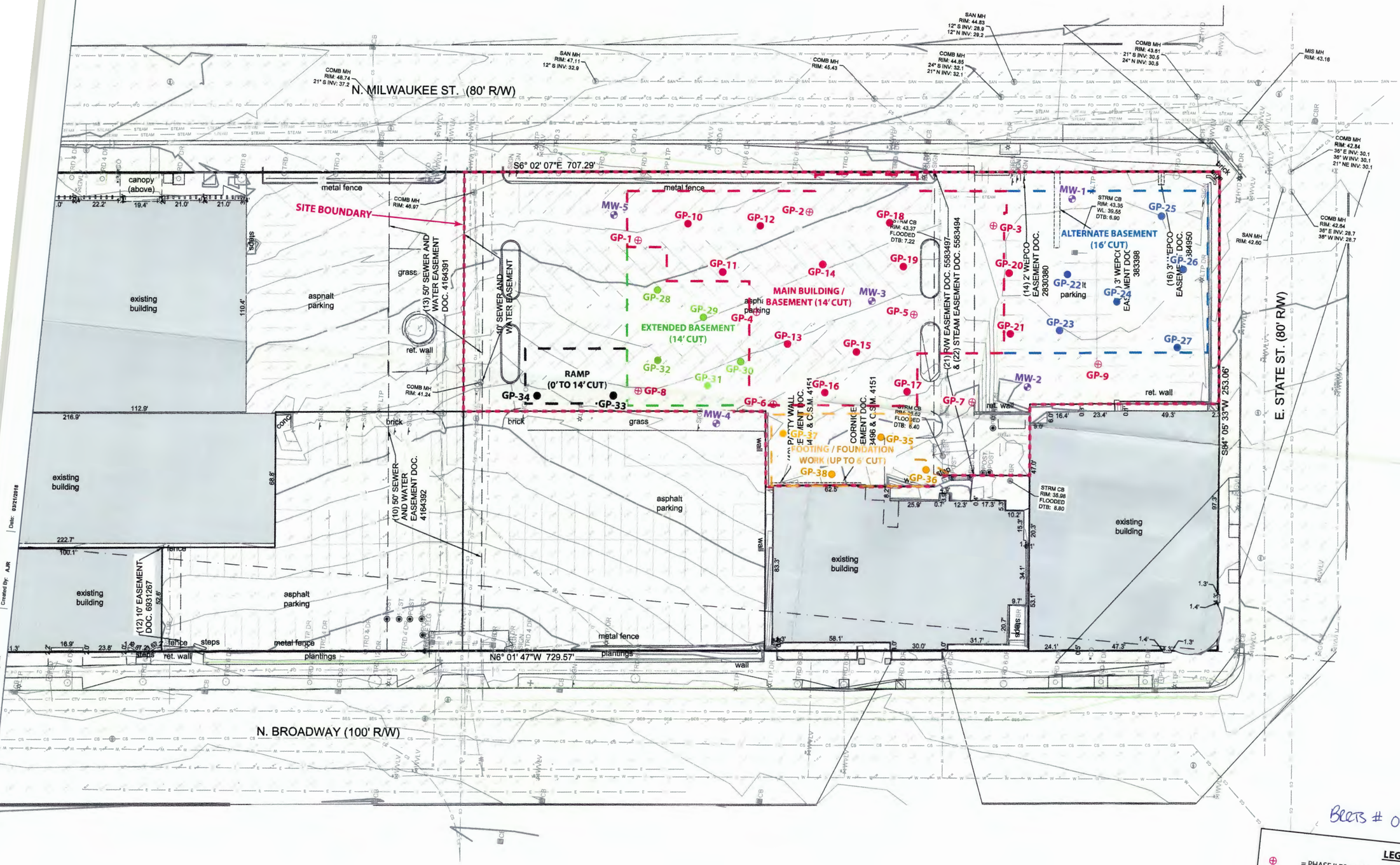


Beets # 02-41-581016 A

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

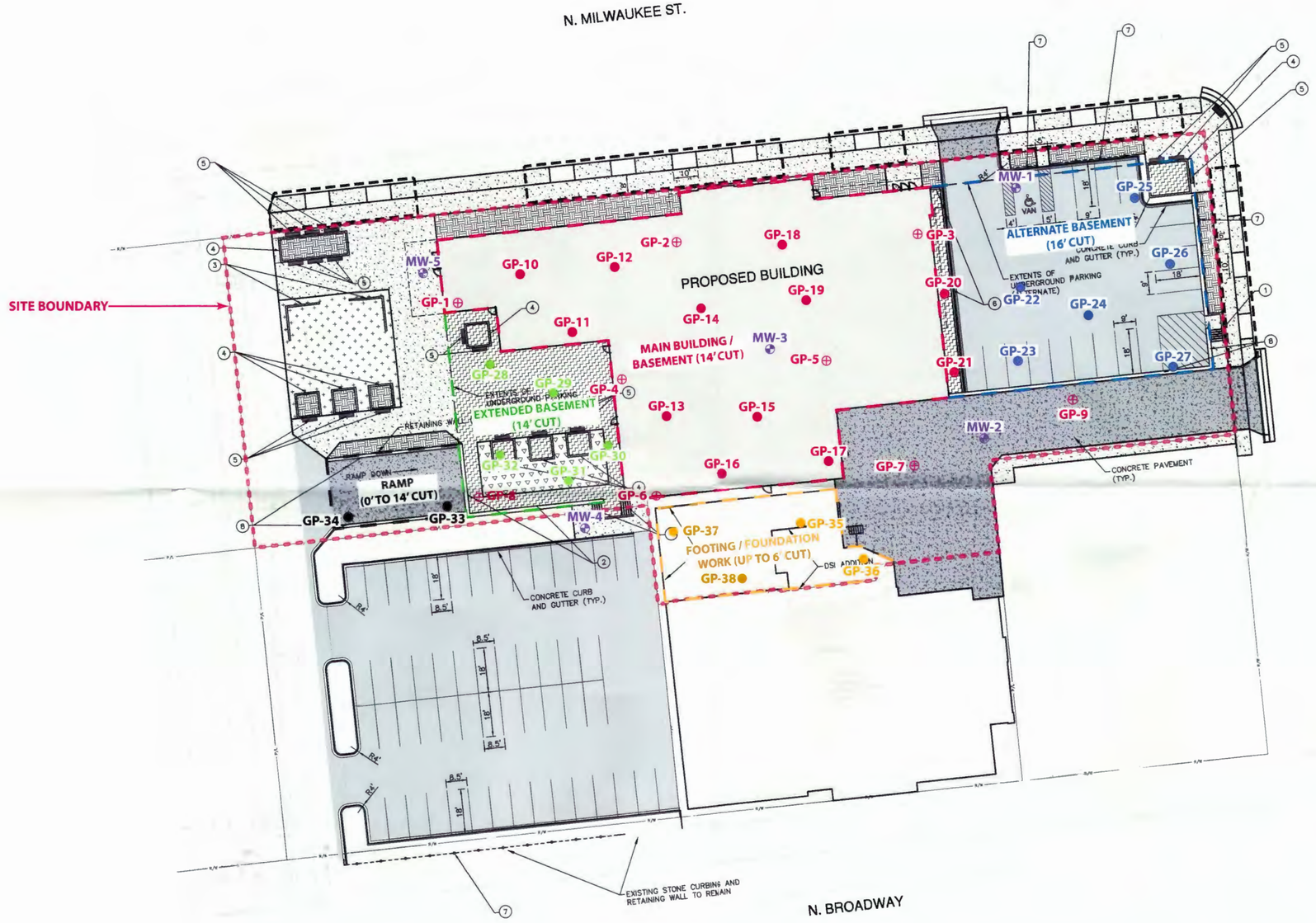
0 40 ft. 80 ft.
GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

SITE PLAN MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE

FIGURE



BRRTS # 02-41-581016 B

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- ● = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- ● = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- ● = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- ● = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- ● = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- ◔ = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

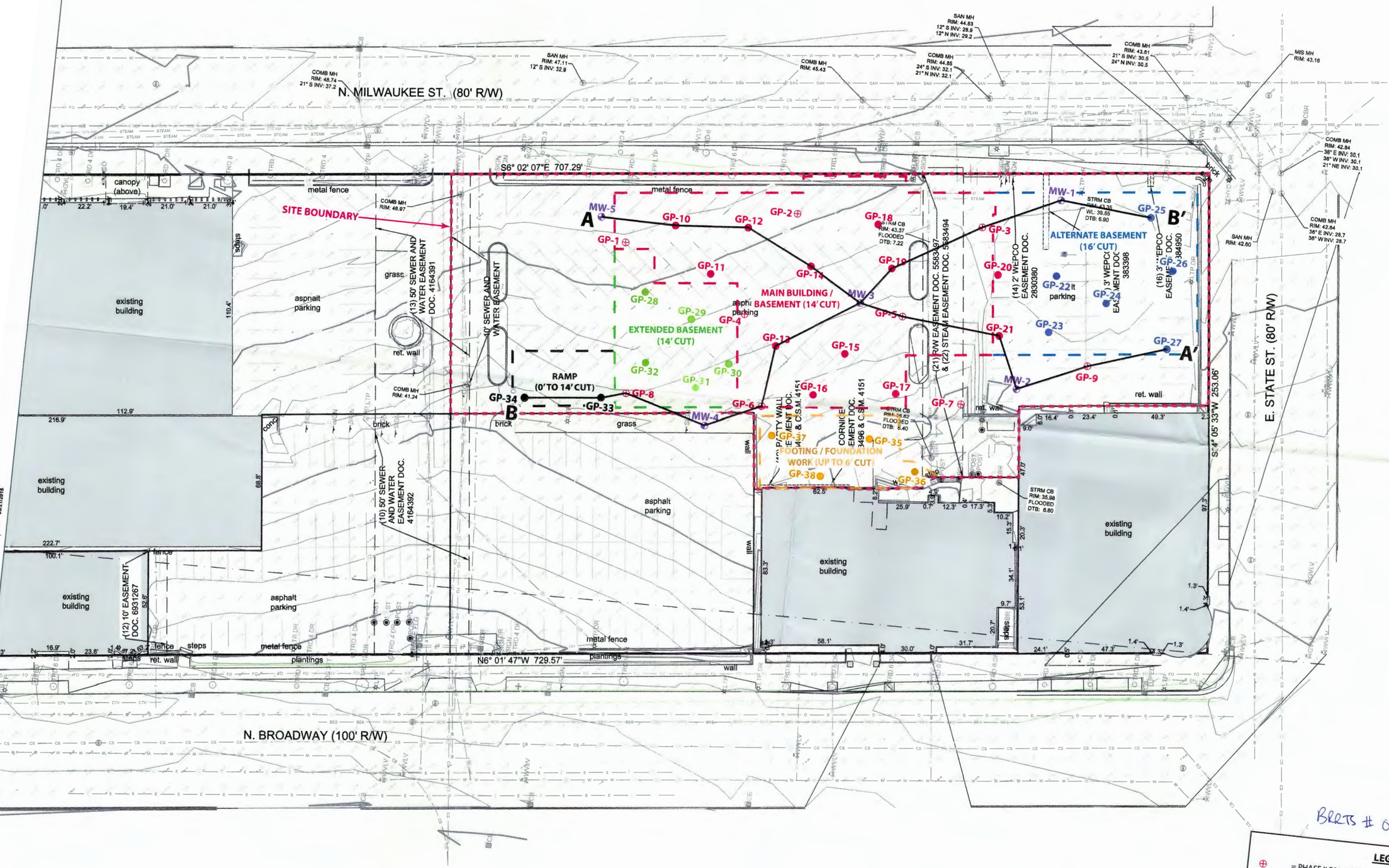
THE SIGMA GROUP
Single Source. Sound Solutions.

SITE PLAN MAP WITH PROPOSED REDEVLOPMENT LAYOUT

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 4

Project: 17076 | Directory: 040 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/21/2018



BERTS # 02-41-581016 C

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

N

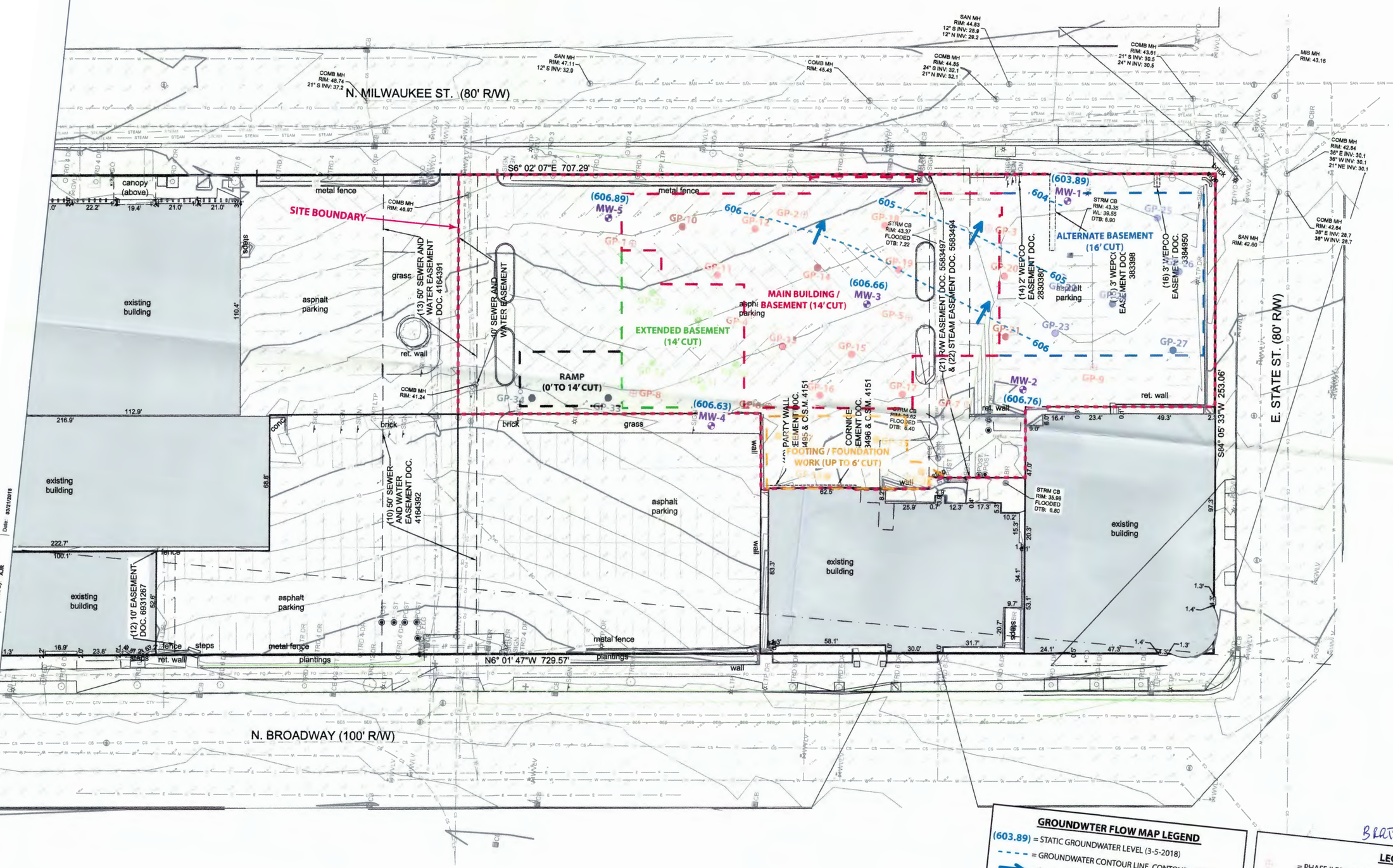
0 40 ft. 80 ft.
GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

GEOLOGIC CROSS SECTION LOCATION MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL

FIGURE



GROUNDWTER FLOW MAP LEGEND

(603.89) = STATIC GROUNDWATER LEVEL (3-5-2018)

= GROUNDWATER CONTOUR LINE, CONTOUR INTERVAL = 1'

= GROUNDWATER FLOW DIRECTION

BRRTS # 02-41-581016 D

LEGEND

= PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)

= GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)

= GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)

= GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)

= GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)

= GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)

= HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:

1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

0 40 ft. 80 ft.

GRAPHIC SCALE

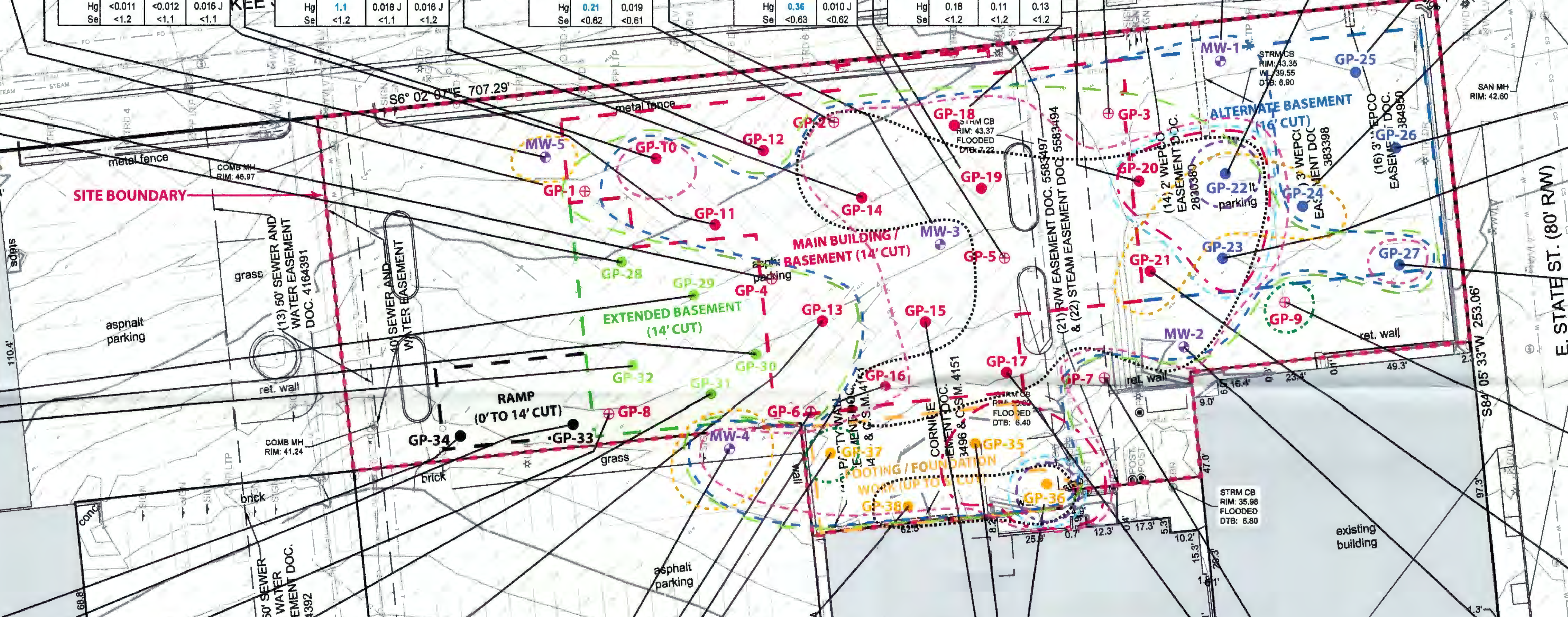
THE SIGMA GROUP

Single Source. Sound Solutions.

