Rose & Westra
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

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File No. 16.0062335.53
January 4, 2019

Ms. Abigail Hendershott
District Supervisor – Remediation and Redevelopment Division
Michigan Department of Environmental Quality (MDEQ)
350 Ottawa Avenue NW #10
Grand Rapids, MI 49503

Re: Wolverine World Wide, Inc.
Source Investigation/Waste Removal Activities Monthly Progress Report

Dear Ms. Hendershott:

On behalf of Wolverine World Wide, Inc. (Wolverine), this letter is a monthly progress report as agreed upon in Mr. John Byl's July 9, 2018 letter entitled *Response to May 29 Correspondence regarding Tannery Meeting Summary and Action Items.*

This Monthly Progress Report (MPR) summarizes actions and available through December 28, 2018 for the Source Investigation/Waste Removal Activities associated with certain parcels located south of the House Street Former Disposal Site (1855 House Street NE).

The latest round of investigation on the MDOT Parcel was completed November 2. The final data was received December 23, 2018. This triggered the 30 day reporting period for the MDOT investigation summary. As such, this documentation is due January 22, 2019. All Level 2 data and EDDs have been provided to the MDEQ.

Analytical results from initial samples collected at 1850 House Street NE and 1778 House Street NE were submitted to the MDEQ on October 2. Since that time, R&W/GZA coordinated with the MDEQ and EPA to develop steps going forward at these sites. Scopes of work for additional sampling were discussed and submitted to the property owners for approval. Upon approval, R&W/GZA collected the additional soil and potential waste samples on November 8, 2018. These analytical results were received December 20, 2018. Attached are summary tables for both the original samples as well as those collected in November 2018. The attached figures also shows the locations of these samples.

The following summarizes the general findings of the Part 201 generic residential cleanup criteria at each of the parcels. For 1850 House Street: VOCs and SVOCs in soil/waste above GSI and DW criteria only; arsenic above DW, GSI, and direct contact criteria; hexavalent chromium above DW and GSI; mercury above GSI; and the waste sample did not exceed RCRA TCLP for chromium.

For 1778 House Street: hexavalent chromium was measured in soil above DW and GSI; lead above direct contact; selenium above GSI and DW; and the total chromium and lead analysis of the waste material are not above RCRA TCLP.

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To the extent that samples listed in these tables contain or consist of waste, in whole or in part, the comparison to the MDEQ Part 201 generic cleanup criteria does not imply applicability of the criteria because the physical and chemical properties of the waste are expected to be different from the default values or assumptions used to derive the Generic Soil Cleanup Criteria in the Cleanup Criteria Requirements for Response Activity Rules (R299.1-299.50).

Upon your review of the 1850 House Street NE and 1778 House Street NE data, we would like to have a meeting to determine the next steps at these properties.

R&W/GZA is developing possible scopes of work for additional investigation/remediation at the Imperial Pine Parcel (7900 Imperial Pine Drive NE). This information has been reviewed with the Imperial Pine Parcel owner. Discussions regarding the next steps forward continue.

If you have any questions, please feel free to contact us.

Very truly yours,

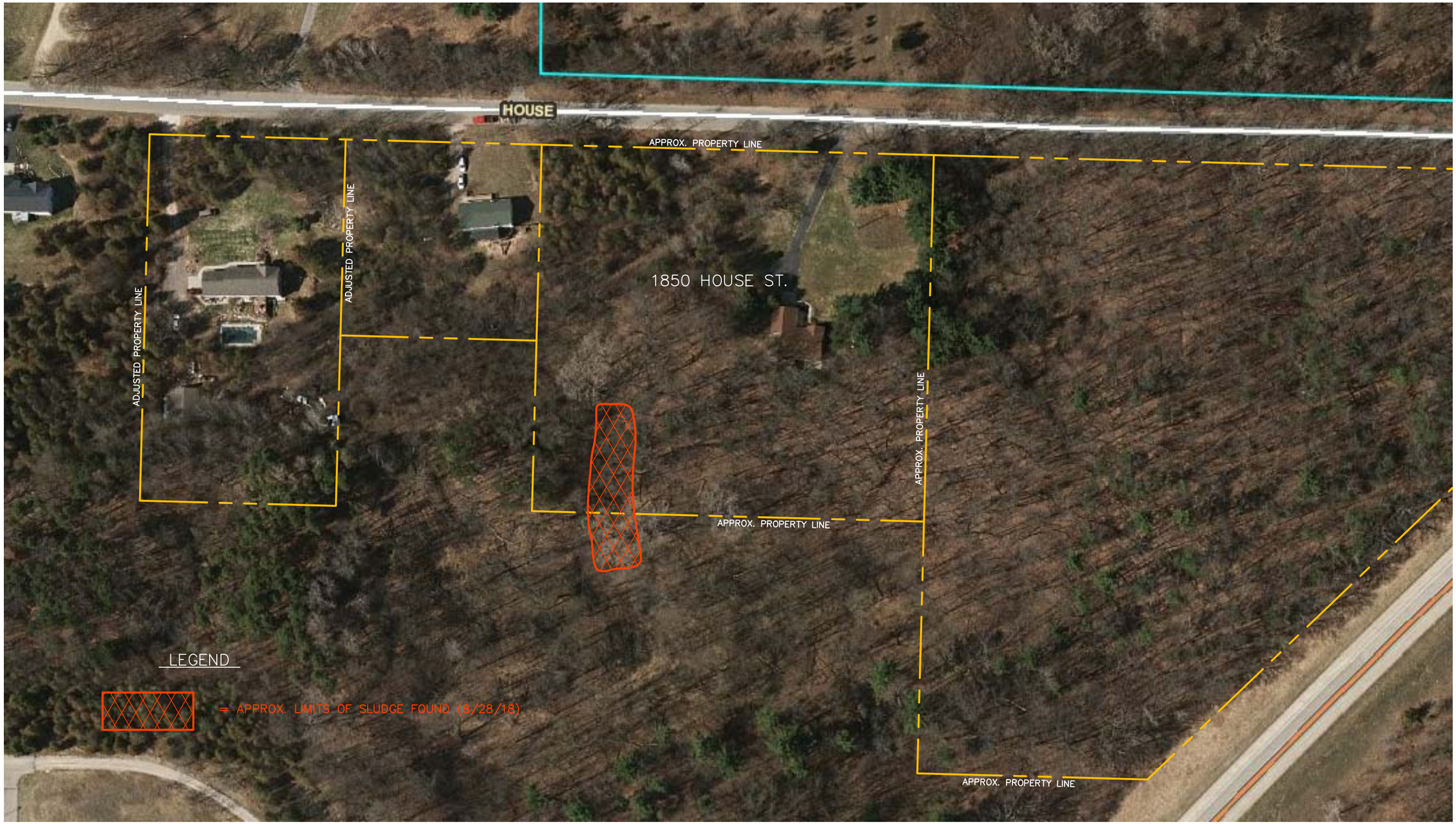
Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

