANS INSUFFICIENT DATA TO DEVELOP CRITERION

0 40 80ft

LOWER TOWN PROJECT
ANN ARBOR, MICHIGAN

11114514-01
Mar 18, 2016

SITE MAP WITH GROUNDWATER ANALYTICAL RESULTS

FIGURE 3

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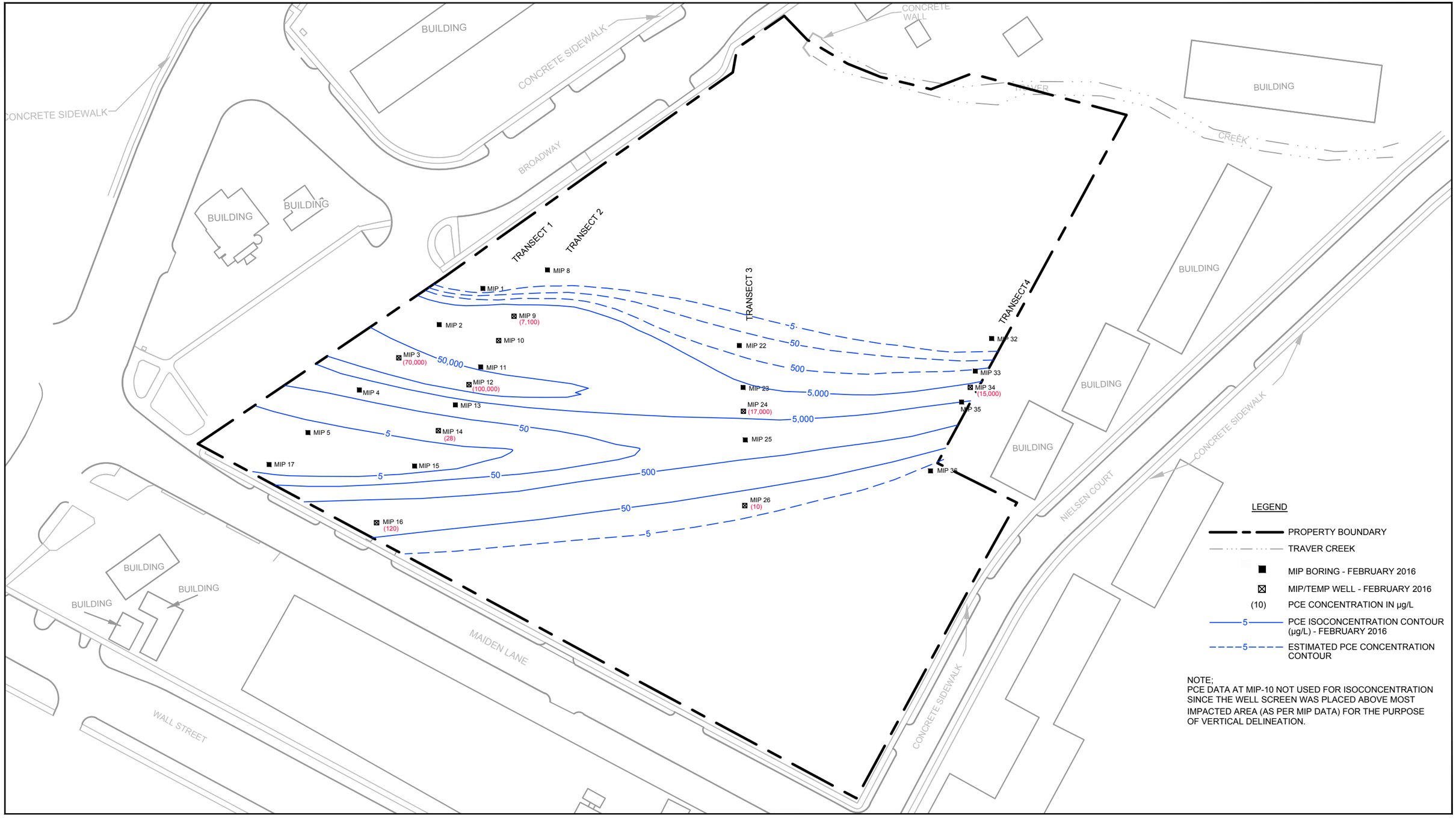