GROUNDWATER CONTOUR MAP (3-5-18)

MSOE DIERCKS COMPUTATIONAL SCIENCE

FIGURE



GP-1

Depth:	2 - 4	10 - 11
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	0.120	<0.0048
B(a)P	[0.130]	<0.0070
B(b)F	0.180	<0.0078
C	0.120	<0.0098
D(ah)A	0.0071 J	<0.0070
I(cd)P	0.068	<0.0093
METALs		
As	2.8 *	4.9 *
Ba	25	22
Cd	0.097 J	0.095 J
Pb	42 *	12
Hg	0.047	0.015 J
Se	<0.60	<0.55

MW-5

Depth:	1 - 2.5	11 - 12.5	18.5 - 20
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.099	<0.013	<0.013
B(a)P	0.093	<0.0113	<0.0113
B(b)F	0.134	<0.013	<0.013
C	0.106	<0.0121	<0.0121
D(ah)A	0.0136 J	<0.0078	<0.0078
I(cd)P	0.063	<0.0114	<0.0114
METALs			
As	4.6 J *	{ [8.6] }	{ [8.3] }
Ba	14.1	23.4	25.6
Cd	0.65	0.43 J	0.24 J
Pb	15.4	12.3	11.6
Hg	0.054	0.015 J	0.018 J
Se	<1.1	<1.1	<1.1

GP-10

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.0228 J	<0.013	0.139
B(a)P	<0.0113	<0.0113	[0.157]
B(b)F	0.0203 J	<0.013	0.173
C	0.025 J	<0.0121	**0.146**
D(ah)A	<0.0078	<0.0078	0.036
I(cd)P	<0.0114	<0.0114	0.089
METALs			
As	4.2 J *	5.3 *	3.7 J *
Ba	70.6	12.3	14.0
Cd	0.24 J	0.30 J	0.20 J
Pb	**137**	6.4	11.8
Hg	0.11	0.011 J	0.015 J
Se	<1.2	<1.1	<1.1

GP-12

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	<0.013	<0.013	<0.013
B(a)P	<0.0113	<0.0113	<0.0113
B(b)F	<0.013	<0.013	<0.013
C	<0.0121	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	4.5 J *	4.1 J *	4.3 J *
Ba	43.4	45.2	19.2
Cd	<0.14	<0.18	0.24 J
Pb	9.8	8.3	5.9
Hg	0.020 J	0.037 J	0.013 J
Se	<1.1	<1.3	<1.2

MW-3

Depth:	1 - 2.5	6 - 7.5	11 - 12.5
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.40	0.10	<0.013
B(a)P	[0.34]	0.075	<0.0113
B(b)F	**0.49**	0.104	<0.013
C	**0.37**	0.091	<0.0121
D(ah)A	0.048	0.012 J	<0.0078
I(cd)P	0.199	0.045	<0.0114
METALs			
As	4.7 J *	4.5 J *	4.1 J *
Ba	59.5	41.9	29.4
Cd	0.37 J	0.21 J	0.21 J
Pb	**74.0**	**93.1**	8.3
Hg	0.13	0.074	0.038 J
Se	<1.1	<1.2	<1.3

GP-19

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.71	0.099	0.0283 J
B(a)P	[0.48]	0.085	0.0166 J
B(b)F	**0.66**	0.095	0.0227 J
C	**0.60**	0.092	0.0239 J
D(ah)A	0.06	0.0096 J	<0.0078
I(cd)P	0.275	0.038	<0.0114
METALs			
As	5.4 *	2.9 J *	3.6 J *
Ba	108	85.0	28.3
Cd	0.67	0.16 J	0.28 J
Pb	**131**	**94.8**	10.7
Hg	**0.53**	0.084	0.016 J
Se	<1.2	<1.3	<1.2

GP-20

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.44]	<0.013	0.43
B(a)P	[1.16]	<0.0113	[0.40]
B(b)F	[1.50]	<0.013	**0.56**
C	**1.13**	<0.0121	**0.44**
D(ah)A	[0.148]	<0.0078	0.052
I(cd)P	0.72	<0.0114	0.283
METALs			
As	4.8 J *	4.3 J *	4.6 J *
Ba	**239**	35.9	34.2
Cd	0.91 *	<0.15	0.32 J
Pb	[529]	7.2	22.2
Hg	**0.67**	<0.012	0.023 J
Se	<1.4	<1.2	<1.2

GP-3

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	0.049	1.000
B(a)P	0.075	[0.880]
B(b)F	0.098	[1.600]
C	0.059	**1.300**
D(ah)A	<0.0078	0.110
I(cd)P	0.047	0.420
METALs		
As	1.6 *	4.2 *
Ba	27	18
Cd	0.059 J	0.13 J
Pb	6.3	7.5
Hg	0.023	0.019
Se	<0.63	<0.64

MW-1

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.171	0.0223 J	<0.013
B(a)P	0.112	0.0119 J	<0.0114
B(b)F	0.06	<0.0147	<0.0147
C	**0.40**	0.062	<0.0147
D(ah)A	<0.0179	<0.0179	<0.0179
I(cd)P	0.0131 J	<0.0113	<0.0113
METALs			
As	5.9 *	7.3 *	4.9 J *
Ba	25.9	31.1	39.2
Cd	0.24 J	0.38 J	0.34 J
Pb	8.8	12.1	8.6
Hg	0.017 J	0.013 J	0.015 J
Se	<1.2	**1.5 J**	<1.2

GP-22

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.96	0.0156 J	0.032 J
B(a)P	[0.72]	<0.0113	0.0228 J
B(b)F	**1.03**	<0.013	0.033 J
C	**0.80**	0.0135 J	0.035 J
D(ah)A	0.091	<0.0078	<0.0078
I(cd)P	0.41	<0.0114	0.0158 J
METALs			
As	{ [14.7] }	7.6 *	8.5 *
Ba	**984**	105	23.0
Cd	**1.8**	0.33 J	0.32 J
Pb	{ [1,170] }	**94.1**	14.1
Hg	**1.3**	0.12	<0.011
Se	<1.4	<1.2	<1.1

GP-25

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.0205 J	<0.013	<0.013
B(a)P	0.0145 J	<0.0113	<0.0113
B(b)F	0.0192 J	<0.013	<0.013
C	0.0175 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	5.5 *	6.0 *	4.4 J *
Ba	85.1	36.3	15.0
Cd	0.32 J	0.42 J	0.24 J
Pb	9.8	28.5 *	8.0
Hg	0.011 J	0.022 J	0.014 J
Se	<1.2	<1.1	<1.1

GP-24

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.0181 J	0.072	<0.013
B(a)P	0.0139 J	0.066	<0.0113
B(b)F	0.0183 J	0.09	<0.013
C	0.0146 J	0.081	<0.0121
D(ah)A	<0.0078	0.0119 J	<0.0078
I(cd)P	<0.0114	0.04	<0.0114
METALs			
As	4.1 J *	3.1 J *	{ [10.2] }
Ba	31.1	13.0	22.9
Cd	0.21 J	0.17 J	0.39 J
Pb	7.3	9.6	15.0
Hg	<0.011	<0.011	<0.012
Se	<1.1	<1.1	<1.2

GP-28

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	4.8 J *	4.6 J *
Ba	18.3	14.7
Cd	<0.14	0.20 J
Pb	12.5	5.0
Hg	0.049	<0.011
Se	<1.1	<1.1

GP-4

Depth:	4 - 6
Date:	12/1/17
VOCs	
	ND
PAHs	
B(a)A	<0.0045
B(a)P	<0.0065
B(b)F	<0.0072
C	<0.0091
D(ah)A	<0.0065
I(cd)P	<0.0087
METALs	
As	3.0 *
Ba	15
Cd	0.14 J
Pb	6.6
Hg	0.0076 J
Se	<0.57

GP-11

Depth:	2 - 4	4 - 6	8 - 10
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.208	0.0192 J	0.0171 J
B(a)P	[0.179]	0.0211 J	<0.0113
B(b)F	0.251	0.0168 J	<0.013
C	**0.181**	0.0187 J	<0.0121
D(ah)A	0.0281	<0.0078	<0.0078
I(cd)P	0.115	<0.0114	<0.0114
METALs			
As	4.6 J *	6.1 *	6.4 *
Ba	24.0	17.6	24.7
Cd	0.14 J	0.23 J	0.21 J
Pb	5.7	6.5	9.9
Hg	<0.011	<0.012	0.016 J
Se	<1.2	<1.1	<1.1

GP-14

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.65]	<0.013	<0.013
B(a)P	[1.20]	<0.0113	<0.0113
B(b)F	[1.64]	<0.013	<0.013
C	**1.19**	<0.0121	<0.0121
D(ah)A	[0.161]	<0.0078	<0.0078
I(cd)P	0.67	<0.0114	<0.0114
METALs			
As	5.6 *	4.4 J *	7.5 *
Ba	68.1	16.9	18.1
Cd	0.34 J	0.16 J	0.20 J
Pb	**167**	5.2	17.6
Hg	**1.1**	0.018 J	0.016 J
Se	<1.2	<1.1	<1.2

GP-2

Depth:	2 - 4	14 - 16
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	0.630	<0.0048
B(a)P	[0.630]	<0.0070
B(b)F	**0.980**	<0.0078
C	**0.630**	<0.0098
D(ah)A	0.092	<0.0070
I(cd)P	0.290	<0.0093
METALs		
As	4.4 *	4.3 *
Ba	110	13
Cd	0.38	0.15 J
Pb	**170**	7.8
Hg	**0.21**	0.019
Se	<0.62	<0.61

GP-5

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	0.410	<0.0051
B(a)P	[0.430]	0.014 J
B(b)F	**0.580**	<0.0083
C	**0.440**	<0.010
D(ah)A	0.090	<0.0074
I(cd)P	0.260	<0.0099
METALs		
As	3.6 *	1.9 *
Ba	73	16
Cd	0.24	0.10 J
Pb	**160**	5.4
Hg	**0.36**	0.010 J
Se	<0.63	<0.62

GP-18

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.142	0.17	0.139
B(a)P	0.10	[0.121]	0.092
B(b)F	0.143	0.179	0.117
C	0.12	**0.168**	0.115
D(ah)A	0.0152 J	0.0168 J	0.0138 J
I(cd)P	0.067	0.079	0.056
METALs			
As	4.6 J *	{ [8.2] }	6.0 *
Ba	76.7	58.1	57.9
Cd	0.37 J	0.50 J	0.33 J
Pb	**143**	**116**	**94.3**
Hg	0.18	0.11	0.13
Se	<1.2	<1.2	<1.2

GP-26

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.0234 J	0.044	<0.013
B(a)P	0.0246 J	0.041	<0.0113
B(b)F	0.034 J	0.055	<0.013
C	0.0271 J	0.046	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0215 J	0.0285 J	<0.0114
METALs			
As	4.8 J *	6.6 *	5.4 *
Ba	20.4	30.2	58.3
Cd	0.20 J	0.27 J	0.24 J
Pb	7.7	21.2	8.0
Hg	<0.011	<0.012	<0.012
Se	<1.2	<1.2	<1.2

GP-23

Depth:	2 - 4	8 - 10	12 - 14
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[2.21]	<0.013	0.71
B(a)P	[1.77]	<0.0113	[0.59]
B(b)F	[2.38]	<0.013	**0.79**
C	**1.73**	<0.0121	**0.57**
D(ah)A	[0.224]	<0.0078	0.084
I(cd)P	0.98	<0.0114	0.33
METALs			
As	6.9 *	3.3 J *	3.8 J *
Ba	**457**	23.7	32.1
Cd	0.79 *	<0.16	<0.15
Pb	[567]	5.6	40.0 *
Hg	**0.29**	<0.013	0.033 J
Se	<1.2	<1.4	<1.2

GP-30

Depth:	6 - 8	12 - 14
Date:	2/28/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	0.057
B(a)P	<0.0113	0.097
B(b)F	<0.013	0.072
C	<0.0121	0.073
D(ah)A	<0.0078	0.0261
I(cd)P	<0.0114	0.032 J
METALs		
As	5.5 *	4.6 J *
Ba	13.0	14.7
Cd	0.16 J	0.13 J
Pb	6.3	7.7
Hg	<0.011	<0.011
Se	<1.1	<1.1

GP-29

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs		
	ND	ND
PAHs		
B(a)A	0.038 J	<0.013
B(a)P	0.057	<0.0113
B(b)F	0.054	<0.013
C	0.045	<0.0121
D(ah)A	0.0116 J	<0.0078
I(cd)P	0.032 J	<0.0114
METALs		
As	5.4 *	6.1 *
Ba	26.6	19.6
Cd	0.22 J	0.35 J
Pb	9.7	7.6
Hg	0.024 J	<0.011
Se	<1.1	<1.1

GP-27

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.034 J	0.64	<0.013
B(a)P	0.0313 J	[0.67]	<0.0113
B(b)F	0.048	**0.86**	<0.013
C	0.037 J	**0.61**	<0.0121
D(ah)A	<0.0078	0.088	<0.0078
I(cd)P	0.0176 J	0.40	<0.0114
METALs			
As	5.8 *	6.4 *	4.1 J *
Ba	35.7	45.2	42.4
Cd	0.18 J	0.22 J	0.17 J
Pb	7.9	**64.0**	7.7
Hg	<0.011	0.017 J	<0.012
Se	<1.1	<1.2	<1.2

GP-32

Depth:	4 - 6	8 - 10
Date:	2/28/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	0.109
B(a)P	<0.0113	0.113
B(b)F	<0.013	0.122
C	<0.0121	0.117
D(ah)A	<0.0078	0.0232 J
I(cd)P	<0.0114	0.06
METALs		
As	4.8 J *	6.4 *
Ba	15.0	18.5
Cd	0.16 J	0.24 J
Pb	5.2	8.5
Hg	<0.011	<0.011
Se	<1.2	<1.1

GP-9

Depth:	4 - 6
Date:	12/1/17
VOCs	
	ND
PAHs	
B(a)A	0.0099 J
B(a)P	0.018 J
B(b)F	<0.0082
C	0.011 J
D(ah)A	<0.0073
I(cd)P	<0.0098
METALs	
As	3.0 *
Ba	46
Cd	0.072 J
Pb	7.4
Hg	0.033
Se	**0.72 J**

GP-36

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.163	0.257	0.0173 J
B(a)P	[0.12]	[0.209]	0.013 J
B(b)F	0.18	0.284	0.0166 J
C	**0.146**	**0.267**	0.0196 J
D(ah)A	0.0234 J	0.033	<0.0078
I(cd)P	0.077	0.115	<0.0114
METALs			
As	4.6 J *	6.3 *	{ [19.1] }
Ba	61.2	154	180
Cd	0.31 J	**1.6**	0.35 J
Pb	**276**	{ [1,020] }	{ [872] }
Hg	0.074	**0.24**	0.088
Se	<1.1	<1.2	<1.2

MW-2

Depth:	1 - 2.5	6 - 7.5	13.5 - 15
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.247	<0.013	<0.013
B(a)P	[0.179]	<0.0113	<0.0113
B(b)F	0.238	<0.013	<0.013
C	**0.204**	<0.0121	<0.0121
D(ah)A	0.0234 J	<0.0078	<0.0078
I(cd)P	0.09	<0.0114	<0.0114
METALs			
As	{ [13.5] }	2.6 J *	{ [10.5] }
Ba	105	16.3	80.2
Cd	0.70	<0.14	<0.66
Pb	**208**	5.0	25.1
Hg	**1.0**	0.016 J	0.019 J
Se	<1.3	<1.2	<1.1

GP-21

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.048	<0.013	0.0144 J
B(a)P	0.0306 J	<0.0113	<0.0113
B(b)F	0.044	<0.013	<0.013
C	0.041	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0166 J	<0.0114	<0.0114
METALs			
As	{ [9.3] }	7.0 *	3.5 J *
Ba	73.5	38.5	46.7
Cd	0.24 J	0.28 J	0.15 J
Pb	**151**	21.5	9.1
Hg	**0.47**	<0.012	<0.013
Se	<1.2	<1.1	<1.2

GP-34

Depth:	2 - 4
Date:	2/28/18
VOCs	
	ND
PAHs	
B(a)A	0.085
B(a)P	0.09
B(b)F	0.126
C	0.10
D(ah)A	0.0127 J
I(cd)P	0.059
METALs	
As	{ [9.2] }
Ba	24.9
Cd	0.36 J
Pb	30.3 *
Hg	0.049
Se	<1.2

GP-33

Depth:	6 - 8
Date:	2/28/18
VOCs	
	ND
PAHs	
B(a)A	<0.013
B(a)P	<0.0113
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
As	{ [8.1] }
Ba	17.8
Cd	0.20 J
Pb	8.6
Hg	<0.011
Se	<1.2

GP-8

Depth:	4 - 6	16 - 18
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.0046	0.016 J
B(a)P	<0.0067	0.085
B(b)F	<0.0074	0.061
C	<0.0094	0.035
D(ah)A	<0.0067	0.043
I(cd)P	<0.0089	0.044
METALs		
As	4.3 *	3.0 *
Ba	11	9.3
Cd	0.17 J	0.21
Pb	6.3	6.5
Hg	0.012 J	0.0077 J
Se	<0.59	<0.55

GP-31

Depth:	2 - 4	6 - 8
Date:	2/28/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.0 J *	5.1 J *
Ba	15.2	26.3
Cd	<0.14	0.27 J
Pb	4.3	5.8
Hg	<0.011	<0.012
Se	<1.2	<1.2

GP-13

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.037 J	<0.013	<0.013
B(a)P	0.0235 J	<0.0113	<0.0113
B(b)F	0.039 J	<0.013	<0.013
C	0.034 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0131 J	<0.0114	<0.0114
METALs			
As	5.6 J *	2.6 J *	5.6 *
Ba	68.3	19.0	16.9
Cd	<0.16	0.18 J	0.18 J
Pb	12.8	4.3	5.0
Hg	0.026 J	<0.012	<0.011
Se	<1.4	<1.2	<1.1

GP-37

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.63]	[1.77]	0.36
B(a)P	[1.20]	[1.27]	[0.249]
B(b)F	[1.73]	[1.79]	0.316
C	**1.36**	**1.52**	**0.305**
D(ah)A	[0.203]	[0.208]	0.0299
I(cd)P	0.60	0.62	0.109
METALs			
As	7.3 *	7.5 *	4.1 J *
Ba	60.6	36.5	59.0
Cd	0.38 J	0.33 J	0.16 J
Pb	**61.7**	**65.3**	**57.9**
Hg	0.092	0.075	0.071
Se	**1.7 J**	<1.2	<1.2

GP-15

Depth:	2 - 4	4 - 6	6 - 7.5
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.80	0.307	0.52
B(a)P	[0.84]	[0.262]	[0.34]
B(b)F	**0.89**	0.36	**0.49**
C	**0.88**	**0.273**	**0.43**
D(ah)A	0.086	0.039	0.042
I(cd)P	0.38	0.152	0.179
METALs			
As	7.5 *	4.3 J *	7.3 *
Ba	94.4	61.5	100
Cd	0.36 J	0.26 J	0.65
Pb	**88.2**	39.7 *	**97.1**
Hg	0.20	0.10	0.20
Se	<1.2	<1.2	<1.3

MW-4

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/27/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.75]	<0.013	<0.013
B(a)P	[1.14]	<0.0113	<0.0113
B(b)F	[1.78]	<0.013	<0.013
C	**1.32**	<0.0121	<0.0121
D(ah)A	[0.178]	<0.0078	<0.0078
I(cd)P	0.72	<0.0114	<0.0114
METALs			
As	7.8 *	{ [50.7] }	{ [10.6] }
Ba	84.9	50.0	22.9
Cd	0.35 J	0.91 J *	0.53 J
Pb	**139**	35.2 *	15.6
Hg	0.17	0.015 J	0.021 J
Se	<1.5	<1.2	<1.3

GP-6

Depth:	4 - 6	10 - 11
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	0.057	<0.0046
B(a)P	0.086	<0.0067
B(b)F	0.100	<0.0075
C	0.064	<0.0094
D(ah)A	0.014 J	<0.0067
I(cd)P	0.044	<0.0090
METALs		
As	2.3 *	4.5 *
Ba	19	16
Cd	0.16 J	0.13 J
Pb	41 *	10
Hg	0.055	0.011 J
Se	<0.62	<0.57

GP-16

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.307	0.032 J	<0.013
B(a)P	[0.242]	0.0208 J	<0.0113
B(b)F	0.35	0.035 J	<0.013
C	**0.275**	0.034 J	<0.0121
D(ah)A	0.0268	<0.0076	<0.0076
I(cd)P	0.124	<0.0114	<0.0114
METALs			
As	6.6 *	4.5 J *	2.6 J *
Ba	85.4	34.0	8.8
Cd	0.26 J	<0.15	<0.15
Pb	45.5 *	29.5 *	3.9
Hg	**0.26**	0.023 J	<0.012
Se	<1.2	<1.3	<1.2

GP-38

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.84]	[7.60]	0.0136 J
B(a)P	[1.73]	{ [4.50] }	<0.0113
B(b)F	[2.49]	[6.30]	<0.013
C	**1.79**	**6.30**	<0.0121
D(ah)A	[0.277]	[0.68]	<0.0078
I(cd)P	1.00	[1.94]	<0.0114
METALs			
As	4.7 J *	6.3 *	5.0 J *
Ba	76.7	83.7	30.9
Cd	0.42 J	0.25 J	<0.14
Pb	**67.3**	**174**	10.2
Hg	0.13	**0.33**	0.029 J
Se	<1.2	<1.3	<1.2

GP-35

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	0.096	0.042 J	<0.013
B(a)P	[0.116]	0.0295 J	<0.0113
B(b)F	0.20	0.042	<0.013
C	0.137	0.039	<0.0121
D(ah)A	0.0193 J	<0.0078	<0.0078
I(cd)P	0.094	0.0169 J	<0.0114
METALs			
As	6.4 *	7.5 *	4.3 J *
Ba	87.3	26.5	16.8
Cd	0.50 J	0.27 J	0.21 J
Pb	[490]	16.1	5.8
Hg	0.10	0.023 J	0.012 J
Se	<1.3	<1.2	<1.2

GP-17

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs			
	ND	ND	ND
PAHs			
B(a)A	[1.78]	0.014 J	0.81
B(a)P	[1.21]	<0.0113	[0.53]
B(b)F	[1.71]	<0.013	**0.70**
C	**1.33**	<0.0121	**0.60**
D(ah)A	[0.181]	<0.0078	0.062
I(cd)P	0.81	<0.0114	0.32
METALs			
As	6.2 *	2.7 J *	4.4 J *
Ba	79.0	8.7	27.8
Cd	0.71	0.16 J	0.26 J
Pb	**133**	3.0	15.0
Hg	**0.29**	<0.011	0.037
Se	<1.2	<1.1	<1.1

GP-7

Depth:	0 - 2	8 - 10
Date:	12/1/17	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.0049	0.024 J
B(a)P	0.015 J	0.069
B(b)F	<0.0079	0.067
C	<0.010	0.037
D(ah)A	<0.0071	0.040
I(cd)P	<0.0095	0.042
METALs		
As	1.8 *	2.7 *
Ba	13	8.3
Cd	0.097 J	0.11 J
Pb	6.4	6.3
Hg	0.011 J	0.014 J
Se	<0.65	<0.59

ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(b)FLUORANTHENE
C = CHRYSENE
D(ah)A = DIBENZO(ah)ANTHRACENE
I(cd)P = INDENO(1,2,3-cd)PYRENE
As = ARSENIC
Ba = BARIUM
Cd = CADMIUM
Pb = LEAD
Hg = MERCURY
Se = SELENIUM

= ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
= ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
= ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
= ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)
{ } = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

* = CONCENTRATION IS BELOW BACKGROUND THRESHOLD VALUE SO RCL EXCEEDANCES NOT NOTED

YELLOW = SOIL DEPTH INTERVAL TO BE EXCAVATED DURING CONSTRUCTION FOR OFF-SITE MANAGEMENT

LEGEND

⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
● = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
◕ = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