Mark A. Westra
Associate Principal

Loretta J. Powers
Senior Project Manager

c: Mr. Dave Latchana – Wolverine Worldwide, Inc. *via email David.Latchana@wwwinc.com*
Mr. John V. Byl – Warner Norcross & Judd LLP *via email jbyl@wnj.com*

J:\62000\623xx\62335.53 - House ST Removal\MDEQ Updates\December 2018 Update\MDEQ-Waste-MonthlyUpdate- 01042018 - F.docx



SCALE: 1" = 100'

0' 100'

NORTH ORIENTATION

SITE PLAN W/ APPROX. LIMITS OF SLUDGE

ROSE & WESTRA
A DIVISION OF GZA
Grand Rapids, Michigan
GEOTECHNICAL–ENVIRONMENTAL–ECOLOGICAL
WATER–CONSTRUCTION MANAGEMENT

WWMNJ
1850 HOUSE STREET NE, BELMONT, MICHIGAN
ENIRONMENTAL INVESTIGATION

PROJECT NO. 16.0062335.53

1
FIGURE NO.

CREATED BY: KJB APPROVED BY: LJP DATE: 12/31/18 FILE NAME: 62335_53_1850

House St NE

1778 SB-03

1778 SB-04

1778 SB-01

1778 SB-02

1778 HOUSE ST NE

House St NE

1850 HOUSE ST NE

1850 SB-01

1850 SB-02

1850 SB-03

1850 SB-04

N

LEGEND

- November 2018 Soil Sampling Location
- Approximate Parcel Boundary

0 40 80 160

APPROXIMATE SCALE IN FEET

NOTES:
1. THE LOCATIONS OF SOIL SAMPLES ARE BASED ON EQUIPMENT WITH SUBMETER ACCURACY AND MAY VARY UP TO 3.3 FEET.

2. AERIAL PHOTOGRAPH AND WORLD TRANSPORTATION LAYER PROVIDED BY ESRI ONLINE MAP SERVICES. WORLD IMAGERY: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY. WORLD TRANSPORTATION: ESRI, HERE, GARMIN, © OPENSTREETMAP CONTRIBUTORS.

3. APPROXIMATE PARCEL BOUNDARIES PROVIDED BY KENT COUNTY.

NO.	ISSUE/DESCRIPTION	BY	DATE

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Rose & Westra, a Division of GZA
601 Fifth Street NW, Suite 102
Grand Rapids, Michigan 49504

1778 & 1850 HOUSE STREET NE
SOIL SAMPLE LOCATION MAP

GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR: WNJ/WWW

PROJ MGR: LJP	REVIEWED BY: LJP	CHECKED BY: LJP	FIGURE 1A
DESIGNED BY: JC	DRAWN BY: JC/JMG	SCALE: AS SHOWN	
DATE: 01-02-2019	PROJECT NO. 16.0062335.53	REVISION NO.	

