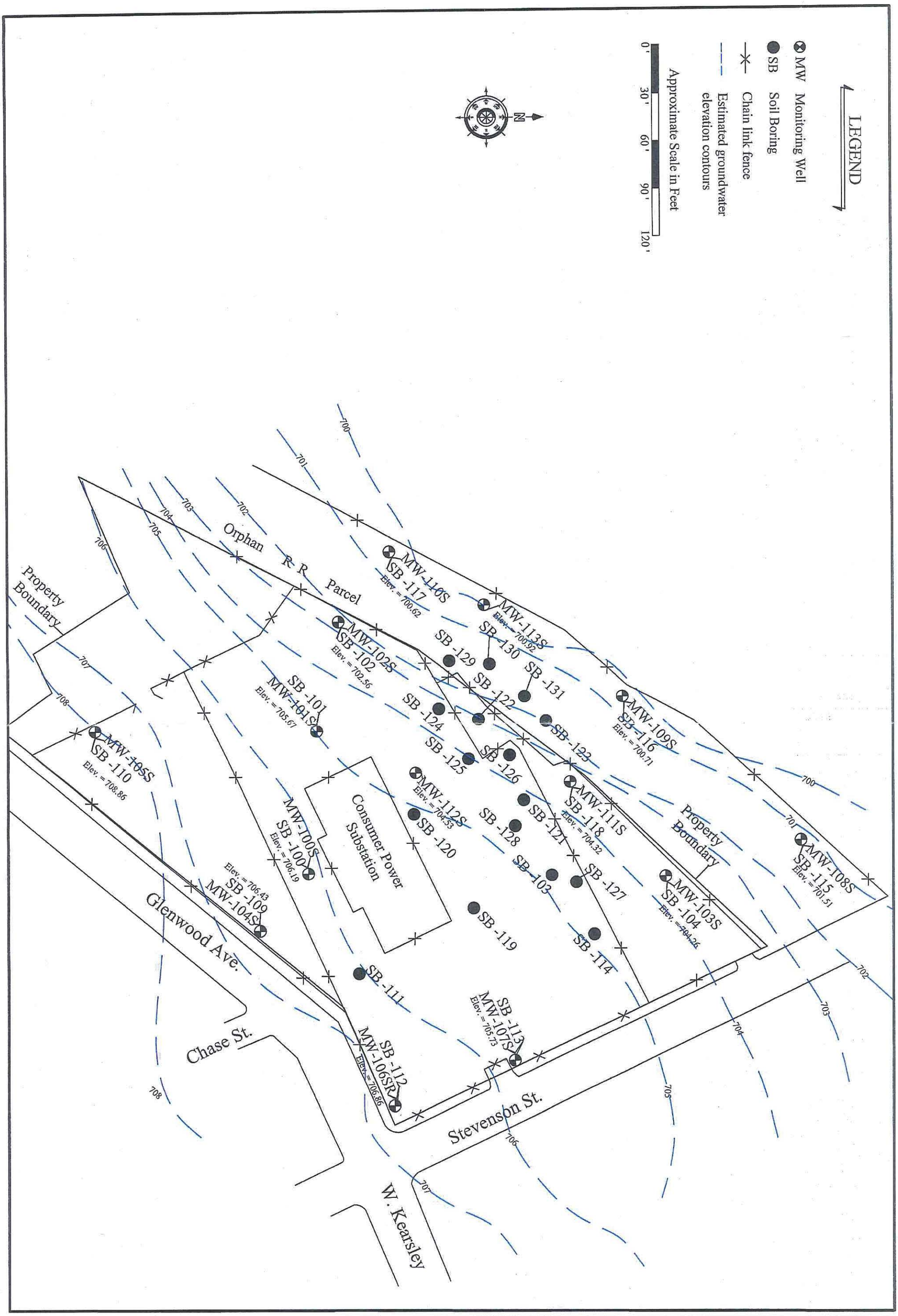
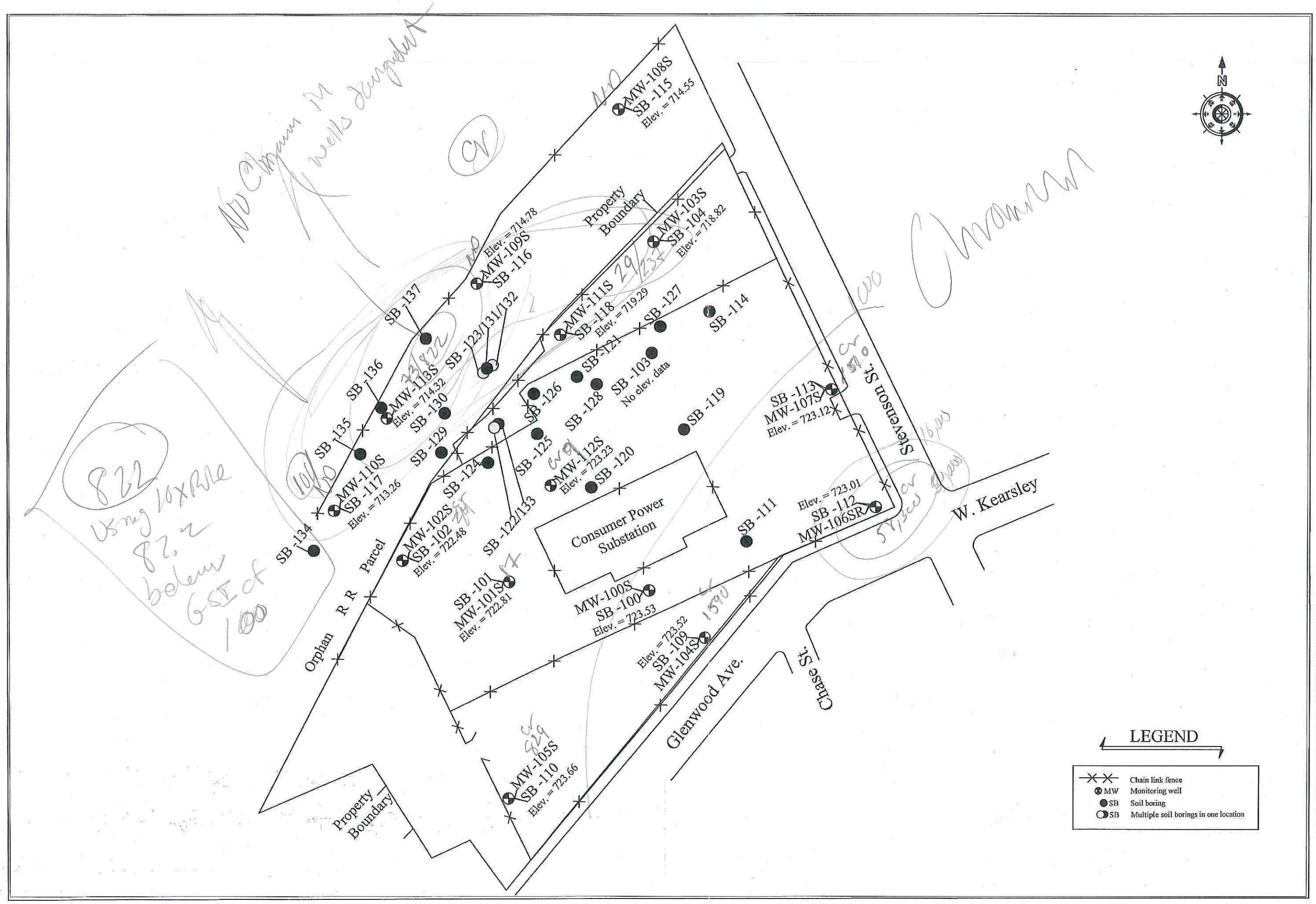


Applied EcoSystems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526	***Groundwater Contour Map*** ***May 2015*** Racer Flint West - 12990 Flint West Industrial Land, Flint, MI	DATE: 2015	SCALE: As Shown
		PROJECT: 11-4317-102	FIGURE: 3



DATE:	SCALE:
2015	As Shown
PROJECT:	FIGURE:
11-4317-102	2

Soil Boring and Well Location Map

Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

Applied EcoSystems, Inc.
Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

Criteria:
40 CFR Hazardous Waste Criteria

Legend

- LNAPL Sampling Locations
- LNAPL present, insufficient volume to sample
- Former USTs
- Potential UST Remaining On-Site
- Former Hazardous Substance Storage Areas
- Surrounding Parcels
- Subject Parcels

N

0 500 Feet

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0001-1206-017
DCN: 1887-2A-BKFZ

Prepared By:
WESTON SOLUTIONS, INC.
360 E. Maple Road
Suite R
Troy, MI 48083

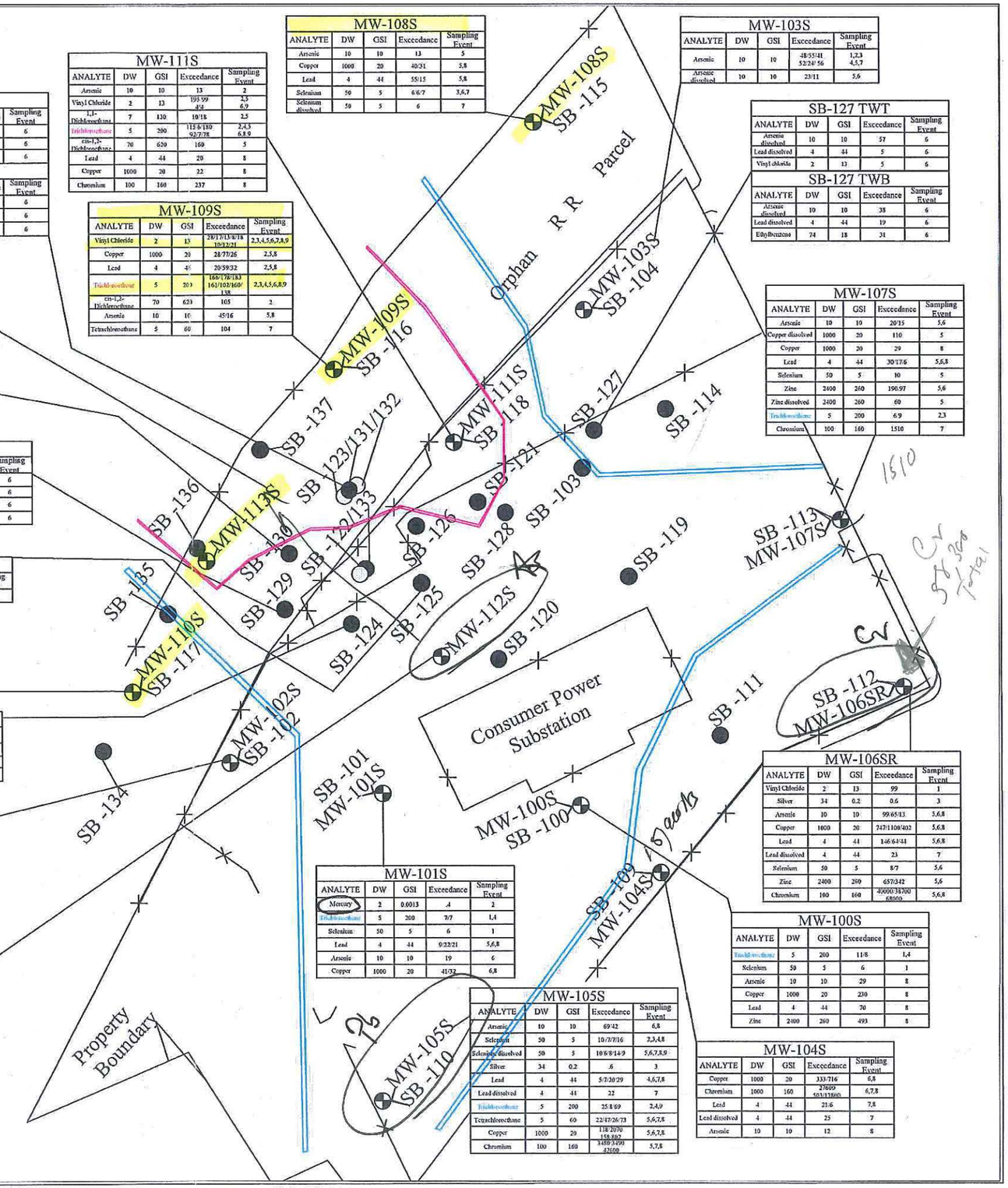
Figure 7
LNAPL Sampling Results
Exceeding 40CFR Hazardous Waste Criteria
Chevy in the Hole
Flint, Genesee County, Michigan

FILE: D:\Chevy_Hole\mxd\SAR2014\F7_LNPAL_Exceeds.mxd 1/17/2014 4:26:14 PM wojdakon

LEGEND

- Chain link fence
- MW Monitoring well
- SB Soil boring
- SB Multiple soil borings in one location
- Trichloroethene - GSI exceedance estimated boundary based on all groundwater sampling events
- Trichloroethene - DW exceedance estimated boundary based on all groundwater sampling events

Ground Water Sampling Events	
April 2012	1
December 2012	2
April 2013	3
August 2013	4
December 2013	5
April 2014	6
July 2014	7
December 2014	8
May 2015	9



MW-113S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Zinc	2400	260	7030/504	5,8
Zinc dissolved	2400	260	502	5
Chromium	100	160	479/2920 132/120/372	4,5 6,7,8
Chromium dissolved	100	160	128/152	6,7
Trichloroethene	5	200	21/62 69/61/36	4,5 7,8,9
Lead	4	44	3310/5/289	5,7,8
Lead dissolved	4	44	5	7
Copper	1000	20	4160/300	5,8
Arsenic	10	10	40	8

SB-131 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	28	6
Lead dissolved	4	44	16	6
Trichloroethene	5	200	81	6

SB-131 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	144	6
Lead dissolved	4	44	14	6
Trichloroethene	5	200	78	6

MW-111S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	13	2
Vinyl Chloride	2	13	193/59 4/4	2,3 6,9
1,1-Dichloroethane	7	120	10/18	2,5
Trichloroethene	5	200	113/5/180 92/7/78	2,4,5 6,8,9
cis-1,2-Dichloroethene	70	620	160	5
Lead	4	44	20	8
Copper	1000	20	22	8
Chromium	100	160	237	8

MW-108S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	13	5
Copper	1000	20	40/31	5,8
Lead	4	44	55/15	5,8
Selenium	50	5	6/6/7	3,6,7
Selenium dissolved	50	5	6	7

MW-103S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	48/55/41 52/24/56	1,2,3 4,5,7
Arsenic dissolved	10	10	23/11	5,6

SB-127 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	57	6
Lead dissolved	4	44	5	6
Vinyl chloride	2	13	5	6

SB-127 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	38	6
Lead dissolved	4	44	19	6
Ethylbenzene	74	18	31	6

MW-109S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	28/17/13/18 10/13/21	2,3,4,5,6,7,8,9
Copper	1000	20	28/77/26	2,5,8
Lead	4	44	20/59/32	2,5,8
Trichloroethene	5	200	160/178/183 161/102/160/ 138	2,3,4,5,6,8,9
cis-1,2-Dichloroethene	70	620	105	2
Arsenic	10	10	45/16	5,8
Tetrachloroethene	5	60	104	7

MW-107S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	20/15	5,6
Copper dissolved	1000	20	110	5
Copper	1000	20	29	8
Lead	4	44	30/17/6	5,6,8
Selenium	50	5	10	5
Zinc	2400	260	190.97	5,6
Zinc dissolved	2400	260	60	5
Trichloroethene	5	200	6.9	2,3
Chromium	100	160	1510	7

MW-130 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	140	6
Lead dissolved	4	44	208	6
Zinc dissolved	2400	260	326	6

MW-130 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	94	6
Lead dissolved	4	44	31	6

SB-129 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	24	6
Lead dissolved	4	44	11	6
Trichloroethene	5	200	9	6

SB-129 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	22	6
Lead dissolved	4	44	23	6
Zinc dissolved	2400	260	323	6
Trichloroethene	5	200	8	6

SB-125 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	30	6
Zinc dissolved	2400	260	400	6

SB-125 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	17	6

MW-110S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	11/41/20/35	4,5,6,8
Arsenic dissolved	10	10	21/17	6,8
Copper	1000	20	49/62 278/959/736	2,4 5,6,8
Copper dissolved	1000	20	28	6
Lead	4	44	16/19/61 28/17/249	2,4,5 6,7,8
Lead dissolved	4	44	24/15	6,7
Chromium	100	160	101	5
Zinc	2400	260	536	8

SB-124 TWT				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	21	6
Lead dissolved	4	44	29	6
Selenium dissolved	50	5	12	6
Zinc dissolved	2400	260	311	6

SB-124 TWB				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	42	6
Lead dissolved	4	44	47	6
Selenium dissolved	50	5	12	6

MW-102S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Cadmium	5	4.5	65	1
Selenium	50	5	6	1
Selenium dissolved	50	5	6	7
Arsenic	10	10	19/12	5,8
Copper	1000	20	25/22	5,8
Lead	4	44	13/14	5,8

MW-112S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	8/3/6/21	4,5,6,7
Arsenic	10	10	93/274/169 121/400	4,5,6,7,8
Arsenic dissolved	10	10	19/19/20/16	6,7,8,9
Lead	4	28	11/257/354	4,5,8
Zinc	2400	260	929.920	5,8
Copper	1000	20	418/502	5,8
Copper dissolved	1000	20	300	5
Chromium	100	160	256/140	5,8
Trichloroethene	5	200	24	7
Vinyl Chloride	2	13	3,4	8,9

MW-101S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Mercury	2	0.0013	.4	2
Trichloroethene	5	200	7/7	1,4
Selenium	50	5	6	1
Lead	4	44	9/22/21	5,6,8
Arsenic	10	10	19	6
Copper	1000	20	41/32	6,8

MW-105S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	69/42	6,8
Selenium	50	5	10/7/7/16	2,3,4,8
Selenium dissolved	50	5	10/6/8/14/9	5,6,7,8,9
Silver	34	0.2	.6	3
Lead	4	44	5/7/20/29	4,6,7,8
Lead dissolved	4	44	22	7
Trichloroethene	5	200	25/8/69	2,4,9
Tetrachloroethene	5	60	22/47/26/73	5,6,7,8
Copper	1000	20	118/2070 158/102	5,6,7,8
Chromium	100	160	3450/3490 42600	5,7,8

MW-106SR				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	99	1
Silver	34	0.2	0.6	3
Arsenic	10	10	99/65/13	5,6,8
Copper	1000	20	747/1100/402	5,6,8
Lead	4	44	146/64/44	5,6,8
Lead dissolved	4	44	23	7
Selenium	50	5	8/7	5,6
Zinc	2400	260	657/342	5,6
Chromium	100	160	40000/38700 68000	5,6,8

MW-100S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Trichloroethene	5	200	11/8	1,4
Selenium	50	5	6	1
Arsenic	10	10	29	8
Copper	1000	20	230	8
Lead	4	44	70	8
Zinc	2400	260	493	8

MW-104S				
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper	1000	20	333/716	6,8
Chromium	1000	160	27600 50/17800	6,7,8
Lead	4	44	21/6	7,8
Lead dissolved	4	44	25	7
Arsenic	10	10	12	8

DATE: 2012 / 2015	SCALE: As Shown
PROJECT: 11-4317-102	FIGURE: 4

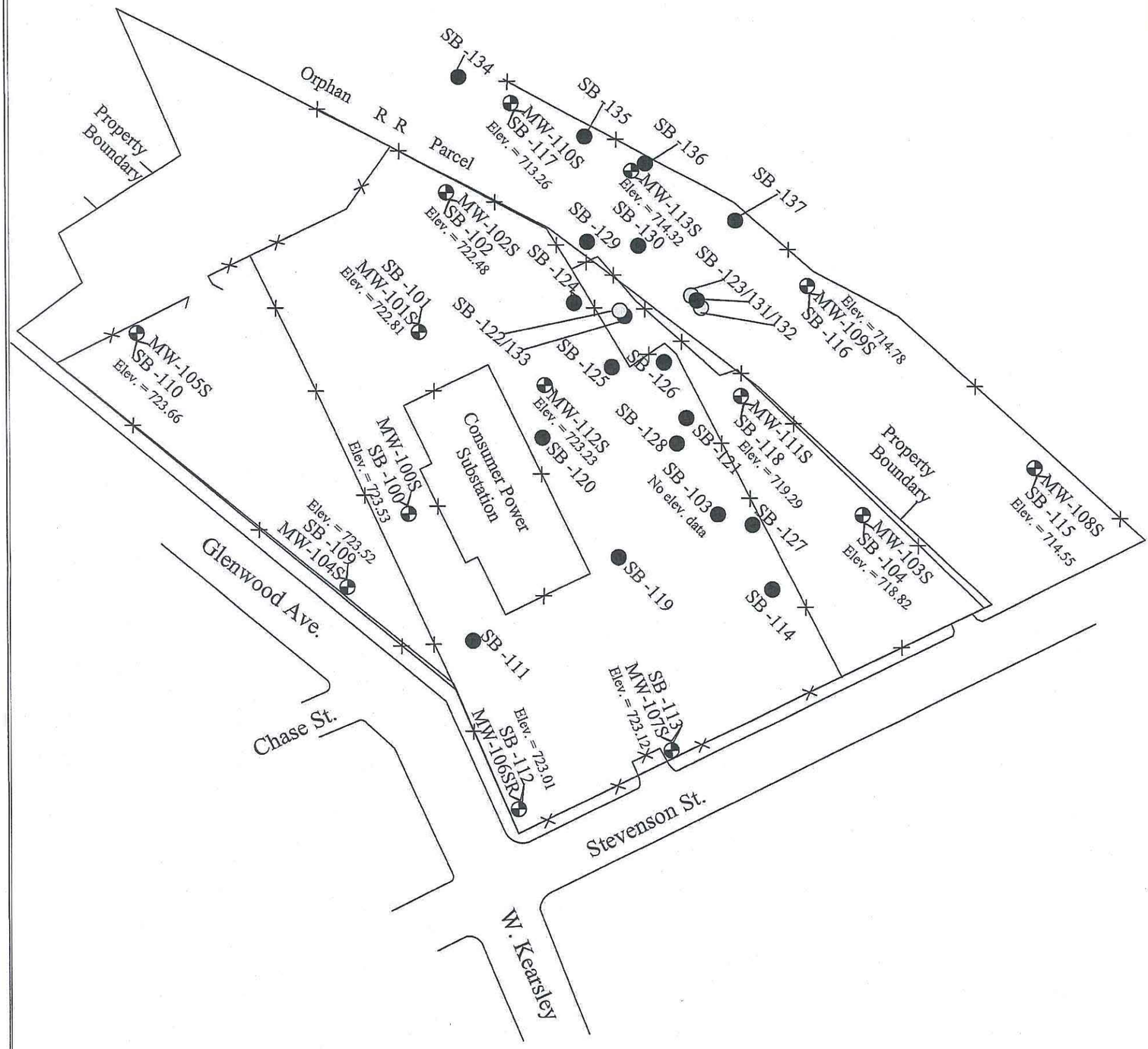
Summary of Drinking Water and Ground to Surface water Interface Exceedences in Groundwater 2012 / 2015

Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

Applied EcoSystems, Inc.
Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

ATTACHMENTS

Applied *Eco*Systems, Inc.
Environmental Management, Consulting & Field Services



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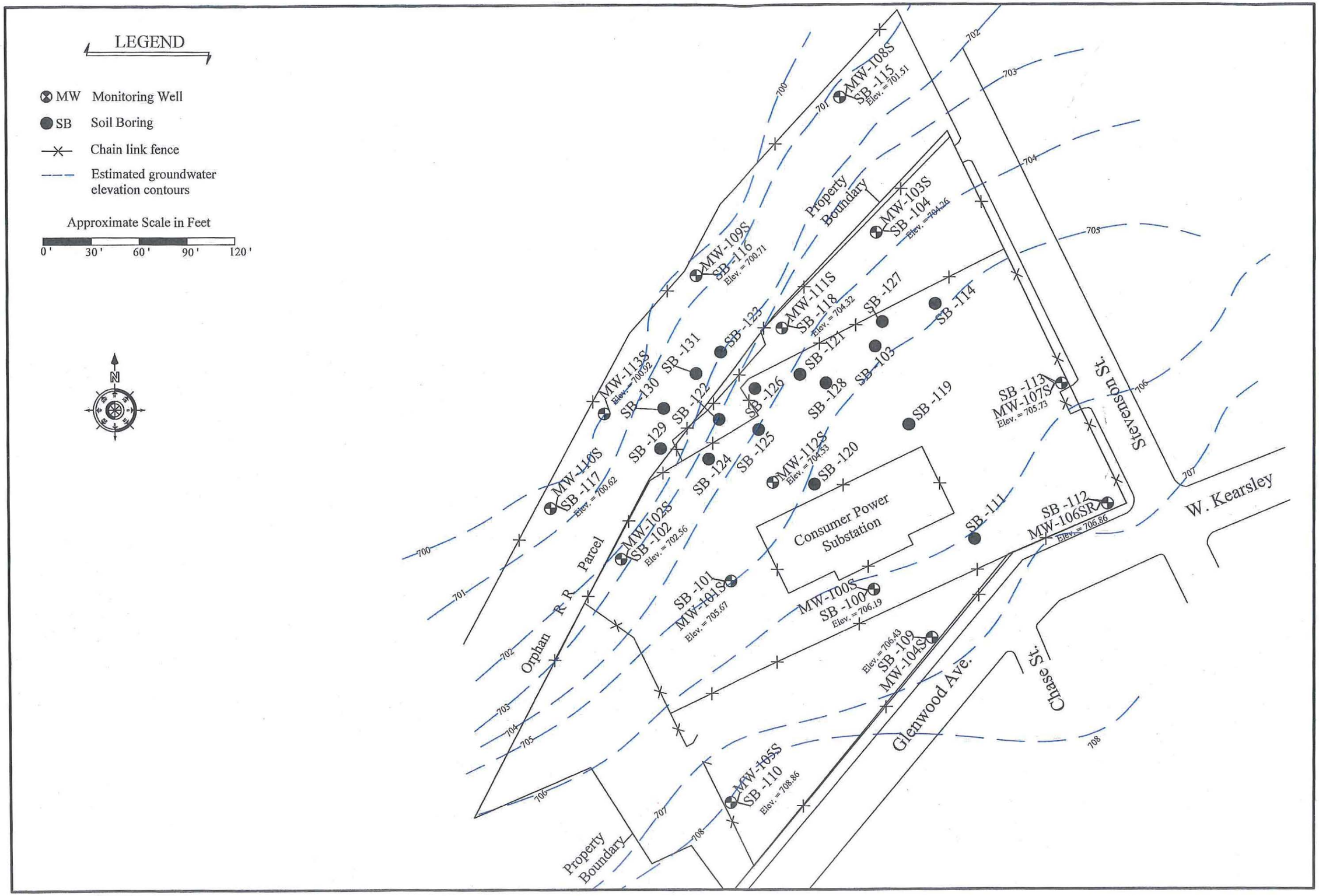
Phone: 810.715.2525; Fax: 810.715.2526

Soil Boring and Well Location Map

Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

DATE:	SCALE:
2015	As Shown
PROJECT:	FIGURE:
11-4317-102	2



DATE:	2015
SCALE:	As Shown
PROJECT:	11-4317-102
FIGURE:	3

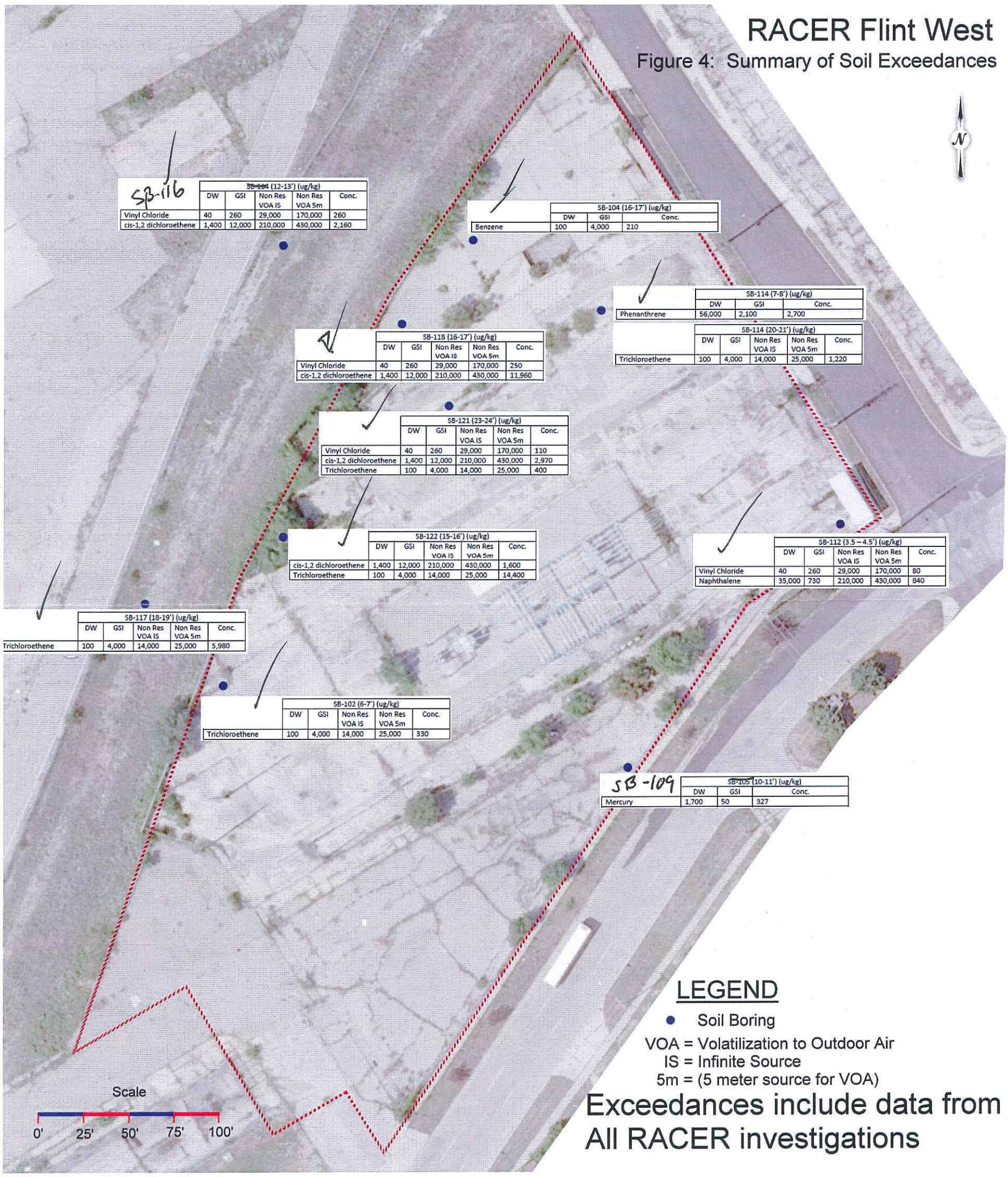
Groundwater Contour Map
May 2015
Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

Applied EcoSystems, Inc.
Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

Add Figure to 725

RACER Flint West

Figure 4: Summary of Soil Exceedances



SB-116

~~SB-101~~ (12-13') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Vinyl Chloride	40	260	29,000	170,000	260
cis-1,2 dichloroethene	1,400	12,000	210,000	430,000	2,160

SB-104 (16-17') (ug/kg)	DW	GSI	Conc.
Benzene	100	4,000	210

SB-114 (7-8') (ug/kg)	DW	GSI	Conc.
Phenanthrene	56,000	2,100	2,700

SB-114 (20-21') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Trichloroethene	100	4,000	14,000	25,000	1,220

SB-118 (16-17') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Vinyl Chloride	40	260	29,000	170,000	250
cis-1,2 dichloroethene	1,400	12,000	210,000	430,000	11,960

SB-121 (23-24') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Vinyl Chloride	40	260	29,000	170,000	110
cis-1,2 dichloroethene	1,400	12,000	210,000	430,000	2,970
Trichloroethene	100	4,000	14,000	25,000	400

SB-122 (15-16') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
cis-1,2 dichloroethene	1,400	12,000	210,000	430,000	1,600
Trichloroethene	100	4,000	14,000	25,000	14,400

SB-112 (3.5 – 4.5') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Vinyl Chloride	40	260	29,000	170,000	80
Naphthalene	35,000	730	210,000	430,000	840

SB-117 (18-19') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Trichloroethene	100	4,000	14,000	25,000	5,980

SB-102 (6-7') (ug/kg)	DW	GSI	Non Res VOA IS	Non Res VOA 5m	Conc.
Trichloroethene	100	4,000	14,000	25,000	330

SB-109

~~SB-105~~ (10-11') (ug/kg)	DW	GSI	Conc.
Mercury	1,700	50	327

LEGEND

- Soil Boring

VOA = Volatilization to Outdoor Air
IS = Infinite Source
5m = (5 meter source for VOA)

Exceedances include data from All RACER investigations

CITH-WMW-2 08/13/13

Depth	Parameter	Result	Units	[Criteria]
8-9	ARSENIC	7.7	mg/kg	[1,2]
8-9	COBALT	3.6	mg/kg	[2]
8-9	LEAD	8.2	mg/kg	[2]
8-9	SILVER	0.15	mg/kg	[2]

CITH-WMW-5 08/13/13

Depth	Parameter	Result	Units	[Criteria]
6-7	ARSENIC	13	mg/kg	[1,2]
6-7	COBALT	4.8	mg/kg	[2]
6-7	IRON	15000	mg/kg	[1]
6-7	LEAD	4.8	mg/kg	[2]

CITH-WMW-1 08/13/13

Depth	Parameter	Result	Units	[Criteria]
7-8	COBALT	2.5	mg/kg	[2]
7-8	LEAD	5.1	mg/kg	[2]

CITH-WMW-12 08/09/13

Depth	Parameter	Result	Units	[Criteria]
21-22	ARSENIC	5.4	mg/kg	[2]
21-22	ARSENIC	13	mg/kg	[1,2]
21-22	COBALT	3.9	mg/kg	[2]
21-22	COBALT	5.7	mg/kg	[2]
21-22	LEAD	6.5	mg/kg	[2]
21-22	LEAD	10	mg/kg	[2]
21-22	SILVER	0.17	mg/kg	[2]
21-22	SILVER	0.16	mg/kg	[2]
21-22	ZINC	64	mg/kg	[1]
21-22	ZINC	64	mg/kg	[1]

CITH-WMW-11 08/09/13

Depth	Parameter	Result	Units	[Criteria]
14-15	ARSENIC	8.9	mg/kg	[1,2]
14-15	BENZO(A)PYRENE	9100	ug/kg	[3]
14-15	CADMIUM	2.2	mg/kg	[1]
14-15	COBALT	3.7	mg/kg	[2]
14-15	COPPER	44	mg/kg	[1]
14-15	FLUORANTHENE	15000	ug/kg	[2]
14-15	IRON	15000	mg/kg	[1]
14-15	LEAD	200	mg/kg	[1,2]
14-15	MERCURY	0.8	mg/kg	[1,2]
14-15	NAPHTHALENE	1500	ug/kg	[2]
14-15	PHENANTHRENE	13000	ug/kg	[2]
14-15	SELENIUM	0.53	mg/kg	[1,2]
14-15	SILVER	1.1	mg/kg	[1,2]
14-15	ZINC	660	mg/kg	[1,2]

CITH-WMW-4 08/13/13

Depth	Parameter	Result	Units	[Criteria]
13-14	ARSENIC	5.3	mg/kg	[2]
13-14	COBALT	4.1	mg/kg	[2]
13-14	LEAD	4.5	mg/kg	[2]
13-14	ZINC	63	mg/kg	[1]

CITH-WMW-7 08/14/13

Depth	Parameter	Result	Units	[Criteria]
2-3	2-METHYLNAPHTHALENE	34000	ug/kg	[2]
2-3	2-METHYLNAPHTHALENE	33000	ug/kg	[2]
2-3	ARSENIC	38	mg/kg	[1,2,3]
2-3	ARSENIC	46	mg/kg	[1,2,3]
2-3	CHROMIUM, TOTAL	1900	mg/kg	[2]
2-3	CHROMIUM, TOTAL	2000	mg/kg	[2]
2-3	COBALT	36	mg/kg	[1,2]
2-3	COBALT	35	mg/kg	[1,2]
2-3	COPPER	1200	mg/kg	[1,2]
2-3	COPPER	1500	mg/kg	[1,2]
2-3	FLUORANTHENE	16000	ug/kg	[2]
2-3	FLUORANTHENE	17000	ug/kg	[2]
2-3	FLUORENE	6000	ug/kg	[2]
2-3	FLUORENE	5800	ug/kg	[2]
2-3	IRON	570000	mg/kg	[1]
2-3	IRON	660000	mg/kg	[1,3]
2-3	LEAD	200	mg/kg	[1,2]
2-3	LEAD	270	mg/kg	[1,2]
2-3	MANGANESE	2600	mg/kg	[1,2]
2-3	MANGANESE	3000	mg/kg	[1,2]
2-3	MERCURY	1.9	mg/kg	[1,2]
2-3	MERCURY	2.6	mg/kg	[1,2]
2-3	NAPHTHALENE	14000	ug/kg	[2]
2-3	NAPHTHALENE	14000	ug/kg	[2]
2-3	NICKEL	670	mg/kg	[1]
2-3	NICKEL	710	mg/kg	[1]
2-3	PHENANTHRENE	33000	ug/kg	[2]
2-3	PHENANTHRENE	31000	ug/kg	[2]
2-3	SILVER	0.18	mg/kg	[2]
2-3	SILVER	0.25	mg/kg	[2]
2-3	ZINC	340	mg/kg	[1,2]
2-3	ZINC	290	mg/kg	[1]

CITH-WMW-13 08/09/13

Depth	Parameter	Result	Units	[Criteria]
4-5	ARSENIC	10	mg/kg	[1,2]
4-5	BARIUM	110	mg/kg	[1]
4-5	COBALT	6	mg/kg	[2]
4-5	COPPER	33	mg/kg	[1]
4-5	IRON	16000	mg/kg	[1]
4-5	LEAD	110	mg/kg	[1,2]
4-5	MERCURY	1.1	mg/kg	[1,2]
4-5	ZINC	100	mg/kg	[1]

CITH-WMW-6 08/15/13

Depth	Parameter	Result	Units	[Criteria]
12-13	COBALT	2.8	mg/kg	[2]
12-13	LEAD	10	mg/kg	[2]

CITH-WMW-16 08/15/13

Depth	Parameter	Result	Units	[Criteria]
9-10	ARSENIC	390	mg/kg	[1,2,3]
9-10	COBALT	5.5	mg/kg	[2]
9-10	IRON	17000	mg/kg	[1]

CITH-WMW-15 08/08/13

Depth	Parameter	Result	Units	[Criteria]
12-13	ARSENIC	5.7	mg/kg	[2]
12-13	COBALT	4.7	mg/kg	[2]
12-13	LEAD	5.3	mg/kg	[2]
12-13	MANGANESE	530	mg/kg	[1]

CITH-WMW-8 08/15/13

Depth	Parameter	Result	Units	[Criteria]
10-11	ARSENIC	6.9	mg/kg	[1,2]
10-11	COBALT	5	mg/kg	[2]
10-11	COPPER	69	mg/kg	[1]
10-11	IRON	28000	mg/kg	[1]
10-11	LEAD	52	mg/kg	[1,2]
10-11	MERCURY	0.055	mg/kg	[2]
10-11	ZINC	130	mg/kg	[1]

CITH-WMW-17 08/08/13

Depth	Parameter	Result	Units	[Criteria]
10-11	ARSENIC	180	mg/kg	[1,2,3]
10-11	IRON	24000	mg/kg	[1]
10-11	LEAD	110	mg/kg	[1,2]
10-11	MERCURY	0.2	mg/kg	[1,2]
10-11	SELENIUM	4.1	mg/kg	[1,2]
10-11	SILVER	0.23	mg/kg	[2]

CITH-WMW-9 08/14/13

Depth	Parameter	Result	Units	[Criteria]
24-25	ARSENIC	5	mg/kg	[2]
24-25	COBALT	3.8	mg/kg	[2]
24-25	LEAD	4.5	mg/kg	[2]

CITH-WMW-18 08/08/13

Depth	Parameter	Result	Units	[Criteria]
4-5	ALUMINUM	9900	mg/kg	[1]
4-5	ARSENIC	24	mg/kg	[1,2]
4-5	BARIUM	150	mg/kg	[1]
4-5	BENZO(A)PYRENE	9300	ug/kg	[3]
4-5	COBALT	16	mg/kg	[1,2]
4-5	COPPER	87	mg/kg	[1]
4-5	IRON	27000	mg/kg	[1]
4-5	LEAD	300	mg/kg	[1,2]
4-5	MERCURY	0.21	mg/kg	[1,2]
4-5	NICKEL	53	mg/kg	[1]
4-5	PHENANTHRENE	2500	ug/kg	[2]
4-5	SELENIUM	0.86	mg/kg	[1,2]
4-5	SILVER	0.23	mg/kg	[2]
4-5	ZINC	80	mg/kg	[1]

CITH-WMW-10 08/14/13

Depth	Parameter	Result	Units	[Criteria]
17-18	COBALT	3.7	mg/kg	[2]

CITH-WMW-14 08/12/13

Depth	Parameter	Result	Units	[Criteria]
13-14	COBALT	4	mg/kg	[2]
13-14	LEAD	4.6	mg/kg	[2]

CITH-WMW-21 08/07/13

Depth	Parameter	Result	Units	[Criteria]
10-11	ALUMINUM	7500	mg/kg	[1]
10-11	BARIUM	530	mg/kg	[1]
10-11	COBALT	3.2	mg/kg	[2]
10-11	LEAD	4.6	mg/kg	[2]

CITH-WMW-27 08/19/13

Depth	Parameter	Result	Units	[Criteria]
15-16	COBALT	3.7	mg/kg	[2]

CITH-WMW-20 08/12/13

Depth	Parameter	Result	Units	[Criteria]
6-7	2-METHYLNAPHTHALENE	5200	ug/kg	[2]
6-7	ARSENIC	5.3	mg/kg	[2]
6-7	COBALT	3.2	mg/kg	[2]
6-7	ETHYLBENZENE	7900	ug/kg	[2]
6-7	LEAD	9.6	mg/kg	[2]
6-7	NAPHTHALENE	3400	ug/kg	[2]

CITH-WMW-23 08/05/13

Depth	Parameter	Result	Units	[Criteria]
14-15	2-METHYLNAPHTHALENE	7900	ug/kg	[2]
14-15	COBALT	3.2	mg/kg	[2]
14-15	LEAD	4.3	mg/kg	[2]
14-15	PHENANTHRENE	3200	ug/kg	[2]