BRRTS # 02-41-581016 E

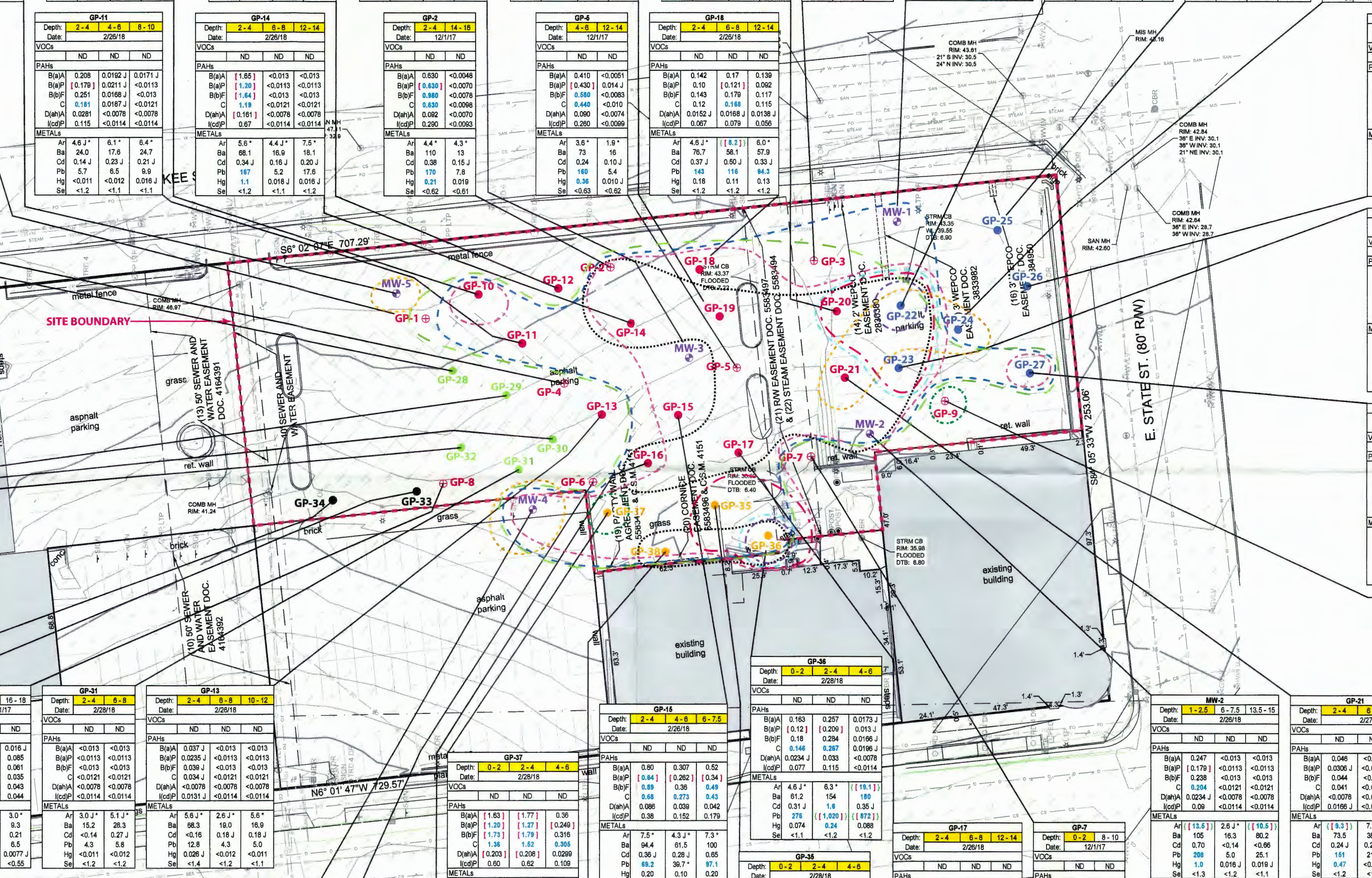
THE SIGMA GROUP
Single Source. Sound Solutions.

SOIL QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 9

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/30/2018



MW-5			
Depth:	1 - 2.5	11 - 12.5	18.5 - 20
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.099	<0.013	<0.013
B(a)P	0.093	<0.0113	<0.0113
B(b)F	0.134	<0.013	<0.013
C	0.106	<0.0121	<0.0121
D(ah)A	0.0136 J	<0.0078	<0.0078
I(cd)P	0.063	<0.0114	<0.0114
METALs			
Ar	4.6 J*	{[8.6]}	{[8.3]}
Ba	14.1	23.4	25.8
Cd	0.65	0.43 J	0.24 J
Pb	15.4	12.3	11.8
Hg	0.054	0.015 J	0.018 J
Se	<1.1	<1.1	<1.1

GP-1		
Depth:	2 - 4	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.120	<0.0048
B(a)P	[0.130]	<0.0070
B(b)F	0.180	<0.0078
C	0.120	<0.0098
D(ah)A	0.0071 J	<0.0070
I(cd)P	0.068	<0.0093
METALs		
Ar	2.8*	4.9*
Ba	25	22
Cd	0.097 J	0.095 J
Pb	42*	12
Hg	0.047	0.015 J
Se	<0.60	<0.55

GP-10			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0228 J	<0.013	0.139
B(a)P	<0.0113	<0.0113	[0.157]
B(b)F	0.0203 J	<0.013	0.173
C	0.025 J	<0.0121	**0.146**
D(ah)A	<0.0078	<0.0078	0.036
I(cd)P	<0.0114	<0.0114	0.089
METALs			
Ar	4.2 J*	5.3*	3.7 J*
Ba	70.8	12.3	14.0
Cd	0.24 J	0.30 J	0.20 J
Pb	**137**	8.4	11.6
Hg	0.11	0.011 J	0.015 J
Se	<1.2	<1.1	<1.1

GP-12			
Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	<0.013	<0.013	<0.013
B(a)P	<0.0113	<0.0113	<0.0113
B(b)F	<0.013	<0.013	<0.013
C	<0.0121	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
Ar	4.5 J*	4.1 J*	4.3 J*
Ba	43.4	45.2	19.2
Cd	<0.14	<0.16	0.24 J
Pb	9.8	8.3	5.9
Hg	0.020 J	0.037 J	0.013 J
Se	<1.1	<1.3	<1.2

MW-3			
Depth:	1 - 2.5	6 - 7.5	11 - 12.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.40	0.10	<0.013
B(a)P	[0.34]	0.075	<0.0113
B(b)F	**0.49**	0.104	<0.013
C	**0.37**	0.091	<0.0121
D(ah)A	0.048	0.012 J	<0.0078
I(cd)P	0.199	0.045	<0.0114
METALs			
Ar	4.7 J*	4.5 J*	4.1 J*
Ba	59.5	41.9	29.4
Cd	0.37 J	0.21 J	0.21 J
Pb	**74.0**	**93.1**	6.3
Hg	0.13	0.074	0.038 J
Se	<1.1	<1.2	<1.3

GP-19			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.71	0.099	0.0283 J
B(a)P	[0.48]	0.065	0.0166 J
B(b)F	**0.66**	0.095	0.0227 J
C	**0.60**	0.092	0.0239 J
D(ah)A	0.06	0.0096 J	<0.0078
I(cd)P	0.275	0.038	<0.0114
METALs			
Ar	5.4*	2.9 J*	3.6 J*
Ba	108	85.0	28.3
Cd	0.67	0.16 J	0.28 J
Pb	**131**	**94.8**	10.7
Hg	**0.53**	0.084	0.016 J
Se	<1.2	<1.3	<1.2

GP-20			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.44]	<0.013	0.43
B(a)P	[1.15]	<0.0113	[0.40]
B(b)F	[1.50]	<0.013	**0.56**
C	**1.13**	<0.0121	**0.44**
D(ah)A	[0.148]	<0.0078	0.052
I(cd)P	0.72	<0.0114	0.283
METALs			
Ar	4.8 J*	4.3 J*	4.6 J*
Ba	**239**	35.9	34.2
Cd	0.91*	<0.15	0.32 J
Pb	[529]	7.2	22.2
Hg	**0.67**	<0.012	0.023 J
Se	<1.4	<1.2	<1.2

GP-3		
Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.049	1.000
B(a)P	0.075	[0.880]
B(b)F	0.098	[1.600]
C	0.059	**1.300**
D(ah)A	<0.0078	0.110
I(cd)P	0.047	0.420
METALs		
Ar	1.6*	4.2*
Ba	27	18
Cd	0.059 J	0.13 J
Pb	6.3	7.5
Hg	0.023	0.019
Se	<0.63	<0.64

MW-1			
Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.171	0.0223 J	<0.013
B(a)P	0.112	0.0119 J	<0.0114
B(b)F	0.06	<0.0147	<0.0147
C	**0.40**	0.062	<0.0147
D(ah)A	<0.0179	<0.0179	<0.0179
I(cd)P	0.0131 J	<0.0113	<0.0113
METALs			
Ar	5.9*	7.3*	4.9 J*
Ba	25.9	31.1	39.2
Cd	0.24 J	0.38 J	0.34 J
Pb	8.8	12.1	8.6
Hg	0.017 J	0.013 J	0.015 J
Se	<1.2	**1.5 J**	<1.2

GP-22			
Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.96	0.0156 J	0.032 J
B(a)P	[0.72]	<0.0113	0.0228 J
B(b)F	**1.03**	<0.013	0.033 J
C	**0.80**	0.0135 J	0.035 J
D(ah)A	0.091	<0.0078	<0.0078
I(cd)P	0.41	<0.0114	0.0158 J
METALs			
Ar	{[14.7]}	7.6*	6.5*
Ba	**984**	105	23.0
Cd	**1.8**	0.33 J	0.32 J
Pb	{[1,170]}	**94.1**	14.1
Hg	**1.3**	0.12	<0.011
Se	<1.4	<1.2	<1.1

GP-25			
Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0205 J	<0.013	<0.013
B(a)P	0.0145 J	<0.0113	<0.0113
B(b)F	0.0192 J	<0.013	<0.013
C	0.0175 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
Ar	5.5*	6.0*	4.4 J*
Ba	65.1	36.3	15.0
Cd	0.32 J	0.42 J	0.24 J
Pb	9.8	28.5*	8.0
Hg	0.011 J	0.022 J	0.014 J
Se	<1.2	<1.1	<1.1

GP-24			
Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0181 J	0.072	<0.013
B(a)P	0.0139 J	0.066	<0.0113
B(b)F	0.0183 J	0.09	<0.013
C	0.0146 J	0.081	<0.0121
D(ah)A	<0.0078	0.0119 J	<0.0078
I(cd)P	<0.0114	0.04	<0.0114
METALs			
Ar	4.1 J*	3.1 J*	{[10.2]}
Ba	31.1	13.0	22.9
Cd	0.21 J	0.17 J	0.39 J
Pb	7.3	9.6	15.0
Hg	<0.011	<0.011	<0.012
Se	<1.1	<1.1	<1.2

GP-28		
Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
Ar	4.8 J*	4.6 J*
Ba	18.3	14.7
Cd	<0.14	0.20 J
Pb	12.5	5.0
Hg	0.049	<0.011
Se	<1.1	<1.1

GP-4	
Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	<0.0045
B(a)P	<0.0065
B(b)F	<0.0072
C	<0.0091
D(ah)A	<0.0065
I(cd)P	<0.0087
METALs	
Ar	3.0*
Ba	15
Cd	0.14 J
Pb	8.6
Hg	0.0076 J
Se	<0.57

GP-11			
Depth:	2 - 4	4 - 6	8 - 10
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.208	0.0192 J	0.0171 J
B(a)P	[0.179]	0.0211 J	<0.0113
B(b)F	0.251	0.0168 J	<0.013
C	**0.181**	0.0187 J	<0.0121
D(ah)A	0.0281	<0.0078	<0.0078
I(cd)P	0.115	<0.0114	<0.0114
METALs			
Ar	4.6 J*	6.1*	6.4*
Ba	24.0	17.6	24.7
Cd	0.14 J	0.23 J	0.21 J
Pb	5.7	6.5	9.9
Hg	<0.011	<0.012	0.016 J
Se	<1.2	<1.1	<1.1

GP-14			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.65]	<0.013	<0.013
B(a)P	[1.20]	<0.0113	<0.0113
B(b)F	[1.64]	<0.013	<0.013
C	**1.19**	<0.0121	<0.0121
D(ah)A	[0.161]	<0.0078	<0.0078
I(cd)P	0.67	<0.0114	<0.0114
METALs			
Ar	5.6*	4.4 J*	7.5*
Ba	68.1	16.9	18.1
Cd	0.34 J	0.16 J	0.20 J
Pb	**167**	5.2	17.6
Hg	**1.1**	0.018 J	0.016 J
Se	<1.2	<1.1	<1.2

GP-2		
Depth:	2 - 4	14 - 16
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.630	<0.0048
B(a)P	[0.630]	<0.0070
B(b)F	**0.980**	<0.0078
C	**0.630**	<0.0098
D(ah)A	0.092	<0.0070
I(cd)P	0.290	<0.0093
METALs		
Ar	4.4*	4.3*
Ba	110	13
Cd	0.38	0.15 J
Pb	**170**	7.8
Hg	**0.21**	0.019
Se	<0.62	<0.61

GP-5		
Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.410	<0.0051
B(a)P	[0.430]	0.014 J
B(b)F	**0.580**	<0.0083
C	**0.440**	<0.010
D(ah)A	0.090	<0.0074
I(cd)P	0.260	<0.0099
METALs		
Ar	3.6*	1.9*
Ba	73	16
Cd	0.24	0.10 J
Pb	**160**	5.4
Hg	**0.36**	0.010 J
Se	<0.63	<0.62

GP-18			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.142	0.17	0.139
B(a)P	0.10	[0.121]	0.092
B(b)F	0.143	0.179	0.117
C	0.12	**0.168**	0.115
D(ah)A	0.0152 J	0.0168 J	0.0138 J
I(cd)P	0.067	0.079	0.056
METALs			
Ar	4.6 J*	{[8.2]}	6.0*
Ba	76.7	58.1	57.9
Cd	0.37 J	0.50 J	0.33 J
Pb	**143**	**116**	**94.3**
Hg	0.18	0.11	0.13
Se	<1.2	<1.2	<1.2

GP-26			
Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0234 J	0.044	<0.013
B(a)P	0.0246 J	0.041	<0.0113
B(b)F	0.034 J	0.055	<0.013
C	0.0271 J	0.046	<0.0121
D(ah)A	<0.0078	<0.0076	<0.0078
I(cd)P	0.0215 J	0.0285 J	<0.0114
METALs			
Ar	4.8 J*	6.6*	5.4*
Ba	20.4	30.2	56.3
Cd	0.20 J	0.27 J	0.24 J
Pb	7.7	21.2	8.0
Hg	<0.011	<0.012	<0.012
Se	<1.2	<1.2	<1.2

GP-23			
Depth:	2 - 4	8 - 10	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[2.21]	<0.013	0.71
B(a)P	[1.77]	<0.0113	[0.59]
B(b)F	[2.38]	<0.013	**0.79**
C	**1.73**	<0.0121	**0.67**
D(ah)A	[0.224]	<0.0078	0.084
I(cd)P	0.98	<0.0114	0.33
METALs			
Ar	6.9*	3.3 J*	3.8 J*
Ba	**457**	23.7	32.1
Cd	0.79*	<0.16	<0.15
Pb	[567]	5.6	40.0*
Hg	**0.29**	<0.013	0.033 J
Se	<1.2	<1.4	<1.2

GP-27			
Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.034 J	0.64	<0.013
B(a)P	0.0313 J	[0.67]	<0.0113
B(b)F	0.048	**0.86**	<0.013
C	0.037 J	**0.61**	<0.0121
D(ah)A	<0.0078	0.088	<0.0078
I(cd)P	0.0176 J	0.40	<0.0114
METALs			
Ar	5.8*	6.4*	4.1 J*
Ba	35.7	45.2	42.4
Cd	0.18 J	0.22 J	0.17 J
Pb	7.9	**64.0**	7.7
Hg	<0.011	0.017 J	<0.012
Se	<1.1	<1.2	<1.2

GP-9	
Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	0.0099 J
B(a)P	0.018 J
B(b)F	<0.0082
C	0.011 J
D(ah)A	<0.0073
I(cd)P	<0.0098
METALs	
Ar	3.0*
Ba	46
Cd	0.072 J
Pb	7.4
Hg	0.033
Se	**0.72 J**

GP-30		
Depth:	6 - 8	12 - 14
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.057
B(a)P	<0.0113	0.097
B(b)F	<0.013	0.072
C	<0.0121	0.073
D(ah)A	<0.0078	0.0261
I(cd)P	<0.0114	0.032 J
METALs		
Ar	5.5*	4.6 J*
Ba	13.0	14.7
Cd	0.16 J	0.13 J
Pb	8.3	7.7
Hg	<0.011	<0.011
Se	<1.1	<1.1

GP-29		
Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	0.038 J	<0.013
B(a)P	0.057	<0.0113
B(b)F	0.054	<0.013
C	0.045	<0.0121
D(ah)A	0.0116 J	<0.0078
I(cd)P	0.032 J	<0.0114
METALs		
Ar	5.4*	6.1*
Ba	26.6	19.6
Cd	0.22 J	0.35 J
Pb	9.7	7.6
Hg	0.024 J	<0.011
Se	<1.1	<1.1

GP-32		
Depth:	4 - 6	8 - 10
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.109
B(a)P	<0.0113	0.113
B(b)F	<0.013	0.122
C	<0.0121	0.117
D(ah)A	<0.0078	0.0232 J
I(cd)P	<0.0114	0.06
METALs		
Ar	4.8 J*	6.4*
Ba	15.0	18.5
Cd	0.16 J	0.24 J
Pb	5.2	8.5
Hg	<0.011	<0.011
Se	<1.2	<1.1

GP-34	
Depth:	2 - 4
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	0.085
B(a)P	0.09
B(b)F	0.126
C	0.10
D(ah)A	0.0127 J
I(cd)P	0.059
METALs	
Ar	{[9.2]}
Ba	24.9
Cd	0.36 J
Pb	30.3*
Hg	0.049
Se	<1.2

GP-33	
Depth:	6 - 8
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	<0.013
B(a)P	<0.0113
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
Ar	{[8.1]}
Ba	17.8
Cd	0.20 J
Pb	8.6
Hg	<0.011
Se	<1.2

GP-8		
Depth:	4 - 6	16 - 18
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0046	0.016 J
B(a)P	<0.0067	0.085
B(b)F	<0.0074	0.061
C	<0.0094	0.035
D(ah)A	<0.0067	0.043
I(cd)P	<0.0089	0.044
METALs		
Ar	4.3*	3.0*
Ba	11	9.3
Cd	0.17 J	0.21
Pb	8.3	6.5
Hg	0.012 J	0.0077 J
Se	<0.59	<0.55

GP-31		
Depth:	2 - 4	6 - 8
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
Ar	3.0 J*	5.1 J*
Ba	15.2	28.3
Cd	<0.14	0.27 J
Pb	4.3	5.8
Hg	<0.011	<0.012
Se	<1.2	<1.2

GP-13			
Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.037 J	<0.013	<0.013
B(a)P	0.0235 J	<0.0113	<0.0113
B(b)F	0.039 J	<0.013	<0.013
C	0.034 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0131 J	<0.0114	<0.0114
METALs			
Ar	5.6 J*	2.6 J*	5.6*
Ba	68.3	19.0	16.9
Cd	<0.16	0.18 J	0.18 J
Pb	12.8	4.3	5.0
Hg	0.026 J	<0.012	<0.011
Se	<1.4	<1.2	<1.1

MW-4			
Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.75]	<0.013	<0.013
B(a)P	[1.14]	<0.0113	<0.0113
B(b)F	[1.78]	<0.013	<0.013
C	**1.32**	<0.0121	<0.0121
D(ah)A	[0.178]	<0.0078	<0.0078
I(cd)P	0.72	<0.0114	<0.0114
METALs			
Ar	7.8*	{[50.7]}	{[10.6]}
Ba	84.9	50.0	22.9
Cd	0.35 J	0.91 J*	0.53 J
Pb	**139**	35.2*	15.8
Hg	0.17	0.015 J	0.021 J
Se	<1.5	<1.2	<1.3

GP-6		
Depth:	4 - 6	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.057	<0.0046
B(a)P	0.086	<0.0067
B(b)F	0.100	<0.0075
C	0.064	<0.0094
D(ah)A	0.014 J	<0.0067
I(cd)P	0.044	<0.0090
METALs		
Ar	2.3*	4.5*
Ba	19	16
Cd	0.16 J	0.13 J
Pb	41*	10
Hg	0.055	0.011 J
Se	<0.62	<0.57

GP-16			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.307	0.032 J	<0.013
B(a)P	[0.242]	0.0208 J	<0.0113
B(b)F	0.35	0.035 J	<0.013
C	**0.275**	0.034 J	<0.0121
D(ah)A	0.0268	<0.0078	<0.0078
I(cd)P	0.124	<0.0114	<0.0114
METALs			
Ar	6.6*	4.5 J*	2.6 J*
Ba	85.4	34.0	8.8
Cd	0.26 J	<0.15	<0.15
Pb	45.5*	29.5*	3.9
Hg	**0.26**	0.023 J	<0.012
Se	<1.2	<1.3	<1.2

GP-37			
Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.63]	[1.77]	0.36
B(a)P	[1.20]	[1.27]	[0.249]
B(b)F	[1.73]	[1.79]	0.316
C	**1.36**	**1.52**	**0.305**
D(ah)A	[0.203]	[0.208]	0.0299
I(cd)P	0.60	0.62	0.109
METALs			
Ar	7.3*	7.5*	4.1 J*
Ba	60.6	36.5	59.0
Cd	0.38 J	0.33 J	0.18 J
Pb	**61.7**	**66.3**	**57.9**
Hg	0.092	0.075	0.071
Se	**1.7 J**	<1.2	<1.2