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J:\16.xx Grand Rapids\16.0062300.xx\16.0062335.5x WNJ WWW\16.0062335.52\Data_GIS\GIS_CAD\Figures\FigureC_HS_SouthSide_Samples.mxd, 1/2/2019, 8:34:23 AM, julie.groenleer

TABLE 1
SUMMARY OF SOIL SAMPLE ANALYSIS - VOCS
1850 House Street NE
Plainfield Township, Kent County, MI

See After Table 4 For Notes
1/2/2019

Location Name	MDEQ Part 201 Soil Criteria Protective of Drinking Water Uses - Residential	MDEQ Part 201 Soil Criteria Protective of Groundwater Surface Water Interface	MDEQ Part 201 Soil Volatilization to Indoor Air Inhalation Criteria - Residential	MDEQ Part 201 Infinite Source Volatile Soil Inhalation Criteria - Residential	MDEQ Part 201 Particulate Soil Inhalation Criteria - Residential	MDEQ Part 201 Direct Contact Criteria - Residential	1850 House	1850 SB-01	1850 SB-01	1850 SB-02	1850 SB-02	1850 SB-03	1850 SB-03	1850 SB-03	1850 SB-04	1850 SB-04	1850 SB-04
Sample Name							1850 House-WC-828	1850 SB-01 (0.5)	1850 SB-01 (4.2)	1850 SB-02 (0.5)	1850 SB-02 (5)	1850 SB-03 (0.1)	1850 SB-03 (1.5)	1850 SB-03 (4.8)	1850 SB-04 (0.1)	1850 SB-04 (1.5)	1850 SB-04 (4.6)
Sample Date							8/28/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
Parameter (ug/kg)																	
Acetone	15,000	34,000	290,000,000	130,000,000	390,000,000,000	23,000,000	7,000 [BJ]	<1,300	<600	<1,100	<940	<1,400	<16,000	<710	<2,400	<11,000	<620
Benzene	100	4,000	1,600	13,000	380,000,000	180,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Bromodichloromethane	1,600	NA	1,200	9,100	84,000,000	110,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Bromoform	1,600	NA	150,000	900,000	2,800,000,000	820,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Bromomethane (Methyl bromide)	200	100	860	11,000	330,000,000	320,000	<2,400	<250	<120	<210	<190	<290	<3,200	<140	<480	<2,300	<120
Carbon disulfide	16,000	NA	76,000	1,300,000	47,000,000,000	7,200,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Carbon tetrachloride	100	760	190	3,500	130,000,000	96,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Chlorobenzene	2,000	500	120,000	770,000	4,700,000,000	4,300,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Chloroethane	8,600	22,000	2,900,000	30,000,000	670,000,000,000	2,600,000	<2,400	<250	<120	<210	<190	<290	<3,200	<140	<480	<2,300	<120
Chloroform	1,600	7,000	7,200	45,000	1,300,000,000	1,200,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Chloromethane (Methyl chloride)	5,200	NA	2,300	40,000	4,900,000,000	1,600,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Cyclohexane	NA	NA	NA	NA	NA	NA	18,000	<130	<60	<110	<94	<140	4,200	<71	<240	4,400	<62
1,2-Dibromo-3-chloropropane (DBCP)	10	NA	220	260	560,000	4,400	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Dibromochloromethane	1,600	NA	3,900	24,000	130,000,000	110,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,2-Dibromoethane (EDB)	20	110	670	1,700	14,000,000	92	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,2-Dichlorobenzene	14,000	280	11,000,000	39,000,000	100,000,000,000	19,000,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,3-Dichlorobenzene	170	680	26,000	79,000	200,000,000	200,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,4-Dichlorobenzene	1,700	360	19,000	77,000	450,000,000	400,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Dichlorodifluoromethane	95,000	NA	900,000	53,000,000	3,300,000,000,000	52,000,000	<2,400	<250	<120	<210	<190	<290	<3,200	<140	<480	<2,300	<120