CITH-WMW-24 08/06/13

Depth	Parameter	Result	Units	[Criteria]
7-8	ALUMINUM	11000	mg/kg	[1]
7-8	ALUMINUM	9400	mg/kg	[1]
7-8	ARSENIC	11	mg/kg	[1,2]
7-8	ARSENIC	9.8	mg/kg	[1,2]
7-8	COBALT	8.5	mg/kg	[1,2]
7-8	COBALT	7.6	mg/kg	[1,2]
7-8	IRON	18000	mg/kg	[1]
7-8	IRON	16000	mg/kg	[1]
7-8	LEAD	8.8	mg/kg	[2]
7-8	LEAD	7.5	mg/kg	[2]
7-8	NICKEL	22	mg/kg	[1]

CITH-WMW-28 08/16/13

Depth	Parameter	Result	Units	[Criteria]
23-24	COBALT	3.1	mg/kg	[2]

CITH-WMW-22 08/12/13

Depth	Parameter	Result	Units	[Criteria]
7-8	ARSENIC	8.4	mg/kg	[1,2]
7-8	COBALT	2.5	mg/kg	[2]

CITH-WMW-26 08/06/13

Depth	Parameter	Result	Units	[Criteria]
24-25	ARSENIC	6.2	mg/kg	[1,2]
24-25	COBALT	4.3	mg/kg	[2]
24-25	IRON	15000	mg/kg	[1]
24-25	LEAD	5.6	mg/kg	[2]

CITH-WMW-19 08/08/13

Depth	Parameter	Result	Units	[Criteria]
9-10	COBALT	2.9	mg/kg	[2]
9-10	ZINC	98	mg/kg	[1]

CITH-WMW-25 08/07/13

Depth	Parameter	Result	Units	[Criteria]
14-15	COBALT	3	mg/kg	[2]
14-15	LEAD	6.5	mg/kg	[2]
14-15	SILVER	1.2	mg/kg	[1,2]

CITH-WMW-30 08/16/13

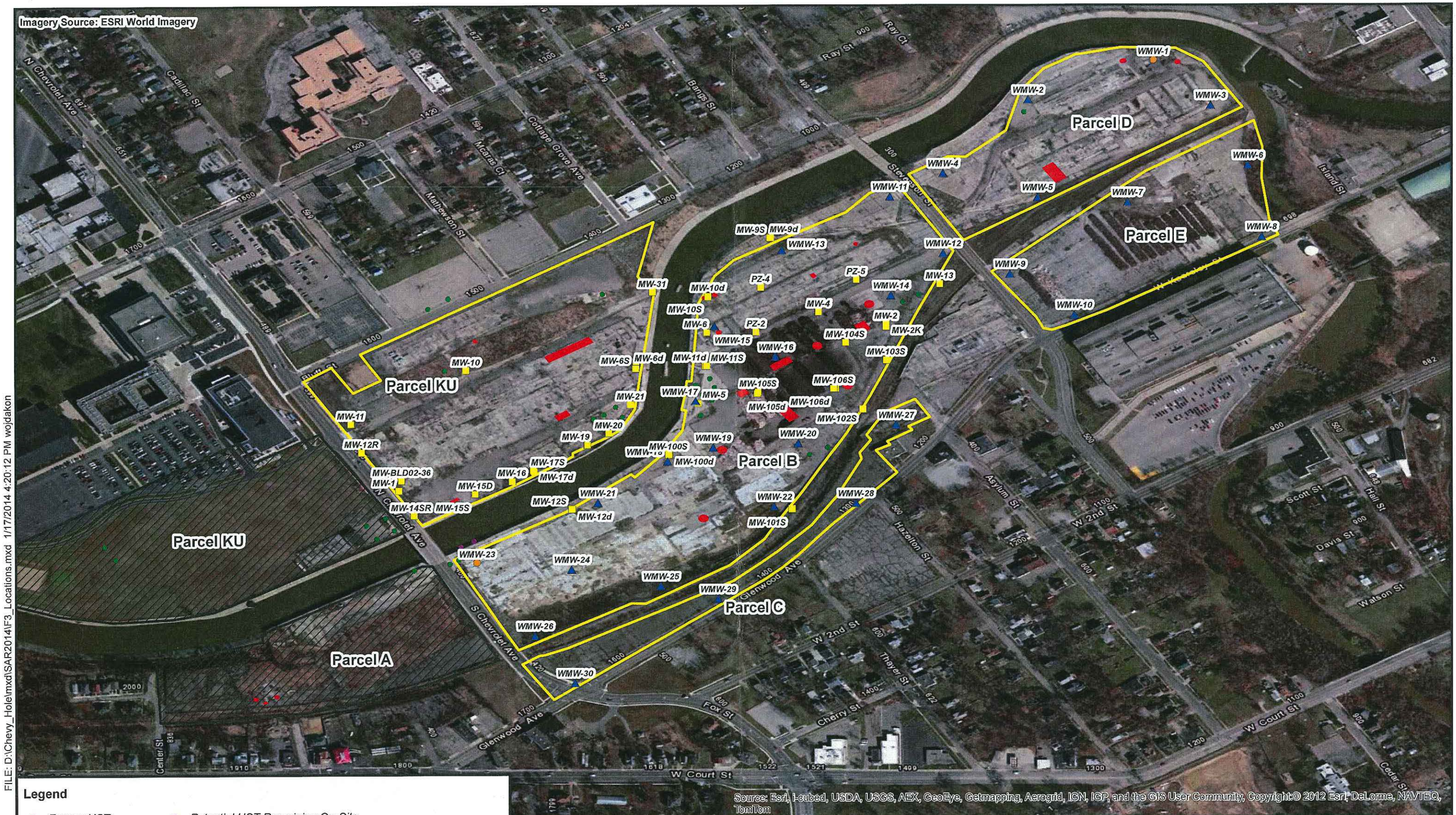
Depth	Parameter	Result	Units	[Criteria]
8-9	ARSENIC	68	mg/kg	[1,2,3]
8-9	COBALT	15	mg/kg	[1,2]
8-9	IRON	62000	mg/kg	[1]
8-9	LEAD	56	mg/kg	[1,2]
8-9	MANGANESE	470	mg/kg	[1]
8-9	MERCURY	0.065	mg/kg	[2]
8-9	NICKEL	21	mg/kg	[1]
8-9	ZINC	100	mg/kg	[1]

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0001-1206-017
DCN: 1887-2A-BKFZ

Prepared By:
WESTON SOLUTIONS, INC.
360 E. Maple Road
Suite R
Troy, MI 48083

Figure 4
Soil Sampling Results Exceeding MDEQ Screening Criteria
Chevy in the Hole
Flint, Genesee County, Michigan

FILE: D:\Chevy_Hole\mxd\SAR20140F4_Soil_Exceeds.mxd 1/17/2014 4:21:23 PM wojdakon



FILE: D:\Chevy_Hole\mxd\SAR2014\F3_Locations.mxd 1/17/2014 4:20:12 PM wojdakon

Legend

- Former USTs
- *Potential UST Remaining On-Site*

Sampling Locations

- Groundwater
- Soil & Groundwater
- Soil & LNAPL
- Former Hazardous Substance Storage Areas
- Surrounding Parcels
- Subject Parcels

0 400 Feet

N

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0001-1206-017
DCN: 1887-2A-BKFZ

Prepared By:
WESTON SOLUTIONS, INC.
360 E. Maple Road
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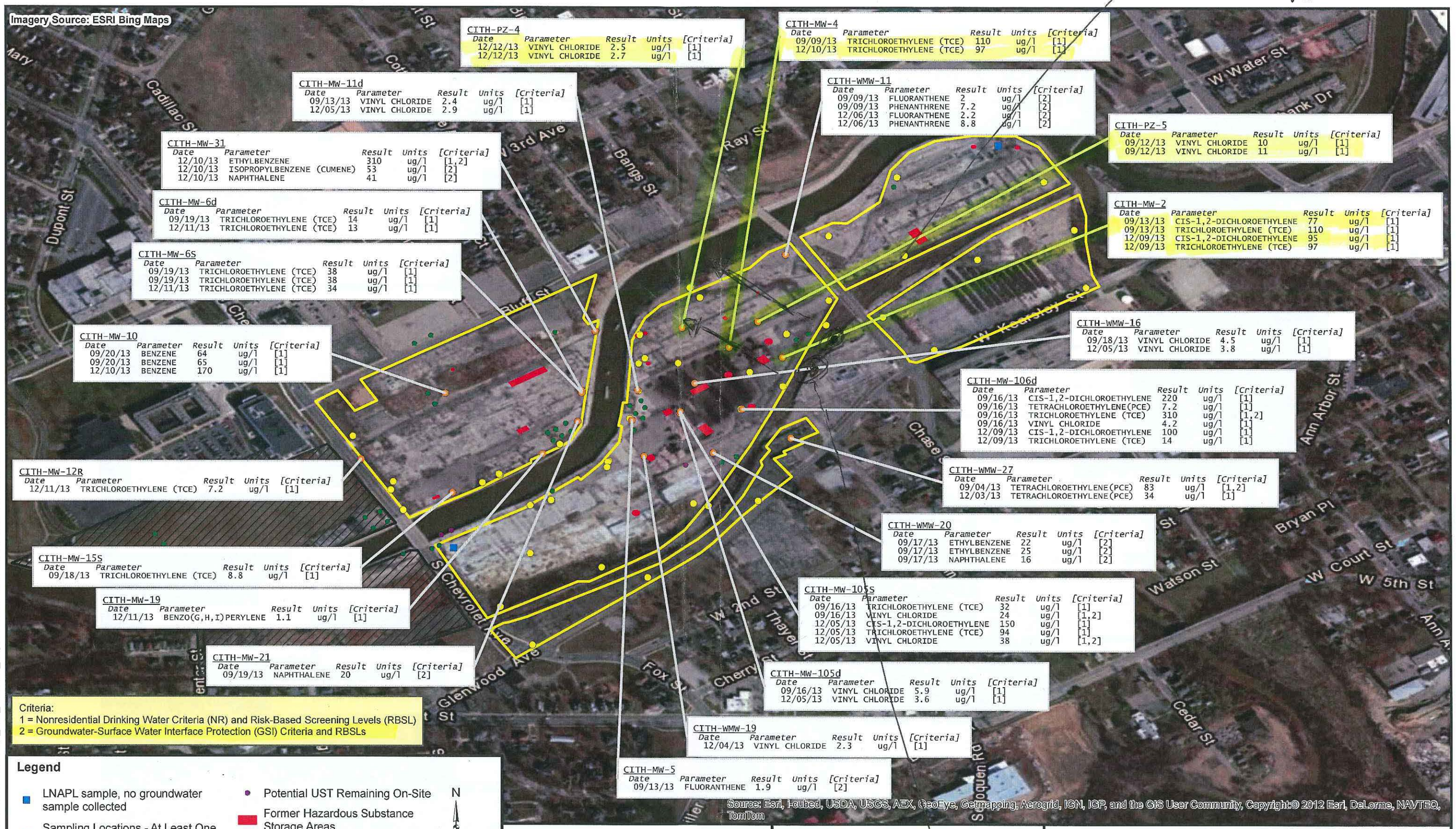
Troy, MI 48083

Figure 3
Sampling Location Map
Chevy in the Hole
Flint, Genesee County, Michigan

Flintwest well 109S TCE = 138ug/L on 4/15
VC = 21ug/L



CITH-PZ-4

Date	Parameter	Result	Units	[Criteria]
12/12/13	VINYL CHLORIDE	2.5	ug/l	[1]
12/12/13	VINYL CHLORIDE	2.7	ug/l	[1]

CITH-MW-4

Date	Parameter	Result	Units	[Criteria]
09/09/13	TRICHLOROETHYLENE (TCE)	110	ug/l	[1]
12/10/13	TRICHLOROETHYLENE (TCE)	97	ug/l	[1]

CITH-MW-11d

Date	Parameter	Result	Units	[Criteria]
09/13/13	VINYL CHLORIDE	2.4	ug/l	[1]
12/05/13	VINYL CHLORIDE	2.9	ug/l	[1]

CITH-WMW-11

Date	Parameter	Result	Units	[Criteria]
09/09/13	FLUORANTHENE	2	ug/l	[2]
09/09/13	PHENANTHRENE	7.2	ug/l	[2]
12/06/13	FLUORANTHENE	2.2	ug/l	[2]
12/06/13	PHENANTHRENE	8.8	ug/l	[2]

CITH-PZ-5

Date	Parameter	Result	Units	[Criteria]
09/12/13	VINYL CHLORIDE	10	ug/l	[1]
09/12/13	VINYL CHLORIDE	11	ug/l	[1]

CITH-MW-31

Date	Parameter	Result	Units	[Criteria]
12/10/13	ETHYLBENZENE	310	ug/l	[1,2]
12/10/13	ISOPROPYLBENZENE (CUMENE)	53	ug/l	[2]
12/10/13	NAPHTHALENE	41	ug/l	[2]

CITH-MW-6d

Date	Parameter	Result	Units	[Criteria]
09/19/13	TRICHLOROETHYLENE (TCE)	14	ug/l	[1]
12/11/13	TRICHLOROETHYLENE (TCE)	13	ug/l	[1]

CITH-MW-2

Date	Parameter	Result	Units	[Criteria]
09/13/13	CIS-1,2-DICHLOROETHYLENE	77	ug/l	[1]
09/13/13	TRICHLOROETHYLENE (TCE)	110	ug/l	[1]
12/09/13	CIS-1,2-DICHLOROETHYLENE	95	ug/l	[1]
12/09/13	TRICHLOROETHYLENE (TCE)	97	ug/l	[1]

CITH-MW-6S

Date	Parameter	Result	Units	[Criteria]
09/19/13	TRICHLOROETHYLENE (TCE)	38	ug/l	[1]
09/19/13	TRICHLOROETHYLENE (TCE)	38	ug/l	[1]
12/11/13	TRICHLOROETHYLENE (TCE)	34	ug/l	[1]

CITH-WMW-16

Date	Parameter	Result	Units	[Criteria]
09/18/13	VINYL CHLORIDE	4.5	ug/l	[1]
12/05/13	VINYL CHLORIDE	3.8	ug/l	[1]

CITH-MW-10

Date	Parameter	Result	Units	[Criteria]
09/20/13	BENZENE	64	ug/l	[1]
09/20/13	BENZENE	65	ug/l	[1]
12/10/13	BENZENE	170	ug/l	[1]

CITH-MW-106d

Date	Parameter	Result	Units	[Criteria]
09/16/13	CIS-1,2-DICHLOROETHYLENE	220	ug/l	[1]
09/16/13	TETRACHLOROETHYLENE(PCE)	7.2	ug/l	[1]
09/16/13	TRICHLOROETHYLENE (TCE)	310	ug/l	[1,2]
09/16/13	VINYL CHLORIDE	4.2	ug/l	[1]
12/09/13	CIS-1,2-DICHLOROETHYLENE	100	ug/l	[1]
12/09/13	TRICHLOROETHYLENE (TCE)	14	ug/l	[1]

CITH-MW-12R

Date	Parameter	Result	Units	[Criteria]
12/11/13	TRICHLOROETHYLENE (TCE)	7.2	ug/l	[1]

CITH-WMW-27

Date	Parameter	Result	Units	[Criteria]
09/04/13	TETRACHLOROETHYLENE(PCE)	83	ug/l	[1,2]
12/03/13	TETRACHLOROETHYLENE(PCE)	34	ug/l	[1]

CITH-WMW-20

Date	Parameter	Result	Units	[Criteria]
09/17/13	ETHYLBENZENE	22	ug/l	[2]
09/17/13	ETHYLBENZENE	25	ug/l	[2]
09/17/13	NAPHTHALENE	16	ug/l	[2]

CITH-MW-15S

Date	Parameter	Result	Units	[Criteria]
09/18/13	TRICHLOROETHYLENE (TCE)	8.8	ug/l	[1]

CITH-MW-19

Date	Parameter	Result	Units	[Criteria]
12/11/13	BENZO(G,H,I)PERYLENE	1.1	ug/l	[1]

CITH-MW-105S

Date	Parameter	Result	Units	[Criteria]
09/16/13	TRICHLOROETHYLENE (TCE)	32	ug/l	[1]
09/16/13	VINYL CHLORIDE	24	ug/l	[1,2]
12/05/13	CIS-1,2-DICHLOROETHYLENE	150	ug/l	[1]
12/05/13	TRICHLOROETHYLENE (TCE)	94	ug/l	[1]
12/05/13	VINYL CHLORIDE	38	ug/l	[1,2]

CITH-MW-21

Date	Parameter	Result	Units	[Criteria]
09/19/13	NAPHTHALENE	20	ug/l	[2]

CITH-MW-105d

Date	Parameter	Result	Units	[Criteria]
09/16/13	VINYL CHLORIDE	5.9	ug/l	[1]
12/05/13	VINYL CHLORIDE	3.6	ug/l	[1]

CITH-WMW-19

Date	Parameter	Result	Units	[Criteria]
12/04/13	VINYL CHLORIDE	2.3	ug/l	[1]

CITH-MW-5

Date	Parameter	Result	Units	[Criteria]
09/13/13	FLUORANTHENE	1.9	ug/l	[2]

Criteria:
1 = Nonresidential Drinking Water Criteria (NR) and Risk-Based Screening Levels (RBSL)
2 = Groundwater-Surface Water Interface Protection (GSI) Criteria and RBSLs

Legend

- LNAPL sample, no groundwater sample collected
- Sampling Locations - At Least One Exceedance
- Sampling Locations - No Exceedances
- Former USTs
- Potential UST Remaining On-Site
- Former Hazardous Substance Storage Areas
- Surrounding Parcels
- Subject Parcels

N

0 500 Feet

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
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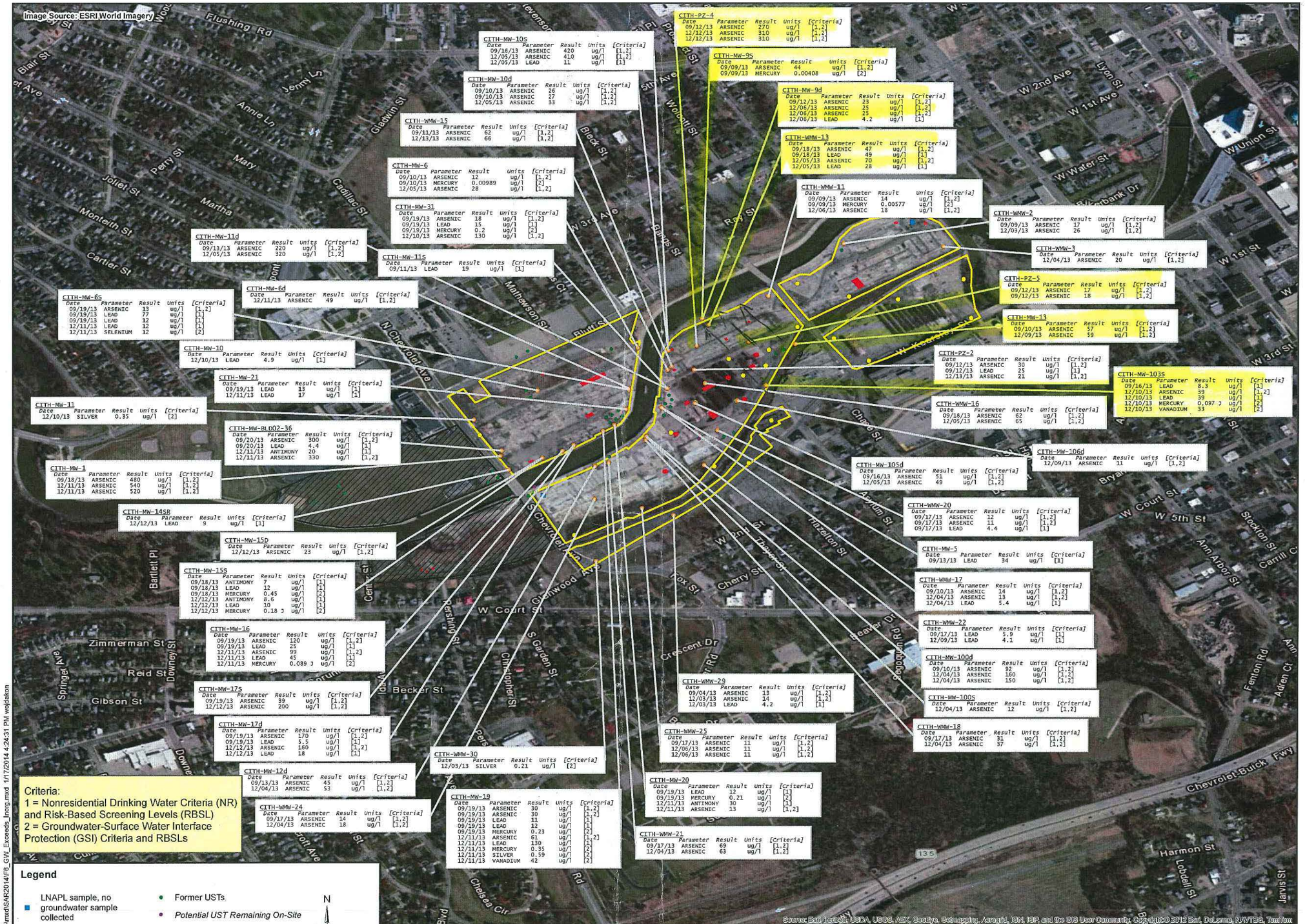
Figure 5
Groundwater Sampling Results
Exceeding MDEQ Screening Criteria - Organics
Chevy in the Hole
Flint, Genesee County, Michigan