GP-15			
Depth:	2 - 4	4 - 6	6 - 7.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.80	0.307	0.52
B(a)P	[0.64]	[0.262]	[0.34]
B(b)F	**0.89**	0.36	**0.49**
C	**0.68**	**0.273**	**0.43**
D(ah)A	0.086	0.039	0.042
I(cd)P	0.38	0.152	0.179
METALs			
Ar	7.5*	4.3 J*	7.3*
Ba	94.4	61.5	100
Cd	0.36 J	0.28 J	0.65
Pb	**69.2**	39.7*	**97.1**
Hg	0.20	0.10	0.20
Se	<1.2	<1.2	<1.3

GP-38			
Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.84]	[7.60]	0.0136 J
B(a)P	[1.73]	{[4.50]}	<0.0113
B(b)F	[2.49]	[6.30]	<0.013
C	**1.79**	**6.30**	<0.0121
D(ah)A	[0.277]	[0.68]	<0.0078
I(cd)P	1.00	[1.94]	<0.0114
METALs			
Ar	4.7 J*	6.3*	5.0 J*
Ba	76.7	83.7	30.9
Cd	0.42 J	0.25 J	<0.14
Pb	**57.3**	**174**	10.2
Hg	0.13	**0.33**	0.029 J
Se	<1.2	<1.3	<1.2

GP-36			
Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.163	0.257	0.0173 J
B(a)P	[0.12]	[0.209]	0.013 J
B(b)F	0.18	0.284	0.0166 J
C	**0.146**	**0.267**	0.0196 J
D(ah)A	0.0234 J	0.033	<0.0078
I(cd)P	0.077	0.115	<0.0114
METALs			
Ar	4.6 J*	6.3*	{[19.1]}
Ba	61.2	154	**180**
Cd	0.31 J	**1.6**	0.35 J
Pb	**276**	{[1,020]}	{[872]}
Hg	0.074	**0.24**	0.088
Se	<1.1	<1.2	<1.2

GP-35			
Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.096	0.042 J	<0.013
B(a)P	[0.116]	0.0295 J	<0.0113
B(b)F	0.20	0.042	<0.013
C	0.137	0.039	<0.0121
D(ah)A	0.0193 J	<0.0078	<0.0078
I(cd)P	0.094	0.0169 J	<0.0114
METALs			
Ar	6.4*	7.5*	4.3 J*
Ba	87.3	26.5	16.8
Cd	0.50 J	0.27 J	0.21 J
Pb	[490]	16.1	5.8
Hg	0.10	0.023 J	0.012 J
Se	<1.3	<1.2	<1.2

GP-17			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.78]	0.014 J	0.81
B(a)P	[1.21]	<0.0113	[0.53]
B(b)F	[1.71]	<0.013	**0.70**
C	**1.33**	<0.0121	**0.60**
D(ah)A	[0.181]	<0.0078	0.082
I(cd)P	0.81	<0.0114	0.32
METALs			
Ar	6.2*	2.7 J*	4.4 J*
Ba	79.0	6.7	27.8
Cd	0.71	0.16 J	0.26 J
Pb	**133**	3.0	15.0
Hg	**0.29**	<0.011	0.037
Se	<1.2	<1.1	<1.1

GP-7		
Depth:	0 - 2	8 - 10
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0049	0.024 J
B(a)P	0.015 J	0.069
B(b)F	<0.0079	0.067
C	<0.010	0.037
D(ah)A	<0.0071	0.040
I(cd)P	<0.0095	0.042
METALs		
Ar	1.8*	2.7*
Ba	13	8.3
Cd	0.097 J	0.11 J
Pb	6.4	6.3
Hg	0.011 J	0.014 J
Se	<0.65	<0.59

MW-2			
Depth:	1 - 2.5	6 - 7.5	13.5 - 15
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.247	<0.013	<0.013
B(a)P	[0.179]	<0.0113	<0.0113
B(b)F	0.238	<0.013	<0.013
C	**0.204**	<0.0121	<0.0121
D(ah)A	0.0234 J	<0.0078	<0.0078
I(cd)P	0.09	<0.0114	<0.0114
METALs			
Ar	{[13.5]}	2.6 J*	{[10.5]}
Ba	105	16.3	80.2
Cd	0.70	<0.14	<0.66
Pb	**208**	5.0	25.1
Hg	**1.0**	0.016 J	0.019 J
Se	<1.3	<1.2	<1.1

GP-21			
Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.046	<0.013	0.0144 J
B(a)P	0.0306 J	<0.0113	<0.0113
B(b)F	0.044	<0.013	<0.013
C	0.041	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0166 J	<0.0114	<0.0114
METALs			
Ar	{[9.3]}	7.0*	3.5 J*
Ba	73.5	38.5	46.7
Cd	0.24 J	0.28 J	0.15 J
Pb	**151**	21.5	9.1
Hg	**0.47**	<0.012	<0.013
Se	<1.2	<1.1	<1.2

ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(b)FLUORANTHENE
C = CHRYSENE
D(ah)A = DIBENZO(ah)ANTHRACENE
I(cd)P = INDENO(1,2,3-cd)PYRENE
Ar = ARSENIC
Ba = BARIUM
Cd = CADMIUM
Pb = LEAD
Hg = MERCURY
Se = SELENIUM

= ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
= ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
= ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
= ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)
{ } = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

* = CONCENTRATION IS BELOW BACKGROUND THRESHOLD VALUE SO RCL EXCEEDANCES NOT NOTED

YELLOW = SOIL TO BE EXCAVATED DURING CONSTRUCTION FOR OFF-SITE MANAGEMENT

LEGEND

= PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
= GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
= HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

BRRTS # 02-41-581016 F

THE SIGMA GROUP
Single Source. Sound Solutions.

SOIL QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 9

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/14/2018

MW-5	
Date:	3/5/18
VOCs	
CF	*0.83*
PCE	<0.38
PAHs	
	ND / <PALs
Dissolved METALs	
	ND / <PALs

MW-3	
Date:	3/5/18
VOCs	
CF	<0.26
PCE	<0.38
PAHs	
	ND / <PALs
Dissolved METALs	
	ND / <PALs

MW-1	
Date:	3/5/18
VOCs	
CF	<0.26
PCE	*1.93*
PAHs	
	ND / <PALs
Dissolved METALs	
	ND / <PALs

MW-4	
Date:	3/5/18
VOCs	
CF	<0.26
PCE	<0.38
PAHs	
	ND / <PALs
Dissolved METALs	
	ND / <PALs

MW-2	
Date:	3/5/18
VOCs	
CF	<0.26
PCE	<0.38
PAHs	
	ND / <PALs
Dissolved METALs	
	ND / <PALs

N. MILWAUKEE ST. (80' R/W)

N. BROADWAY (100' R/W)

E. STATE ST. (80' R/W)

ESTIMATED EXTENT OF TETRACHLOROETHENE IMPACTS > NR 140 PAL

ESTIMATED EXTENT OF CHLOROFORM IMPACTS > NR 140 PAL

SITE BOUNDARY

MAIN BUILDING / BASEMENT (14' CUT)

EXTENDED BASEMENT (14' CUT)

ALTERNATE BASEMENT (16' CUT)

RAMP (0' TO 14' CUT)

FOOTING / FOUNDATION WORK (UP TO 6' CUT)

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19 GP-20 GP-21 GP-22 GP-23 GP-24 GP-25 GP-26 GP-27 GP-28 GP-29 GP-30 GP-31 GP-32 GP-33 GP-34 GP-35 GP-36 GP-37 GP-38

MW-1 MW-2 MW-3 MW-4 MW-5

existing building

asphalt parking

grass

brick

metal fence

plantings

wall

ret. wall

steps

canopy (above)

(13) 50' SEWER AND WATER EASEMENT DOC. 4164391

40' SEWER AND WATER EASEMENT

(10) 50' SEWER AND WATER EASEMENT DOC. 4164392

(12) 10' EASEMENT DOC. 6931267

(21) R/W EASEMENT DOC. 5583497 & (22) STEAM EASEMENT DOC. 5583494

(14) 2' WEPCO EASEMENT DOC. 2830380

(16) 3' WEPCO EASEMENT DOC. 384950

3' WEPCO EASEMENT DOC 383398

PROPERTY WALL EASEMENT DOC. 3496 & C.S.M. 4151

CORNICE EASEMENT DOC. 3496 & C.S.M. 4151

S84° 05' 33"W 253.06'

N6° 01' 47"W 729.57'

S 02° 07"E 707.29'

STRM CB RIM: 43.37 FLOODED DTB: 7.22

STRM CB RIM: 43.35 W.: 39.55 DTB: 6.90

STRM CB RIM: 35.62 FLOODED DTB: 6.40

STRM CB RIM: 35.98 FLOODED DTB: 6.80

COMB MH RIM: 48.74 21" S INV: 37.2

SAN MH RIM: 47.11 12" S INV: 32.9

COMB MH RIM: 46.97

COMB MH RIM: 45.43

COMB MH RIM: 43.81 21" S INV: 30.5 24" N INV: 30.5

MIS MH RIM: 43.16

COMB MH RIM: 42.84 36" E INV: 30.1

COMB MH RIM: 42.84 36" E INV: 28.7 36" W INV: 28.7

SAN MH RIM: 42.60

COMB MH RIM: 41.24

BBBS # 0241-581016 G

ANALYTICAL KEY

CF = CHLOROFORM
PCE = TETRACHLOROETHENE

BOLD = CONCENTRATION EXCEEDS NR 140 ES
ITALICS = CONCENTRATION EXCEEDS NR 140 PAL

ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

N

0 40 ft. 80 ft.

GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

GROUNDWATER QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 10

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/21/2018

SOIL IMPACTS KEY

- = ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
- = ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
- = ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
- = ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

SOIL MANAGEMENT KEY

- = SOIL EXCAVATED FOR RAMP AND BASEMENTS TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION (MILWAUKEE SOLVAY COKE AND GAS SITE AT 311 E. GREENFIELD AVENUE, MILWAUKEE)
- = REMAINING SOIL EXCAVATED FOR BASEMENTS AND SUBGRADE PREPARATION OUTSIDE OF BUILDING TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION(S) AND/OR WDNR LICENSED LANDFILL FACILITY WITH APPROPRIATE SOIL PROFILE APPROVAL FROM LANDFILL

BRRT # 02-41-578016 H

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

N

0 40 ft. 80 ft.

GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

SOIL MANAGEMENT PLAN MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 11

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/30/2018

SOIL IMPACTS KEY

- = ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
- = ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
- = ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
- = ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

SOIL MANAGEMENT KEY

- = ALL SOIL EXCAVATED FOR BASEMENTS AND SUBGRADE PREPARATION OUTSIDE OF BUILDING TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION(S) AND/OR WDNR LICENSED LANDFILL FACILITY WITH APPROPRIATE SOIL PROFILE APPROVAL FROM LANDFILL
- = SOIL EXCAVATED FOR RAMP AND BASEMENTS TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION (POTENTIAL FACILITY = MILWAUKEE SOLVAY COKE AND GAS SITE AT 311 E. GREENFIELD AVENUE, MILWAUKEE)

BRRTS # 02-41-581016 I

LEGEND

- = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

SOIL MANAGEMENT PLAN MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 11

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/21/2018

SOIL IMPACTS KEY

- = ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
- = ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
- = ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
- = ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

ENGINEERED BARRIER KEY

- = CONCRETE FLOOR SLAB, 5" MIN.
- = CONCRETE SIDEWALK OR DRIVE AREA, 4" MIN.
- = ASPHALT PAVEMENT, 3.5" MIN.
- = CLEAN SOIL FOR PLANT BEDS, 24" THICK
- = TOPSOIL, 8" THICK

BRRTS # 02-41-581016 J

LEGEND

- = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

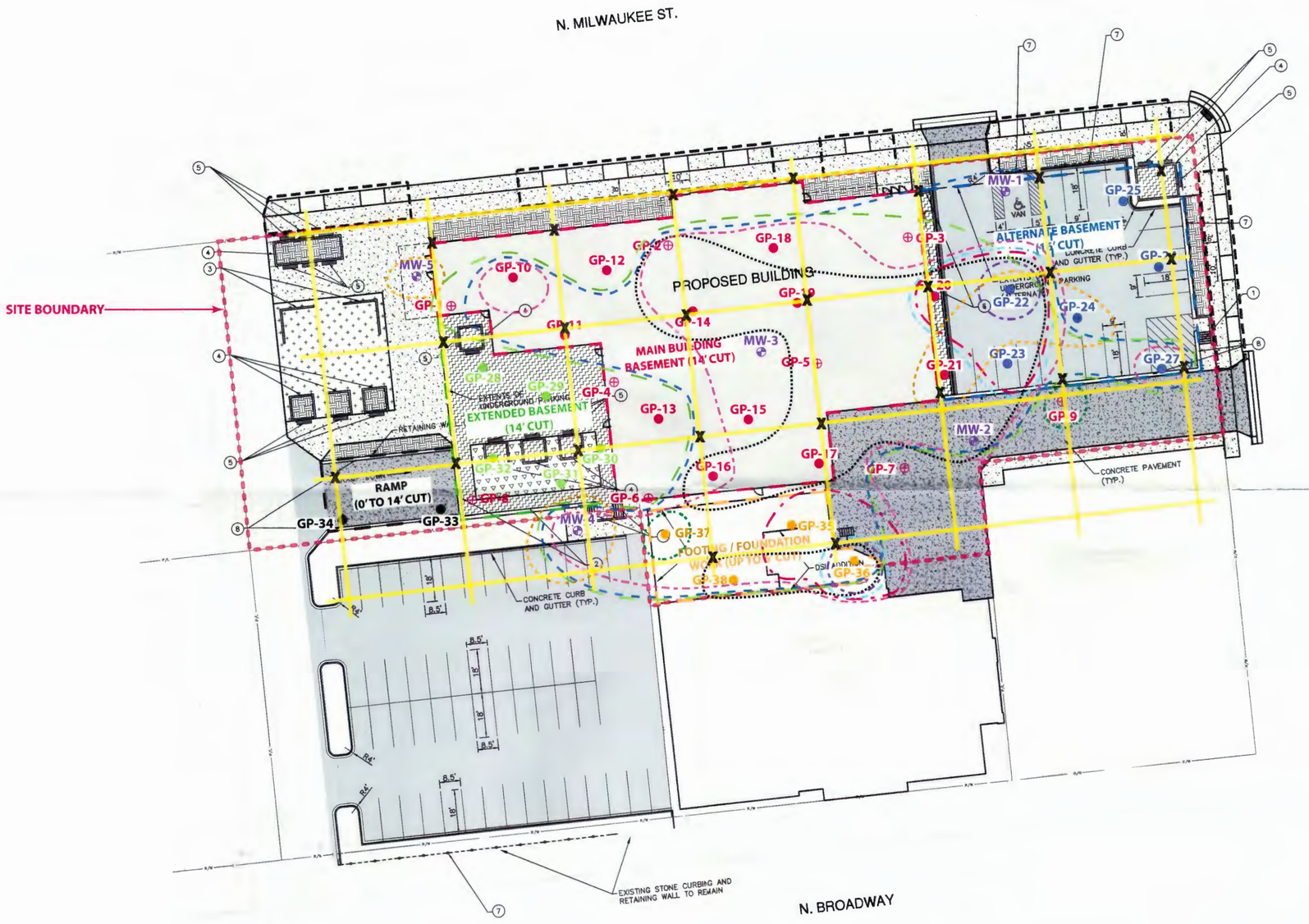
THE SIGMA GROUP
Single Source. Sound Solutions.

ENGINEERED BARRIER MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 12

Project: 17975 | Directory: 900 CAD / E-Env | Filename: 17975 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/21/2018



SOIL IMPACTS KEY

- = ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
- = ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
- = ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
- = ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

POST-EXCAVATION SOIL SAMPLING KEY

X = POST-EXCAVATION SOIL SAMPLE TO BE COLLECTED FROM BOTTOM OF MASS EXCAVATION FOR BASEMENT AREAS (APPROXIMATELY 50-FOOT GRID INTERVAL). SOIL SAMPLES TO BE SUBMITTED TO ENVIRONMETNAL LABORATORY FOR ANALYSIS OF VOCs, PAHs, AND RCRA METALs.

BRRTS # 02-41-581016 K

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

N

0 40 ft. 80 ft.

GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

POST-EXCAVATION SOIL SAMPLING PLAN MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 13

Project: 17076 | Directory: 060 CAD \ E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/21/2018

Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

THE SIGMA GROUP
Single Source. Sound Solutions.

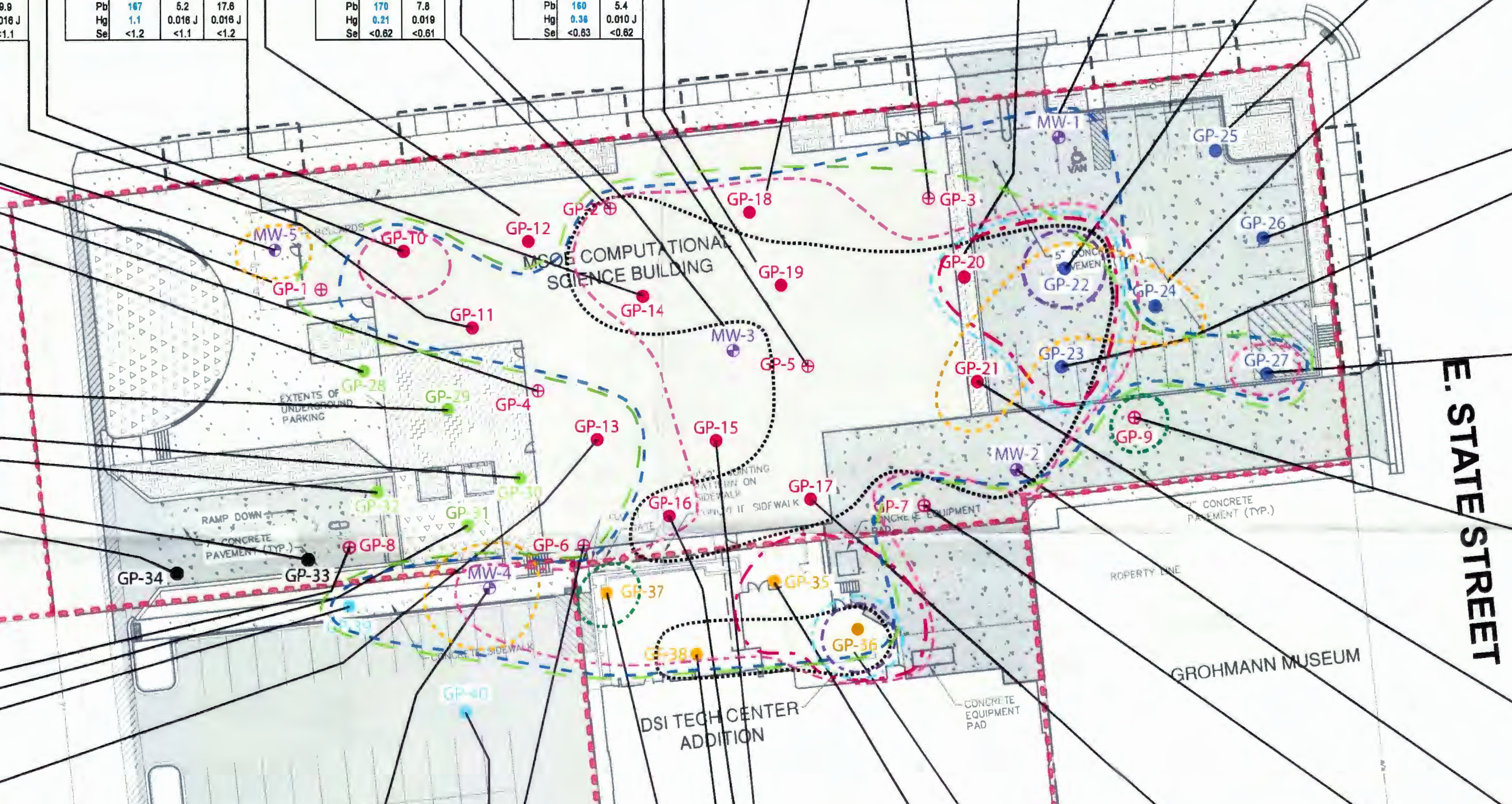
BRRTS # 02-41-581016 L

SITE PLAN MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE
1

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 10/23/2019



GP-1

Depth:	2 - 4	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.120	<0.0048
B(a)P	[0.130]	<0.0070
B(b)F	0.180	<0.0078
C	0.120	<0.0098
D(ah)A	0.0071 J	<0.0070
I(cd)P	0.068	<0.0093
METALs		
As	2.8 *	4.9 *
Ba	25	22
Cd	0.097 J	0.095 J
Pb	42 *	12
Hg	0.047	0.015 J
Se	<0.60	<0.55

MW-5

Depth:	1 - 2.5	11 - 12.5	18.5 - 20
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.099	<0.013	<0.013
B(a)P	0.093	<0.0113	<0.0113
B(b)F	0.134	<0.013	<0.013
C	0.106	<0.0121	<0.0121
D(ah)A	0.0136 J	<0.0078	<0.0078
I(cd)P	0.063	<0.0114	<0.0114
METALs			
As	4.6 J *	{ [8.6] }	{ [8.3] }
Ba	14.1	23.4	25.6
Cd	0.65	0.43 J	0.24 J
Pb	15.4	12.3	11.6
Hg	0.054	0.015 J	0.018 J
Se	<1.1	<1.1	<1.1