1,1-Dichloroethane	18,000	15,000	230,000	2,100,000	33,000,000,000	27,000,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,2-Dichloroethane	100	7,200	2,100	6,200	120,000,000	91,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,1-Dichloroethene	140	2,600	62	1,100	62,000,000	200,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
cis-1,2-Dichloroethene	1,400	12,000	22,000	180,000	2,300,000,000	2,500,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
trans-1,2-Dichloroethene	2,000	30,000	23,000	280,000	4,700,000,000	3,800,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,2-Dichloropropane	100	4,600	4,000	25,000	270,000,000	140,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Ethylbenzene	1,500	360	87,000	720,000	10,000,000,000	22,000,000	***5,700***	<130	<60	<110	<94	<140	***7,300***	<71	<240	***5,400***	<62
2-Hexanone	20,000	NA	990,000	1,100,000	2,700,000,000	32,000,000	<12,000	<1,300	<600	<1,100	<940	<1,400	<16,000	<710	<2,400	<11,000	<620
Isopropylbenzene	91,000	3,200	400,000	1,700,000	5,800,000,000	25,000,000	***8,300***	<130	<60	<110	<94	<140	***10,000***	<71	<240	***6,800***	<62
Methyl acetate	NA	NA	NA	NA	NA	NA	1,800	370	50 [J]	550	46 [J]	1,100	3,700	39 [J]	1,300	2,200	<62
2-Butanone (MEK)	260,000	44,000	54,000,000	29,000,000	67,000,000,000	120,000,000	<12,000	<1,300	<600	<1,100	<940	<1,400	<16,000	<710	<2,400	<11,000	<620
4-Methyl-2-pentanone	36,000	NA	37,000,000	45,000,000	140,000,000,000	56,000,000	<12,000	<1,300	<600	<1,100	<940	<1,400	<16,000	<710	<2,400	<11,000	<620
Methyl tertiary butyl ether (MTBE)	800	140,000	9,900,000	25,000,000	200,000,000,000	1,500,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Methylene chloride	100	30,000	45,000	210,000	6,600,000,000	1,300,000	<1,200	<130	<60	<110	42 [J]	<140	<1,600	<71	<240	<1,100	<62
Styrene	2,700	2,100	250,000	970,000	5,500,000,000	400,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,1,2,2-Tetrachloroethane	170	1,600	4,300	10,000	54,000,000	53,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Tetrachloroethene	100	1,200	11,000	170,000	2,700,000,000	200,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Toluene	16,000	5,400	330,000	2,800,000	27,000,000,000	50,000,000	***7,900***	<130	<60	<110	<94	<140	5,000	<71	<240	***5,600***	<62
1,1,2-Trichloro-1,2,2-Trifluoroethane	9,000,000	1,700	5,100,000	180,000,000	5,100,000,000,000	1,000,000,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,2,4-Trichlorobenzene	4,200	5,900	9,600,000	28,000,000	25,000,000,000	990,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,1,1-Trichloroethane	4,000	1,800	250,000	3,800,000	67,000,000,000	500,000,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
1,1,2-Trichloroethane	100	6,600	4,600	17,000	190,000,000	180,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Trichloroethene	100	4,000	1,000	11,000	130,000,000	110,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Trichlorofluoromethane	52,000	NA	2,800,000	92,000,000	3,800,000,000,000	79,000,000	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
Vinyl chloride	40	260	270	4,200	350,000,000	3,800	<1,200	<130	<60	<110	<94	<140	<1,600	<71	<240	<1,100	<62
o - Xylenes	NA	NA	NA	NA	NA	NA	12,000	<130	<60	<110	<94	<140	16,000	<71	<240	11,000	<62
Xylenes (total)	5,600	980	6,300,000	46,000,000	290,000,000,000	410,000,000	***36,000***	<250	<120	<210	<190	<290	***46,000***	<140	<480	***32,000***	<120
Methylcyclohexane	NA	NA	NA	NA	NA	NA	32,000	<630	<300	<530	<470	<720	17,000	<350	<1,200	13,000	<310
m+p - Xylenes	NA	NA	NA	NA	NA	NA	24,000	<130	<60	<110	<94	<140	30,000	<71	<240	21,000	<62