0 40 80ft

LOWER TOWN PROJECT
ANN ARBOR, MICHIGAN

11114514-01

Mar 21, 2016

ISOCONCENTRATION MAP

FIGURE 4

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TABLE 1

SAMPLE ANALYSIS SUMMARY
LOWER TOWN SITE
ANN ARBOR, MICHIGAN

Sample ID	Location Code	Sample Date	Sample Time	Sample Type	Sample Matrix	Lab Analysis	Lab
TB-11114514-020516	NA	2/5/2016	NA	Trip Blank	WQ	TCL - VOCs	TriMatrix
GW-11114514-020516-DR-001	MIP-34	2/5/2016	1230	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-020516-DR-002	MIP-24	2/5/2016	1300	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-020516-DR-003	MIP-26	2/5/2016	1330	Groundwater	WG	TCL - VOCs	TriMatrix
TB-11114514-021116	NA	2/11/2016	NA	Trip Blank	WQ	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-004	MIP-3	2/11/2016	845	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-005	MIP-3	2/11/2016	850	Duplicate	WQ	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-006	MIP-9	2/11/2016	920	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-007	MIP-10	2/11/2016	945	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-008	MIP-12	2/11/2016	1015	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-009	MIP-14	2/11/2016	1045	Groundwater	WG	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-010	MIP-16	2/11/2016	1115	MS/MSD	WQ	TCL - VOCs	TriMatrix
GW-11114514-021116-DR-011	WC	2/11/2016	NA	Soil	WC	TCL - VOCs	TriMatrix

Notes:
WC - Waste Characterization
WQ - Water qaulity sample
WG - Water grab sample
NA - No data available
TCL - VOCs - Total Compound List - Volitile Organic Compounds

TABLE 2

MIP/HPT SUMMARY
LOWER TOWN SITE
ANN ARBOR, MICHIGAN

MIP Location	Date Completed	Total Depth Explored (feet bgs)	Depth to Water (feet bgs)	Elevated XSD Intervals (feet bgs)	Maximum XSD ($\mu V \times 10^6$)	Hydraulic Conductivity Interval(s) (feet bgs)	Average Hydraulic Conductivity Value (feet /day)	Temp Well (Yes/No)	Temp Well Screen Interval (feet bgs)
MIP - 1	2/9/2016	36	12	NA	NA	NA	NA	No	NA
MIP - 2	2/9/2015	34	13.5	(31-32)	0.75	(16-31)	~50	No	NA
MIP - 3	2/9/2015	33	14	(23-31)	1	(14-29)	~80	Yes	(25-30)
MIP - 4	2/9/2015	32	13	(3.5-5) & (29-30)	0.7	(19-24)	~150	No	NA
MIP - 5	2/9/2015	31	14	NA	NA	(18-27)	~150	No	NA
MIP - 8	2/8/2016	35	11	(32-33)	0.25	(16-26) & (28-32)	~30 & ~120	No	NA
MIP - 9	2/8/2016	34	12	(27-31)	0.6	(14-30)	~70	Yes	(26-31)
MIP - 10	2/3/2016	31	11.5	(22.5-24) & (28-29)	1.0 & 0.9	(12-23) & (24-28)	~60 & ~40	Yes	(20-25)
MIP - 11	2/3/2016	36	12	(11-12) & (20-22.5) & (31-34)	0.7 & 0.55 & 0.25	(13-21) & (24-26)	~100 & ~20	No	NA
MIP - 12	2/5/2016	30	13	(12-28)	0.5	(13-22) & (26-27)	~70 & ~5	Yes	(17-22)
MIP - 13	2/5/2016	31	12	(13-14)	0.2	(13-21) & (26-27)	~70 & ~30	No	NA
MIP - 14	2/5/2016	31	10	(23-26)	0.1	(14-20) & (24-25)	~50 & ~25	Yes	(22-27)
MIP - 15	2/8/2016	31	10	NA	NA	(13-18) & (21-24)	~60 & ~150	No	NA
MIP - 16	2/8/2016	29	11	(22-23)	0.4	(15-17) & (23-26)	~150 & ~150	Yes	(21-26)
MIP - 17	2/8/2016	31	12	NA	NA	(18-23)	~150	No	NA
MIP - 22	2/2/2016	31	9	(25-26)	0.1	(9-20) & (26-28)	~40 & ~50	No	NA
MIP - 23	2/2/2016	31	8	(17-18)	0.15	(10-17) & (23-24.5)	~75 & ~25	No	NA
MIP - 24	2/2/2016	36	9	(15-18) & (21.5-25)	0.8 & 0.7	(10-16) & (18-22) & (26.5-28)	~150 & ~150 & ~20	Yes	(11-16)
MIP - 25	2/2/2016	31	7.5	(16.5-18) & (20-23)	0.2 &0.2	(13-14.5) & (25-29)	~150 & ~10	No	NA
MIP - 26	2/2/2016	34	10.5	(22.5-23)	0.5	(26-32)	~20	Yes	(22-27)
MIP - 32	2/1/2016	31	NA	NA	NA	NA	NA	No	NA
MIP - 33	2/1/2016	21	9	(15-16)	0.9	(9.5-14.5) & (18.5-19.5)	~40 & ~20	No	NA
MIP - 34	2/1/2016	21	9	(13.5-16.5)	0.9	(9-14)	~40	Yes	(10-15)
MIP - 35	2/1/2016	21	8.5	(12.5-15)	0.8	(8.5-12.5)	~40	No	NA
MIP - 36	2/1/2016	22	NA	NA	NA	NA	NA	No	NA