GP-10

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0228 J	<0.013	0.139
B(a)P	<0.0113	<0.0113	[0.157]
B(b)F	0.0203 J	<0.013	0.173
C	0.025 J	<0.0121	**0.146**
D(ah)A	<0.0078	<0.0078	0.036
I(cd)P	<0.0114	<0.0114	0.089
METALs			
As	4.2 J *	5.3 *	3.7 J *
Ba	70.6	12.3	14.0
Cd	0.24 J	0.30 J	0.20 J
Pb	**137**	6.4	11.6
Hg	0.11	0.011 J	0.015 J
Se	<1.2	<1.1	<1.1

GP-12

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	<0.013	<0.013	<0.013
B(a)P	<0.0113	<0.0113	<0.0113
B(b)F	<0.013	<0.013	<0.013
C	<0.0121	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	4.5 J *	4.1 J *	4.3 J *
Ba	43.4	45.2	19.2
Cd	<0.14	<0.16	0.24 J
Pb	9.8	8.3	5.9
Hg	0.020 J	0.037 J	0.013 J
Se	<1.1	<1.3	<1.2

MW-3

Depth:	1 - 2.5	6 - 7.5	11 - 12.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.40	0.10	<0.013
B(a)P	[0.34]	0.075	<0.0113
B(b)F	**0.49**	0.104	<0.013
C	**0.37**	0.091	<0.0121
D(ah)A	0.048	0.012 J	<0.0078
I(cd)P	0.199	0.045	<0.0114
METALs			
As	4.7 J *	4.5 J *	4.1 J *
Ba	59.5	41.9	29.4
Cd	0.37 J	0.21 J	0.21 J
Pb	**74.0**	**93.1**	6.3
Hg	0.13	0.074	0.038 J
Se	<1.1	<1.2	<1.3

GP-19

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.71	0.099	0.0283 J
B(a)P	[0.48]	0.065	0.0166 J
B(b)F	**0.66**	0.095	0.0227 J
C	**0.60**	0.092	0.0239 J
D(ah)A	0.06	0.0096 J	<0.0078
I(cd)P	0.275	0.038	<0.0114
METALs			
As	5.4 *	2.9 J *	3.6 J *
Ba	108	85.0	28.3
Cd	0.67	0.16 J	0.28 J
Pb	**131**	**94.8**	10.7
Hg	**0.53**	0.084	0.016 J
Se	<1.2	<1.3	<1.2

GP-18

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.142	0.17	0.139
B(a)P	0.10	[0.121]	0.092
B(b)F	0.143	0.179	0.117
C	0.12	**0.168**	0.115
D(ah)A	0.0152 J	0.0168 J	0.0138 J
I(cd)P	0.067	0.079	0.056
METALs			
As	4.6 J *	{ [8.2] }	6.0 *
Ba	76.7	58.1	57.9
Cd	0.37 J	0.50 J	0.33 J
Pb	**143**	**116**	**94.3**
Hg	0.18	0.11	0.13
Se	<1.2	<1.2	<1.2

GP-3

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.049	1.000
B(a)P	0.075	[0.880]
B(b)F	0.098	[1.600]
C	0.059	**1.300**
D(ah)A	<0.0076	0.110
I(cd)P	0.047	0.420
METALs		
As	1.6 *	4.2 *
Ba	27	18
Cd	0.059 J	0.13 J
Pb	6.3	7.5
Hg	0.023	0.019
Se	<0.63	<0.64

GP-20

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.44]	<0.013	0.43
B(a)P	[1.16]	<0.0113	[0.40]
B(b)F	[1.60]	<0.013	**0.56**
C	**1.13**	<0.0121	**0.44**
D(ah)A	[0.148]	<0.0078	0.052
I(cd)P	0.72	<0.0114	0.283
METALs			
As	4.8 J *	4.3 J *	4.6 J *
Ba	**239**	35.9	34.2
Cd	0.91 *	<0.15	0.32 J
Pb	[529]	7.2	22.2
Hg	**0.67**	<0.012	0.023 J
Se	<1.4	<1.2	<1.2

MW-1

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.171	0.0223 J	<0.013
B(a)P	0.112	0.0119 J	<0.0114
B(b)F	0.06	<0.0147	<0.0147
C	**0.40**	0.062	<0.0147
D(ah)A	<0.0179	<0.0179	<0.0179
I(cd)P	0.0131 J	<0.0113	<0.0113
METALs			
As	5.9 *	7.3 *	4.9 J *
Ba	25.9	31.1	39.2
Cd	0.24 J	0.38 J	0.34 J
Pb	8.8	12.1	6.6
Hg	0.017 J	0.013 J	0.015 J
Se	<1.2	**1.5 J**	<1.2

GP-22

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.96	0.0156 J	0.032 J
B(a)P	[0.72]	<0.0113	0.0228 J
B(b)F	**1.03**	<0.013	0.033 J
C	**0.80**	0.0135 J	0.035 J
D(ah)A	0.091	<0.0078	<0.0078
I(cd)P	0.41	<0.0114	0.0158 J
METALs			
As	{ [14.7] }	7.6 *	6.5 *
Ba	**984**	105	23.0
Cd	**1.8**	0.33 J	0.32 J
Pb	{ [1,170] }	**94.1**	14.1
Hg	**1.3**	0.12	<0.011
Se	<1.4	<1.2	<1.1

GP-25

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0205 J	<0.013	<0.013
B(a)P	0.0145 J	<0.0113	<0.0113
B(b)F	0.0192 J	<0.013	<0.013
C	0.0175 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	5.5 *	6.0 *	4.4 J *
Ba	65.1	38.3	15.0
Cd	0.32 J	0.42 J	0.24 J
Pb	9.8	28.5 *	8.0
Hg	0.011 J	0.022 J	0.014 J
Se	<1.2	<1.1	<1.1

GP-24

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0181 J	0.072	<0.013
B(a)P	0.0139 J	0.066	<0.0113
B(b)F	0.0183 J	0.09	<0.013
C	0.0146 J	0.081	<0.0121
D(ah)A	<0.0078	0.0119 J	<0.0078
I(cd)P	<0.0114	0.04	<0.0114
METALs			
As	4.1 J *	3.1 J *	{ [10.2] }
Ba	31.1	13.0	22.9
Cd	0.21 J	0.17 J	0.39 J
Pb	7.3	9.6	15.0
Hg	<0.011	<0.011	<0.012
Se	<1.1	<1.1	<1.2

GP-28

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0076	<0.0076
I(cd)P	<0.0114	<0.0114
METALs		
As	4.8 J *	4.6 J *
Ba	16.3	14.7
Cd	<0.14	0.20 J
Pb	12.5	5.0
Hg	0.049	<0.011
Se	<1.1	<1.1

GP-4

Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	<0.0045
B(a)P	<0.0065
B(b)F	<0.0072
C	<0.0091
D(ah)A	<0.0065
I(cd)P	<0.0087
METALs	
As	3.0 *
Ba	15
Cd	0.14 J
Pb	6.6
Hg	0.0076 J
Se	<0.57

GP-11

Depth:	2 - 4	4 - 6	8 - 10
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.208	0.0192 J	0.0171 J
B(a)P	[0.179]	0.0211 J	<0.0113
B(b)F	0.251	0.0168 J	<0.013
C	**0.181**	0.0167 J	<0.0121
D(ah)A	0.0281	<0.0078	<0.0078
I(cd)P	0.115	<0.0114	<0.0114
METALs			
As	4.6 J *	6.1 *	6.4 *
Ba	24.0	17.6	24.7
Cd	0.14 J	0.23 J	0.21 J
Pb	5.7	6.5	9.9
Hg	<0.011	<0.012	0.016 J
Se	<1.2	<1.1	<1.1

GP-14

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.65]	<0.013	<0.013
B(a)P	[1.20]	<0.0113	<0.0113
B(b)F	[1.64]	<0.013	<0.013
C	**1.19**	<0.0121	<0.0121
D(ah)A	[0.161]	<0.0078	<0.0076
I(cd)P	0.67	<0.0114	<0.0114
METALs			
As	5.6 *	4.4 J *	7.5 *
Ba	68.1	16.9	18.1
Cd	0.34 J	0.16 J	0.20 J
Pb	**167**	5.2	17.6
Hg	**1.1**	0.016 J	0.016 J
Se	<1.2	<1.1	<1.2

GP-2

Depth:	2 - 4	14 - 16
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.630	<0.0048
B(a)P	[0.630]	<0.0070
B(b)F	**0.980**	<0.0076
C	**0.630**	<0.0098
D(ah)A	0.092	<0.0070
I(cd)P	0.290	<0.0093
METALs		
As	4.4 *	4.3 *
Ba	110	13
Cd	0.38	0.15 J
Pb	**170**	7.8
Hg	**0.21**	0.019
Se	<0.62	<0.61

GP-5

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.410	<0.0051
B(a)P	[0.430]	0.014 J
B(b)F	**0.680**	<0.0083
C	**0.440**	<0.010
D(ah)A	0.090	<0.0074
I(cd)P	0.260	<0.0099
METALs		
As	3.6 *	1.9 *
Ba	73	16
Cd	0.24	0.10 J
Pb	**160**	5.4
Hg	**0.36**	0.010 J
Se	<0.63	<0.62

GP-26

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0234 J	0.044	<0.013
B(a)P	0.0246 J	0.041	<0.0113
B(b)F	0.034 J	0.055	<0.013
C	0.0271 J	0.046	<0.0121
D(ah)A	<0.0076	<0.0076	<0.0078
I(cd)P	0.0215 J	0.0285 J	<0.0114
METALs			
As	4.8 J *	6.6 *	5.4 *
Ba	20.4	30.2	56.3
Cd	0.20 J	0.27 J	0.24 J
Pb	7.7	21.2	6.0
Hg	<0.011	<0.012	<0.012
Se	<1.2	<1.2	<1.2

GP-23

Depth:	2 - 4	8 - 10	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[2.21]	<0.013	0.71
B(a)P	[1.77]	<0.0113	[0.59]
B(b)F	[2.38]	<0.013	**0.79**
C	**1.73**	<0.0121	**0.67**
D(ah)A	[0.224]	<0.0078	0.084
I(cd)P	0.98	<0.0114	0.33
METALs			
As	6.9 *	3.3 J *	3.8 J *
Ba	**457**	23.7	32.1
Cd	0.79 *	<0.16	<0.15
Pb	[567]	5.6	40.0 *
Hg	**0.29**	<0.013	0.033 J
Se	<1.2	<1.4	<1.2

GP-27

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.034 J	0.64	<0.013
B(a)P	0.0313 J	[0.67]	<0.0113
B(b)F	0.048	**0.86**	<0.013
C	0.037 J	**0.61**	<0.0121
D(ah)A	<0.0076	0.088	<0.0078
I(cd)P	0.0176 J	0.40	<0.0114
METALs			
As	5.8 *	6.4 *	4.1 J *
Ba	35.7	45.2	42.4
Cd	0.18 J	0.22 J	0.17 J
Pb	7.9	**64.0**	7.7
Hg	<0.011	0.017 J	<0.012
Se	<1.1	<1.2	<1.2

GP-9

Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	0.0099 J
B(a)P	0.018 J
B(b)F	<0.0082
C	0.011 J
D(ah)A	<0.0073
I(cd)P	<0.0098
METALs	
As	3.0 *
Ba	46
Cd	0.072 J
Pb	7.4
Hg	0.033
Se	**0.72 J**

GP-30

Depth:	6 - 8	12 - 14
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.057
B(a)P	<0.0113	0.097
B(b)F	<0.013	0.072
C	<0.0121	0.073
D(ah)A	<0.0078	0.0261
I(cd)P	<0.0114	0.032 J
METALs		
As	5.5 *	4.6 J *
Ba	13.0	14.7
Cd	0.16 J	0.13 J
Pb	8.3	7.7
Hg	<0.011	<0.011
Se	<1.1	<1.1

GP-29

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	0.038 J	<0.013
B(a)P	0.057	<0.0113
B(b)F	0.054	<0.013
C	0.045	<0.0121
D(ah)A	0.0116 J	<0.0078
I(cd)P	0.032 J	<0.0114
METALs		
As	5.4 *	6.1 *
Ba	26.6	19.6
Cd	0.22 J	0.35 J
Pb	9.7	7.6
Hg	0.024 J	<0.011
Se	<1.1	<1.1

GP-32

Depth:	4 - 6	8 - 10
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.109
B(a)P	<0.0113	0.113
B(b)F	<0.013	0.122
C	<0.0121	0.117
D(ah)A	<0.0076	0.0232 J
I(cd)P	<0.0114	0.06
METALs		
As	4.8 J *	6.4 *
Ba	15.0	18.5
Cd	0.16 J	0.24 J
Pb	5.2	6.5
Hg	<0.011	<0.011
Se	<1.2	<1.1

GP-33

Depth:	6 - 8
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	<0.013
B(a)P	<0.0113
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0076
I(cd)P	<0.0114
METALs	
As	{ [8.1] }
Ba	17.6
Cd	0.20 J
Pb	8.6
Hg	<0.011
Se	<1.2

GP-34

Depth:	2 - 4
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	0.085
B(a)P	0.09
B(b)F	0.126
C	0.10
D(ah)A	0.0127 J
I(cd)P	0.059
METALs	
As	{ [9.2] }
Ba	24.9
Cd	0.36 J
Pb	30.3 *
Hg	0.049
Se	<1.2

GP-8

Depth:	4 - 6	16 - 18
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0046	0.016 J
B(a)P	<0.0067	0.085
B(b)F	<0.0074	0.061
C	<0.0094	0.035
D(ah)A	<0.0067	0.043
I(cd)P	<0.0089	0.044
METALs		
As	4.3 *	3.0 *
Ba	11	9.3
Cd	0.17 J	0.21
Pb	8.3	6.5
Hg	0.012 J	0.0077 J
Se	<0.59	<0.55

GP-31

Depth:	2 - 4	6 - 8
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0076	<0.0076
I(cd)P	<0.0114	<0.0114
METALs		
As	3.0 J *	5.1 J *
Ba	15.2	26.3
Cd	<0.14	0.27 J
Pb	4.3	5.6
Hg	<0.011	<0.012
Se	<1.2	<1.2

GP-39

Depth:	2 - 4	7 - 8
Date:	4/30/18	
VOCs	ND	ND
PAHs		
B(a)A	0.313	<0.013
B(a)P	[0.35]	<0.013
B(b)F	**0.50**	<0.013
C	**0.34**	<0.0121
D(ah)A	0.057	<0.0078
I(cd)P	0.231	<0.0114
METALs		
As	3.94 *	2.99 *
Ba	23.9	15.6
Cd	<0.16	<0.16
Pb	45.6 *	6.95
Hg	0.0321 J	<0.019
Se	<0.52	<0.52

GP-13

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.037 J	<0.013	<0.013
B(a)P	0.0235 J	<0.0113	<0.0113
B(b)F	0.039 J	<0.013	<0.013
C	0.034 J	<0.0121	<0.0121
D(ah)A	<0.0076	<0.0076	<0.0078
I(cd)P	0.0131 J	<0.0114	<0.0114
METALs			
As	5.6 J *	2.6 J *	5.6 *
Ba	68.3	19.0	16.9
Cd	<0.16	0.18 J	0.16 J
Pb	12.6	4.3	5.0
Hg	0.026 J	<0.012	<0.011
Se	<1.4	<1.2	<1.1

GP-41

Depth:	2 - 4	7 - 8
Date:	4/30/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.013	<0.013
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.25 *	2.67 *
Ba	15.3	37.5
Cd	<0.16	<0.16
Pb	5.34	6.79
Hg	<0.019	<0.019
Se	<0.52	<0.52

MW-4

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.75]	<0.013	<0.013
B(a)P	[1.14]	<0.0113	<0.0113
B(b)F	[1.78]	<0.013	<0.013
C	**1.32**	<0.0121	<0.0121
D(ah)A	[0.178]	<0.0076	<0.0078
I(cd)P	0.72	<0.0114	<0.0114
METALs			
As	7.8 *	{ [50.7] }	{ [10.6] }
Ba	84.9	50.0	22.9
Cd	0.35 J	0.91 J *	0.53 J
Pb	**139**	35.2 *	15.6
Hg	0.17	0.015 J	0.021 J
Se	<1.5	<1.2	<1.3

GP-40

Depth:	2 - 4	7 - 8
Date:	4/30/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.013	<0.013
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	2.73 *	2.97 *
Ba	12.2	16.5
Cd	<0.16	<0.16
Pb	4.85	5.92
Hg	<0.019	<0.019
Se	<0.52	<0.52

GP-37

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.63]	[1.77]	0.36
B(a)P	[1.20]	[1.27]	[0.249]
B(b)F	[1.73]	[1.79]	0.316
C	**1.36**	**1.52**	**0.306**
D(ah)A	[0.203]	[0.208]	0.0299
I(cd)P	0.60	0.62	0.109
METALs			
As	7.3 *	7.5 *	4.1 J *
Ba	60.6	38.5	59.0
Cd	0.38 J	0.33 J	0.16 J
Pb	**61.7**	**66.3**	**57.9**
Hg	0.092	0.075	0.071
Se	**1.7 J**	<1.2	<1.2

GP-15

Depth:	2 - 4	4 - 6	6 - 7.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.80	0.307	0.52
B(a)P	[0.64]	[0.262]	[0.34]
B(b)F	**0.89**	0.36	**0.49**
C	**0.68**	**0.273**	**0.43**
D(ah)A	0.066	0.039	0.042
I(cd)P	0.38	0.152	0.179
METALs			
As	7.5 *	4.3 J *	7.3 *
Ba	94.4	61.5	100
Cd	0.36 J	0.26 J	0.85
Pb	**69.2**	39.7 *	**97.1**
Hg	0.20	0.10	0.20
Se	<1.2	<1.2	<1.3

GP-16

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.307	0.032 J	<0.013
B(a)P	[0.242]	0.0208 J	<0.0113
B(b)F	0.35	0.035 J	<0.013
C	**0.276**	0.034 J	<0.0121
D(ah)A	0.0266	<0.0078	<0.0076
I(cd)P	0.124	<0.0114	<0.0114
METALs			
As	6.6 *	4.5 J *	2.6 J *
Ba	65.4	34.0	6.6
Cd	0.26 J	<0.15	<0.15
Pb	45.5 *	29.5 *	3.9
Hg	**0.26**	0.023 J	<0.012
Se	<1.2	<1.3	<1.2

GP-35

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.096	0.042 J	<0.013
B(a)P	[0.116]	0.0295 J	<0.0113
B(b)F	0.20	0.042	<0.013
C	0.137	0.039	<0.0121
D(ah)A	0.0193 J	<0.0078	<0.0078
I(cd)P	0.094	0.0169 J	<0.0114
METALs			
As	6.4 *	7.5 *	4.3 J *
Ba	87.3	26.5	16.8
Cd	0.50 J	0.27 J	0.21 J
Pb	[480]	16.1	5.6
Hg	0.10	0.023 J	0.012 J
Se	<1.3	<1.2	<1.2

GP-36

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.163	0.257	0.0173 J
B(a)P	[0.12]	[0.209]	0.013 J
B(b)F	0.16	0.284	0.0166 J
C	**0.146**	**0.267**	0.0196 J
D(ah)A	0.0234 J	0.033	<0.0078
I(cd)P	0.077	0.115	<0.0114
METALs			
As	4.6 J *	6.3 *	{ [19.1] }
Ba	61.2	154	**180**
Cd	0.31 J	**1.6**	0.35 J
Pb	**276**	{ [1,020] }	{ [872] }
Hg	0.074	**0.24**	0.086
Se	<1.1	<1.2	<1.2

GP-17

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.78]	0.014 J	0.81
B(a)P	[1.21]	<0.0113	[0.63]
B(b)F	[1.71]	<0.013	**0.70**
C	**1.33**	<0.0121	**0.60**
D(ah)A	[0.181]	<0.0076	0.082
I(cd)P	0.81	<0.0114	0.32
METALs			
As	6.2 *	2.7 J *	4.4 J *
Ba	79.0	6.7	27.6
Cd	0.71	0.16 J	0.26 J
Pb	**133**	3.0	15.0
Hg	**0.29**	<0.011	0.037
Se	<1.2	<1.1	<1.1

GP-7

Depth:	0 - 2	8 - 10
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0049	0.024 J
B(a)P	0.015 J	0.069
B(b)F	<0.0079	0.067
C	<0.010	0.037
D(ah)A	<0.0071	0.040
I(cd)P	<0.0095	0.042
METALs		
As	1.8 *	2.7 *
Ba	13	6.3
Cd	0.097 J	0.11 J
Pb	6.4	6.3
Hg	0.011 J	0.014 J
Se	<0.65	<0.59

MW-2

Depth:	1 - 2.5	6 - 7.5	13.5 - 15
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.247	<0.013	<0.013
B(a)P	[0.179]	<0.0113	<0.0113
B(b)F	0.238	<0.013	<0.013
C	**0.204**	<0.0121	<0.0121
D(ah)A	0.0234 J	<0.0076	<0.0078
I(cd)P	0.09	<0.0114	<0.0114
METALs			
As	{ [13.6] }	2.6 J *	{ [10.6] }
Ba	105	16.3	80.2
Cd	0.70	<0.14	<0.66
Pb	**208**	5.0	25.1
Hg	**1.0**	0.016 J	0.019 J
Se	<1.3	<1.2	<1.1

GP-21

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.048	<0.013	0.0144 J
B(a)P	0.0306 J	<0.0113	<0.0113
B(b)F	0.044	<0.013	<0.013
C	0.041	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0076	<0.0078
I(cd)P	0.0166 J	<0.0114	<0.0114
METALs			
As	{ [9.3] }	7.0 *	3.5 J *
Ba	73.5	38.5	46.7
Cd	0.24 J	0.26 J	0.15 J
Pb	**151**	21.5	9.1
Hg	**0.47**	<0.012	<0.013
Se	<1.2	<1.1	<1.2

GP-42

Depth:	2 - 4	7 - 8
Date:	4/30/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.013	<0.013
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.04 *	2.65 *
Ba	83.9	44.1
Cd	<0.16	<0.16
Pb	9.24	7.80
Hg	0.019	<0.019
Se	<0.52	**0.686 J**

GP-6

Depth:	4 - 6	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.057	<0.0046
B(a)P	0.086	<0.0067
B(b)F	0.100	<0.0075
C	0.064	<0.0094
D(ah)A	0.014 J	<0.0067
I(cd)P	0.044	<0.0090
METALs		
As	2.3 *	4.5 *
Ba	19	16
Cd	0.16 J	0.13 J
Pb	41 *	10
Hg	0.055	0.011 J
Se	<0.62	<0.57

GP-38

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.84]	[7.60]	0.0136 J
B(a)P	[1.73]	{ [4.80] }	<0.0113
B(b)F	[2.49]	[6.30]	<0.013
C	**1.79**	**6.30**	<0.0121
D(ah)A	[0.277]	[0.68]	<0.0078
I(cd)P	1.00	[1.94]	<0.0114
METALs			
As	4.7 J *	6.3 *	5.0 J *
Ba	76.7	83.7	30.9
Cd	0.42 J	0.25 J	<0.14
Pb	**57.3**	**171**	10.2
Hg	0.13	**0.33**	0.029 J
Se	<1.2	<1.3	<1.2

ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(b)FLUORANTHENE
C = CHRYSENE
D(ah)A = DIBENZO(ah)ANTHRACENE
I(cd)P = INDENO(1,2,3-cd)PYRENE
As = ARSENIC
Ba = BARIUM
Cd = CADMIUM
Pb = LEAD
Hg = MERCURY
Se = SELENIUM

= ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
= ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
= ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
= ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)
{ } = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

* = CONCENTRATION IS BELOW BACKGROUND THRESHOLD VALUE SO RCL EXCEEDANCES NOT NOTED

YELLOW = SOIL DEPTH INTERVAL EXCAVATED DURING CONSTRUCTION AND DISPOSED OFF-SITE

N… 1. …chitects Sheet C300 "Site Layout and … upd… 9.
2. 2016 aerial base map from Milwaukee County GIS website.