Flintwest Well 113S TCE = 36ug/L on 4/15

FILE: D:\Chevy_Hole\mxd\SAR2014\F5_GW_Exceeds_Organics.mxd 1/17/2014 4:22:11 PM wojdakon



CITH-PZ-4

Date	Parameter	Result	Units	[Criteria]
09/12/13	ARSENIC	270	ug/l	[1,2]
12/12/13	ARSENIC	310	ug/l	[1,2]
12/12/13	ARSENIC	310	ug/l	[1,2]

CITH-MW-10S

Date	Parameter	Result	Units	[Criteria]
09/16/13	ARSENIC	420	ug/l	[1,2]
12/05/13	ARSENIC	410	ug/l	[1,2]
12/05/13	LEAD	11	ug/l	[1]

CITH-MW-9S

Date	Parameter	Result	Units	[Criteria]
09/09/13	ARSENIC	44	ug/l	[1,2]
09/09/13	MERCURY	0.00408	ug/l	[2]

CITH-MW-10d

Date	Parameter	Result	Units	[Criteria]
09/10/13	ARSENIC	26	ug/l	[1,2]
09/10/13	ARSENIC	27	ug/l	[1,2]
12/05/13	ARSENIC	33	ug/l	[1,2]

CITH-MW-9d

Date	Parameter	Result	Units	[Criteria]
09/12/13	ARSENIC	23	ug/l	[1,2]
12/06/13	ARSENIC	25	ug/l	[1,2]
12/06/13	ARSENIC	25	ug/l	[1,2]
12/06/13	LEAD	4.2	ug/l	[1]

CITH-WMW-15

Date	Parameter	Result	Units	[Criteria]
09/11/13	ARSENIC	62	ug/l	[1,2]
12/13/13	ARSENIC	66	ug/l	[1,2]

CITH-WMW-13

Date	Parameter	Result	Units	[Criteria]
09/18/13	ARSENIC	47	ug/l	[1,2]
09/18/13	LEAD	49	ug/l	[1]
12/05/13	ARSENIC	70	ug/l	[1,2]
12/05/13	LEAD	28	ug/l	[1]

CITH-MW-6

Date	Parameter	Result	Units	[Criteria]
09/10/13	ARSENIC	12	ug/l	[1,2]
09/10/13	MERCURY	0.00989	ug/l	[2]
12/05/13	ARSENIC	28	ug/l	[1,2]

CITH-WMW-11

Date	Parameter	Result	Units	[Criteria]
09/09/13	ARSENIC	14	ug/l	[1,2]
09/09/13	MERCURY	0.00577	ug/l	[2]
12/06/13	ARSENIC	18	ug/l	[1,2]

CITH-MW-3I

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	18	ug/l	[1,2]
09/19/13	LEAD	15	ug/l	[1]
09/19/13	MERCURY	0.2	ug/l	[2]
12/10/13	ARSENIC	130	ug/l	[1,2]

CITH-WMW-2

Date	Parameter	Result	Units	[Criteria]
09/09/13	ARSENIC	17	ug/l	[1,2]
12/03/13	ARSENIC	26	ug/l	[1,2]

CITH-MW-11d

Date	Parameter	Result	Units	[Criteria]
09/13/13	ARSENIC	220	ug/l	[1,2]
12/05/13	ARSENIC	320	ug/l	[1,2]

CITH-WMW-3

Date	Parameter	Result	Units	[Criteria]
12/04/13	ARSENIC	20	ug/l	[1,2]

CITH-MW-11S

Date	Parameter	Result	Units	[Criteria]
09/11/13	LEAD	19	ug/l	[1]

CITH-PZ-5

Date	Parameter	Result	Units	[Criteria]
09/12/13	ARSENIC	17	ug/l	[1,2]
09/12/13	ARSENIC	18	ug/l	[1,2]

CITH-MW-6d

Date	Parameter	Result	Units	[Criteria]
12/11/13	ARSENIC	49	ug/l	[1,2]

CITH-MW-6S

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	13	ug/l	[1,2]
09/19/13	LEAD	77	ug/l	[1]
09/19/13	LEAD	12	ug/l	[1]
12/11/13	LEAD	12	ug/l	[1]
12/11/13	SELENIUM	12	ug/l	[2]

CITH-MW-13

Date	Parameter	Result	Units	[Criteria]
09/10/13	ARSENIC	57	ug/l	[1,2]
12/09/13	ARSENIC	59	ug/l	[1,2]

CITH-PZ-2

Date	Parameter	Result	Units	[Criteria]
09/12/13	ARSENIC	30	ug/l	[1,2]
09/12/13	LEAD	25	ug/l	[1]
12/13/13	ARSENIC	21	ug/l	[1,2]

CITH-MW-103S

Date	Parameter	Result	Units	[Criteria]
09/16/13	LEAD	8.3	ug/l	[1]
12/10/13	ARSENIC	39	ug/l	[1,2]
12/10/13	LEAD	39	ug/l	[1]
12/10/13	MERCURY	0.097 J	ug/l	[2]
12/10/13	VANADIUM	33	ug/l	[2]

CITH-MW-10

Date	Parameter	Result	Units	[Criteria]
12/10/13	LEAD	4.9	ug/l	[1]

CITH-MW-21

Date	Parameter	Result	Units	[Criteria]
09/19/13	LEAD	13	ug/l	[1]
12/11/13	LEAD	17	ug/l	[1]

CITH-WMW-16

Date	Parameter	Result	Units	[Criteria]
09/18/13	ARSENIC	62	ug/l	[1,2]
12/05/13	ARSENIC	65	ug/l	[1,2]

CITH-MW-11

Date	Parameter	Result	Units	[Criteria]
12/10/13	SILVER	0.35	ug/l	[2]

CITH-MW-BLD02-36

Date	Parameter	Result	Units	[Criteria]
09/20/13	ARSENIC	300	ug/l	[1,2]
09/20/13	LEAD	4.4	ug/l	[1]
12/11/13	ANTIMONY	20	ug/l	[1]
12/11/13	ARSENIC	330	ug/l	[1,2]

CITH-MW-106d

Date	Parameter	Result	Units	[Criteria]
12/09/13	ARSENIC	11	ug/l	[1,2]

CITH-MW-105d

Date	Parameter	Result	Units	[Criteria]
09/16/13	ARSENIC	51	ug/l	[1,2]
12/05/13	ARSENIC	49	ug/l	[1,2]

CITH-MW-1

Date	Parameter	Result	Units	[Criteria]
09/18/13	ARSENIC	480	ug/l	[1,2]
12/11/13	ARSENIC	540	ug/l	[1,2]
12/11/13	ARSENIC	520	ug/l	[1,2]

CITH-WMW-20

Date	Parameter	Result	Units	[Criteria]
09/17/13	ARSENIC	12	ug/l	[1,2]
09/17/13	ARSENIC	11	ug/l	[1,2]
09/17/13	LEAD	4.4	ug/l	[1]

CITH-MW-14SR

Date	Parameter	Result	Units	[Criteria]
12/12/13	LEAD	9	ug/l	[1]

CITH-MW-15D

Date	Parameter	Result	Units	[Criteria]
12/12/13	ARSENIC	23	ug/l	[1,2]

CITH-MW-5

Date	Parameter	Result	Units	[Criteria]
09/13/13	LEAD	34	ug/l	[1]

CITH-MW-15S

Date	Parameter	Result	Units	[Criteria]
09/18/13	ANTIMONY	7	ug/l	[1]
09/18/13	LEAD	12	ug/l	[1]
09/18/13	MERCURY	0.45	ug/l	[2]
12/12/13	ANTIMONY	8.6	ug/l	[1]
12/12/13	LEAD	10	ug/l	[1]
12/12/13	MERCURY	0.18 J	ug/l	[2]

CITH-WMW-17

Date	Parameter	Result	Units	[Criteria]
09/10/13	ARSENIC	14	ug/l	[1,2]
12/04/13	ARSENIC	13	ug/l	[1,2]
12/04/13	LEAD	5.4	ug/l	[1]

CITH-WMW-22

Date	Parameter	Result	Units	[Criteria]
09/17/13	LEAD	5.9	ug/l	[1]
12/09/13	LEAD	4.1	ug/l	[1]

CITH-MW-16

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	120	ug/l	[1,2]
09/19/13	LEAD	25	ug/l	[1]
12/11/13	ARSENIC	99	ug/l	[1,2]
12/11/13	LEAD	45	ug/l	[1]
12/11/13	MERCURY	0.089 J	ug/l	[2]

CITH-MW-100d

Date	Parameter	Result	Units	[Criteria]
09/10/13	ARSENIC	92	ug/l	[1,2]
12/04/13	ARSENIC	160	ug/l	[1,2]
12/04/13	ARSENIC	150	ug/l	[1,2]

CITH-WMW-29

Date	Parameter	Result	Units	[Criteria]
09/04/13	ARSENIC	13	ug/l	[1,2]
12/03/13	ARSENIC	14	ug/l	[1,2]
12/03/13	LEAD	4.2	ug/l	[1]

CITH-MW-100S

Date	Parameter	Result	Units	[Criteria]
12/04/13	ARSENIC	12	ug/l	[1,2]

CITH-MW-17S

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	39	ug/l	[1,2]
12/12/13	ARSENIC	200	ug/l	[1,2]

CITH-WMW-25

Date	Parameter	Result	Units	[Criteria]
09/17/13	ARSENIC	11	ug/l	[1,2]
12/06/13	ARSENIC	11	ug/l	[1,2]
12/06/13	ARSENIC	11	ug/l	[1,2]

CITH-WMW-18

Date	Parameter	Result	Units	[Criteria]
09/17/13	ARSENIC	31	ug/l	[1,2]
12/04/13	ARSENIC	37	ug/l	[1,2]

CITH-MW-17d

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	170	ug/l	[1,2]
09/19/13	LEAD	5.5	ug/l	[1]
12/12/13	ARSENIC	160	ug/l	[1,2]
12/12/13	LEAD	18	ug/l	[1]

CITH-WMW-30

Date	Parameter	Result	Units	[Criteria]
12/03/13	SILVER	0.21	ug/l	[2]

CITH-MW-20

Date	Parameter	Result	Units	[Criteria]
09/19/13	LEAD	12	ug/l	[1]
09/19/13	MERCURY	0.21	ug/l	[2]
12/11/13	ANTIMONY	30	ug/l	[1]
12/11/13	ARSENIC	13	ug/l	[1,2]

CITH-MW-12d

Date	Parameter	Result	Units	[Criteria]
09/13/13	ARSENIC	45	ug/l	[1,2]
12/04/13	ARSENIC	53	ug/l	[1,2]

CITH-WMW-24

Date	Parameter	Result	Units	[Criteria]
09/17/13	ARSENIC	14	ug/l	[1,2]
12/04/13	ARSENIC	18	ug/l	[1,2]

CITH-MW-19

Date	Parameter	Result	Units	[Criteria]
09/19/13	ARSENIC	30	ug/l	[1,2]
09/19/13	ARSENIC	30	ug/l	[1,2]
09/19/13	LEAD	11	ug/l	[1]
09/19/13	LEAD	12	ug/l	[1]
09/19/13	MERCURY	0.23	ug/l	[2]
12/11/13	ARSENIC	61	ug/l	[1,2]
12/11/13	LEAD	130	ug/l	[1]
12/11/13	MERCURY	0.35	ug/l	[2]
12/11/13	SILVER	0.59	ug/l	[2]
12/11/13	VANADIUM	42	ug/l	[2]

WMW-21

Date	Parameter	Result	Units	[Criteria]
09/17/13	ARSENIC	69	ug/l	[1,2]
12/04/13	ARSENIC	63	ug/l	[1,2]

Criteria:
1 = Nonresidential Drinking Water Criteria (NR) and Risk-Based Screening Levels (RBSL)
2 = Groundwater-Surface Water Interface Protection (GSI) Criteria and RBSLs

Legend

- LNAPL sample, no groundwater sample collected
- Sampling Locations - At Least One Exceedance
- Sampling Locations - No Exceedances
- Former USTs
- *Potential UST Remaining On-Site*
- Former Hazardous Substance Storage Areas
- Surrounding Parcels
- Subject Parcels

N

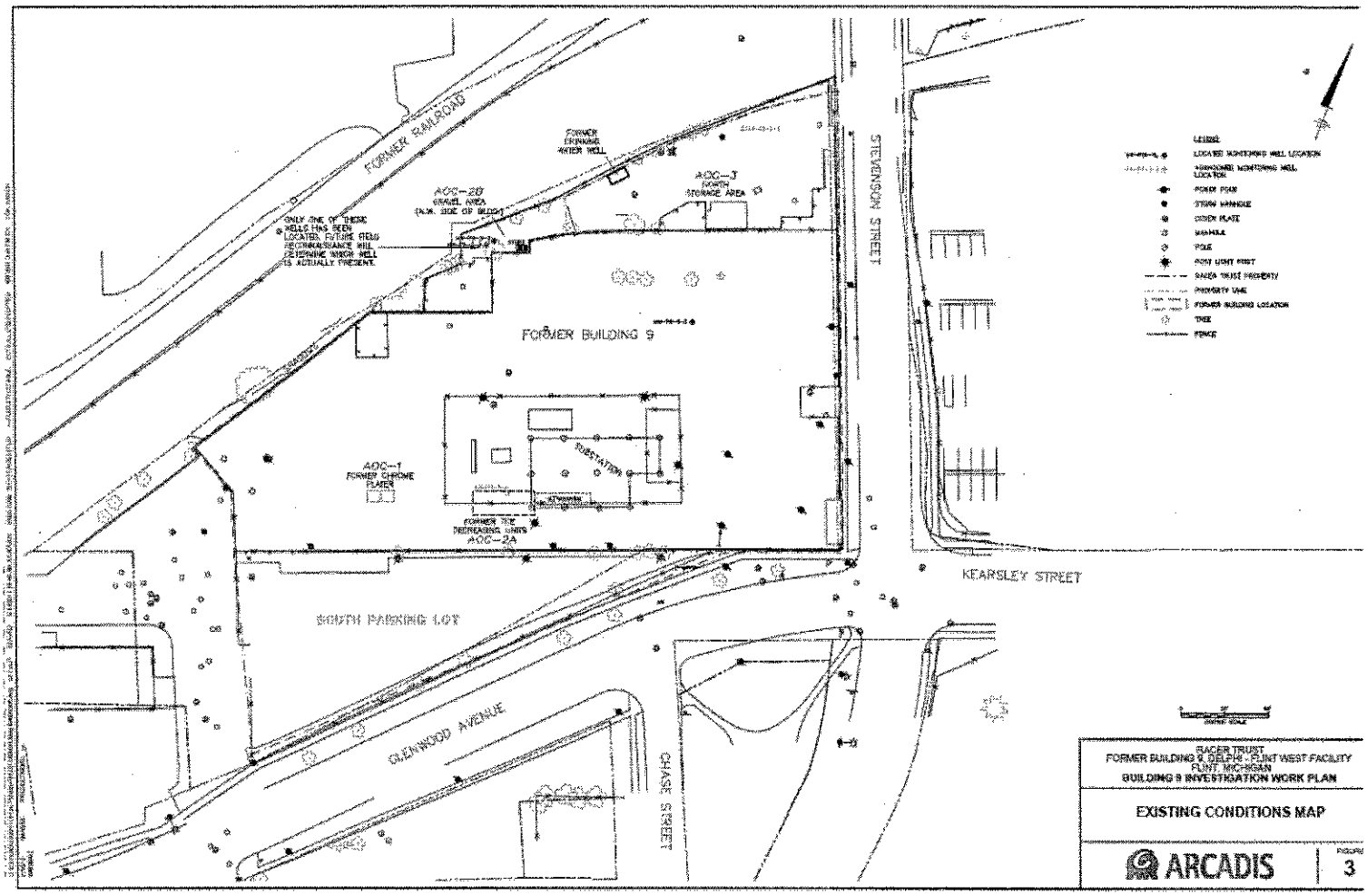
0 500 Feet

FILE: D:\Chevy_Hole\mxd\SAR2014\FB_GW_Exceeds_Inorg.mxd 1/17/2014 4:24:31 PM wojtakon

Prepared For:
US EPA Region V
Contract No.: EP-S5-06-04
TDD: S05-0001-1206-017
DCN: 1887-2A-BKFZ

Prepared By:
WESTON SOLUTIONS, INC.
360 E. Maple Road
Suite R
Troy, MI 48083

Figure 6
Groundwater Sampling Results
Exceeding MDEQ Screening Criteria - Inorganics
Chevy in the Hole
Flint, Genesee County, Michigan


FORMER RAILROAD
FORMER DRINKING WATER WELL
AOC-2B
GRAVEL AREA
(N.W. SIDE OF BLDG.)
AOC-3
SOUTH STORAGE AREA
ONLY ONE OF THESE WELLS HAS BEEN LOCATED. FUTURE ITESS RECONNAISSANCE WILL DETERMINE WHICH WELL IS ACTUALLY PRESENT.
FORMER BUILDING 9
AOC-1
FORMER CHROME PLATER
SUBSTATION
FORMER TCE DEGREASING UNITS
AOC-2A
SOUTH PARKING LOT
STEVENSON STREET
KEARSLEY STREET
GLENWOOD AVENUE
CHASE STREET
LEGEND
LOCATED MONITORING WELL LOCATION
ABANDONED MONITORING WELL LOCATION
POWER POLE
STORM HANDHOLE
CODEX PLATE
MANHOLE
POLE
POST LIGHT POST
RACER TRUST PROPERTY
PROPERTY LINE
FORMER BUILDING LOCATION
TREE
FENCE
RACER TRUST
FORMER BUILDING 9, DIELDRIN - FLINT WEST FACILITY
FLINT, MICHIGAN
BUILDING 9 INVESTIGATION WORK PLAN
EXISTING CONDITIONS MAP
ARCADIS
FIGURE
3

RACER – FLINT WEST- FORMER DELPHI BLDG. 9

September, 2011

Contact: Chris Black (LCD) 312- 886-1451

EPA ID Number: MID 005 356 654 **MLC Number:** 1299

Location: Northwest corner of Stevenson/Chase Street and Glenwood Avenue Flint, Michigan.

AOC Summary: The order will require RACER to define the nature and extent of the contamination, Submit EI Reports, Propose Corrective Measures and Implement Corrective Measures chosen.

Past Operations Prior to construction of the former Building 9 at the Site in 1929, the Site was a residential area. Former Building 9 was originally used as a mechanic shop and was eventually converted into an assembly line manufacturing plant that produced intake and exhaust engine valves. Processes that have been conducted at Building 9 include: forging, plating, degreasing/parts cleaning, process wastewater collection and transport, lubrication, grinding/forming, welding, forming, heat treating and recycling, soluble lubricating oils treatment and recycling, and tumbling. These processes had potential to release contaminants into the environment.

Since its initial construction, additional construction activities occurred twice at Building 9; the first was an addition in 1971 and the second was the construction of an overhead roof that was added to the north storage area in 1986. The building underwent decommissioning and demolition activities in 1996. At the time of demolition, all machinery and wooden floor blocks were removed, trenches and sumps were cleaned, filled, and capped with concrete, and hazardous and non-hazardous materials were containerized for disposal or recycling.

Contamination

Contamination present from existing investigation are solvents, metals in the groundwater and soils. Areas being investigated are a former chrome plating area, a former TCE degreaser unit, a stained gravel area and a storm water sump. The site has had some sampling conducted, but additional investigation is needed to fill in the data gaps and define the nature and extent of the contamination.

Current Status

Currently an Investigation Workplan along with a Field Sampling Plan and QAPP have been approved by EPA and RACER is waiting on securing a local contractor to begin these investigations. The investigations include, soil borings, groundwater well installations, and soil and groundwater sampling and analysis.

Corrective Action

The investigations at the Site hope to fill in the data gaps and address:

- Potential issues of ground water flow direction
- Impacts in the chrome plating area
- Off-site migration of VOC's in the groundwater
- The presence and extent of LNAPL at the site

The proposed Corrective Measures are yet to be determined and are dependent on the nature and extent of the contamination and the appropriate engineering and institutional controls that may apply.