TABLE 2
SUMMARY OF SOIL SAMPLE ANALYSIS - SVOCs
1850 House Street NE
Plainfield Township, Kent County, MI

Location Name	MDEQ Part 201 Soil Criteria Protective of Drinking Water Uses - Residential	MDEQ Part 201 Soil Criteria Protective of Groundwater Surface Water Interface	MDEQ Part 201 Soil Volatilization to Indoor Air Inhalation Criteria - Residential	MDEQ Part 201 Infinite Source Volatile Soil Inhalation Criteria - Residential	MDEQ Part 201 Particulate Soil Inhalation Criteria - Residential	MDEQ Part 201 Direct Contact Criteria - Residential	1850 House
Sample Name							1850 House-WC-828
Sample Date							08/28/2018
Parameter (ug/kg)							
Acenaphthene	300,000	8,700	190,000,000	81,000,000	14,000,000,000	41,000,000	<17,000
Acenaphthylene	5,900	NA	1,600,000	2,200,000	2,300,000,000	1,600,000	<17,000
Acetophenone	30,000	NA	120,000,000	44,000,000	33,000,000,000	47,000,000	<87,000
Anthracene	41,000	NA	1,000,000,000	1,400,000,000	67,000,000,000	230,000,000	<17,000
Atrazine	60	150	NA	NA	NA	71,000	<87,000
1,2-Diphenylhydrazine(as azobenzene)	4,200	NA	6,100,000	630,000	100,000,000	140,000	<87,000
Benzidine	1,000	1,000	NA	NA	46,000	1,000	<430,000
Benzo(a)anthracene	NA	NA	NA	NA	NA	20,000	<17,000
Benzo(a)pyrene	NA	NA	NA	NA	1,500,000	2,000	<17,000
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	20,000	<17,000
Benzo(g,h,i)perylene	NA	NA	NA	NA	800,000,000	2,500,000	<17,000
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	200,000	<17,000
bis(2-Chloroethyl)ether	100	100	8,300	3,800	9,400,000	13,000	<87,000
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	700,000,000	2,800,000	<87,000
Butyl benzyl phthalate	2,200,000	120,000	NA	NA	47,000,000,000	36,000,000	<87,000
Caprolactam	120,000	NA	NA	NA	670,000,000	53,000,000	<87,000
Carbazole	9,400	1,100	NA	NA	62,000,000	530,000	<87,000
4-Chloro-3-methyl phenol	5,800	280	NA	NA	NA	4,500,000	<87,000
2-Chlorophenol	900	360	430,000	960,000	1,200,000,000	1,400,000	<87,000
2-Chloronaphthalene	620,000	NA	NA	NA	NA	56,000,000	<87,000
Chrysene	NA	NA	NA	NA	NA	2,000,000	<17,000
Di-n-butyl phthalate	960,000	11,000	NA	NA	3,300,000,000	27,000,000	<87,000
Di-n-octylphthalate	100,000,000	NA	NA	NA	31,000,000,000	6,900,000	<87,000
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	2,000	<17,000
Dibenzofuran	NA	1,700	2,000,000	130,000	6,700,000	NA	<87,000
3,3'-Dichlorobenzidine	2,000	2,000	NA	NA	6,500,000	6,600	<87,000
2,4-Dichlorophenol	1,500	330	NA	NA	5,100,000,000	660,000	<87,000
Diethylphthalate	110,000	2,200	NA	NA	3,300,000,000	170,000,000	<87,000
Dimethyl phthalate	1,500,000	NA	NA	NA	3,300,000,000	1,000,000,000	<87,000
2,4-Dimethylphenol	7,400	7,600	NA	NA	4,700,000,000	11,000,000	<87,000
4,6-Dinitro-2-methylphenol	830	NA	NA	NA	130,000,000	79,000	<430,000
2,4-Dinitrotoluene	430	NA	NA	NA	16,000,000	48,000	<170,000
Fluoranthene	730,000	5,500	1,000,000,000	740,000,000	9,300,000,000	46,000,000	<17,000
Fluorene	390,000	5,300	580,000,000	130,000,000	9,300,000,000	27,000,000	<17,000
Hexachlorobenzene	1,800	350	41,000	17,000	6,800,000	8,900	<87,000
Hexachlorobutadiene	26,000	91	130,000	130,000	140,000,000	100,000	<87,000
Hexachlorocyclopentadiene	320,000	NA	30,000	50,000	13,000,000	2,300,000	<430,000
Hexachloroethane	430	1,800	40,000	550,000	230,000,000	230,000	<87,000
Indeno(1,2,3-c,d)pyrene	NA	NA	NA	NA	NA	20,000	<17,000
Isophorone	15,000	26,000	NA	NA	12,000,000,000	4,800,000	<87,000
2-Methylnaphthalene	57,000	4,200	2,700,000	1,500,000	670,000,000	8,100,000	***84,000***
2-Methylphenol	NA	NA	NA	NA	NA	NA	<87,000
3+4-Methylphenol	NA	NA	NA	NA	NA	NA	<170,000
Naphthalene	35,000	730	250,000	300,000	200,000,000	16,000,000	***29,000***
Nitrobenzene	330	3,600	91,000	54,000	47,000,000	100,000	<87,000
2-Nitrophenol	400	NA	NA	NA	NA	630,000	<170,000
N-Nitrosodi-n-propylamine	330	NA	NA	NA	1,600,000	1,200	<87,000
N-Nitrosodiphenylamine (Diphenylamine)	5,400	NA	NA	NA	2,200,000,000	1,700,000	<87,000
Pentachlorophenol	22	NA	NA	NA	100,000,000	90,000	<430,000
Phenanthrene	56,000	2,100	2,800,000	160,000	6,700,000	1,600,000	***11,000 J***
Phenol	88,000	9,000	NA	NA	40,000,000,000	40,000,000	<87,000
Pyrene	480,000	NA	1,000,000,000	650,000,000	6,700,000,000	29,000,000	<17,000
2,4,5-Trichlorophenol	39,000	NA	NA	NA	23,000,000,000	23,000,000	<87,000
2,4,6-Trichlorophenol	2,400	330	NA	NA	1,000,000,000	710,000	<87,000

TABLE 3
SUMMARY OF SOIL SAMPLE ANALYSIS - METALS
1850 House Street NE
Plainfield Township, Kent County, MI