Notes:
MIP - Membrane Interface Probe
bgs - Below ground surface
µV - Microvolts
XSD - Halogen Specific Detector
NA - No data available

TABLE 3

GROUNDWATER ANALYTICAL RESULTS
LOWER TOWN SITE
ANN ARBOR, MICHIGAN

Sample Location:		MDEQ Generic Groundwater Cleanup Criteria: Residential and Nonresidential (1)				***MIP-3***	***MIP-3***	***MIP-9***	***MIP-10***	***MIP-12***	***MIP-14***	***MIP-16***	***MIP-24***	***MIP-26***	***MIP-34***
Sample Date:		Residential	Non-Residential	Groundwater	Residential Groundwater	***2/11/2016***	***2/11/2016***	***2/11/2016***	***2/11/2016***	***2/11/2016***	***2/11/2016***	***2/11/2016***	***2/5/2016***	***2/5/2016***	***2/5/2016***
Sample Depth:		Drinking Water	Drinking Water	Surface Water Interface	Volatilization to Indoor Air Inhalation	***(25-30) ft BGS***	***(25-30) ft BGS***	***(27-32) ft BGS***	***(20-25) ft BGS***	***(17.5-22.5) ft BGS***	***(22-27) ft BGS***	***(21-26) ft BGS***	***(11-16) ft BGS***	***(22-27) ft BGS***	***(10-15) ft BGS***
Sample Type:							***Duplicate***								
	Units	a	b	c	d										
Volatile Organic Compounds (VOCs)															
1,1,1-Trichloroethane	ug/L	200	200	89	660000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78	12000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,1,2-Trichloroethane	ug/L	5	5	330	17000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,1-Dichloroethane	ug/L	880	2500	740	1000000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,1-Dichloroethene	ug/L	7	7	130	200	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2,4-Trichlorobenzene	ug/L	70	70	99	300000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.2		220	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	0.05	5.7	2400	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2-Dichlorobenzene	ug/L	600	600	13	160000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2-Dichloroethane	ug/L	5	5	360	9600	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,2-Dichloropropane	ug/L	5	5	230	16000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,3-Dichlorobenzene	ug/L	6.6	19	28	18000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
1,4-Dichlorobenzene	ug/L	75	75	17	16000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	240000000	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
2-Hexanone	ug/L	1000	2900	ID	4200000	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1800	5200	ID	20000000	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Acetone	ug/L	730	2100	1700	1000000000	5000 U	5000 U	160 J	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Benzene	ug/L	5	5	200	5600	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Bromodichloromethane	ug/L	80	80	ID	4800	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Bromoform	ug/L	80	80	ID	470000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Bromomethane (Methyl bromide)	ug/L	10	29	35	4000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Carbon disulfide	ug/L	800	2300	ID	250000	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Carbon