		HNV		HNV				HCV		HCV							
		Drink		Non-drink		WV		Drink		Non-drink		FCV		AMV		FAV	
CAS #	PARAMETER NAME	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date
108883	Toluene	5600	1199707	51000	1199707	NA		NA		NA		270	2201307	1300	1201307	2600	1201307
108907	Chlorobenzene	470	1199707	3200	1199707	NA		NA		NA		25	2201109	220	2201109	450	2201109
108952	Phenol	1100	2200310	1200	2200310	NA		NA		NA		450	2200303	3400	1200303	6800	1200303
109739	Butylamine	ID	199805	ID	199805	NA		NA		NA		57	2199805	510	2199805	1000	2199805
109897	Diethylamine	310	1199712	24000	1199712	NA		NA		NA		20	2199807	180	2199807	350	2199807
109999	Tetrahydrofuran	350	2199802	26000	2199802	NA		NA		NA		11000	2199806	74000	2199806	130000	2199806
110816	Diethyl disulfide	ID	199710	ID	199710	NA		NA		NA		ID	199710	ID	199710	ID	199710
110827	Cyclohexane	ID	200607	ID	200607	NA		NA		NA		ID	200607	ID	200607	ID	200607
111444	Bis(2-chloroethyl)ether #	ID*	200012	ID*	200012	NA		0.79	2200012	15	2200012	ID*	200012	ID	200012	ID	200012
111466	Diethylene glycol	170000	1199708	14000000	1199708	NA		NA		NA		ID	199801	ID	199801	ID	199801
111922	Dibutylamine	ID	199712	ID	199712	NA		NA		NA		ID	199802	ID	199802	ID	199802
112265	1,2-Bis(2-chloroethoxy)ethane	ID	200012	ID	200012	NA		NA		NA		1500	2200012	13000	2200012	26000	2200012
115297	Endosulfan	85	1200103	170	1200103	NA		NA		NA		0.029	2200107	0.13	1200107	0.17	1200107
117817	Bis(2-ethylhexyl)phthalate #	120	1199711	160	1199711	NA		14	1201402	18	1201402	ID*	199809	285	2199809	285	2199809
117840	Di-n-octyl phthalate	240	2199902	300	2199902	NA		NA		NA		ID	199808	ID	199808	ID	199808
118741	Hexachlorobenzene # @	0.046	1199707	0.046	1199707	0.0003	1199704	0.00045	1199707	0.00045	1199707	ID*	199801	ID	199801	ID	199801
120127	Anthracene	1900	2199901	2400	2199901	NA		NA		NA		ID	200407	ID	200407	ID	200407
120821	1,2,4-Trichlorobenzene	80	1201002	99	1201002	NA		NA		NA		130	2201006	420	1201006	850	1201006
120832	2,4-Dichlorophenol	220	1200609	1100	1200609	NA		NA		NA		11	2200807	92	2200807	180	2200807
120956	2,4-Di-tert-pentylphenol	ID	199712	ID	199712	NA		NA		NA		NLS		NLS		NLS	
121448	Triethylamine	4000	1199708	230000	1199708	NA		NA		NA		260	2199710	1100	2199710	2100	2199710
121824	RDX #	83	1199908	6100	1199908	NA		5.8	1199908	420	1199908	85	2199908	400	2199908	790	2199908
122349	Simazine	140	1200604	4000	1200604	NA		NA		NA		17	2200604	160	2200604	310	2200604
123911	1,4-Dioxane #	4000	1199806	320000	1199806	NA		34	1199806	2800	1199806	22000	2199806	200000	2199806	390000	2199806
124174	Diethylene glycol butyl ether acetate	330	1200501	13000	1200501	NA		NA		NA		260	2200501	2300	2200501	4600	2200501
124481	Dibromochloromethane #	570	1201408	12000	1201408	NA		6.8	1201408	150	1201408	ID	201408	ID	201408	ID	201408
126727	Tris(2,3-dibromopropyl)phosphate #	ID*	200908	ID*	200908	NA		0.31	1200908	13	1200908	ID	200908	ID	200908	ID	200908
126863	2,4,7,9-Tetramethyl-5-decune-4,7-diol	ID	200112	ID	200112	NA		NA		NA		350	2200410	3100	2200410	6200	2200410
127184	Tetrachloroethylene #	320	1199705	1800	1199705	NA		11	1199705	60	1199705	190	2201208	1400	1201208	2900	1201208
127195	N,N-dimethylacetamide	700	1199711	57000	1199711	NA		NA		NA		4100	2199709	37000	2199709	74000	2199709
128370	4-Methyl-2,6-di-T-butylphenol #	3	2199805	3	2199805	NA		0.25	2199805	0.25	2199805	ID	199803	ID	199803	ID	199803
129000	Pyrene	15	2199807	15	2199807	NA		NA		NA		ID	200106	ID	200106	ID	200106
132649	Dibenzofuran #	ID*	199902	ID*	199902	NA		NA		NA		4	2199902	36	2199902	72	2199902
135988	sec-Butylbenzene	ID	200011	ID	200011	NA		NA		NA		ID	201007	ID	201007	ID	201007
140669	Octylphenol	NLS		NLS		NA		NA		NA		2	2199708	13	2199708	26	2199708
140807	N,N-diethyl-1,4-pentanediamine	ID	199807	ID	199807	NA		NA		NA		ID	199801	ID	199801	ID	199801
140932	Sodium isopropyl xanthate	ID	201408	ID	201408	NA		NA		NA		150	2201408	1400	2201408	2800	2201408
144627	Oxalic acid	4500	1199906	360000	1199906	NA		NA		NA		250	2200008	2300	2200008	4600	2200008
149735	Trimethylorthoformate	ID	199710	ID	199710	NA		NA		NA		ID	199709	ID	199709	ID	199709
156592	cis-1,2-Dichloroethylene	880	1200809	36000	1200809	NA		NA		NA		620	2200007	5500	2200007	11000	2200007
156605	trans-1,2-Dichloroethylene	470	1200809	19000	1200809	NA		NA		NA		1500	2200007	14000	2200007	28000	2200007
191242	Benzo(g,h,i)perylene	ID	201009	ID	201009	NA		NA		NA		ID	201006	ID	201006	ID	201006
193395	Indeno (1,2,3-cd) pyrene #	NLS		NLS		NA		NLS		NLS		ID	199712	ID	199712	ID	199712
203992	Benzo(b)fluoranthene #	NLS		NLS		NA		NLS		NLS		ID	199712	ID	199712	ID	199712
206440	Fluoranthene	18	2199901	18	2199901	NA		NA		NA		1.6	2199806	14	1199806	28	1199806
208968	Acenaphthylene	ID	199803	ID	199803	NA		NA		NA		ID	200407	ID	200407	ID	200407
218019	Chrysene #	ID	199903	ID	199903	NA		ID	199903	ID	199903	ID	200106	ID	200106	ID	200106
288324	Imidazole	ID	201003	ID	201003	NA		NA		NA		ID	201003	ID	201003	ID	201003
302012	Hydrazine #	42	1201201	3400	1201201	NA		0.094	1201201	7.6	1201201	1.8	2201201	16	2201201	32	2201201
309002	Aldrin #	0.00012	1200011	0.00012	1200011	NA		0.0000087	1200011	0.0000087	1200011	0.017	2200011	0.15	2200011	0.3	2200011
319846	alpha-Hexachlorocyclohexane #	19	1200910	21	1200910	ID*	200910	0.016	1200910	0.017	1200910	ID	200910	ID	200910	ID	200910
319857	beta-Hexachlorocyclohexane # @	0.091	1200011	0.098	1200011	ID*	200011	0.024	2200011	0.026	2200011	ID	200011	ID	200011	ID	200011
319868	delta-Hexachlorocyclohexane @	ID	200011	ID	200011	ID	200011	NA		NA		ID	200011	ID	200011	ID	200011
333415	Diazinon	12	1200408	37	1200408	NA		NA		NA		0.004	2200410	0.064	1200410	0.13	1200410
335671	Perfluorooctanoic acid	0.42	1201105	12	1201105	NA		NA		NA		880	2201007	7700	2201007	15000	2201007
495487	Azoxybenzene	ID	199811	ID	199811	NA		NA		NA		ID	199812	ID	199812	ID	199812
526738	1,2,3-Trimethylbenzene	290	1200609	650	1200609	NA		NA		NA		ID	200609	ID	200609	ID	200609
526750	2,3-Dimethylphenol	ID	201109	ID	201109	NA		NA		NA		120	2201108	1100	2201108	2200	2201108
540590	1,2-Dichloroethylene	ID	199902	ID	199902	NA		NA		NA		1100	2200007	9600	2200007	19000	2200007
541731	1,3-Dichlorobenzene	37	2200309	65	2200309	NA		NA		NA		28	2200309	100	2200309	200	2200309
542756	1,3-Dichloropropylene #	930	1200709	39000	1200709	NA		3.3	1200709	140	1200709	9.0	2200708	81	1200708	160	1200708
575371	1,7-Dimethylnaphthalene	ID	200007	ID	200007	NA		NA		NA		ID	200007	ID	200007	ID	200007
585342	3-tert-Butylphenol	ID	200210	ID	200210	NA		NA		NA		29	2200212	260	2200212	530	2200212
591786	2-Hexanone	9700	1200409	630000	1200409	NA		NA		NA		ID	200409	ID	200409	ID	200409
594207	2,2-Dichloropropane	ID	199803	ID	199803	NA		NA		NA		ID	199802	ID	199802	ID	199802
608935	Pentachlorobenzene # @	0.38	1200206	0.38	1200206	0.019	1200206	NA		NA		1.2	2200206	11	2200206	21	2200206
611143	2-Ethyltoluene	ID	200109	ID	200109	NA		NA		NA		ID	200109	ID	200109	ID	200109
618451	3-Isopropylphenol	ID	200212	ID	200212	NA		NA		NA		26	2200212	240	2200212	470	2200212
620144	3-Ethyltoluene	ID	200109	ID	200109	NA		NA		NA		ID	200109	ID	200109	ID	200109
620235	m-Tolualdehyde	ID*	201109	ID*	201109	NA		NA		NA		34	2201108	310	2201108	620	2201108
624920	Dimethyl disulfide	480	2199707	20000	2199707	NA		NA		NA		ID	199709	ID	199709	ID	199709
625456	Methoxyacetic acid	ID	200102	ID	200102	NA		NA		NA		270	2200008	2400	2200008	4800	2200008
625503	N-ethyl acetamide	ID	199807	ID	199807	NA		NA		NA		ID	199710	ID	199710	ID	199710
630206	1,1,1,2-Tetrachloroethane #	680	1200203	3500	1200203	NA		19	1200203	100	1200203	ID	200203	ID	200203	ID	200203
632224	1,1,3,3-Tetramethylurea	ID	200605	ID	200605	NA		NA		NA		ID	200605	ID	200605	ID	200605
634662	1,2,3,4-Tetrachlorobenzene @	3.9	1201006	4.1	1201006	ID	201006	NA		NA		3.4	2201007	18	2201007	35	2201007
637923	Ethyl tert-butyl ether	2500	1200703	130000	1200703	NA		NA		NA		ID	200609	ID	200609	ID	200609

VC
TCE

		HNV		HNV				HCV		HCV							
		Drink		Non-drink		WV		Drink		Non-drink		FCV		AMV		FAV	
CAS #	PARAMETER NAME	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date
685916	Diethylacetamide	ID	199707	ID	199707	NA		NA		NA		ID	199710	ID	199710	ID	199710
706785	Octachlorocyclopentene	ID	199903	ID	199903	NA		NA		NA		ID	199904	ID	199904	ID	199904
792745	Dimethyl 4,4'-biphenylcarboxylate	ID	200910	ID	200910	NA		NA		NA		ID	200910	ID	200910	ID	200910
872504	N-Methyl pyrrolidone	25000	1200402	2000000	1200402	NA		NA		NA		ID	200402	ID	200402	ID	200402
927628	N,N-dimethyl-1-butamine	ID	199805	ID	199805	NA		NA		NA		ID	199803	ID	199803	ID	199803
950107	Mephosfolan	2.5	1200103	170	1200103	NA		NA		NA		0.37	2200112	3.3	2200112	6.6	2200112
1024573	Heptachlor epoxide #	0.0075	2200008	0.0076	2200008	NA		0.0021	2200008	0.0021	2200008	ID	200008	ID	200008	ID	200008
1330207	Xylene	3800	1201009	16000	1201009	NA		NA		NA		41	2200509	370	2200509	730	2200509
1336363	PCB # @	NLS		NLS		0.00012	1199707	0.000026	1199707	0.000026	1199707	ID*	199706	ID	199706	ID	199706
1634044	Methyl tert butyl ether (MTBE) #	920	1200809	63000	1200809	NA		100	1200809	7100	1200809	32000	2200808	210000	1200808	420000	1200808
1702176	3,6-Dichloropicolinic acid	4100	1199806	200000	1199806	NA		NA		NA		ID	199809	ID	199809	ID	199809
1746016	2,3,7,8-TCDD # @	0.000000067	1199707	0.000000067	1199707	3.1E-09	1199707	8.6E-09	1199707	8.6E-09	1199707	ID*	199709	ID*	199709	ID*	199709
1763231	Perfluorooctyl sulfonate	0.011	2201403	0.012	2201403	NA		NA		NA		140	2201408	780	2201408	1600	2201408
1912249	Atrazine	880	1200309	8600	1200309	NA		NA		NA		7.3	2199712	50	2199712	100	2199712
1918021	Picloram	5500	1200301	180000	1200301	NA		NA		NA		46	2200301	290	2200301	570	2200301
2385855	Mirex # @	ID*	199904	ID*	199904	0.000016	1199904	0.000042	1199904	0.000042	1199904	ID*	199905	ID	199905	ID	199905
2691410	HMX	1400	1199908	110000	1199908	NA		NA		NA		250	2199908	2300	2199908	4600	2199908
2764729	Diquat	61	1200212	4900	1200212	NA		NA		NA		6.0	2201107	54	2201107	110	2201107
2921882	Chlorpyrifos	*		*		NA		NA		NA		0.002	2200301	0.027	1200301	0.053	1200301
3383968	Temephos	NLS		NLS		NA		NA		NA		0.000075	2201111	0.00067	2201111	0.0013	2201111
4684940	6-Chloropicolinic acid	410	1199806	22000	1199806	NA		NA		NA		26	2199809	230	2199809	460	2199809
4860031	1-Chlorohexadecane	ID	200007	ID	200007	NA		NA		NA		ID	200007	ID	200007	ID	200007
7439921	Lead	14	1200709	190	1200709	NA		NA		NA		(EXP(0.9859*(LnH)-1.270))*CFc^{D}	2201011	(EXP(0.9859*(LnH)+0.2972))*CFc^{D}	1201011	(EXP(0.9859*(LnH)+0.9904))*CFc*2^{D}	1201011
7439932	Lithium	720	2200602	58000	2200602	NA		NA		NA		440	2200806	910	1200806	1800	1200806
7439965	Manganese	1300	1200612	59000	1200612	NA		NA		NA		EXP(0.8784*(lnH)+3.5385)	1201208	EXP(0.8784*(lnH)+4.3075)	1201208	EXP(0.8784*(lnH)+5.0006)	1201208
7439976	Mercury @	0.0018	1199707	0.0018	1199707	0.0013	1199707	NA		NA		0.77^{D}	1199707	1.4^{D}	1199707	2.8^{D}	1199707
7439987	Molybdenum	120	1200605	10000	1200605	NA		NA		NA		3200	2200604	28000	2200604	58000	2200604
7440020	Nickel	2600	1199706	210000	1199706	NA		NA		NA		(EXP(0.846*(LnH)+0.0584))*0.997^{D}	1199707	(EXP(0.846*(LnH)+2.255))*0.998^{D}	1199707	(EXP(0.846*(LnH)+2.255))*0.998*2^{D}	1199707
7440224	Silver	130	1199705	11000	1199705	NA		NA		NA		0.06	1199710	0.54	1199710	1.1	1199710
7440246	Strontium	ID*	199808	ID*	199808	NA		NA		NA		21000	2200806	40000	1200806	81000	1200806
7440280	Thallium	1.2	1200501	3.7	1200501	NA		NA		NA		7.2	2201407	47	2201407	94	2201407
7440326	Titanium	NLS		NLS		NA		NA		NA		ID	200205	ID	200205	ID	200205
7440360	Antimony	1.7	1199807	130	1199807	NA		NA		NA		240	2200106	1100	2200106	2300	2200106
7440382	Arsenic #	10	1201009	280	1201009	NA		10	1201009	10	1201009	150	1199707	340	1199707	680	1199707
7440393	Barium	1900	1199705	160000	1199705	NA		NA		NA		EXP(1.0629*(lnFH)+1.1869)	2200905	EXP(1.0629*(lnFH)+2.2354)	2200905	EXP(1.0629*(lnFH)+2.9285)	2200905
7440417	Beryllium	160	1199704	1200	1199704	NA		NA		NA		EXP(1.6839(LnFH)-5.8575)	2201401	EXP(1.6839(LnFH)-3.6603)	2201401	EXP(1.6839(LnFH)-2.9672)	2201401
7440428	Boron	4000	1201209	330000	1201209	NA		NA		NA		7200	1201112	34000	1201112	69000	1201112
7440439	Cadmium	2.5	1199706	130	1199706	NA		NA		NA		(EXP(0.7852*(LnH)-2.715))*CFb^{D}	1199707	(EXP(1.128*(LnH)-3.6867))*CFa^{D}	1199707	(EXP(1.128*(LnH)-3.6867))*CFa*2^{D}	1199707
7440473	Chromium	120	1199706	9400	1199706	NA		NA		NA		(EXP(0.819*(LnH)+0.6848))*0.86^{D}	1199707	(EXP(0.819*(LnH)+3.7256))*0.316^{D}	1199707	(EXP(0.819*(LnH)+3.7256))*0.316*2^{D}	1199707
7440484	Cobalt	ID*	199807	ID*	199807	NA		NA		NA		100	2199804	370	2199804	740	2199804
7440508	Copper	470	1200512	38000	1200512	NA		NA		NA		(EXP(0.8545*(LnH)-1.702))*0.96^{D}	1199707	(EXP(0.9422*(LnH)-1.7))*0.96^{D}	1199707	(EXP(0.9422*(LnH)-1.7))*0.96*2^{D}	1199707
7440622	Vanadium	53	1200907	540	1200907	NA		NA		NA		27	2201104	79	2201104	160	2201104
7440666	Zinc	3300	1200510	16000	1200510	NA		NA		NA		(EXP(0.8473*(LnH)+0.884))*0.986^{D}	1199707	(EXP(0.8473*(LnH)+0.884))*0.978^{D}	1199707	(EXP(0.8473*(LnH)+0.884))*0.978*2^{D}	1199707
7664417	Ammonia, unionized coldwater	ID*	199711	ID*	199711	NA		NA		NA		29	1199710	160	1199710	320	1199710
7664417.1	Ammonia, unionized warmwater	ID*	199711	ID*	199711	NA		NA		NA		53	1199710	210	1199710	420	1199710
7722647	Potassium permanganate	NLS		NLS		NA		NA		NA		*	2200308	29	2200308	58	2200308
7722841	Hydrogen peroxide	ID*	199903	ID*	199903	NA		NA		NA		10	2200906	92	2200906	180	2200906
7726956	Bromine	ID*	199903	ID*	199903	NA		NA		NA		0.26	2200911	2.4	2200911	4.8	2200911
7782492	Selenium & inorganic salts	120	1199704	2700	1199704	NA		NA		NA		5	1199707	62	1199808	120	1199808
7782505	Chlorine	NLS		NLS		NA		NA		NA		*	1199709	19	1199709	38	1199709
7783064	Hydrogen sulfide	160	1200401	13000	1200401	NA		NA		NA		0.36	2200812	3.2	1200812	6.4	1200812
8001352	Toxaphene # @	0.021	1199710	0.021	1199710	0.00014	1199710	0.000068	1199707	0.000068	1199707	0.005	2199706	0.15	2199706	0.3	2199706
10028156	Ozone	NLS		NLS		NLS		NLS		NLS		0.065	2200112	0.58	2200112	1.2	2200112
10061015	*cis* -1,3-Dichloropropylene #	930	1200709	39000	1200709	NA		3.3	1200709	140	1200709	9.0	2200708	81	1200708	160	1200708
10061026	*trans* -1,3-Dichloropropylene #	930	1200709	39000	1200709	NA		3.3	1200709	140	1200709	9.0	2200708	81	1200708	160	1200708
10222012	DBNPA	ID*	199804	ID*	199804	NA		NA		NA		7.8	2199804	71	2199804	140	2199804
14797558	Nitrate	10000	1200309	NLS		NA		NA		NA		NLS		NLS		NLS	
14797730	Perchlorate	19	1200905	1600	1200905	NA		NA		NA		NLS		NLS		NLS	
14998277	Chlorite	830	1200601	67000	1200601	NA		NA		NA		0.72	2200601	6.5	1200601	13	1200601
15541454	Bromate #	100	1200505	8200	1200505	NA		0.5	1200505	40	1200505	760	2200505	6900	2200505	14000	2200505
15687271	Ibuprofen	NLS		NLS		NA		NA		NA		96	2201401	860	2201401	1700	2201401
15972608	Alachlor #	270	1199802	6900	1199802	NA		3.5	1199802	91	1199802	11	2199803	150	2199803	300	2199803
16984488	Fluoride	NLS		NLS		NA		NA		NA		EXP(0.1776*(lnH)+6.9017)	2201302	EXP(0.1776*(lnH)+8.1995)	1201302	EXP(0.1776*(lnH)+8.8927)	1201302
18540299	Chromium, hexavalent	120	1199706	9400	1199706	NA		NA		NA		112	1199707	16^{D}	1199707	32^{D}	1199707
21725462	Cyanazine #	190	1199805	12000	1199805	NA		0.93	1199805	56	1199805	110	2199804	1000	2199804	2000	2199804
25154523	p-Nonylphenol (mixed isomers)	NLS		NLS		NA		NA		NA		2	1199902	7	1199902	14	1199902
25812300	Gemfibrozil	NLS		NLS		NA		NA		NA		44	2201401	400	2201401	800	2201401
26628228	Sodium azide	330	2200307	27000	2200307	NA		NA		NA		7.3	2200306	65	2200306	130	2200306
32289580	PFHxS	*	201211	*	201211	NA		*	201211	*	201211	0.2	2201209	1.8	2201209	3.6	2201209
38836394	N-(1-methylpropylidene)-2-propanamine	ID	199805	ID	199805	NA		NA		NA		ID	199803	ID	199803	ID	199803
40360449	3,5,6-Trichloropicolinic acid	ID	199809	ID	199809	NA		NA		NA		ID	199805	ID	199805	ID	199805
40596698	Methoprene	21	2200401	21	2200401	NA		NA		NA		2.9	2200401	26	2200401	51	2200401
51207319	Tetrachlorodibenzofuran, 2,3,7,8-	NLS		NLS		NA		NA		NA		ID	199706	ID	199706	ID	199706
51218452	Metolachlor	3300	1200603	14000	1200603	NA		78	1200603	340	1200603	15	2200604	110	2200604	210	2200604
57755604	Fluridone	2200	1200212	80000	1200212	NA		NA		NA		1	2200304	3	2200304	250	2200301
64741668	Isopar C	ID	200402	ID	200402	NA		NA		NA		1.9	2200402	17	2200402	35	2200402
67774327	PBB #	0.00031	1199904	0.00031	1199904	NA		0.00013	1199904	0.00013	1199904	NLS		NLS		NLS	

NOTES:
All chemical specific values are in ug/L and expressed as total unless otherwise indicated
EXP = exponent in log base e
H = hardness (in mg/L)
ID = insufficient data to derive value
NLS = no literature search has been conducted
NA = not applicable
@ = Bioaccumulative Chemical of Concern
# = carcinogen
* = the lowest HNV, WV, HCV or FCV given for this chemical will adequately protect the uses identified with an ID* or *
CFa = acute conversion factor for cadmium = 1.136672-[(lnH)(0.041838)]
CFb = chronic conversion factor for cadmium = 1.101672-[(lnH)(0.041838)]
CFc = acute and chronic conversion factor for lead = 1.46203-[(lnH)(0.145712)]
D = value is expressed as dissolved
Modifications/additions to this spreadsheet compared to the previous one dated 2/27/2014 are shaded.