Location Name	Statewide Default Background	Part 201 Generic Residential Soil Cleanup Criteria – Drinking Water Protection	Part 201 Generic Soil Cleanup Criteria – Groundwater Surface Water Interface Protection Criteria	Part 201 Generic Residential Soil Cleanup Criteria – Soil Volatilization to Indoor Air Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Infinite Source Volatile Soil Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Particulate Soil Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Direct Contact	1850 House	1850 SB-01	1850 SB-01	1850 SB-02	1850 SB-02	1850 SB-03	1850 SB-03	1850 SB-03	1850 SB-04	1850 SB-04	1850 SB-04
Sample Name								1850 House-WC-828	1850 SB-01 (0.5)	1850 SB-01 (4.2)	1850 SB-02 (0.5)	1850 SB-02 (5)	1850 SB-03 (0.1)	1850 SB-03 (1.5)	1850 SB-03 (4.8)	1850 SB-04 (0.1)	1850 SB-04 (1.5)	1850 SB-04 (4.6)
Sample Date								08/28/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
Parameter (ug/kg)																		
Aluminum	6,900,000	1,000	NA	NA	NA	NA	50,000,000	1,400,000 [B]										
Antimony	NA	4,300	94,000	NA	NA	13,000,000	180,000	1,000										
Arsenic	5,800	4,600	4,600	NA	NA	720,000	7,600	***7,100***	<17,000	1,000	<15,000	810	<25,000	***8,900***	<490	<30,000	<5,000	540
Barium	75,000	1,300,000	NA	NA	NA	330,000,000	37,000,000	25,000										
Beryllium	NA	51,000	NA	NA	NA	1,300,000	410,000	<130										
Boron	NA	10,000	140,000	NA	NA	NA	48,000,000	6,000 [BJ]										
Cadmium	1,200	6,000	NA	NA	NA	1,700,000	550,000	530										
Total Chromium	18,000	1,000,000,000	2,900,000,000	NA	NA	330,000,000	790,000,000	2,800,000	6,600,000	4,400	4,100,000	4,600	11,000,000	120,000	230,000	10,000,000	1,600,000	4,200
Hexavalent Chromium	NA	30,000	3,300	NA	NA	260,000	2,500,000		***27,000***	<1,000	***28,000***	<1,000	***30,000***	2,500	<1,000	***24,000***	2,500	310 [J]
Cobalt	6,800	800	2,000	NA	NA	13,000,000	2,600,000	<1,600										
Copper	32,000	5,800,000	NA	NA	NA	130,000,000	20,000,000	16,000										
Iron	12,000,000	6,000	NA	NA	NA	NA	160,000,000	1,600,000										
Lead	21,000	700,000	NA	NA	NA	100,000,000	400,000	79,000										
Magnesium	NA	8,000,000	NA	NA	NA	6,700,000,000	1,000,000,000	270,000										
Mercury	130	1,700	50	48,000	52,000	20,000,000	160,000	***260***	***300***	<81	***210***	<80	***1,200***	75 [J]	<75	***990***	71 [J]	<75
Molybdenum	NA	1,500	64,000	NA	NA	NA	2,600,000	<3,100										
Nickel	20,000	100,000	NA	NA	NA	13,000,000	40,000,000	3,600 [BJ]										
Selenium	410	4,000	400	NA	NA	130,000,000	2,600,000	<1,600										
Silver	1,000	4,500	100	NA	NA	6,700,000	2,500,000	260 [J]										
Sodium	NA	NA	NA	NA	NA	NA	NA	<630,000										
Thallium	NA	2,300	4,200	NA	NA	13,000,000	35,000	<160										
Vanadium	NA	72,000	430,000	NA	NA	NA	750,000	<160,000										
Zinc	47,000	2,400,000	NA	NA	NA	NA	170,000,000	71,000										
Titanium	NA	NA	NA	NA	NA	NA	NA	35,000										

TABLE 4
SUMMARY OF SOIL SAMPLE ANALYSIS - PFAS
1850 House Street NE
Plainfield Township, Kent County, MI

Location	Part 201 Generic Residential Soil Cleanup Criteria – Drinking Water Protection	Part 201 Generic Soil Cleanup Criteria – Groundwater Surface Water Interface Protection Criteria	1850 House
Sample Name			1850 House-WC-828
Sample Date			08/28/2018
Parameter (ug/kg)			
1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2 FTS)	NA	NA	<13
1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)	NA	NA	<13
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	NA	NA	<2.7
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	NA	NA	<2.7
Perfluoro-1-butanesulfonate (PFBS)	NA	NA	<6.7
Perfluoro-n-butanoic acid (PFBA)	NA	NA	<6.7
Perfluoro-n-decanoic acid (PFDA)	NA	NA	<6.7
Perfluoro-n-dodecanoic acid (PFDoA)	NA	NA	<6.7
Perfluoro-1-heptanesulfonate (PFHpS)	NA	NA	<6.7
Perfluoro-n-heptanoic acid (PFHpA)	NA	NA	<6.7
Perfluorohexanesulfonate (PFHxS)	NA	NA	<6.7
Perfluoro-n-hexanoic acid (PFHxA)	NA	NA	<6.7
Perfluoro-n-nonanoic acid (PFNA)	NA	NA	<6.7
Perfluoro-1-octanesulfonamide (PFOSA)	NA	NA	<6.7
Perfluorooctanesulfonate (PFOS)	NA	0.24	<6.7
Perfluoro-n-octanoic acid (PFOA)	NA	10,000	<6.7
Perfluoro-n-pentanoic acid (PFPeA)	NA	NA	<6.7
Perfluoro-n-tetradecanoic acid (PFTeDA)	NA	NA	<6.7
Perfluoro-n-tridecanoic acid (PFTrDA)	NA	NA	<6.7
Perfluoro-n-undecanoic acid (PFUdA)	NA	NA	<6.7
Perfluoro-1-decanesulfonate (PFDS)	NA	NA	<6.7
Perfluoro-1-nonanesulfonate (PFNS)	NA	NA	<6.7
Perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	<6.7

TABLES 1 TO 4 NOTES
1850 House Street NE
Plainfield Township, Kent County, MI

NOTES:
1. Concentration and criteria units are micro-grams per kilogram or parts per billion; "< RL" or "<PQL" indicates the compound was analyzed for but not detected above the method detection limit; RL = Reporting Limit; PQL=Pratical Quantitation Limit.