LEGEND

⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
● = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
● = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
◕ = HSA SOIL BORING / MONITORING WELL (FEB. 2018)
■ = GEOPROBE SOIL BORING FOR STORM WATER SYSTEM (MAY 2018)

N

0 40 ft. 80 ft.
GRAPHIC SCALE

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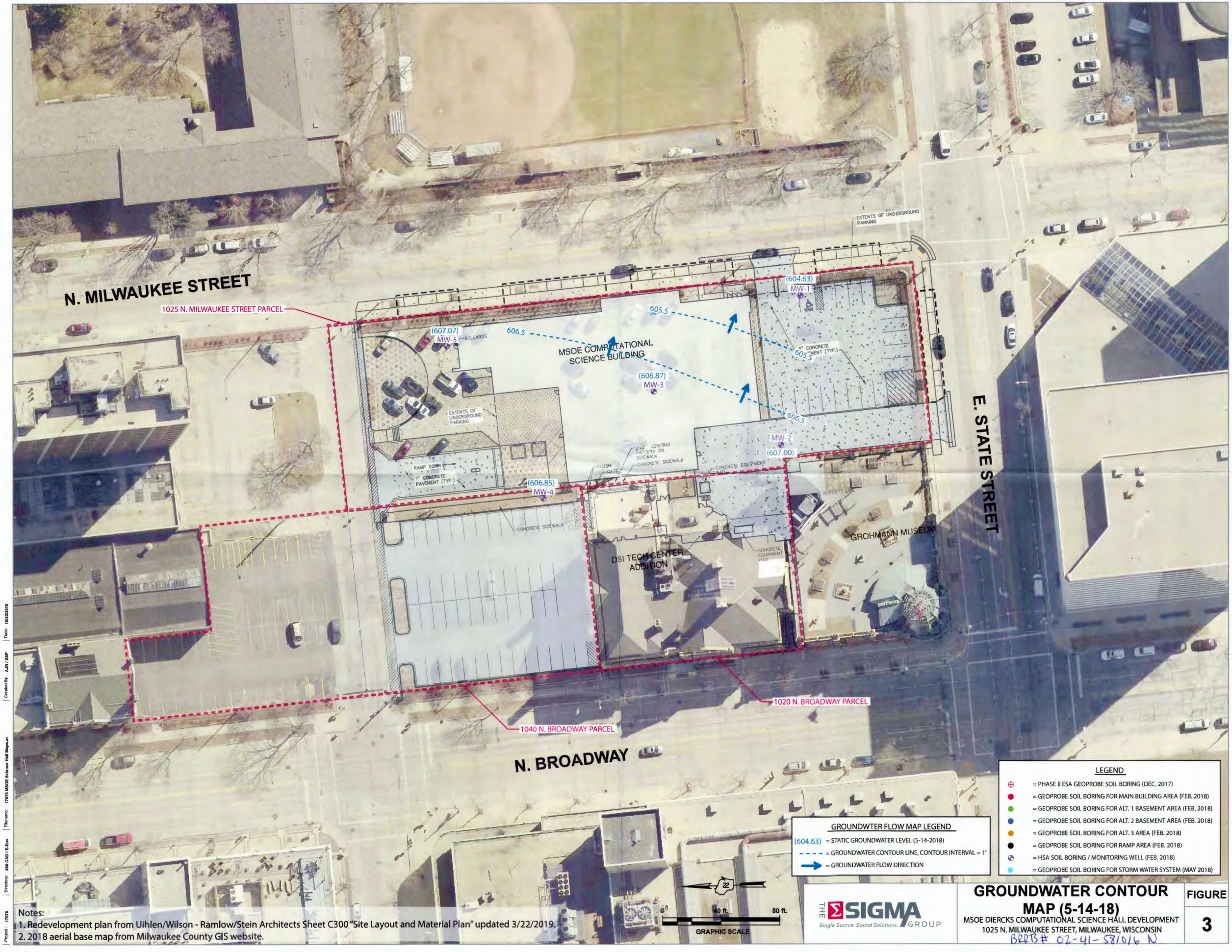
BRRTS # 02-41-581016 M

SOIL QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

FIGURE 2

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 10/22/2019



LEGEND

- = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)
- = GEOPROBE SOIL BORING FOR STORM WATER SYSTEM (MAY 2018)

GROUNDWTER FLOW MAP LEGEND

- (604.63) = STATIC GROUNDWATER LEVEL (5-14-2018)
- = GROUNDWATER CONTOUR LINE, CONTOUR INTERVAL = 1'
- = GROUNDWATER FLOW DIRECTION

Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

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GROUNDWATER CONTOUR MAP (5-14-18)

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN
BRRTS# 02-41-581016 N

FIGURE 3

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 10/22/2019

MW-5		
Date:	3/5/18	5/14/18
VOCs		
CF	*0.83*	*1.94*
PCE	<0.38	<0.38
PAHs		
	ND / <PALs	ND / <PALs
Dissolved METALs		
	ND / <PALs	ND / <PALs

MW-3		
Date:	3/5/18	5/14/18
VOCs		
CF	<0.26	<0.26
PCE	<0.38	<0.38
PAHs		
	ND / <PALs	ND / <PALs
Dissolved METALs		
	ND / <PALs	ND / <PALs

MW-1		
Date:	3/5/18	5/14/18
VOCs		
CF	<0.26	<0.26
PCE	*1.93*	<0.38
PAHs		
	ND / <PALs	ND / <PALs
Dissolved METALs		
	ND / <PALs	ND / <PALs

MW-4		
Date:	3/5/18	5/14/18
VOCs		
CF	<0.26	0.52 J
PCE	<0.38	<0.38
PAHs		
	ND / <PALs	ND / <PALs
Dissolved METALs		
	ND / <PALs	ND / <PALs

MW-2		
Date:	3/5/18	5/14/18
VOCs		
CF	<0.26	<0.26
PCE	<0.38	<0.38
PAHs		
	ND / <PALs	ND / <PALs
Dissolved METALs		
	ND / <PALs	ND / <PALs

ANALYTICAL KEY

CF = CHLOROFORM
PCE = TETRACHLOROETHENE
ND/<PALs = ANALYTES NOT DETECTED GREATER THAN PALs
BOLD = CONCENTRATION EXCEEDS NR 140 ES
ITALICS = CONCENTRATION EXCEEDS NR 140 PAL

ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

LEGEND

- ⊕ = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)
- = GEOPROBE SOIL BORING FOR STORM WATER SYSTEM (MAY 2018)

Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

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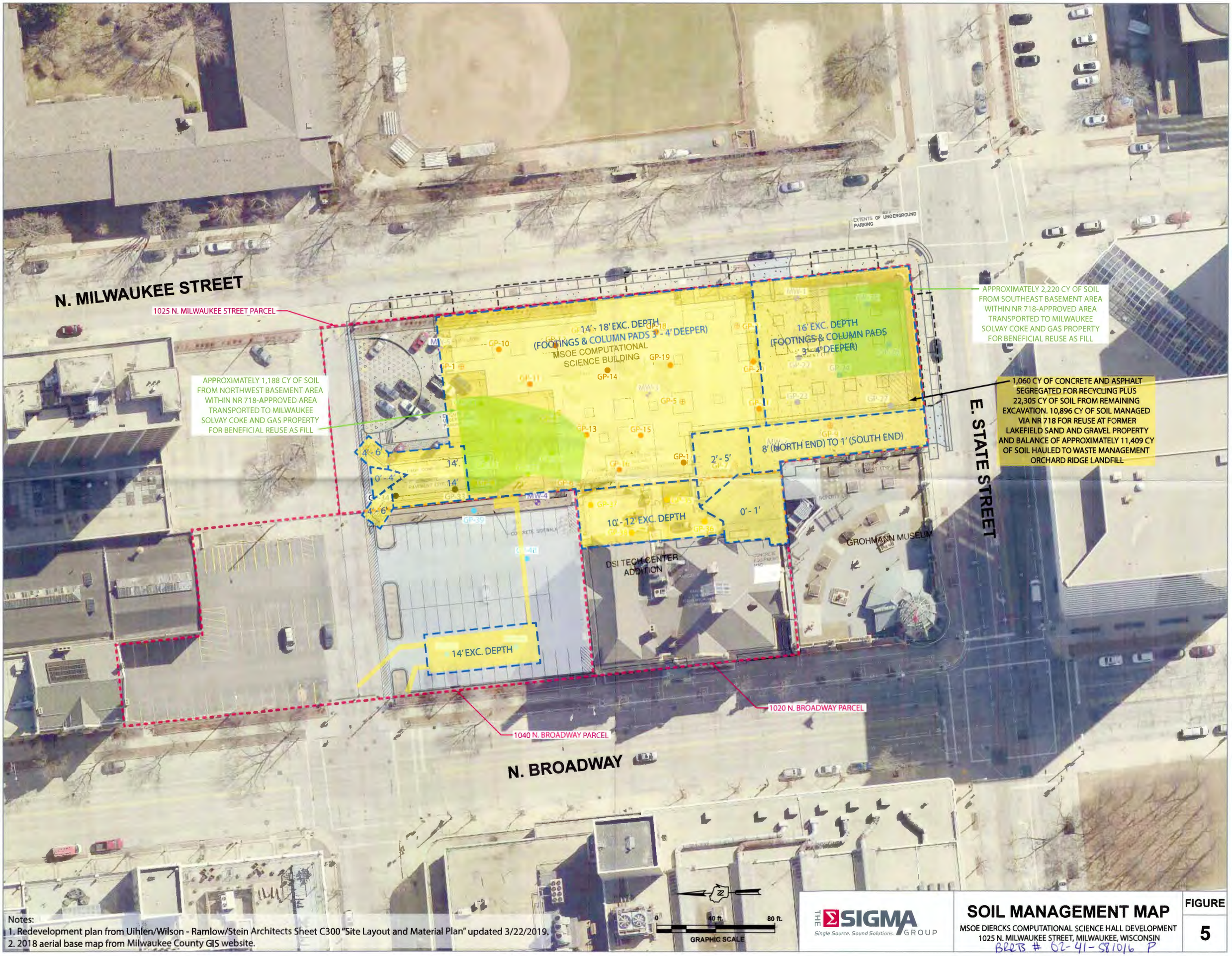
GROUNDWATER QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN
BRRTS # 02-41-581016 0

FIGURE
4

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 10/22/2019



Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

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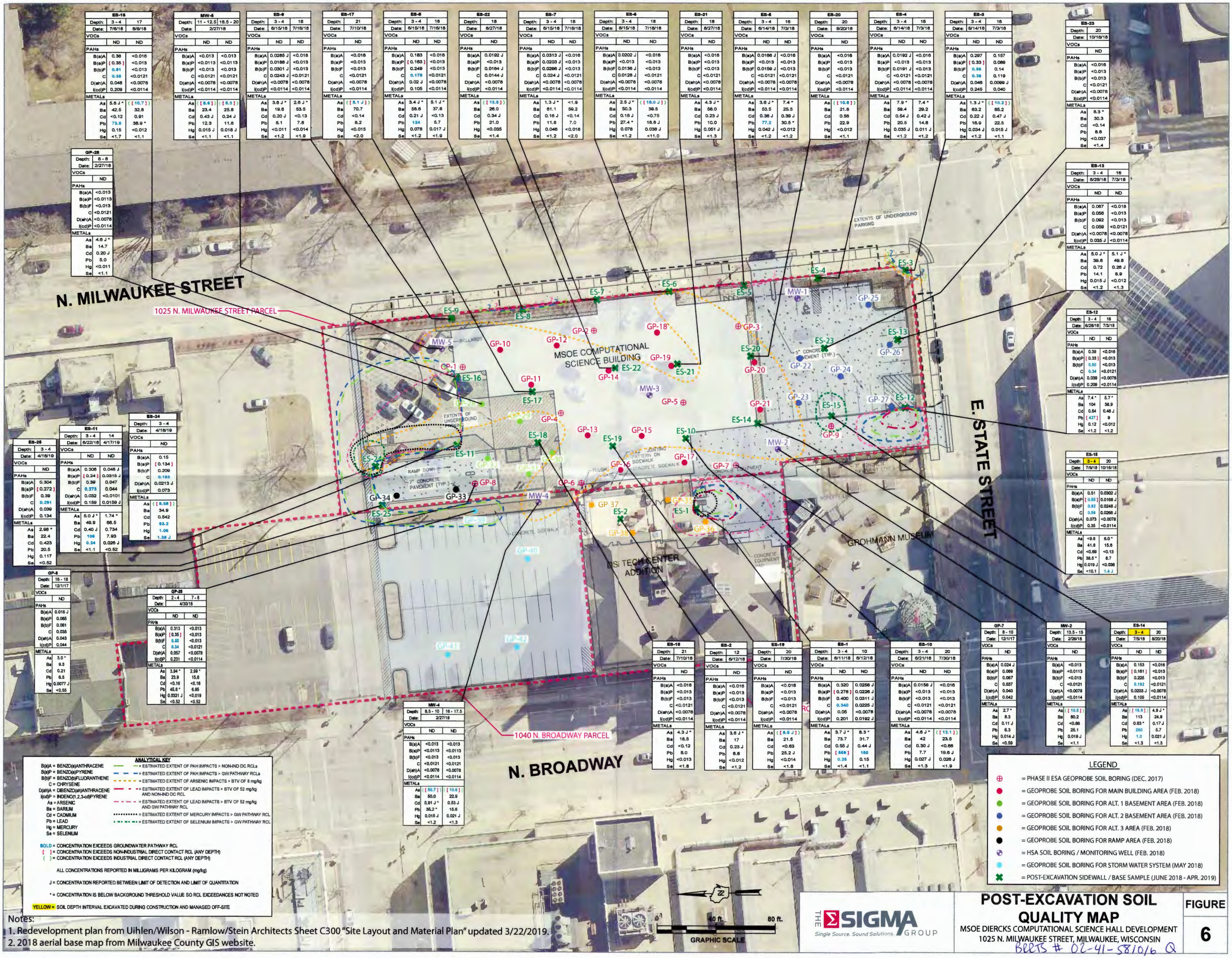
SOIL MANAGEMENT MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN
BRRTS # 02-41-581016 P

FIGURE
5

Project: 17076 | Directory: 049 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 11/15/2019



ES-16		
Depth:	3 - 4	17
Date:	7/6/18	8/8/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.38	<0.016
B(a)P	[0.35]	<0.013
B(b)F	0.61	<0.013
C	0.36	<0.0121
D(ah)A	0.046	<0.0078
I(cd)P	0.209	<0.0114
METALs		
As	5.6 J *	([10.7])
Ba	42.5	32.6
Cd	<0.12	0.91
Pb	73.8	38.9 *
Hg	0.15	<0.012
Se	<1.7	<1.1

MW-5		
Depth:	11 - 12.5	18.5 - 20
Date:	2/27/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	([8.6])	([8.3])
Ba	23.4	25.8
Cd	0.43 J	0.24 J
Pb	12.3	11.8
Hg	0.015 J	0.018 J
Se	<1.1	<1.1

ES-9		
Depth:	3 - 4	18
Date:	6/15/18	7/16/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0285 J	<0.016
B(a)P	0.0188 J	<0.013
B(b)F	0.0301 J	<0.013
C	0.0243 J	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.6 J *	2.6 J *
Ba	19.6	53.5
Cd	0.20 J	<0.13
Pb	8.1	7.8
Hg	<0.011	<0.014
Se	<1.2	<1.9

ES-17		
Depth:	21	
Date:	7/10/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	([8.1 J])	
Ba	70.7	
Cd	<0.14	
Pb	8.2	
Hg	<0.015	
Se	<2.0	

ES-8		
Depth:	3 - 4	18
Date:	6/15/18	7/16/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.183	<0.016
B(a)P	[0.163]	<0.013
B(b)F	0.249	<0.013
C	0.178	<0.0121
D(ah)A	0.02 J	<0.0078
I(cd)P	0.105	<0.0114
METALs		
As	3.4 J *	5.1 J *
Ba	58.6	37.8
Cd	0.21 J	<0.13
Pb	124	5.7
Hg	0.078	0.017 J
Se	<1.2	<1.9

ES-22	
Depth:	18
Date:	8/27/18
VOCs	
	ND
PAHs	
B(a)A	0.0192 J
B(a)P	<0.013
B(b)F	0.0164 J
C	0.0144 J
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
As	([13.8])
Ba	26.0
Cd	0.34 J
Pb	21.0
Hg	<0.035
Se	<1.4

ES-7		
Depth:	3 - 4	18
Date:	6/15/18	7/16/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0313 J	<0.016
B(a)P	0.0203 J	<0.013
B(b)F	0.0296 J	<0.013
C	0.024 J	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	1.3 J *	<1.9
Ba	61.1	59.2
Cd	0.16 J	<0.14
Pb	11.8	7.0
Hg	0.046	<0.018
Se	<1.2	<2.0

ES-6		
Depth:	3 - 4	18
Date:	6/15/18	7/16/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0202 J	<0.016
B(a)P	<0.013	<0.013
B(b)F	0.0136 J	<0.013
C	0.0126 J	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	2.5 J *	([18.0 J])
Ba	50.3	39.5
Cd	0.18 J	<0.75
Pb	27.4 *	18.8 J
Hg	0.078	0.038 J
Se	<1.2	<11.0

ES-21		
Depth:	18	
Date:	8/27/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	4.3 J *	
Ba	58.0	
Cd	0.23 J	
Pb	10.0	
Hg	0.051 J	
Se	<1.3	

ES-5		
Depth:	3 - 4	16
Date:	6/14/18	7/3/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0166 J	<0.016
B(a)P	<0.013 *	<0.013
B(b)F	0.0159 J	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.6 J *	7.4 *
Ba	53.5	25.5
Cd	0.36 J	0.39 J
Pb	77.2	30.5 *
Hg	0.042 J	<0.012
Se	<1.2	<1.2

ES-20		
Depth:	20	
Date:	8/20/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	([10.8])	
Ba	21.8	
Cd	0.56	
Pb	22.9	
Hg	<0.012	
Se	<1.1	

ES-4		
Depth:	3 - 4	18
Date:	6/14/18	7/3/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0192 J	<0.016
B(a)P	<0.013	<0.013
B(b)F	0.0191 J	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	7.9 *	7.4 *
Ba	59.4	29.2
Cd	0.54 J	0.42 J
Pb	20.5	14.8
Hg	0.035 J	0.011 J
Se	<1.2	<1.2

ES-3		
Depth:	3 - 4	16
Date:	6/14/18	7/3/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.297	0.157
B(a)P	[0.33]	0.089
B(b)F	0.56	0.14
C	0.36	0.119
D(ah)A	0.046	0.0099 J
I(cd)P	0.245	0.040
METALs		
As	1.3 J *	([10.2])
Ba	63.2	85.2
Cd	0.22 J	0.47 J
Pb	16.9	22.5
Hg	0.034 J	0.015 J
Se	<1.2	<1.1

ES-23	
Depth:	20
Date:	10/16/18
VOCs	
	ND
PAHs	
B(a)A	<0.016
B(a)P	<0.013
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
As	8.3 *
Ba	30.3
Cd	<0.14
Pb	8.6
Hg	<0.037
Se	<1.4

ES-13		
Depth:	3 - 4	16
Date:	6/28/18	7/3/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.067	<0.016
B(a)P	0.056	<0.013
B(b)F	0.092	<0.013
C	0.059	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	0.035 J	<0.0114
METALs		
As	5.0 J *	5.1 J *
Ba	39.6	49.8
Cd	0.72	0.26 J
Pb	14.1	8.9
Hg	0.015 J	<0.012
Se	<1.2	<1.3