Rule 57 Water Quality Values
Surface Water Assessment Section
Michigan DEQ

4/1/2015

		HNV Drink		HNV Non-drink		WV		HCV Drink		HCV Non-drink		FCV		AMV		FAV	
CAS #	PARAMETER NAME	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date
50000	Formaldehyde	5000	1200906	390000	1200906	NA		NA		NA		180	2201305	790	2201305	1600	2201305
50293	DDT # @	0.002	1199707	0.002	1199707	0.000011	1199707	0.00015	1199707	0.00015	1199707	0.0032	2199708	0.029	2199708	0.057	2199708
50328	Benzo(a)pyrene #	NLS		NLS		NA		NLS		NLS		ID	201003	ID	201003	ID	201003
51285	2,4-Dinitrophenol	55	1199707	2800	1199707	NA		NA		NA		19	2200301	130	2200301	270	2200301
53703	Dibenz(a,h)anthracene #	NLS		NLS		NA		NLS		NLS		ID	199712	ID	199712	ID	199712
56235	Carbon tetrachloride #	18	1201311	140	1201311	NA		4.7	1201311	38	1201311	77	2200709	690	2200709	1400	2200709
56382	Parathion	NLS		NLS		NA		NA		NA		0.013	1199707	0.065	1199707	0.13	1199707
56553	Benzo(a)anthracene	NLS		NLS		NA		NLS		NLS		ID	200002	ID	200002	ID	200002
57125	Cyanide, free	600	1199707	48000	1199707	NA		NA		NA		5.2	1199707	22	1199707	44	1199707
57410	Phenytoin #	790	1201004	11000	1201004	NA		6.1	1201004	89	1201004	120	2200606	1100	2200606	2200	2200606
57556	Propylene glycol	580000	1200202	47000000	1200202	NA		NA		NA		290000	2200203	1000000	2200203	2100000	2200203
57749	Chlordane # @	0.0014	1199707	0.0014	1199707	NLS		0.00025	1199707	0.00025	1199707	0.029	2199705	0.27	2199705	0.53	2199705
58899	Lindane # @	0.47	1199707	0.5	1199707	0.026	1199809	0.025	2199809	0.027	2199809	0.07	2199706	0.95	1199707	1.9	1199707
58902	2,3,4,6-Tetrachlorophenol	120	2200301	150	2200301	NA		NA		NA		1.2	2200301	11	2200301	22	2200301
59507	4-Chloro-3-methylphenol	6900	1200103	390000	1200103	NA		NA		NA		7.4	2200103	67	2200103	130	2200103
60297	Ethyl ether	14000	1199707	1000000	1199707	NA		NA		NA		ID	201310	ID	201310	ID	201310
60571	Dieldrin # @	0.00041	1199707	0.00041	1199707	0.000071	1199704	0.0000065	1199707	0.0000065	1199707	0.056	1199707	0.24	1199707	0.48	1199707
62533	Aniline #	190	1199809	13000	1199809	NA		21	1199809	1500	1199809	4	2199907	18	2199907	36	2199907
64175	Ethanol	1500000	1199810	120000000	1199810	NA		NA		NA		NLS		NLS		NLS	
64186	Formic acid	38000	1199905	3100000	1199905	NA		NA		NA		ID	199905	ID	199905	ID	199905
64197	Acetic acid (includes acetate)	16000	2199807	1300000	2199807	NA		NA		NA		EXP(0.2732*(pH) + 7.0362)	2200506	EXP(0.2732*(pH) + 9.2333)	2200506	EXP(0.2732*(pH) + 9.9265)	2200506
67561	Methanol	14000	1199810	1100000	1199810	NA		NA		NA		590000	2200307	13000000	2200307	27000000	2200307
67630	2-Propanol	28000	1200202	2300000	1200202	NA		NA		NA		57000	2200203	500000	2200203	1000000	2200203
67641	Acetone	5600	1199710	450000	1199710	NA		NA		NA		1700	2199711	15000	1199711	30000	1199711
67663	Chloroform #	350	1201009	11000	1201009	NA		*	201009	*	201009	630	2201001	5700	1201001	11000	1201001
67685	Dimethylsulfoxide	830000	1199807	67000000	1199807	NA		NA		NA		190000	2199709	1700000	2199709	3400000	2199709
67721	Hexachloroethane #	6	1199707	7.6	1199707	NA		5.3	1199707	6.7	1199707	13	2200512	110	2200512	210	2200512
71363	n-Butanol	3500	1201107	250000	1201107	NA		NA		NA		9800	2201108	88000	2201108	180000	2201108
71432	Benzene #	19	1199707	510	1199707	NA		12	1199707	310	1199707	200	2201109	950	2201109	1900	2201109
71501	Acetate (includes acetic acid)	16000	2199807	1300000	2199807	NA		NA		NA		EXP(0.2732*(pH) + 7.0362)	2200407	EXP(0.2732*(pH) + 9.2333)	2200407	EXP(0.2732*(pH) + 9.9265)	2200407
71556	1,1,1-Trichloroethane	62000	1201208	1300000	1201208	NA		NA		NA		89	2201207	800	2201207	1600	2201207
72208	Endrin	NLS		NLS		NA		NA		NA		0.036	1199707	0.086	1199707	0.172	1199707
74839	Bromomethane	39	1199708	2600	1199708	NA		NA		NA		4.2	2201401	38	2201401	75	2201401
74873	Chloromethane #	3500	1201005	240000	1201005	NA		110	1201005	7300	1201005	ID	201011	ID	201011	ID	201011
74895	Methylamine	ID	199805	ID	199805	NA		NA		NA		ID	199807	ID	199807	ID	199807
74931	Methylmercaptan	140	1200107	11000	1200107	NA		NA		NA		ID	200107	ID	200107	ID	200107
74975	Bromochloromethane	1000	1200108	59000	1200108	NA		NA		NA		ID	201010	ID	201010	ID	201010
75003	Chloroethane #	500000	1201310	27000000	1201310	NA		170	1201310	9400	1201310	1100	2201310	10000	2201310	20000	2201310
75014	Vinyl chloride #	83	1201111	4400	1201111	NA		0.25	1201111	13	1201111	930	2201111	8400	2201111	17000	2201111
75047	Ethylamine	740	1199712	60000	1199712	NA		NA		NA		ID	199807	ID	199807	ID	199807
75058	Acetonitrile	5600	1201404	450000	1201404	NA		NA		NA		13000	2201401	120000	2201401	230000	2201401
75070	Acetaldehyde	1200	2200107	93000	2200107	NA		NA		NA		130	2200107	1200	2200107	2400	2200107
75092	Methylene chloride #	1600	1199707	90000	1199707	NA		47	1199707	2600	1199707	1500	2200911	8500	2200911	17000	2200911
75150	Carbon disulfide	1000	1199809	34000	1199809	NA		NA		NA		ID	200511	ID	200511	ID	200511
75252	Bromoform #	470	1199801	8100	1199801	NA		52	1199801	890	1199801	ID	199712	ID	199712	ID	199712
75274	Dichlorobromomethane #	170	1200811	4500	1200811	NA		6.8	1200811	180	1200811	ID	200806	ID	200806	ID	200806
75343	1,1-Dichloroethane	9800	1201111	400000	1201111	NA		NA		NA		740	2201111	6600	2201111	13000	2201111
75354	1,1-Dichloroethylene	1200	1201209	33000	1201209	NA		NA		NA		130	2201209	1200	2201209	2300	2201209
75434	Dichlorofluoromethane	2500	2199910	130000	2199910	NA		NA		NA		150	2199910	1300	2199910	2600	2199910
75569	Propylene oxide #	ID*	199711	ID*	199711	NA		2.3	1199711	180	1199711	220	2199709	2000	2199709	4000	2199709
75718	Dichlorodifluoromethane	2900	1201408	90000	1201408	NA		NA		NA		ID	201408	ID	201408	ID	201408
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	444000	1200007	1834000	1200007	NA		NA		NA		32	2201206	280	2201206	570	2201206
76448	Heptachlor #	0.071	2200007	0.072	2200007	NA		0.0017	2200007	0.0018	2200007	0.07	2200012	0.42	1200012	0.85	1200012
77474	Hexachlorocyclopentadiene	140	1199904	450	1199904	NA		NA		NA		ID	199904	ID	199904	ID	199904
77769	2,2-Dimethoxypropane	ID	199810	ID	199810	NA		NA		NA		ID	199812	ID	199812	ID	199812
78591	Isophorone #	4100	1199811	110000	1199811	NA		310	1199811	8200	1199811	1300	2200207	4600	2200207	9200	2200207
78875	1,2-Dichloropropane #	12000	1200309	380000	1200309	NA		9.1	1200309	290	1200309	230	2200309	2000	2200309	4000	2200309
78933	Methyl ethyl ketone	17000	1201005	1,300,000	1201005	NA		NA		NA		2200	2201001	20000	2201001	40000	2201001

		HNV		HNV				HCV		HCV							
		Drink		Non-drink		WV		Drink		Non-drink		FCV		AMV		FAV	
CAS #	PARAMETER NAME	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date
79005	1,1,2-Trichloroethane #	110	1201209	3000	1201209	NA		12	1201209	330	1201209	730	2201209	3200	2201209	6400	2201209
79016	Trichloroethylene #	44	1199709	550	1199709	NA		29	1199707	370	1199707	200	2201207	1800	2201207	3500	2201207
79061	Acrylamide #	28	1200506	2200	1200506	NA		0.12	1200506	10	1200506	590	2200808	5300	2200808	11000	2200808
79094	Propionic acid	50000	1199807	3900000	1199807	NA		NA		NA		ID	199709	ID	199709	ID	199709
79210	Peracetic acid	NLS		NLS		NA		NA		NA		9.3	2201401	19	2201401	39	2201401
79345	1,1,2,2-Tetrachloroethane #	180	1200709	4300	1200709	NA		3.2	1200709	78	1200709	200	2200707	910	2200707	1800	2200707
79390	Methacrylamide	NLS		NLS		NA		NLS		NLS		ID	201011	ID	201011	ID	201011
80057	Bisphenol A	NLS		NLS		NLS		NLS		NLS		20	2200212	180	2200212	350	2200212
80466	Dimethylpropyl phenol	ID	199707	ID	199707	NA		NA		NA		ID	199710	ID	199710	ID	199710
83329	Acenaphthene	580	2199903	890	2199903	NA		NA		NA		38	1200206	100	1200206	200	1200206
84662	Diethyl phthalate	14000	1200101	40000	1200101	NA		NA		NA		110	2200101	980	2200101	2000	2200101
84742	Di-n-butyl phthalate	640	2199808	690	2199808	NA		NA		NA		9.7	2199809	38	2199809	75	2199809
84764	Dinonyl phthalate	ID*	200501	ID*	200501	NA		NA		NA		140	2200501	1200	2200501	2500	2200501
85018	Phenanthrene	ID*	199706	ID*	199706	NA		NA		NA		1.7	2201210	5.7	2201210	11	2201210
85687	Butyl benzyl phthalate	6.9	1199902	160	1199902	NA		NA		NA		67	2200207	310	1200207	630	1200207
86737	Fluorene	140	2199901	160	2199901	NA		NA		NA		12	2199809	110	1199809	220	1199809
86748	Carbazole#	ID*	199809	ID*	199809	NA		19	1200001	41	1200001	4	2199905	36	2199905	72	2199905
87616	1,2,3-Trichlorobenzene	55	1200609	73	1200609	NA		NA		NA		ID	200609	ID	200609	ID	200609
87683	Hexachlorobutadiene # @	0.093	1199704	0.098	1199704	0.053	1199906	0.33	2199704	0.35	2199704	1	2199904	7	2199904	15	2199904
87821	Hexabromobenzene	81	1199903	6500	1199903	NA		NA		NA		ID	199903	ID	199903	ID	199903
87865	Pentachlorophenol #	300	1199710	450	1199710	NA		1.8	1199710	2.8	1199710	EXP(1.005*(pH)-5.134)	1199707	EXP(1.005*(pH)-4.869)	1199707	(EXP(1.005*(pH)-4.869))*2	1199707
88062	2,4,6-Trichlorophenol #	1900	1200612	14000	1200612	NA		41	1200612	290	1200612	5	2200609	39	2200609	79	2200609
88697	2-Isopropylphenol	ID	200212	ID	200212	NA		NA		NA		36	2200212	320	2200212	650	2200212
88755	2-Nitrophenol	ID	201005	ID	201005	NA		NA		NA		56	2200911	510	2200911	1000	2200911
88857	Dinoseb	28	1200006	1900	1200006	NA		NA		NA		0.48	2200005	4.8	2200005	9.5	2200005
91203	Naphthalene	1100	1201001	2300	1201001	NA		NA		NA		11	2200802	100	2200802	200	2200802
91576	2-Methylnaphthalene	600	2200911	1000	2200911	NA		NA		NA		19	2200909	170	2200909	340	2200909
91941	3,3'-Dichlorobenzidine #	650	2199709	950	2199709	NA		0.14	2199709	0.2	2199709	4.5	2199710	41	2199710	81	2199710
92524	Biphenyl	460	1200108	690	1200108	NA		NA		NA		13	2200110	54	2200110	110	2200110
92875	Benzidine #	74	1201003	3700	1201003	NA		0.0015	1201003	0.073	1201003	2.7	2200902	25	2200902	49	2200902
93721	Silvex	83	2200301	140	2200301	NA		NA		NA		30	2200301	270	2200301	540	2200301
93765	2,4,5-T	490	1200301	1200	1200301	NA		NA		NA		ID	200301	ID	200301	ID	200301
94757	2,4-D	240	1199804	1900	1199804	NA		NA		NA		220	2199802	1400	2199802	2900	2199802
95487	2-Methylphenol	1400	1199802	44000	1199802	NA		NA		NA		76	2201109	690	2201109	1400	2201109
95498	o-Chlorotoluene	360	1200010	970	1200010	NA		NA		NA		ID	200010	ID	200010	ID	200010
95501	1,2-Dichlorobenzene	2000	1200609	11000	1200609	NA		NA		NA		13	2200609	120	2200609	240	2200609
95512	2-Chloroaniline	91	1200809	3100	1200809	NA		NA		NA		ID	199906	ID	199906	ID	199906
95578	2-Chlorophenol	190	2200703	400	2200703	NA		NA		NA		18	2200806	160	2200806	320	2200806
95636	1,2,4-Trimethylbenzene	190	2200101	330	2200101	NA		NA		NA		17	2200102	150	2200102	310	2200102
95658	3,4-Dimethylphenol	37	1201109	580	1201109	NA		NA		NA		25	2201108	230	2201108	460	2201108
95943	1,2,4,5-Tetrachlorobenzene	2.8	1199902	2.9	1199902	ID		NA		NA		3	2199905	23	2199905	46	2199905
96128	1,2-Dibromo-3-chloropropane #	ID*	200908	ID*	200908	NA		0.24	1200908	4.9	1200908	ID	200908	ID	200908	ID	200908
98066	tert-Butylbenzene	ID	200109	ID	200109	NA		NA		NA		ID	200109	ID	200109	ID	200109
98068	4-Chlorobenzenesulfonic acid	28000	2200908	2200000	2200908	NA		NA		NA		ID	200908	ID	200908	ID	200908
98828	Cumene	1700	1201103	3800	1201103	NA		NA		NA		28	2200807	250	2200807	500	2200807
98862	Acetophenone	ID	200108	ID	200108	NA		NA		NA		ID	200109	ID	200109	ID	200109
98953	Nitrobenzene #	26	1201005	990	1201005	NA		4.7	1201005	180	1201005	230	2201002	1000	2201002	2100	2201002
99876	p-Isopropyltoluene	ID	200011	ID	200011	NA		NA		NA		ID	200010	ID	200010	ID	200010
99898	4-Isopropylphenol	ID	200212	ID	200212	NA		NA		NA		20	2200212	180	2200212	360	2200212
100027	4-Nitrophenol	680	1200906	18000	1200906	NA		NA		NA		200	2200806	940	2200806	1900	2200806
100414	Ethylbenzene #	2100	1199704	8300	1199704	NA		25	1200409	110	1200409	18	2200309	160	2200309	320	2200309
100425	Styrene #	4200	1199809	18000	1199809	NA		20	1199809	80	1199809	160	2199802	1400	2199802	2900	2199802
100618	N-methylaniline	ID	200607	ID	200607	NA		NA		NA		ID	200607	ID	200607	ID	200607
101848	Diphenyloxide	44	2200109	78	2200109	NA		NA		NA		2.9	2200109	26	2200109	52	2200109
102829	Tributylamine	ID	199707	ID	199707	NA		NA		NA		ID	199710	ID	199710	ID	199710
103231	Di(2-ethylhexyl)adipate	ID	200201	ID	200201	NA		ID	200201	ID	200201	4.6	2200404	41	2200404	83	2200404
103333	Azobenzene #	ID*	201004	ID*	201004	NA		3.7	2201004	6.0	2201004	ID	201004	ID	201004	ID	201004
103651	N-propyl benzene	ID	200011	ID	200011	NA		NA		NA		ID	200609	ID	200609	ID	200609
103695	N-ethylaniline	ID	199902	ID	199902	NA		NA		NA		1.8	2199709	16	2199709	32	2199709
104518	n-Butylbenzene	ID	200011	ID	200011	NA		NA		NA		ID	200010	ID	200010	ID	200010
104767	2-Ethylhexanol #	8700	1200201	68000	1200201	NA		86	1200408	660	1200408	130	2200402	1100	2200402	2300	2200402
105679	2,4-Dimethylphenol	450	1199707	8700	1199707	NA		NA		NA		380	2199909	1300	1199909	2700	1199909
106445	4-Methylphenol	1400	1199802	45000	1199802	NA		NA		NA		25	2201310	230	2201310	450	2201310
106467	1,4-Dichlorobenzene #	1100	1201111	11000	1201111	NA		24	1201111	240	1201111	17	2201109	100	2201109	210	2201109
106478	4-Chloroaniline #	39	1200805	1400	1200805	NA		2	1200805	72	1200805	ID	200804	ID	200804	ID	200804
106489	4-Chlorophenol	880	2201005	14000	2201005	NA		NA		NA		30	2201010	270	2201010	530	2201010
106934	1,2-Dibromoethane #	250	1200607	8200	1200607	NA		0.17	1200607	5.7	1200607	15	2200607	140	2200607	280	2200607
107062	1,2-Dichloroethane #	6900	1201207	420000	1201207	NA		6	1201207	360	1201207	2000	2201207	8200	2201207	16000	2201207
107131	Acrylonitrile #	58	1200708	320	1200708	NA		0.21	1200708	1.2	1200708	66	2201010	590	2201010	1200	2201010
107211	Ethylene glycol	56000	1200003	4500000	1200003	NA		NA		NA		190000	2200003	1700000	2200003	3400000	2200003
108101	4-Methyl-2-pentanone	ID	201003	ID	201003	NA		NA		NA		ID	200906	ID	200906	ID	200906
108112	4-Methyl-2-pentanol	ID	201209	ID	201209	NA		NA		NA		ID	201208	ID	201208	ID	201208
108203	Diisopropylether	22000	1200008	1200000	1200008	NA		NA		NA		ID	200008	ID	200008	ID	200008
108394	3-Methylphenol	2700	1199912	89000	1199912	NA		NA		NA		71	2199912	636	2199912	1271	2199912
108601	Bis(2-chloroisopropyl)ether #	990	1199711	47000	1199711	NA		6	1199711	230	1199711	ID	199709	ID	199709	ID	199709
108678	1,3,5-Trimethylbenzene	2000	1200101	4200	1200101	NA		NA		NA		45	2200102	410	2200102	810	2200102
108872	Methylcyclohexane	ID	200910	ID	200910	NA		NA		NA		ID	200910	ID	200910	ID	200910