2. BOLD, Italic number indicates that compound was detected above one of the listed cleanup cirteria. For metals, BOLD, Italic number indicates that compound was detected at a concentration greater than both the statewide background, if available, and the most restrictive Part 201 cleanup criteria.

3. Michigan Part 201 soil cleanup criteria were based on MDEQ 's Table 2, Soil: Residential, Part 201 Generic Cleanup Citeria and Screening Levels, June 2018.

4. Part 201 Criteria for total chromium is not available, and the criteria for chromium (III) are used in the table.

TABLE 5
SUMMARY OF SOIL SAMPLE ANALYSIS - TCLP METALS
1850 House Street NE
Plainfield Township, Kent County, MI

Location	RCRA TCLP	1850 House
Sample Name		1850 House-WC-828
Sample Date		08/28/2018
Parameter (mg/L)		
Chromium	5.0	0.081 J

NOTES:
1. Concentration and criteria units are milligrams per Liter or parts per million; "< RL" or "<PQL" indicates the compound was analyzed for but not detected above the method detection limit; RL = Reporting Limit; PQL=Pratical Quantitation Limit.
2. BOLD, Italic number indicates that compound was detected above the listed cirteria.
3. RCRA TCLP criteria were based on USEPA 's Table 1, Maximum Concentration of Contaminants for the Toxicity Characteristic, 40 CFR Part 261.24, July 2012.

TABLE 6
SUMMARY OF SOIL SAMPLE ANALYSIS - METALS
1778 House Street NE
Plainfield Township, Kent County, MI

Location	Statewide Default Background	Part 201 Generic Residential Soil Cleanup Criteria – Drinking Water Protection	Part 201 Generic Groundwater Cleanup Criteria – Groundwater Surface Water Interface	Part 201 Generic Residential Soil Cleanup Criteria – Soil Volatilization to Indoor Air Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Infinite Source Volatile Soil Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Particulate Soil Inhalation	Part 201 Generic Residential Soil Cleanup Criteria – Direct Contact	1778 House	1778 House	1778 SB-01	1778 SB-01	1778 SB-02	1778 SB-02	1778 SB-03	1778 SB-04
Sample Name								1778 House-WC-828	1778 House-WC-828A	1778 SB-01 (0.25)	1778 SB-01 (1)	1778 SB-02 (0.25)	1778 SB-02 (1)	1778 SB-03 (1)	1778 SB-04 (1)
Sample Date								08/28/2018	08/28/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018	11/8/2018
Parameter (ug/kg)															
Aluminum	6,900,000	1,000	NA	NA	NA	NA	50,000,000	3,900,000 [B]	1,100,000 [B]						
Antimony	NA	4,300	94,000	NA	NA	13,000,000	180,000	<610	2,500						
Arsenic	5,800	4,600	4,600	NA	NA	720,000	7,600	1,500	2,400						
Barium	75,000	1,300,000	NA	NA	NA	330,000,000	37,000,000	9,000	6,600						
Beryllium	NA	51,000	NA	NA	NA	1,300,000	410,000	41 [J]	<190						
Boron	NA	10,000	140,000	NA	NA	NA	48,000,000	<16,000	8,700 [BJ]						
Cadmium	1,200	6,000	NA	NA	NA	1,700,000	550,000	<160	620						
Total Chromium	18,000	1,000,000,000	2,900,000,000	NA	NA	330,000,000	790,000,000	70,000	13,000,000	5,700,000	68,000	13,000,000	40,000	29,000	50,000
Hexavalent Chromium	NA	30,000	3,300	NA	NA	260,000	2,500,000			***23,000***	910 [J]	***37,000***	2,100	860 [J]	920 [J]
Cobalt	6,800	800	2,000	NA	NA	13,000,000	2,600,000	1,600	560 [J]						
Copper	32,000	5,800,000	NA	NA	NA	130,000,000	20,000,000	3,100	50,000						
Iron	12,000,000	6,000	NA	NA	NA	NA	160,000,000	6,100,000	5,900,000						
Lead	21,000	700,000	NA	NA	NA	100,000,000	400,000	21,000	380,000	230,000	11,000	***690,000***	11,000	6,600	6,100
Magnesium	NA	8,000,000	NA	NA	NA	6,700,000,000	1,000,000,000	740000	130,000 [J]						
Mercury	130	1,700	50	48,000	52,000	20,000,000	160,000	<90	<1,500						
Molybdenum	NA	1,500	64,000	NA	NA	NA	2,600,000	<3,000	1,300 [J]						
Nickel	20,000	100,000	NA	NA	NA	13,000,000	40,000,000	5,700 [B]	5,400 [BJ]						
Selenium	410	4,000	400	NA	NA	130,000,000	2,600,000	<1,600	***1,400 [J]***	<52,000	<1,100	<160,000	<1,400	<1,500	<1,200
Silver	1,000	4,500	100	NA	NA	6,700,000	2,500,000	<300	<470						
Sodium	NA	NA	NA	NA	NA	NA	NA	<120,000	<930,000						
Thallium	NA	2,300	4,200	NA	NA	13,000,000	35,000	83 [J]	<1,200						
Vanadium	NA	72,000	430,000	NA	NA	NA	750,000	13,000	<240,000						
Zinc	47,000	2,400,000	NA	NA	NA	NA	170,000,000	14,000	34,000						
Titanium	NA	NA	NA	NA	NA	NA	NA	170,000	37,000						