ES-12		
Depth:	3 - 4	16
Date:	6/28/18	7/3/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.39	<0.016
B(a)P	[0.33]	<0.013
B(b)F	0.50	<0.013
C	0.34	<0.0121
D(ah)A	0.039	<0.0078
I(cd)P	0.209	<0.0114
METALs		
As	7.4 *	5.7 *
Ba	104	38.9
Cd	0.54	0.46 J
Pb	[427]	9
Hg	0.12	<0.012
Se	<1.2	<1.2

ES-15		
Depth:	3 - 4	20
Date:	7/6/18	10/16/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.51	0.0302 J
B(a)P	[0.55]	0.0168 J
B(b)F	0.82	0.0248 J
C	0.56	0.0266 J
D(ah)A	0.073	<0.0078
I(cd)P	0.35	<0.0114
METALs		
As	<9.8	6.0 *
Ba	41.8	15.6
Cd	<0.69	<0.13
Pb	38.5 *	8.7
Hg	0.019 J	<0.036
Se	<10.1	1.4 J

GP-28	
Depth:	6 - 8
Date:	2/27/18
VOCs	
	ND
PAHs	
B(a)A	<0.013
B(a)P	<0.0113
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
As	4.6 J *
Ba	14.7
Cd	0.20 J
Pb	5.0
Hg	<0.011
Se	<1.1

ES-11		
Depth:	3 - 4	14
Date:	6/22/18	4/17/19
VOCs		
	ND	ND
PAHs		
B(a)A	0.306	0.046 J
B(a)P	[0.24]	0.0315 J
B(b)F	0.39	0.047
C	0.273	0.044
D(ah)A	0.032	<0.0101
I(cd)P	0.159	0.0159 J
METALs		
As	5.0 J *	1.74 *
Ba	49.9	66.5
Cd	0.40 J	0.734
Pb	106	7.93
Hg	0.24	0.026 J
Se	<1.1	<0.52

ES-24	
Depth:	3 - 4
Date:	4/15/19
VOCs	
	ND
PAHs	
B(a)A	0.15
B(a)P	[0.134]
B(b)F	0.209
C	0.163
D(ah)A	0.0213 J
I(cd)P	0.073
METALs	
As	([8.58])
Ba	34.9
Cd	0.542
Pb	93.2
Hg	1.06
Se	1.38 J

ES-26		
Depth:	3 - 4	
Date:	4/18/19	
VOCs		
	ND	
PAHs		
B(a)A	0.304	
B(a)P	[0.272]	
B(b)F	0.39	
C	0.291	
D(ah)A	0.039	
I(cd)P	0.134	
METALs		
As	2.98 *	
Ba	22.4	
Cd	0.423	
Pb	20.5	
Hg	0.117	
Se	<0.52	

GP-8		
Depth:	16 - 18	
Date:	12/1/17	
VOCs		
	ND	
PAHs		
B(a)A	0.016 J	
B(a)P	0.085	
B(b)F	0.061	
C	0.035	
D(ah)A	0.043	
I(cd)P	0.044	
METALs		
As	3.0 *	
Ba	9.3	
Cd	0.21	
Pb	6.5	
Hg	0.0077 J	
Se	<0.55	

GP-39		
Depth:	2 - 4	7 - 8
Date:	4/30/18	
VOCs		
	ND	ND
PAHs		
B(a)A	0.313	<0.013
B(a)P	[0.35]	<0.013
B(b)F	0.50	<0.013
C	0.34	<0.0121
D(ah)A	0.057	<0.0078
I(cd)P	0.231	<0.0114
METALs		
As	3.94 *	2.99 *
Ba	23.9	15.6
Cd	<0.16	<0.16
Pb	45.8 *	6.95
Hg	0.0321 J	<0.019
Se	<0.52	<0.52

MW-4		
Depth:	8.5 - 10	16 - 17.5
Date:	2/27/18	
VOCs		
	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	([50.7])	([10.6])
Ba	50.0	22.9
Cd	0.91 J *	0.53 J
Pb	35.2 *	15.6
Hg	0.015 J	0.021 J
Se	<1.2	<1.3

ES-18		
Depth:	21	
Date:	7/10/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	4.3 J *	
Ba	18.5	
Cd	<0.12	
Pb	8.0	
Hg	<0.013	
Se	<1.8	

ES-2		
Depth:	12	
Date:	6/12/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	3.6 J *	
Ba	17	
Cd	0.23 J	
Pb	6.8	
Hg	<0.012	
Se	<1.2	

ES-19		
Depth:	20	
Date:	7/30/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.016	
B(a)P	<0.013	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	([8.6 J])	
Ba	21.5	
Cd	<0.63	
Pb	25.2 J	
Hg	<0.014	
Se	<1.8	

ES-1		
Depth:	3 - 4	10
Date:	6/11/18	6/12/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.320	0.0256 J
B(a)P	[0.278]	0.0226 J
B(b)F	0.400	0.0311 J
C	0.340	0.0225 J
D(ah)A	0.05	<0.0078
I(cd)P	0.201	0.0192 J
METALs		
As	3.7 J *	8.3 *
Ba	73.7	31.7
Cd	0.55 J	0.44 J
Pb	[569]	150
Hg	0.26	0.15
Se	<1.4	<1.1

ES-10		
Depth:	3 - 4	20
Date:	6/21/18	7/30/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.0158 J	<0.016
B(a)P	<0.013	<0.013
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	4.6 J *	([12.1])
Ba	42	23.5
Cd	0.30 J	<0.66
Pb	7.7	19.6 J
Hg	0.027 J	0.026 J
Se	<1.3	<1.9

GP-7		
Depth:	8 - 10	
Date:	12/1/17	
VOCs		
	ND	
PAHs		
B(a)A	0.024 J	
B(a)P	0.069	
B(b)F	0.067	
C	0.037	
D(ah)A	0.040	
I(cd)P	0.042	
METALs		
As	2.7 *	
Ba	8.3	
Cd	0.11 J	
Pb	6.3	
Hg	0.014 J	
Se	<0.59	

MW-2		
Depth:	13.5 - 15	
Date:	2/26/18	
VOCs		
	ND	
PAHs		
B(a)A	<0.013	
B(a)P	<0.0113	
B(b)F	<0.013	
C	<0.0121	
D(ah)A	<0.0078	
I(cd)P	<0.0114	
METALs		
As	([10.5])	
Ba	80.2	
Cd	<0.66	
Pb	25.1	
Hg	0.019 J	
Se	<1.1	

ES-14		
Depth:	3 - 4	20
Date:	7/5/18	8/20/18
VOCs		
	ND	ND
PAHs		
B(a)A	0.153	<0.016
B(a)P	[0.181]	<0.013
B(b)F	0.225	<0.013
C	0.152	<0.0121
D(ah)A	0.0203 J	<0.0078
I(cd)P	0.105	<0.0114
METALs		
As	([16.9])	4.9 J *
Ba	113	24.9
Cd	0.83 *	0.17 J
Pb	260	5.7
Hg	1.0	0.021 J
Se	<1.3	<1.3

ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(b)FLUORANTHENE
C = CHRYSENE
D(ah)A = DIBENZO(ah)ANTHRACENE
I(cd)P = INDENO(1,2,3-cd)PYRENE
As = ARSENIC
Ba = BARIUM
Cd = CADMIUM
Pb = LEAD
Hg = MERCURY
Se = SELENIUM

= ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
= ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
= ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)
( ) = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

* = CONCENTRATION IS BELOW BACKGROUND THRESHOLD VALUE SO RCL EXCEEDANCES NOT NOTED

YELLOW = SOIL DEPTH INTERVAL EXCAVATED DURING CONSTRUCTION AND MANAGED OFF-SITE

LEGEND

- = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)
- = GEOPROBE SOIL BORING FOR STORM WATER SYSTEM (MAY 2018)
- = POST-EXCAVATION SIDEWALL / BASE SAMPLE (JUNE 2018 - APR. 2019)

Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

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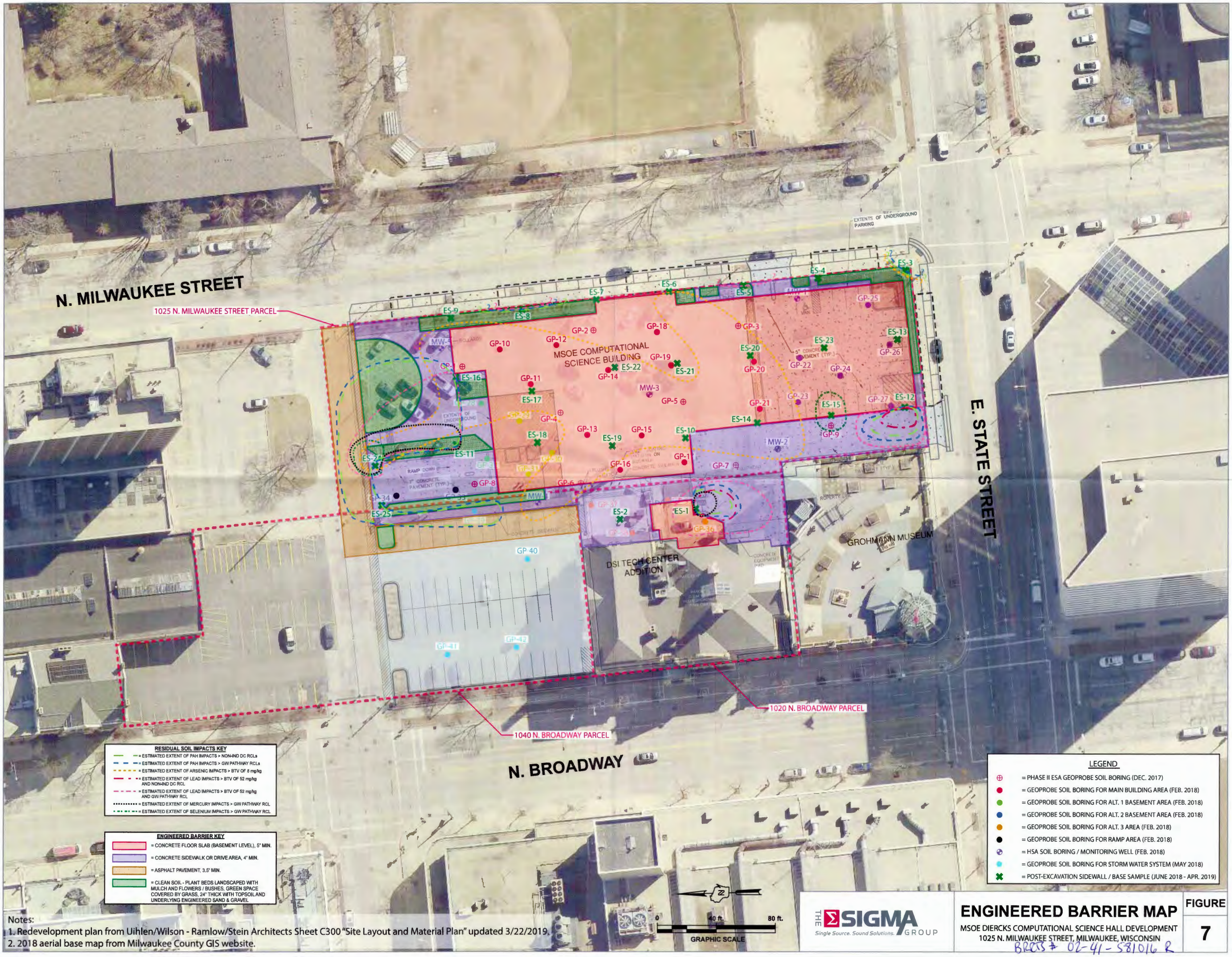
POST-EXCAVATION SOIL QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN
BRRTS # 02-41-5810/6 Q

FIGURE 6

Project: 17076 | Directory: 000 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 11/15/2019



Notes:
1. Redevelopment plan from Uihlen/Wilson - Ramlow/Stein Architects Sheet C300 "Site Layout and Material Plan" updated 3/22/2019.
2. 2018 aerial base map from Milwaukee County GIS website.

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ENGINEERED BARRIER MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN
BRRTS # 02-41-581016 R

FIGURE
7

Project: 17076 | Directory: 860 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR / ESP | Date: 11/15/2019

N. MILWAUKEE ST.

N. BROADWAY

SOIL IMPACTS KEY

- = ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
- = ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
- = ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
- = ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
- = ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
- = ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
- = ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

SOIL MANAGEMENT KEY

- = SOIL EXCAVATED FOR RAMP AND BASEMENTS TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION (MILWAUKEE SOLVAY COKE AND GAS SITE AT 311 E. GREENFIELD AVENUE, MILWAUKEE)
- = REMAINING SOIL EXCAVATED FOR BASEMENTS AND SUBGRADE PREPARATION OUTSIDE OF BUILDING TO BE MANAGED AND DISPOSED OFF-SITE UNDER A WDNR PRE-APPROVED NR 718 EXEMPTION(S) AND/OR WDNR LICENSED LANDFILL FACILITY WITH APPROPRIATE SOIL PROFILE APPROVAL FROM LANDFILL

LEGEND

- = PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
- = GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
- = GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
- = HSA SOIL BORING / MONITORING WELL (FEB. 2018)

N

0 40 ft. 80 ft.

GRAPHIC SCALE

NOTES:
1. MAP BASED ON GRAEF "LAYOUT AND MATERIALS PLAN" SHEET DATED 3/7/2018.

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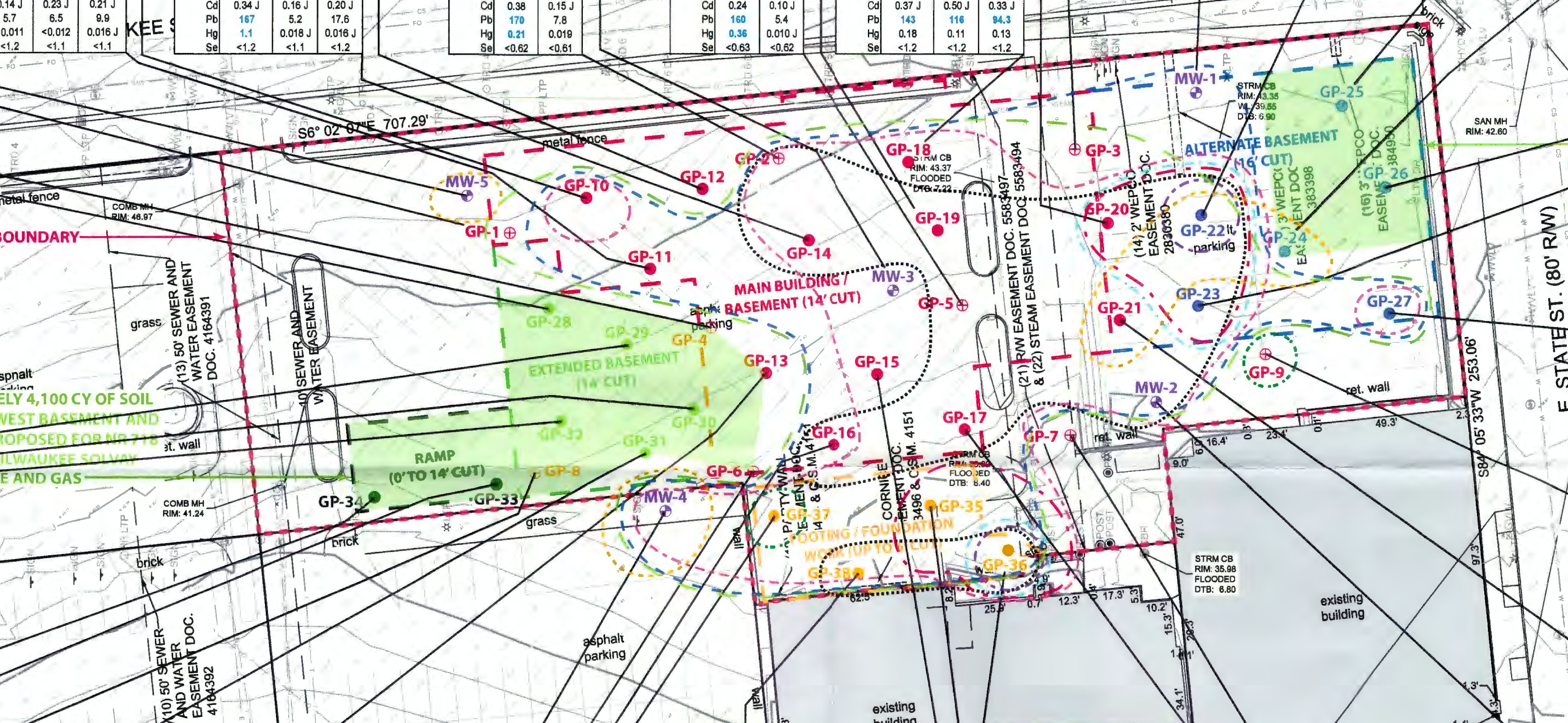
SOIL MANAGEMENT PLAN MAP

MSOE DIERCKS COMPUTATIONAL

FIGURE



MW-5

Depth:	1 - 2.5	11 - 12.5	18.5 - 20
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.099	<0.013	<0.013
B(a)P	0.093	<0.0113	<0.0113
B(b)F	0.134	<0.013	<0.013
C	0.106	<0.0121	<0.0121
D(ah)A	0.0136 J	<0.0078	<0.0078
I(cd)P	0.063	<0.0114	<0.0114
METALs			
As	4.6 J *	{[8.6]}	{[8.3]}
Ba	14.1	23.4	25.6
Cd	0.65	0.43 J	0.24 J
Pb	15.4	12.3	11.6
Hg	0.054	0.015 J	0.018 J
Se	<1.1	<1.1	<1.1

GP-10

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0228 J	<0.013	0.139
B(a)P	<0.0113	<0.0113	[0.157]
B(b)F	0.0203 J	<0.013	0.173
C	0.025 J	<0.0121	0.146
D(ah)A	<0.0078	<0.0078	0.036
I(cd)P	<0.0114	<0.0114	0.089
METALs			
As	4.2 J *	5.3 *	3.7 J *
Ba	70.6	12.3	14.0
Cd	0.24 J	0.30 J	0.20 J
Pb	137	6.4	11.6
Hg	0.11	0.011 J	0.015 J
Se	<1.2	<1.1	<1.1

GP-12

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	<0.013	<0.013	<0.013
B(a)P	<0.0113	<0.0113	<0.0113
B(b)F	<0.013	<0.013	<0.013
C	<0.0121	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	4.5 J *	4.1 J *	4.3 J *
Ba	43.4	45.2	19.2
Cd	<0.14	<0.16	0.24 J
Pb	9.8	8.3	5.9
Hg	0.020 J	0.037 J	0.013 J
Se	<1.1	<1.3	<1.2

MW-3

Depth:	1 - 2.5	6 - 7.5	11 - 12.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.40	0.10	<0.013
B(a)P	[0.34]	0.075	<0.0113
B(b)F	0.49	0.104	<0.013
C	0.37	0.091	<0.0121
D(ah)A	0.048	0.012 J	<0.0078
I(cd)P	0.199	0.045	<0.0114
METALs			
As	4.7 J *	4.5 J *	4.1 J *
Ba	59.5	41.9	29.4
Cd	0.37 J	0.21 J	0.21 J
Pb	74.0	93.1	6.3
Hg	0.13	0.074	0.038 J
Se	<1.1	<1.2	<1.3

GP-19

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.71	0.099	0.0283 J
B(a)P	[0.48]	0.065	0.0166 J
B(b)F	0.66	0.095	0.0227 J
C	0.60	0.092	0.0239 J
D(ah)A	0.06	0.0096 J	<0.0078
I(cd)P	0.275	0.038	<0.0114
METALs			
As	5.4 *	2.9 J *	3.6 J *
Ba	108	85.0	28.3
Cd	0.67	0.16 J	0.28 J
Pb	131	94.8	10.7
Hg	0.53	0.084	0.016 J
Se	<1.2	<1.3	<1.2

GP-20

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.44]	<0.013	0.43
B(a)P	[1.15]	<0.0113	[0.40]
B(b)F	[1.50]	<0.013	0.56
C	1.13	<0.0121	0.44
D(ah)A	[0.148]	<0.0078	0.052
I(cd)P	0.72	<0.0114	0.283
METALs			
As	4.8 J *	4.3 J *	4.6 J *
Ba	239	35.9	34.2
Cd	0.91 *	<0.15	0.32 J
Pb	[529]	7.2	22.2
Hg	0.67	<0.012	0.023 J
Se	<1.4	<1.2	<1.2

GP-3

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.049	1.000
B(a)P	0.075	[0.880]
B(b)F	0.098	[1.600]
C	0.059	1.300
D(ah)A	<0.0076	0.110
I(cd)P	0.047	0.420
METALs		
As	1.6 *	4.2 *
Ba	27	18
Cd	0.059 J	0.13 J
Pb	6.3	7.5
Hg	0.023	0.019
Se	<0.63	<0.64

MW-1

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.171	0.0223 J	<0.013
B(a)P	0.112	0.0119 J	<0.0114
B(b)F	0.06	<0.0147	<0.0147
C	0.40	0.062	<0.0147
D(ah)A	<0.0179	<0.0179	<0.0179
I(cd)P	0.0131 J	<0.0113	<0.0113
METALs			
As	5.9 *	7.3 *	4.9 J *
Ba	25.9	31.1	39.2
Cd	0.24 J	0.38 J	0.34 J
Pb	8.8	12.1	8.6
Hg	0.017 J	0.013 J	0.015 J
Se	<1.2	1.5 J	<1.2