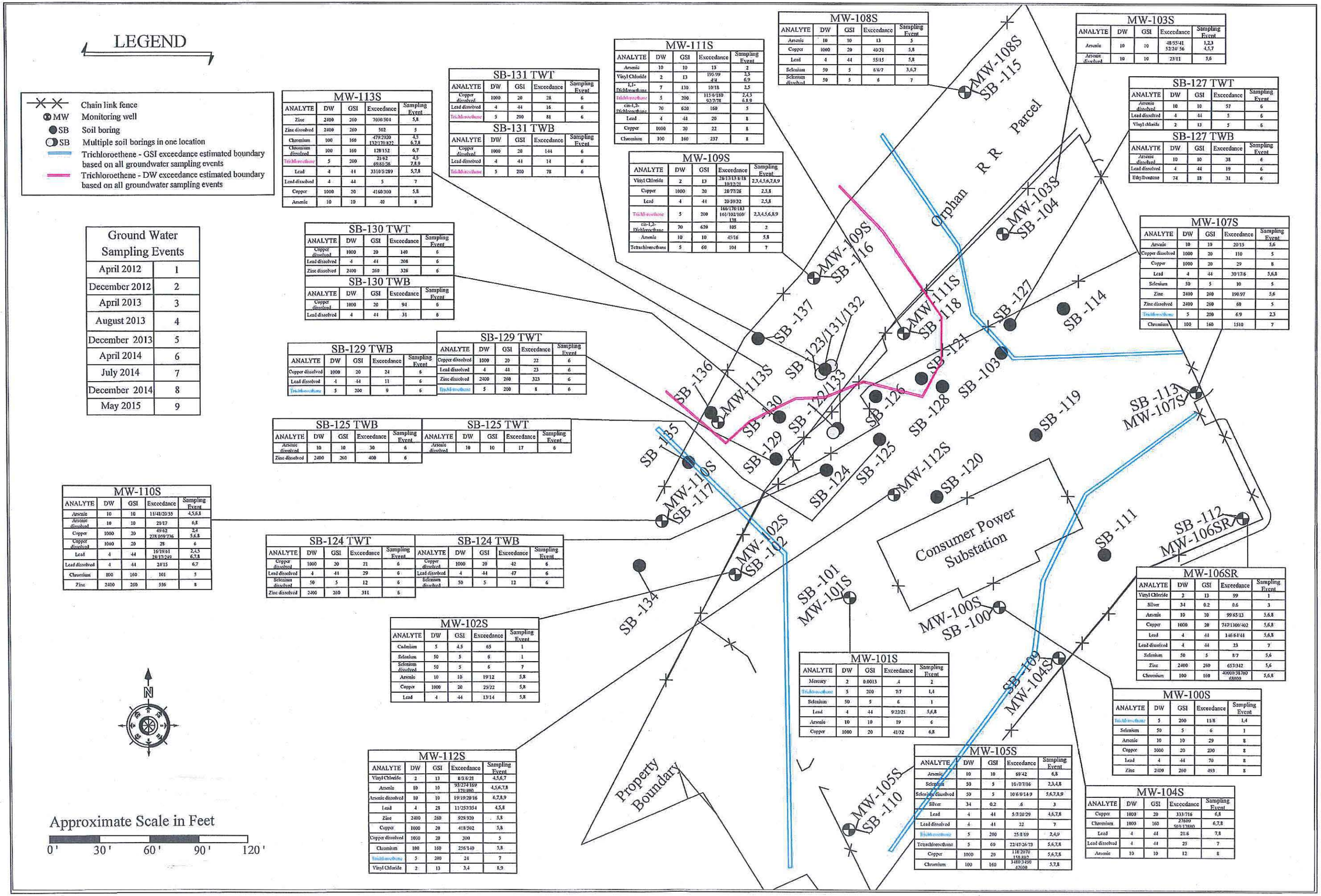
		HNV		HNV				HCV		HCV									
		Drink		Non-drink		WV		Drink		Non-drink		FCV		AMV		FAV			
CAS #	PARAMETER NAME	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date	Value	verif date		
84852153	4-Nonylphenol	130	2199811	200	2199811	NA		NA		NA		ID	199902	ID	199902	ID	199902		
103361097	Fluoxazin	NLS		NLS		NA		NA		NA		ID	201205	ID	201205	ID	201205		
168316858	Spinosad	620	1200505	7500	1200505	NA		NA		NA		60	2200507	540	2200507	1100	2200507		

GROUNDWATER Turbidity and METALS ANALYTICAL DATA
RACER - Flint West #12990
May 2015

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S
	Date Collected			DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI															
Arsenic (dissolved)	10	10					6									16	
Arsenic	10	10			4		23			5				2	6	277	6
Chromium (dissolved)	100	160	G			22		5	8								
Chromium	100	160	G		17	24		1590	829	58300					29	9	73
Copper (dissolved)	1000	20	G														
Copper	1000	20	G		31	9		40	13	306						14	12
Lead (dissolved)	4	44	G														
Lead	4	44	G		24					26						9	11
Selenium (dissolved)	50	5							9								
Selenium	50	5							9								
Zinc (dissolved)	2400	260	G		9			8		120		6			9	39	22
Zinc	2400	260	G		9			8		133		6			9	39	22
Final Field Turbidity Reading, before filtering, stated in ug/L					785E+3	432E+3	595E+3	1010E+3	1105E+3	1694E+3	479E+3	453E+3	505E+3	585E+3	617E+3	829E+3	729E+3

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River



Ground Water Sampling Events	
April 2012	1
December 2012	2
April 2013	3
August 2013	4
December 2013	5
April 2014	6
July 2014	7
December 2014	8
May 2015	9

MW-113S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Zinc	2400	260	7030/504	5,8
Zinc dissolved	2400	260	502	5
Chromium	100	160	479/2920 132/170/822	4,5 6,7,8
Chromium dissolved	100	160	128/152	6,7
Trichloroethene	5	200	21/62 69/61/36	4,5 7,8,9
Lead	4	44	3310/3/289	5,7,8
Lead dissolved	4	44	5	7
Copper	1000	20	4160/300	5,8
Arsenic	10	10	40	8

SB-131 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	28	6
Lead dissolved	4	44	16	6
Trichloroethene	5	200	81	6

SB-131 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	144	6
Lead dissolved	4	44	14	6
Trichloroethene	5	200	78	6

MW-111S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	13	2
Vinyl Chloride	2	13	193/99 4/4	2,5 6,9
1,1-Dichloroethane	7	130	10/18	2,5
Trichloroethene	5	200	115/6/189 92/7/78	2,4,5 6,8,9
cis-1,2-Dichloroethene	70	620	160	5
Lead	4	44	20	8
Copper	1000	20	22	8
Chromium	100	160	237	8

MW-108S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	13	5
Copper	1000	20	40/31	5,8
Lead	4	44	55/15	5,8
Selenium	50	5	6/6/7	3,6,7
Selenium dissolved	50	5	6	7

MW-103S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	48/55/41 52/24/56	1,2,3 4,5,7
Arsenic dissolved	10	10	23/11	5,6

SB-127 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	57	6
Lead dissolved	4	44	5	6
Vinyl chloride	2	13	5	6

SB-127 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	38	6
Lead dissolved	4	44	19	6
Ethylbenzene	74	18	31	6

MW-109S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	28/13/13/18 10/12/21	2,3,4,5,6,7,8,9
Copper	1000	20	28/77/26	2,5,8
Lead	4	44	20/59/32	2,5,8
Trichloroethene	5	200	160/176/183 161/102/169/ 138	2,3,4,5,6,8,9
cis-1,2-Dichloroethene	70	620	105	2
Arsenic	10	10	45/16	5,8
Tetrachloroethene	5	60	104	7

MW-107S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	20/15	5,6
Copper dissolved	1000	20	110	5
Copper	1000	20	29	8
Lead	4	44	30/17/6	5,6,8
Selenium	50	5	10	5
Zinc	2400	260	190/97	5,6
Zinc dissolved	2400	260	60	5
Trichloroethene	5	200	6.9	2,3
Chromium	100	160	1510	7

SB-130 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	140	6
Lead dissolved	4	44	208	6
Zinc dissolved	2400	260	326	6

SB-130 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	94	6
Lead dissolved	4	44	31	6

SB-129 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	24	6
Lead dissolved	4	44	11	6
Trichloroethene	5	200	9	6

SB-129 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	22	6
Lead dissolved	4	44	23	6
Zinc dissolved	2400	260	323	6
Trichloroethene	5	200	8	6

SB-125 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	30	6
Zinc dissolved	2400	260	400	6

SB-125 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic dissolved	10	10	17	6

MW-110S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	11/41/20/55	4,5,6,8
Arsenic dissolved	10	10	21/17	6,8
Copper	1000	20	49/62 278/059/736	2,4 5,6,8
Copper dissolved	1000	20	28	6
Lead	4	44	16/19/61 28/17/249	2,4,5 6,7,8
Lead dissolved	4	44	24/15	6,7
Chromium	100	160	101	5
Zinc	2400	260	536	8

SB-124 TWT

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	21	6
Lead dissolved	4	44	29	6
Selenium dissolved	50	5	12	6
Zinc dissolved	2400	260	311	6

SB-124 TWB

ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper dissolved	1000	20	42	6
Lead dissolved	4	44	47	6
Selenium dissolved	50	5	12	6

MW-106SR

ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	99	1
Silver	34	0.2	0.6	3
Arsenic	10	10	99/65/13	5,6,8
Copper	1000	20	747/1100/402	5,6,8
Lead	4	44	146/64/44	5,6,8
Lead dissolved	4	44	23	7
Selenium	50	5	8/7	5,6
Zinc	2400	260	657/342	5,6
Chromium	100	160	4000/38/800 68000	5,6,8

MW-102S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Cadmium	5	4.5	65	1
Selenium	50	5	6	1
Selenium dissolved	50	5	6	7
Arsenic	10	10	19/12	5,8
Copper	1000	20	25/22	5,8
Lead	4	44	13/14	5,8

MW-101S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Mercury	2	0.0013	.4	2
Trichloroethene	5	200	7/7	1,4
Selenium	50	5	6	1
Lead	4	44	9/22/21	5,6,8
Arsenic	10	10	19	6
Copper	1000	20	41/32	6,8

MW-100S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Trichloroethene	5	200	11/8	1,4
Selenium	50	5	6	1
Arsenic	10	10	29	8
Copper	1000	20	230	8
Lead	4	44	70	8
Zinc	2400	260	493	8

MW-112S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Vinyl Chloride	2	13	8/3/6/21	4,5,6,7
Arsenic	10	10	93/27/4/169 171/400	4,5,6,7,8
Arsenic dissolved	10	10	19/19/20/16	6,7,8,9
Lead	4	25	11/257/354	4,5,8
Zinc	2400	260	929/920	5,8
Copper	1000	20	418/302	5,8
Copper dissolved	1000	20	300	5
Chromium	100	160	256/140	5,8
Trichloroethene	5	200	24	7
Vinyl Chloride	2	13	3,4	8,9

MW-105S

ANALYTE	DW	GSI	Exceedance	Sampling Event
Arsenic	10	10	69/42	6,8
Selenium	50	5	10/7/7/16	2,3,4,8
Selenium dissolved	50	5	10/6/9/14/9	5,6,7,8,9
Silver	34	0.2	.6	3
Lead	4	44	5/7/10/29	4,6,7,8
Lead dissolved	4	44	22	7
Trichloroethene	5	200	25/8/69	2,4,9
Tetrachloroethene	5	60	22/47/26/73	5,6,7,8
Copper	1000	20	118/2070 158/807	5,6,7,8
Chromium	100	160	3480/3490 42000	5,7,8

MW-104S

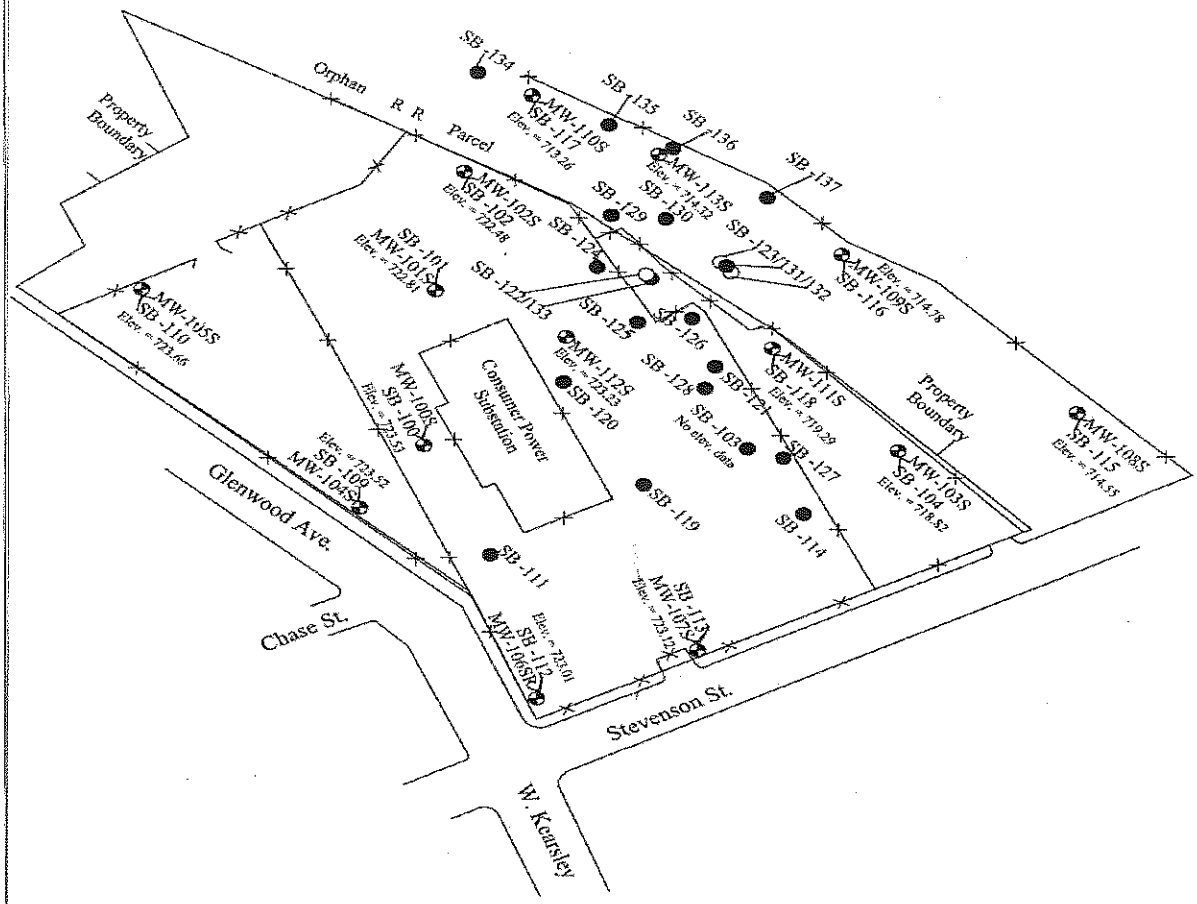
ANALYTE	DW	GSI	Exceedance	Sampling Event
Copper	1000	20	333/716	6,8
Chromium	1000	160	2760/ 503/12800	6,7,8
Lead	4	44	21/6	7,8
Lead dissolved	4	44	25	7
Arsenic	10	10	12	8

SCALE: As Shown
FIGURE: 4
DATE: 2012 / 2015
PROJECT: 11-4317-102

Summary of Drinking Water and Ground to Surface water Interface Exceedences in Groundwater 2012 / 2015

Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

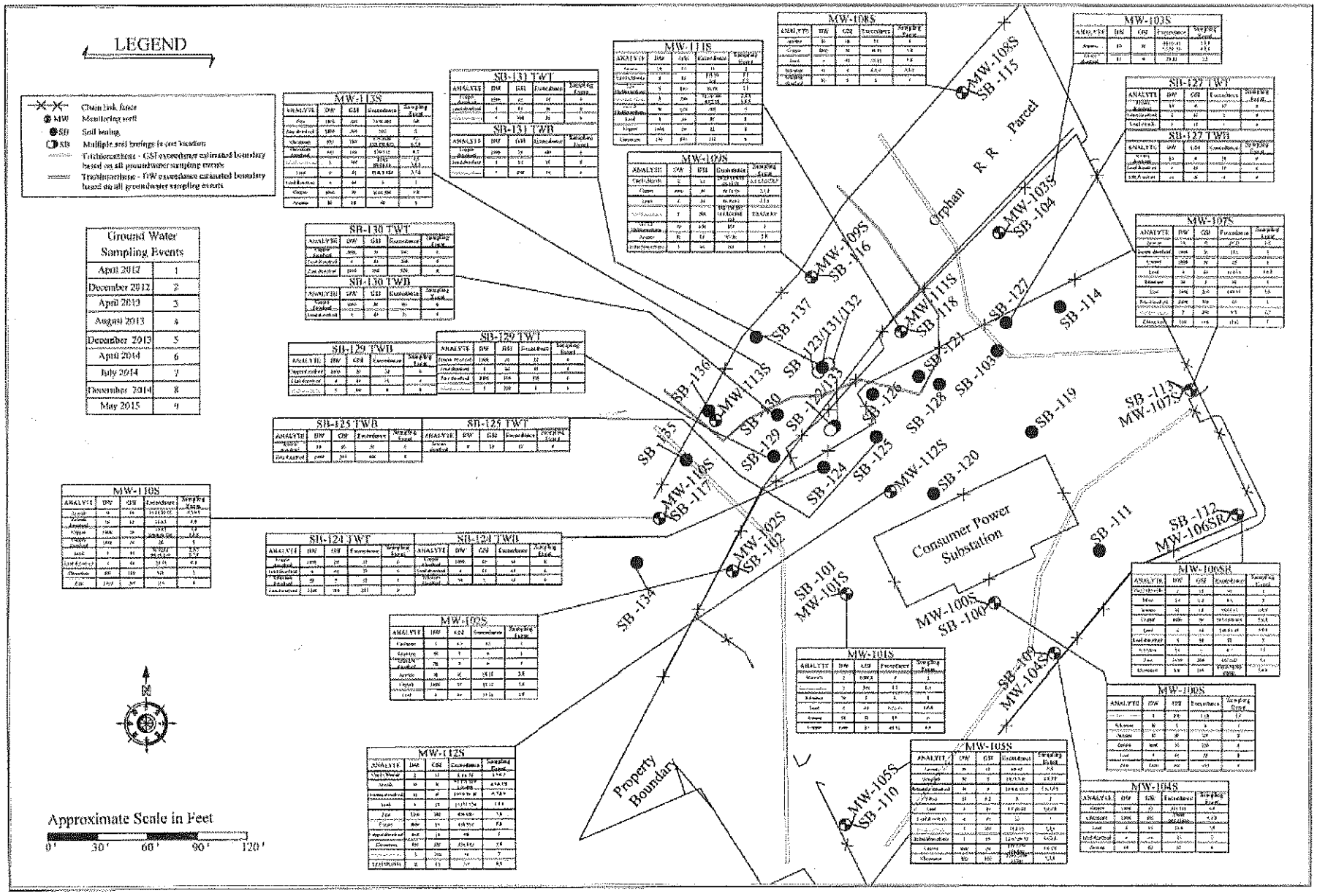
Applied EcoSystems, Inc.
Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526



Applied *Eco*Systems, Inc.
Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

Soil Boring and Well Location Map
Racer Flint West - 12990
Flint West Industrial Land, Flint, MI

DATE:	SCALE:
2015	As Shown
PROJECT:	FIGURE:
11-4317-102	2



Applied EcoSystems, Inc.
Environmental Management, Consulting & Field Services
C-4500 South Saginaw Street, Suite A, Michigan 48529
Phone: 810.715.2525 Fax: 810.715.2526

DATE: 2012 / 2015
SCALE: As Shown
PROJECT:
FIGURE:

Summary of Drinking Water and Ground to Surfacewater Interface Exceedences in Groundwater 2012 / 2015

GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected			DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																	
Arsenic (dissolved)	10	10					6									16			6
Arsenic	10	10			4		23			5				2	6	277	6		20
Chromium (dissolved)	100	160	G			22		5	8									10	
Chromium	100	160	G		17	24		1590	829	58300					29	9	73	16	
Copper (dissolved)	1000	20	G																
Copper	1000	20	G		31	9		40	13	306						14	12		
Lead (dissolved)	4	44	G																
Lead	4	44	G		24					26						9	11		
Selenium (dissolved)	50	5							9										
Selenium	50	5							9										
Zinc (dissolved)	2400	260	G		9			8		120		6			9	39	22	11	
Zinc	2400	260	G		9			8		133		6			9	39	22	11	
Final Field Turbidity Reading, before filtering stated in ug/L					785E+3	432E+3	595E+3	1010E+3	1105E+3	1694E+3	479E+3	453E+3	505E+3	585E+3	617E+3	829E+3	729E+3		
	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected			DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																	
PNAs	varies	varies																	

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected			DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																	
Acetone	730	1,700														10			
Methyl iodide	NC	NC																	
Carbon disulfide	800	NC								0.17						0.16			
2 Butanone (MEK)	13,000	2,200														6.6			
Chloromethane	260	NC			4	6	2	6	5	5	4	4	4	5	5	4	2		3
Vinyl Chloride	2.0	13									0.6		21		4	4	2		
Chloroethane	430	1,100					0.7									5			0.77
trichlorofluoromethane	2,600	NA																	
1,1-Dichloroethene	7.0	130											4		0.88				
Methylene Chloride	5.0	1,500																	
trans-1,2-Dichloroethene	100	1,500											1		0.99		0.26		
1,1-Dichloroethane	880	740									0.56		2		2	0.52	3		
cis-1,2-Dichloroethene	70	620									2		51		48	0.66	19		
Tetrahydrofuran	95	11,000																	
Chloroform	80	350						1		0.7		1	0.28		0.29	0.21	0.19		
1,1,1-Trichloroethane	200	89											0.51		0.36				
4-Methyl-2-pentanone (MIBK	1800	1E+09														1			
2-Hexanone	1000	1E+09														3			
Carbontetrachloride	5.0	45										2							
Benzene	5.0	200			0.26		0.23												0.25
Bromodichloromethane	80.0	NC																	
Trichloroethene	5.0	200			2	0.51					2		138		78	0.62	36		
Toluene	790	270			0.71					0.18									
Tetrachloroethene	5.0	60							69										
Chlorobenzene	100	25																	0.17
Styrene	100	80					0.15												0.21
Ethylbenzene	?	?																	
Total Xylenes	280	41																	
1,2 -Dichlorobenzene	?	?																	
1,2,4-Trimethylbenzene	63	17																	
1,2,3-Trimethylbenzene	NC	NC																	
Naphthalene	520	11																	
2-Methylnaphthalene	260	19																	