tetrachloride	ug/L	5	5	45	370	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Chlorobenzene	ug/L	100	100	25	210000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Chloroethane	ug/L	430	1700	1100	5700000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Chloroform (Trichloromethane)	ug/L	80	80	350	28000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	8600	1000 U	190 J	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
cis-1,2-Dichloroethene	ug/L	70	70	620	93000	1000 U	1000 U	**1500[abc]**	1.0 U	1000 U	1.0 U	0.27 J	200 U	9.8	200 U
cis-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Cyclohexane	ug/L	NA	NA	NA	NA	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Dibromochloromethane	ug/L	80	80	ID	14000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	220000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Ethylbenzene	ug/L	74	74	18	110000	1000 U	1000 U	50 U	1.0 U	1000 U	0.10 J	1.0 U	200 U	0.080 J	200 U
Isopropyl benzene	ug/L	800	2300	28	56000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Methyl acetate	ug/L	NA	NA	NA	NA	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Methyl cyclohexane	ug/L	NA	NA	NA	NA	5000 U	5000 U	250 U	5.0 U	5000 U	5.0 U	5.0 U	1000 U	5.0 U	1000 U
Methyl tert butyl ether (MTBE)	ug/L	40	40	7100	47000000	1000 U	1000 U	50 U	1.0 U	1000 U	30	12	200 U	15	200 U
Methylene chloride	ug/L	5	5	1500	220000	**410 J[ab]**	**340 J[ab]**	**26 J[ab]**	1.0 U	**280 J[ab]**	1.0 U	1.0 U	**170 J[ab]**	1.0 U	**180 J[ab]**
Styrene	ug/L	100	100	80	170000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Tetrachloroethene	ug/L	5	5	60	25000	**70000[abcd]**	**69000[abcd]**	**7100[abc]**	0.82 J	**100000[abcd]**	**28[ab]**	**120[abc]**	**17000[abc]**	**11[ab]**	**15000[abc]**
Toluene	ug/L	790	790	270	530000	1000 U	1000 U	160	1.0 U	1000 U	0.30 J	1.0 U	200 U	0.34 J	200 U
trans-1,2-Dichloroethene	ug/L	100	100	1500	85000	1000 U	1000 U	12 J	1.0 U	1000 U	1.0 U	1.0 U	200 U	0.85 J	200 U
trans-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Trichloroethene	ug/L	5	5	200	2200	1000 U	1000 U	**1400[abc]**	1.0 U	1000 U	0.64 J	1.5	**54 J[ab]**	1.0 U	**110 J[ab]**
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300		1100000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Trifluorotrichloroethane (CFC-113)	ug/L	170000	170000	32	170000	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Vinyl chloride	ug/L	2	2	13	1100	1000 U	1000 U	50 U	1.0 U	1000 U	1.0 U	1.0 U	200 U	1.0 U	200 U
Xylenes (total)	ug/L	280	280	41	190000	3000 U	3000 U	150 U	3.0 U	3000 U	3.0 U	3.0 U	600 U	3.0 U	600 U

Notes :

NA - Criteria not available

ND ( ) - Not present at or above the associated value.

J - Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero.

The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.

2.6[ab] Indicates a concentration exceedance of Part 201 Cleanup Criteria.

(1) MDEQ (Michigan) Generic groundwater cleanup criteria, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended (Part 201 Groundwater Criteria)