GP-22

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.96	0.0156 J	0.032 J
B(a)P	[0.72]	<0.0113	0.0228 J
B(b)F	1.03	<0.013	0.033 J
C	0.80	0.0135 J	0.035 J
D(ah)A	0.091	<0.0078	<0.0078
I(cd)P	0.41	<0.0114	0.0158 J
METALs			
As	{[14.7]}	7.6 *	6.5 *
Ba	984	105	23.0
Cd	1.8	0.33 J	0.32 J
Pb	{[1,170]}	94.1	14.1
Hg	1.3	0.12	<0.011
Se	<1.4	<1.2	<1.1

GP-25

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0205 J	<0.013	<0.013
B(a)P	0.0145 J	<0.0113	<0.0113
B(b)F	0.0192 J	<0.013	<0.013
C	0.0175 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114	<0.0114
METALs			
As	5.5 *	6.0 *	4.4 J *
Ba	65.1	36.3	15.0
Cd	0.32 J	0.42 J	0.24 J
Pb	9.8	28.5 *	8.0
Hg	0.011 J	0.022 J	0.014 J
Se	<1.2	<1.1	<1.1

GP-24

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0181 J	0.072	<0.013
B(a)P	0.0139 J	0.066	<0.0113
B(b)F	0.0183 J	0.09	<0.013
C	0.0146 J	0.081	<0.0121
D(ah)A	<0.0078	0.0119 J	<0.0078
I(cd)P	<0.0114	0.04	<0.0114
METALs			
As	4.1 J *	3.1 J *	{[10.2]}
Ba	31.1	13.0	22.9
Cd	0.21 J	0.17 J	0.39 J
Pb	7.3	9.6	15.0
Hg	<0.011	<0.011	<0.012
Se	<1.1	<1.1	<1.2

GP-1

Depth:	2 - 4	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.120	<0.0048
B(a)P	[0.130]	<0.0070
B(b)F	0.180	<0.0078
C	0.120	<0.0098
D(ah)A	0.0071 J	<0.0070
I(cd)P	0.068	<0.0093
METALs		
As	2.8 *	4.9 *
Ba	25	22
Cd	0.097 J	0.095 J
Pb	42 *	12
Hg	0.047	0.015 J
Se	<0.60	<0.55

GP-11

Depth:	2 - 4	4 - 6	8 - 10
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.208	0.0192 J	0.0171 J
B(a)P	[0.179]	0.0211 J	<0.0113
B(b)F	0.251	0.0168 J	<0.013
C	0.181	0.0187 J	<0.0121
D(ah)A	0.0281	<0.0078	<0.0078
I(cd)P	0.115	<0.0114	<0.0114
METALs			
As	4.6 J *	6.1 *	6.4 *
Ba	24.0	17.6	24.7
Cd	0.14 J	0.23 J	0.21 J
Pb	5.7	6.5	9.9
Hg	<0.011	<0.012	0.016 J
Se	<1.2	<1.1	<1.1

GP-14

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.65]	<0.013	<0.013
B(a)P	[1.20]	<0.0113	<0.0113
B(b)F	[1.64]	<0.013	<0.013
C	1.19	<0.0121	<0.0121
D(ah)A	[0.161]	<0.0078	<0.0078
I(cd)P	0.67	<0.0114	<0.0114
METALs			
As	5.6 *	4.4 J *	7.5 *
Ba	68.1	16.9	18.1
Cd	0.34 J	0.16 J	0.20 J
Pb	167	5.2	17.6
Hg	1.1	0.018 J	0.016 J
Se	<1.2	<1.1	<1.2

GP-2

Depth:	2 - 4	14 - 16
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.630	<0.0048
B(a)P	[0.630]	<0.0070
B(b)F	0.980	<0.0078
C	0.630	<0.0098
D(ah)A	0.092	<0.0070
I(cd)P	0.290	<0.0093
METALs		
As	4.4 *	4.3 *
Ba	110	13
Cd	0.38	0.15 J
Pb	170	7.8
Hg	0.21	0.019
Se	<0.62	<0.61

GP-5

Depth:	4 - 6	12 - 14
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.410	<0.0051
B(a)P	[0.430]	0.014 J
B(b)F	0.580	<0.0083
C	0.440	<0.010
D(ah)A	0.090	<0.0074
I(cd)P	0.260	<0.0099
METALs		
As	3.6 *	1.9 *
Ba	73	16
Cd	0.24	0.10 J
Pb	160	5.4
Hg	0.36	0.010 J
Se	<0.63	<0.62

GP-18

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.142	0.17	0.139
B(a)P	0.10	[0.121]	0.092
B(b)F	0.143	0.179	0.117
C	0.12	0.168	0.115
D(ah)A	0.0152 J	0.0168 J	0.0138 J
I(cd)P	0.067	0.079	0.056
METALs			
As	4.6 J *	{[8.2]}	6.0 *
Ba	76.7	58.1	57.9
Cd	0.37 J	0.50 J	0.33 J
Pb	143	116	94.3
Hg	0.18	0.11	0.13
Se	<1.2	<1.2	<1.2

GP-26

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.0234 J	0.044	<0.013
B(a)P	0.0246 J	0.041	<0.0113
B(b)F	0.034 J	0.055	<0.013
C	0.0271 J	0.046	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0215 J	0.0285 J	<0.0114
METALs			
As	4.8 J *	6.6 *	5.4 *
Ba	20.4	30.2	56.3
Cd	0.20 J	0.27 J	0.24 J
Pb	7.7	21.2	8.0
Hg	<0.011	<0.012	<0.012
Se	<1.2	<1.2	<1.2

GP-28

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	4.8 J *	4.6 J *
Ba	18.3	14.7
Cd	<0.14	0.20 J
Pb	12.5	5.0
Hg	0.049	<0.011
Se	<1.1	<1.1

GP-4

Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	<0.0045
B(a)P	<0.0065
B(b)F	<0.0072
C	<0.0091
D(ah)A	<0.0065
I(cd)P	<0.0087
METALs	
As	3.0 *
Ba	15
Cd	0.14 J
Pb	6.6
Hg	0.0076 J
Se	<0.57

GP-30

Depth:	6 - 8	12 - 14
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.057
B(a)P	<0.0113	0.097
B(b)F	<0.013	0.072
C	<0.0121	0.073
D(ah)A	<0.0078	0.0261
I(cd)P	<0.0114	0.032 J
METALs		
As	5.5 *	4.6 J *
Ba	13.0	14.7
Cd	0.18 J	0.13 J
Pb	8.3	7.7
Hg	<0.011	<0.011
Se	<1.1	<1.1

GP-29

Depth:	2 - 4	6 - 8
Date:	2/27/18	
VOCs	ND	ND
PAHs		
B(a)A	0.038 J	<0.013
B(a)P	0.057	<0.0113
B(b)F	0.054	<0.013
C	0.045	<0.0121
D(ah)A	0.0116 J	<0.0078
I(cd)P	0.032 J	<0.0114
METALs		
As	5.4 *	6.1 *
Ba	26.6	19.6
Cd	0.22 J	0.35 J
Pb	9.7	7.6
Hg	0.024 J	<0.011
Se	<1.1	<1.1

GP-23

Depth:	2 - 4	8 - 10	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[2.21]	<0.013	0.71
B(a)P	[1.77]	<0.0113	[0.59]
B(b)F	[2.38]	<0.013	0.79
C	1.73	<0.0121	0.57
D(ah)A	[0.224]	<0.0078	0.084
I(cd)P	0.98	<0.0114	0.33
METALs			
As	6.9 *	3.3 J *	3.8 J *
Ba	457	23.7	32.1
Cd	0.79 *	<0.16	<0.15
Pb	[567]	5.6	40.0 *
Hg	0.29	<0.013	0.033 J
Se	<1.2	<1.4	<1.2

GP-27

Depth:	2 - 4	8 - 10	14 - 16
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.034 J	0.64	<0.013
B(a)P	0.0313 J	[0.67]	<0.0113
B(b)F	0.048	0.86	<0.013
C	0.037 J	0.61	<0.0121
D(ah)A	<0.0078	0.088	<0.0078
I(cd)P	0.0176 J	0.40	<0.0114
METALs			
As	5.8 *	6.4 *	4.1 J *
Ba	35.7	45.2	42.4
Cd	0.18 J	0.22 J	0.17 J
Pb	7.9	64.0	7.7
Hg	<0.011	0.017 J	<0.012
Se	<1.1	<1.2	<1.2

GP-32

Depth:	4 - 6	8 - 10
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	0.109
B(a)P	<0.0113	0.113
B(b)F	<0.013	0.122
C	<0.0121	0.117
D(ah)A	<0.0078	0.0232 J
I(cd)P	<0.0114	0.06
METALs		
As	4.8 J *	6.4 *
Ba	15.0	18.5
Cd	0.16 J	0.24 J
Pb	5.2	8.5
Hg	<0.011	<0.011
Se	<1.2	<1.1

GP-9

Depth:	4 - 6
Date:	12/1/17
VOCs	ND
PAHs	
B(a)A	0.0099 J
B(a)P	0.018 J
B(b)F	<0.0082
C	0.011 J
D(ah)A	<0.0073
I(cd)P	<0.0098
METALs	
As	3.0 *
Ba	46
Cd	0.072 J
Pb	7.4
Hg	0.033
Se	0.72 J

GP-34

Depth:	2 - 4
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	0.085
B(a)P	0.09
B(b)F	0.126
C	0.10
D(ah)A	0.0127 J
I(cd)P	0.059
METALs	
As	{[9.2]}
Ba	24.9
Cd	0.36 J
Pb	30.3 *
Hg	0.049
Se	<1.2

GP-33

Depth:	6 - 8
Date:	2/28/18
VOCs	ND
PAHs	
B(a)A	<0.013
B(a)P	<0.0113
B(b)F	<0.013
C	<0.0121
D(ah)A	<0.0078
I(cd)P	<0.0114
METALs	
As	{[8.1]}
Ba	17.8
Cd	0.20 J
Pb	8.6
Hg	<0.011
Se	<1.2

GP-8

Depth:	4 - 6	16 - 18
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0046	0.016 J
B(a)P	<0.0067	0.085
B(b)F	<0.0074	0.061
C	<0.0094	0.035
D(ah)A	<0.0067	0.043
I(cd)P	<0.0089	0.044
METALs		
As	4.3 *	3.0 *
Ba	11	9.3
Cd	0.17 J	0.21
Pb	8.3	6.5
Hg	0.012 J	0.0077 J
Se	<0.59	<0.55

GP-31

Depth:	2 - 4	6 - 8
Date:	2/28/18	
VOCs	ND	ND
PAHs		
B(a)A	<0.013	<0.013
B(a)P	<0.0113	<0.0113
B(b)F	<0.013	<0.013
C	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078
I(cd)P	<0.0114	<0.0114
METALs		
As	3.0 J *	5.1 J *
Ba	15.2	26.3
Cd	<0.14	0.27 J
Pb	4.3	5.8
Hg	<0.011	<0.012
Se	<1.2	<1.2

GP-13

Depth:	2 - 4	6 - 8	10 - 12
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.037 J	<0.013	<0.013
B(a)P	0.0235 J	<0.0113	<0.0113
B(b)F	0.039 J	<0.013	<0.013
C	0.034 J	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0131 J	<0.0114	<0.0114
METALs			
As	5.6 J *	2.6 J *	5.6 *
Ba	68.3	19.0	16.9
Cd	<0.16	0.18 J	0.18 J
Pb	12.8	4.3	5.0
Hg	0.026 J	<0.012	<0.011
Se	<1.4	<1.2	<1.1

MW-4

Depth:	1 - 2.5	8.5 - 10	16 - 17.5
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.75]	<0.013	<0.013
B(a)P	[1.14]	<0.0113	<0.0113
B(b)F	[1.78]	<0.013	<0.013
C	1.32	<0.0121	<0.0121
D(ah)A	[0.178]	<0.0078	<0.0078
I(cd)P	0.72	<0.0114	<0.0114
METALs			
As	7.8 *	{[50.7]}	{[10.6]}
Ba	84.9	50.0	22.9
Cd	0.35 J	0.91 J *	0.53 J
Pb	139	35.2 *	15.6
Hg	0.17	0.015 J	0.021 J
Se	<1.5	<1.2	<1.3

GP-6

Depth:	4 - 6	10 - 11
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	0.057	<0.0046
B(a)P	0.086	<0.0067
B(b)F	0.100	<0.0075
C	0.064	<0.0094
D(ah)A	0.014 J	<0.0067
I(cd)P	0.044	<0.0090
METALs		
As	2.3 *	4.5 *
Ba	19	16
Cd	0.16 J	0.13 J
Pb	41 *	10
Hg	0.055	0.011 J
Se	<0.62	<0.57

GP-37

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.63]	[1.77]	0.36
B(a)P	[1.20]	[1.27]	[0.249]
B(b)F	[1.73]	[1.79]	0.316
C	1.36	1.52	0.305
D(ah)A	[0.203]	[0.208]	0.0299
I(cd)P	0.60	0.62	0.109
METALs			
As	7.3 *	7.5 *	4.1 J *
Ba	80.6	36.5	59.0
Cd	0.38 J	0.33 J	0.16 J
Pb	61.7	65.3	57.9
Hg	0.092	0.075	0.071
Se	1.7 J	<1.2	<1.2

GP-16

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.307	0.032 J	<0.013
B(a)P	[0.242]	0.0208 J	<0.0113
B(b)F	0.35	0.035 J	<0.013
C	0.275	0.034 J	<0.0121
D(ah)A	0.0268	<0.0078	<0.0078
I(cd)P	0.124	<0.0114	<0.0114
METALs			
As	6.6 *	4.5 J *	2.6 J *
Ba	85.4	34.0	8.8
Cd	0.26 J	<0.15	<0.15
Pb	45.5 *	29.5 *	3.9
Hg	0.26	0.023 J	<0.012
Se	<1.2	<1.3	<1.2

GP-15

Depth:	2 - 4	4 - 6	6 - 7.5
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.80	0.307	0.52
B(a)P	[0.64]	[0.262]	[0.34]
B(b)F	0.89	0.36	0.49
C	0.68	0.273	0.43
D(ah)A	0.086	0.039	0.042
I(cd)P	0.38	0.152	0.179
METALs			
As	7.5 *	4.3 J *	7.3 *
Ba	94.4	61.5	100
Cd	0.36 J	0.28 J	0.65
Pb	69.2	39.7 *	97.1
Hg	0.20	0.10	0.20
Se	<1.2	<1.2	<1.3

GP-38

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.84]	[7.60]	0.0136 J
B(a)P	[1.73]	{[4.50]}	<0.0113
B(b)F	[2.49]	[6.30]	<0.013
C	1.79	6.30	<0.0121
D(ah)A	[0.277]	[0.68]	<0.0078
I(cd)P	1.00	[1.94]	<0.0114
METALs			
As	4.7 J *	6.3 *	5.0 J *
Ba	76.7	83.7	30.9
Cd	0.42 J	0.25 J	<0.14
Pb	57.3	174	10.2
Hg	0.13	0.33	0.029 J
Se	<1.2	<1.3	<1.2

GP-36

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.163	0.257	0.0173 J
B(a)P	[0.12]	[0.209]	0.013 J
B(b)F	0.18	0.284	0.0166 J
C	0.146	0.267	0.0196 J
D(ah)A	0.0234 J	0.033	<0.0078
I(cd)P	0.077	0.115	<0.0114
METALs			
As	4.6 J *	6.3 *	{[19.1]}
Ba	61.2	154	180
Cd	0.31 J	1.8	0.35 J
Pb	276	{[1,020]}	{[872]}
Hg	0.074	0.24	0.088
Se	<1.1	<1.2	<1.2

GP-35

Depth:	0 - 2	2 - 4	4 - 6
Date:	2/28/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.096	0.042 J	<0.013
B(a)P	[0.116]	0.0295 J	<0.0113
B(b)F	0.20	0.042	<0.013
C	0.137	0.039	<0.0121
D(ah)A	0.0193 J	<0.0078	<0.0078
I(cd)P	0.094	0.0169 J	<0.0114
METALs			
As	6.4 *	7.5 *	4.3 J *
Ba	87.3	26.5	16.8
Cd	0.50 J	0.27 J	0.21 J
Pb	[490]	16.1	5.8
Hg	0.10	0.023 J	0.012 J
Se	<1.3	<1.2	<1.2

GP-17

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	[1.78]	0.014 J	0.81
B(a)P	[1.21]	<0.0113	[0.53]
B(b)F	[1.71]	<0.013	0.70
C	1.33	<0.0121	0.60
D(ah)A	[0.181]	<0.0078	0.082
I(cd)P	0.81	<0.0114	0.32
METALs			
As	6.2 *	2.7 J *	4.4 J *
Ba	79.0	8.7	27.8
Cd	0.71	0.16 J	0.26 J
Pb	133	3.0	15.0
Hg	0.29	<0.011	0.037
Se	<1.2	<1.1	<1.1

GP-7

Depth:	0 - 2	8 - 10
Date:	12/1/17	
VOCs	ND	ND
PAHs		
B(a)A	<0.0049	0.024 J
B(a)P	0.015 J	0.089
B(b)F	<0.0079	0.067
C	<0.010	0.037
D(ah)A	<0.0071	0.040
I(cd)P	<0.0095	0.042
METALs		
As	1.8 *	2.7 *
Ba	13	8.3
Cd	0.097 J	0.11 J
Pb	6.4	6.3
Hg	0.011 J	0.014 J
Se	<0.65	<0.59

MW-2

Depth:	1 - 2.5	6 - 7.5	13.5 - 15
Date:	2/26/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.247	<0.013	<0.013
B(a)P	[0.179]	<0.0113	<0.0113
B(b)F	0.238	<0.013	<0.013
C	0.204	<0.0121	<0.0121
D(ah)A	0.0234 J	<0.0078	<0.0078
I(cd)P	0.09	<0.0114	<0.0114
METALs			
As	{[13.5]}	2.6 J *	{[10.5]}
Ba	105	16.3	80.2
Cd	0.70	<0.14	<0.66
Pb	208	5.0	25.1
Hg	1.0	0.016 J	0.019 J
Se	<1.3	<1.2	<1.1

GP-21

Depth:	2 - 4	6 - 8	12 - 14
Date:	2/27/18		
VOCs	ND	ND	ND
PAHs			
B(a)A	0.048	<0.013	0.0144 J
B(a)P	0.0306 J	<0.0113	<0.0113
B(b)F	0.044	<0.013	<0.013
C	0.041	<0.0121	<0.0121
D(ah)A	<0.0078	<0.0078	<0.0078
I(cd)P	0.0166 J	<0.0114	<0.0114
METALs			
As	{[9.3]}	7.0 *	3.5 J *
Ba	73.5	38.5	46.7
Cd	0.24 J	0.28 J	0.15 J
Pb	151	21.5	9.1
Hg	0.47	<0.012	<0.013
Se	<1.2	<1.1	<1.2

ANALYTICAL KEY

B(a)A = BENZO(a)ANTHRACENE
B(a)P = BENZO(a)PYRENE
B(b)F = BENZO(b)FLUORANTHENE
C = CHRYSENE
D(ah)A = DIBENZO(ah)ANTHRACENE
I(cd)P = INDENO(1,2,3-cd)PYRENE
As = ARSENIC
Ba = BARIUM
Cd = CADMIUM
Pb = LEAD
Hg = MERCURY
Se = SELENIUM

= ESTIMATED EXTENT OF PAH IMPACTS > NON-IND DC RCLs
= ESTIMATED EXTENT OF PAH IMPACTS > GW PATHWAY RCLs
= ESTIMATED EXTENT OF ARSENIC IMPACTS > BTV OF 8 mg/kg
= ESTIMATED EXTENT OF BARIUM IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF CADMIUM IMPACTS > BTV OF 1 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND NON-IND DC RCL
= ESTIMATED EXTENT OF LEAD IMPACTS > BTV OF 52 mg/kg AND GW PATHWAY RCL
= ESTIMATED EXTENT OF MERCURY IMPACTS > GW PATHWAY RCL
= ESTIMATED EXTENT OF SELENIUM IMPACTS > GW PATHWAY RCL

BOLD = CONCENTRATION EXCEEDS GROUNDWATER PATHWAY RCL
[ ] = CONCENTRATION EXCEEDS NON-INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)
{ } = CONCENTRATION EXCEEDS INDUSTRIAL DIRECT CONTACT RCL (ANY DEPTH)

ALL CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg)

J = CONCENTRATION REPORTED BETWEEN LIMIT OF DETECTION AND LIMIT OF QUANTITATION

* = CONCENTRATION IS BELOW BACKGROUND THRESHOLD VALUE SO RCL EXCEEDANCES NOT NOTED

YELLOW = SOIL DEPTH INTERVAL TO BE EXCAVATED DURING CONSTRUCTION FOR OFF-SITE MANAGEMENT

LEGEND

= PHASE II ESA GEOPROBE SOIL BORING (DEC. 2017)
= GEOPROBE SOIL BORING FOR MAIN BUILDING AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 1 BASEMENT AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 2 BASEMENT AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR ALT. 3 AREA (FEB. 2018)
= GEOPROBE SOIL BORING FOR RAMP AREA (FEB. 2018)
= HSA SOIL BORING / MONITORING WELL (FEB. 2018)

NOTES:
1. MAP BASED ON SIGMA "TOPOGRAPHIC SURVEY" DATED 1/29/2018.

0 40 ft. 80 ft.
GRAPHIC SCALE

THE SIGMA GROUP
Single Source. Sound Solutions.

SOIL QUALITY MAP

MSOE DIERCKS COMPUTATIONAL SCIENCE HALL DEVELOPMENT
1025 N. MILWAUKEE STREET, MILWAUKEE, WISCONSIN

BRRTS # 02-41-581016 T

FIGURE 2

Project: 17076 | Directory: 060 CAD / E-Env | Filename: 17076 MSOE Science Hall Maps.ai | Created By: AJR | Date: 03/30/2018