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected			12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14
ANALYTE (ug/L)	DW	GSI																	
Arsenic (dissolved)	10.00	10.00		na										17		20			
Arsenic	10.00	10.00		29	4	12	na	12	42	13	2	5	16	55	9	400	40	11.00	5.00
Cadmium (dissolved)	5.00	4.50	GX	na		na	na	na	na	na	na	na	na	na	na	na	na	na	na
Cadmium	5.00	4.50	GX	6.90		na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chromium (dissolved)	100.00	1,600.00	G	na	na	7	na	9	6	15				7	7			10	
Chromium	100.00	1,600.00	GX	na	na	62	na	17,800	42,600	68,000	14	19	16	69	237	140	822	14,000	11
Copper (dissolved)	1,000.00	20.00	G	na			na												
Copper	1,000.00	20.00	GX	230	32	22	na	716	802	402	29	31	26	736	22	502	300	583	21
Lead (dissolved)	4.00	44.00	G	na			na												
Lead	4.00	44.00	GX	70	21	14	na	6	29	44	6	15	32	249	20	354	289	5	23
Selenium (dissolved)	50.00	5.00		na			na		14	5									
Selenium	50.00	5.00					na		16	5								6	
Zinc (dissolved)	2,400.00	260.00	G	na	66		na	28		15	9	13	11	25	34	9	23	36	43
Zinc	2,400.00	260.00	GX	493	74	33	na	29	52	210	27	222	47	556	36	920	504	23	75

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14		
ANALYTE (ug/L)	DW	GSI																
Acetone	730	1,700	1.83	2.77		na									42			
Methyl iodide	NC	NC				na												
Carbon disulfide	800	NC	0.29			na	0.70											
2 Butanone (MEK)	13,000	2,200	0.55			na									24			
Chloromethane	260	NC				na	0.27	0.35		0.33		0.53	0.58	0.88		0.48	0.58	
Vinyl Chloride	2.0	13				na				0.58		12			3			
Chloroethane	430	1,100				na									0.88			
trichlorofluoromethane	2,600	NA				na												
1,1-Dichloroethene	7.0	130				na						5						
Methylene Chloride	5.0	1,500				na												
trans-1,2-Dichloroethene	100	1,500				na						0.9						
1,1-Dichloroethane	880	740				na				0.71		1			0.76	0.47		
cis-1,2-Dichloroethene	70	620	1			na				2	0.57	45		1	3	9		0.56
Tetrahydrofuran	95	11,000				na												
Chloroform	80	350				na	3				2	0.18					3	2
1,1,1-Trichloroethane	200	89				na						0.37				0.29		
4-Methyl-2-pentanone (MIBK)	1800	1000000000				na									3.88			
2-Hexanone	1000	1000000000				na									12			
Carbontetrachloride	5.0	45				na					2							2
Benzene	5.0	200				na							0.12		0.29			
Bromodichloromethane	80.0	NC				na	0.54										0.46	
Trichloroethene	5.0	200	2	4	0.36	na				5		160		7		61	0.3	
Toluene	790	270				na							0.22		0.51			
Tetrachloroethene	5.0	60		0.23		na		73				0.2				0.20		
Chlorobenzene	100	25				na												
Styrene	100	80				na												
Ethylbenzene	74	18				na									0.17			
Total Xylenes	280	41				na												
1,2 -Dichlorobenzene	600	13				na												
1,2,4-Trimethylbenzene	63	17				na												
1,2,3-Trimethylbenzene	NC	NC				na												
Naphthalene	520	11				na												
2-Methylnaphthalene	260	19				na												

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria G =
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River
na	Sample not analyzed for this constituent

GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected			6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																		
Arsenic (dissolved)	10.00	10.00														19				
Chromium (dissolved)	100.00	160.00	G			51											152			
Copper (dissolved)	1,000.00	20.00	G														4			
Lead (dissolved)	4.00	28.00	G					25	22	23				15			5			
Selenium (dissolved)	50.00	5.00				66			8			6								
Zinc (dissolved)	2,400.00	26.00	G	5	11		10				5	7				8	13			

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected			6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																		
Acetone	730	1,700		1.74	1.45	2.04	2.67	1.55	1.86	1.59	2.82	1.32	1.47	1.29	1.48	4.93	1.32			
Methyl iodide	NC	NC																		
Carbon disulfide	800	NC														0.42	0.36			
2 Butanone (MEK)	13,000	2,200									0.4	0.65	0.29		0.29	1.99				
Chloromethane	260	NC		0.32				0.34									0.29			
Vinyl Chloride	2.0	13											10			21	2			
Chloroethane	430	1,100														2.9				
trichlorofluoromethane	2,600	NA																		
1,1-Dichloroethene	7.0	130											4			2.00	0.39			
Methylene Chloride	5.0	1,500																		
trans-1,2-Dichloroethene	100	1,500											0.7			0.64	0.24			
1,1-Dichloroethane	880	740														1.00	3.00			
cis-1,2-Dichloroethene	70	620		0.62									3			7	59			
Tetrahydrofuran	95	11,000											70.0							
Chloroform	80	350						5.00		0.22		0.5	0.37				0.320			
1,1,1-Trichloroethane	200	89											0.50				1.00			
4-Methyl-2-pentanone (M	1800	1000000000														0.83				
2-Hexanone	1000	1000000000														1.46				
Carbontetrachloride	5.0	45										2								
Benzene	5.0	200																		
Bromodichloromethane	80.0	NC						0.82												
Trichloroethene	5.0	200		5	1	3			26		2		104		2	24	69			
Toluene	790	270																		
Tetrachloroethene	5.0	60																		
Chlorobenzene	100	25																		
Styrene	100	80																		
Ethylbenzene	74	18																		
Total Xylenes	280	41																		
1,2 -Dichlorobenzene	600	13																		
1,2,4-Trimethylbenzene	63	17																		
1,2,3-Trimethylbenzene	NC	NC																		
Naphthalene	520	11																		
2-Methylnaphthalene	260	19																		

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds residential and non-residential DW criteria
X	Exceeds GSI criteria G
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3
	Date Collected				4/3/14	4/3/14	3/29/14	4/3/14	4/3/14	4/3/14	4/3/14	3/29/14	3/29/14	3/29/14	3/29/14	4/3/14	3/29/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	3/29/14		
ANALYTE (ug/L)	DW	GSI																														
Arsenic (dissolved)	10.00	10.00					11.00			4.00				21.00		19.00			17.00	57.00	4.00	3.00	2.00	3.00	30.00	38.00						
Chromium (dissolved)	100.00	160.00	G			35.00		22.00	18.00					7.00	12.00		128.00	13.00			147.00	64.00	25.00	16.00		17.00	89.00	19.00	33.00	14.00		
Copper (dissolved)	1,000.00	20.00	G											28.00				21.00		5.00	22.00	140.00	28.00	42.00		12.00	24.00	94.00	144.00			
Lead (dissolved)	4.00	28.00	G											24.00				29.00		5.00	23.00	208.00	16.00	47.00	1.00	19.00	11.00	31.00	14.00			
Selenium (dissolved)	50.00	5.00							6.00	5.00		5.00						12.00				4.00		12.00				5.00	3.00			
Zinc (dissolved)	2,400.00	26.00	G		97.00		23.00	5.00		62.00	5.00	16.00	18.00	81.00	21.00	9.00	24.00	311.00	167.00	82.00	323.00	326.00	103.00	241.00	400.00	166.00	68.00	241.00	191.00	12.00		

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3
	Date Collected																															
ANALYTE (ug/L)	DW	GSI																														
Acetone	730	1,700			1.13	2.36		0.88	1.82	3.58	3.82		1.22	2.11	0.72	5.17	0.93	5.7		9.1	5.7			10.3	66	25.8	5.9		5.8	1.06		
Methyl Iodide	NC	NC																														
Carbon disulfide	800	NC																							0.86	0.4						
2 Butanone (MEK)	13,000	2,200			0.73	0.85		0.41	0.83	0.78	0.94					2.98									11.6	8.6						
Chloromethane	260	NC																						0.33		0.61						
Vinyl Chloride	2.0	13									0.64		18		4	6	0.45			5			2			2			2	4		
Chloroethane	430	1,100													0.6	1.13				1.07						0.77						
trichlorofluoromethane	2,600	NA																														
1,1-Dichloroethene	7.0	130											4		1	0.40				1						0.81				1		
Methylene Chloride	5.0	1,500																														
trans-1,2-Dichloroethene	100	1,500											0.92		0.24	0.23													0.28	0.26		
1,1-Dichloroethane	880	740									0.21		3.00		2	0.69	2.00						3.00						2.00	2.00		
cis-1,2-Dichloroethene	70	620									3		59		46	2	26			0.042	0.69	2	21			0.36	0.93	3.00	21.00	43.00		
Tetrahydrofuran	95	11,000																														
Chloroform	80	350						3.00				0.35	0.35		0.29								0.042						0.41	0.29		
1,1,1-Trichloroethane	200	89											0.49		0.75								0.72						0.71	0.73		
4-Methyl-2-pentanone (M	1800	1000000000														0.67				0.390					0.590	2.190						
2-Hexanone	1000	1000000000																		0.750				0.210	2.170	4.570						
Carbontetrachloride	5.0	45										2																				
Benzene	5.0	200									0.25									0.43	0.12			0.17	0.21	0.81	0.21	0.16	0.23			
Bromodichloromethane	80.0	NC						0.89																								
Trichloroethene	5.0	200			3	2					4		102		92	3	23				8	3	81	0.55			8	5	78	86		
Toluene	790	270								0.35	0.63							0.23		0.39	0.20			0.38	0.30	1.00	0.35	0.24	0.44			
Tetrachloroethene	5.0	80							47														0.180						0.17			
Chlorobenzene	100	25																														
Styrene	100	80																		0.43												
Ethylbenzene	74	18																						0.12	0.11	0.31			0.11			
Total Xylenes	280	41																								0.79						
1,2-Dichlorobenzene	600	13																														
1,2,4-Trimethylbenzene	63	17																							0.22	0.31						
1,2,3-Trimethylbenzene	NC	NC								0.07	0.07														0.20	0.18						
Naphthalene	520	11																0.34		0.31				0.75	1.68	0.55						
2-Methylnaphthalene	260	19																0.51		0.40				0.47	0.88	0.47						

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds residential and non-residential DW criteria
X	Exceeds GSI criteria G
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Applied *Eco*Systems, Inc.
Environmental Management, Consulting & Field Services

DATA REPORT
AND PROPOSED ADDITIONAL INVESTIGATION

TO: Chris Black, U.S. EPA
Dave Favero, RACER TRUST
Grant Trigger, RACER TRUST

FROM: Mike Smith, Applied *Eco*Systems, Inc.

DATE: August 7, 2015

SUBJECT: RACER Flint West Industrial Land (#12990)
Summary of Additional Site Investigation

CONTENTS:

1.0 Introduction.....2
2.0 Investigation Activities Completed 2
3.0 Investigation Results.....3
4.0 Proposed Additional Investigations..... 4
5.0 Proposed Schedule.....4

FIGURES:

Figure 1: Site Location Map
Figure 2: Soil Boring and Well Location Map
Figure 3: Groundwater Contour Map – May, 2015
Figure 4: Summary of Drinking Water and GSI Exceedances in Groundwater (2012-2015)

ATTACHMENTS:

Attachment 1: Cross Section Diagrams
Attachment 2: Groundwater Analytical Tables (All investigations conducted by RACER to-date)
Attachment 3: Groundwater Analytical Laboratory Report (May, 2015)
Attachment 4: Soil Analytical Tables (All investigations conducted by RACER to-date)
Attachment 5: Groundwater Turbidity Results
Attachment 6: Groundwater Concentration Graphs

G-4300 South Saginaw Street, Burton, Michigan 48529 Office (810) 715-2525 Fax (810) 715-2526

1.0 INTRODUCTION

Applied *Eco*Systems, Inc. (Applied *Eco*Systems) completed a groundwater monitoring event at the RACER Trust Flint West Industrial Land - #12990 Site on April 28, and 30, 2015 as outlined in the February 13, 2015 Data Report submitted to the United States Environmental Protection Agency (USEPA).

The Site consists of approximately five acres of land located west of Stevens Street and north of Glenwood Avenue in Flint, Genesee County, Michigan. The Site is developed with a Consumers Energy electrical substation in the central portion. Almost the entire Site consists of concrete pavement, remaining after the demolition of a former manufacturing building. The majority of the Site is secured with a locked chain-link fence.

There were no exceptions to the approved USEPA Scope of Work.

2.0 INVESTIGATION ACTIVITIES COMPLETED

Groundwater Monitoring (Task 6)

- All wells were gauged. No NAPL was encountered.
- All wells were sampled, except MW100S, which did not produce sufficient groundwater for sample collection. Samples were analyzed for VOCs, and the following metals (total and dissolved): arsenic, chromium, copper, lead, selenium, and zinc. Analytical results are attached.

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3.0 INVESTIGATION RESULTS

Comparison of groundwater data to current (December 30, 2013) Michigan Department of Environmental Quality (MDEQ) Generic Residential and Non-Residential Cleanup Criteria (GRCC) indicates the following:

Metals: Select metals were detected above drinking water and GSI criteria as shown in the table below. The metals concentrations are consistent with expected regional conditions, do not appear to represent a plume, and are believed to be naturally-occurring. Although the MDEQ has published state-wide and regional "background" concentrations for soils, there are no such values published for groundwater. The concentrations are generally consistent with concentrations encountered by Applied *Eco*Systems at other uncontaminated sites in the Flint area. Groundwater turbidity results are provided on Attachment 5. The highest turbidity results were observed in MW-104S, MW-105S, MW1-06S, and MW-112S. These wells were also the locations of the highest concentrations of total metals. The dissolved metals concentrations are significantly lower than the concentrations of total metals. Total metals results appear to have been influenced by turbidity. Accordingly, the dissolved metals concentrations are considered to be more representative of site conditions for the purposes of this assessment.

Monitoring well MW100S did not produce sufficient groundwater for sample collection.

Table 1.0 – Dissolved Metals Exceedances in Groundwater

Well ID	Metal	Drinking Water Criterion	GSI Criterion	Result
MW-105S	dissolved selenium	50	5	9
MW-112S	dissolved arsenic	10	10	16

All results are expressed in ug/L

VOCs: (VOCs comparison includes the updated criteria published by the MDEQ on December 30, 2013). Exceedances were present as follows:

Table 2.0 – VOCs Exceedances in Groundwater

Well ID	VOC	Drinking Water Criterion	GSI Criterion	Result
MW-105S	Tetrachloroethene	5	60	69
MW-109S*	Trichloroethene	5	200	138
	Vinyl Chloride	2	13	21
MW-111S	Vinyl Chloride	2	13	4
	Trichloroethene	5	200	78
MW-112S	Vinyl Chloride	2	13	4
MW-113S*	Trichloroethene	5	200	36

- All results are expressed in ug/L
- * Located on the former railroad property to the north of Flint West #12990.

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Criteria in **red** indicate an exceedance for that pathway. Sample analytical results (tabulated results and reports) are attached. Figure 4 illustrates the GSI and drinking water exceedances.

Graphs illustrating concentrations over time of select parameters in select wels s are included in Attachment 6. Graphs representing concentrations of the primary constituents of concern for VOCs and metals in key down gradient wells (MW-109S, MW-111S, and MW-113S) as compared to drinking water (DW) and ground to surface water (GSI) interface thresholds for each constituent are included in Attachment 6.

The primary constituents of concern associated with VOCs are Trichloroethene, Tetrachloroethene, Vinyl Chloride, and cis-1,2-Dichloroethene. Elevated concentrations of Trichloroethene persist in each of the down gradient wells. Tetrachloroethene was not detected in any of the down gradient wells. Note that elevated Tetrachloroethene levels have been consistently detected in one up gradient well, MW-105S since April 2012. While one well, MW-109S, still exhibits concentrations of vinyl chloride slightly above DW criteria, concentrations of Vinyl Chloride appear to have significantly decreased overall. Concentrations of cis-1,2-Dichloroethene have been below DW and GSI criteria since April 2014.

Analytical results associated with dissolved metals of concern (Chromium, Lead and Arsenic) in the down gradient wells, identified elevated Chromium in MW-113S. With the exceptions of dissolved Lead exceeding the DW criteria in one event in June 2014 by 1 ppb, no DW or GSI exceedances of dissolved Lead or Arsenic were detected in any of the three down gradient wells.

4.0 PROPOSED ADDITIONAL INVESTIGATION

An additional round of groundwater monitoring is proposed. In addition to the metals and VOCs analysis completed previously, the samples will be analyzed for hexavalent chromium. Other future action is dependent upon USEPA review and comment/approval of the November 1, 2014 Corrective Measures Proposal (CMP).

5.0 PROPOSED SCHEDULE:

Groundwater monitoring is proposed for October 2015. A schedule for any other future activities will be developed upon receipt of comments or approval from USEPA of the CMP.

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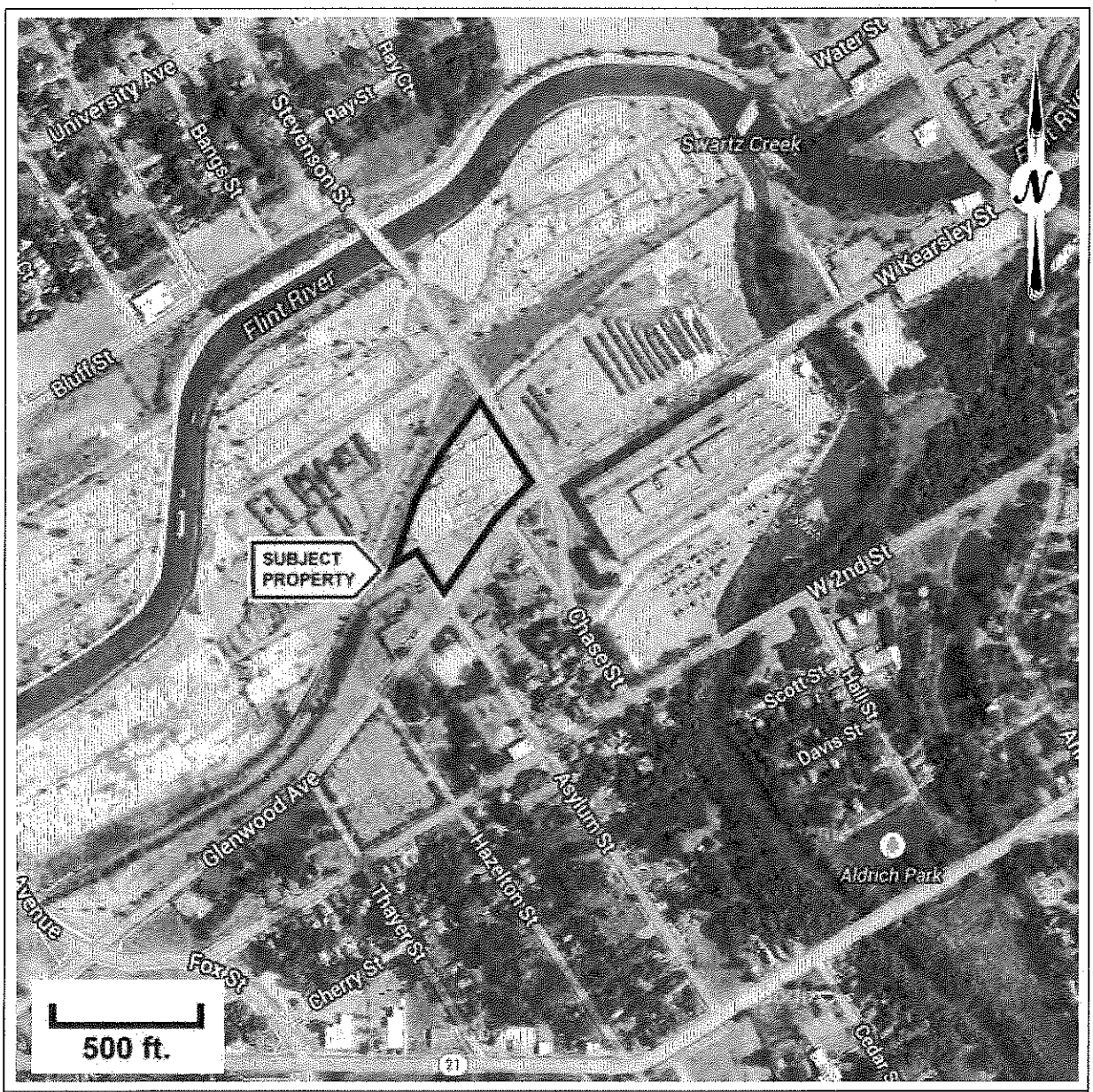
FIGURES

SITE LOCATION MAP

RACER Flint West

FIGURE	DATE	SCALE	PROJECT No.
1	2014	As Shown	11-4317-102



Source: United States Geological Survey | Property outline is approximate.

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