TABLE 7
SUMMARY OF SOIL SAMPLE ANALYSIS - PFAS
1778 House Street NE
Plainfield Township, Kent County, MI

Location	Part 201 Generic Residential Soil Cleanup Criteria – Drinking Water Protection	Part 201 Generic Soil Cleanup Criteria – Groundwater Surface Water Interface Protection Criteria	1778 House	1778 House
Sample Name			1778 House-WC-828	1778 House-WC-828A
Sample Date			08/28/2018	08/28/2018
Parameter (ug/kg)				
1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2 FTS)	NA	NA	<12	<18
1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)	NA	NA	<12	<18
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)	NA	NA	<2.4	<3.6
N-methylperfluoro-1-octanesulfonamide (MeFOSA)	NA	NA	<2.4	<3.6
Perfluoro-1-butanesulfonate (PFBS)	NA	NA	<6	<9.1
Perfluoro-n-butanoic acid (PFBA)	NA	NA	<6	<9.1
Perfluoro-n-decanoic acid (PFDA)	NA	NA	<6	<9.1
Perfluoro-n-dodecanoic acid (PFDoA)	NA	NA	<6	<9.1
Perfluoro-1-heptanesulfonate (PFHpS)	NA	NA	<6	<9.1
Perfluoro-n-heptanoic acid (PFHpA)	NA	NA	<6	<9.1
Perfluorohexanesulfonate (PFHxS)	NA	NA	<6	<9.1
Perfluoro-n-hexanoic acid (PFHxA)	NA	NA	<6	<9.1
Perfluoro-n-nonanoic acid (PFNA)	NA	NA	<6	<9.1
Perfluoro-1-octanesulfonamide (PFOSA)	NA	NA	<6	<9.1
Perfluorooctanesulfonate (PFOS)	NA	0.24	<6	<9.1
Perfluoro-n-octanoic acid (PFOA)	NA	10,000	<6	<9.1
Perfluoro-n-pentanoic acid (PFPeA)	NA	NA	<6	<9.1
Perfluoro-n-tetradecanoic acid (PFTeDA)	NA	NA	<6	<9.1
Perfluoro-n-tridecanoic acid (PFTrDA)	NA	NA	<6	<9.1
Perfluoro-n-undecanoic acid (PFUdA)	NA	NA	<6	<9.1
Perfluoro-1-decanesulfonate (PFDS)	NA	NA	<6	<9.1
Perfluoro-1-nonanesulfonate (PFNS)	NA	NA	<6	<9.1
Perfluoro-1-pentanesulfonate (PFPeS)	NA	NA	<6	<9.1

NOTES:

1. Concentration and criteria units are micro-grams per kilogram or parts per billion; "< RL" or "<PQL" indicates the compound was analyzed for but not detected above the method detection limit; RL = Reporting Limit; PQL=Pratical Quantitation Limit.

2. BOLD, Italic number indicates that compound was detected above one of the listed cleanup cirteria. For metals, BOLD, Italic number indicates that compound was detected at a concentration greater than both the statewide background, if available, and the most restrictive Part 201 cleanup criteria.

3. Michigan Part 201 soil cleanup criteria were based on MDEQ 's Table 2, Soil: Residential, Part 201 Generic Cleanup Citeria and Screening Levels, June 2018.

4. Part 201 Criteria for total chromium is not available, and the criteria for chromium (III) are used in the table.

TABLE 8
SUMMARY OF SOIL SAMPLE ANALYSIS - TCLP METALS
1778 House Street NE
Plainfield Township, Kent County, MI

Location	RCRA TCLP	1778 House
Sample Name		1778 House-WC-828A
Sample Date		08/28/2018
Parameter (mg/L)		
Chromium	5.00	1.3
Lead	5.00	0.14

NOTES:
1. Concentration and criteria units are milligrams per Liter or parts per million; "< RL" or "<PQL" indicates the compound was analyzed for but not detected above the method detection limit; RL = Reporting Limit; PQL=Pratical Quantitation Limit.
2. BOLD, Italic number indicates that compound was detected above the listed cirteria.
3. RCRA TCLP criteria were based on USEPA 's Table 1, Maximum Concentration of Contaminants for the Toxicity Characteristic, 40 CFR Part 261.24, July 2012.