

The following drawings summarize both the site investigation (Drawings F - I), and a conversation I had with GP and their consultant about the proposed remedial design (Drawings A – E). They handed me Drawings C, D and E in draft format to aid our discussion. I have an additional 19 drawings that include RAP details and specifications. After receiving my comments, the consultant will memorialize the drawings with an added memo as the final RAP.

Bob Klauk previously approved the site investigation as complete in 2018, though I couldn't find that documentation. I added site investigation Figures F - I for EPA review. The DNR closure committee review is to give general concurrence with their plan to cap areas that have a direct contact risk.

This site lies adjacent to the Ashwaubenon High School/Middle School/football field/Klipstine Park/Community Center PCB site at the corner of Anderson and Oneida (**Drawing A**). Georgia Pacific used the site for sludge disposal through the 1960s, when it capped and sold the property for development. **Drawing F** shows a typical cross section of the borrow pit/fill area. The site investigation concluded that direct contact is the only risk pathway.

Remedial Action Plan

Drawing B shows a close up of fill limits, which is the area the consultant sampled.

For capping purposes, the consultant assumed that anything in the top four feet containing sludge was a direct contact risk. Drawing C shows all sample locations and the depths where sludge occurs. Any sludge (or soil above the DC standard) with less than 18 inches of cover will receive an above grade landscape feature as cover.

Drawings C and D show the landscaping locations. Drawing D is easier to read. These areas cover soil borings where sludge was found, with additional covered area at each location so as to be protective.

Drawing E shows a typical cover feature. The plan calls for no excavation. The consultant prescribed a geotextile mesh at the current land surface to lie beneath each landscape feature. The block curbing is wired together to prevent movement, then filled with river stone (approximately one inch diameter). Plants and shrubs are sometimes included. The boulder in each feature will be placed on top of the soil boring location.

The entire site requires a cap maintenance plan and continuing obligations. Keld and I both felt like there may be unknown areas where sludge occurs in the top 18 inches. Without removing the soil/pavement cover, it's impossible to tell.

The owner actively keeps up the landscaping and would not allow gardening or digging on the site.

Site Investigation Summary

Over the course of four years, GP and their consultants investigated the property and submitted the five documents listed below. Drawings F – I came from the Supplemental Site Investigation, and they summarize findings from all five reports.

Drawing F shows that sludge exists beneath much of the site, from the surface to varying depths, as deep as 15 feet below ground surface. Building and pavement construction covered most of the sludge at the surface.

Investigations concentrated on the top four feet of material, with the assumption that PCBs only present a risk through direct contact. One groundwater well confirmed that no PCBs have leached to groundwater as of 2017.

Drawing G shows borings and sample depths from the site investigations. **Drawing H** summarizes sample results from the two site investigation documents. The addendum (**Drawing I**) addressed potential contamination outside the north end of the original excavation. Visual inspection and the addendum show that it's unlikely sludge lies north of the property.

Investigation Documents

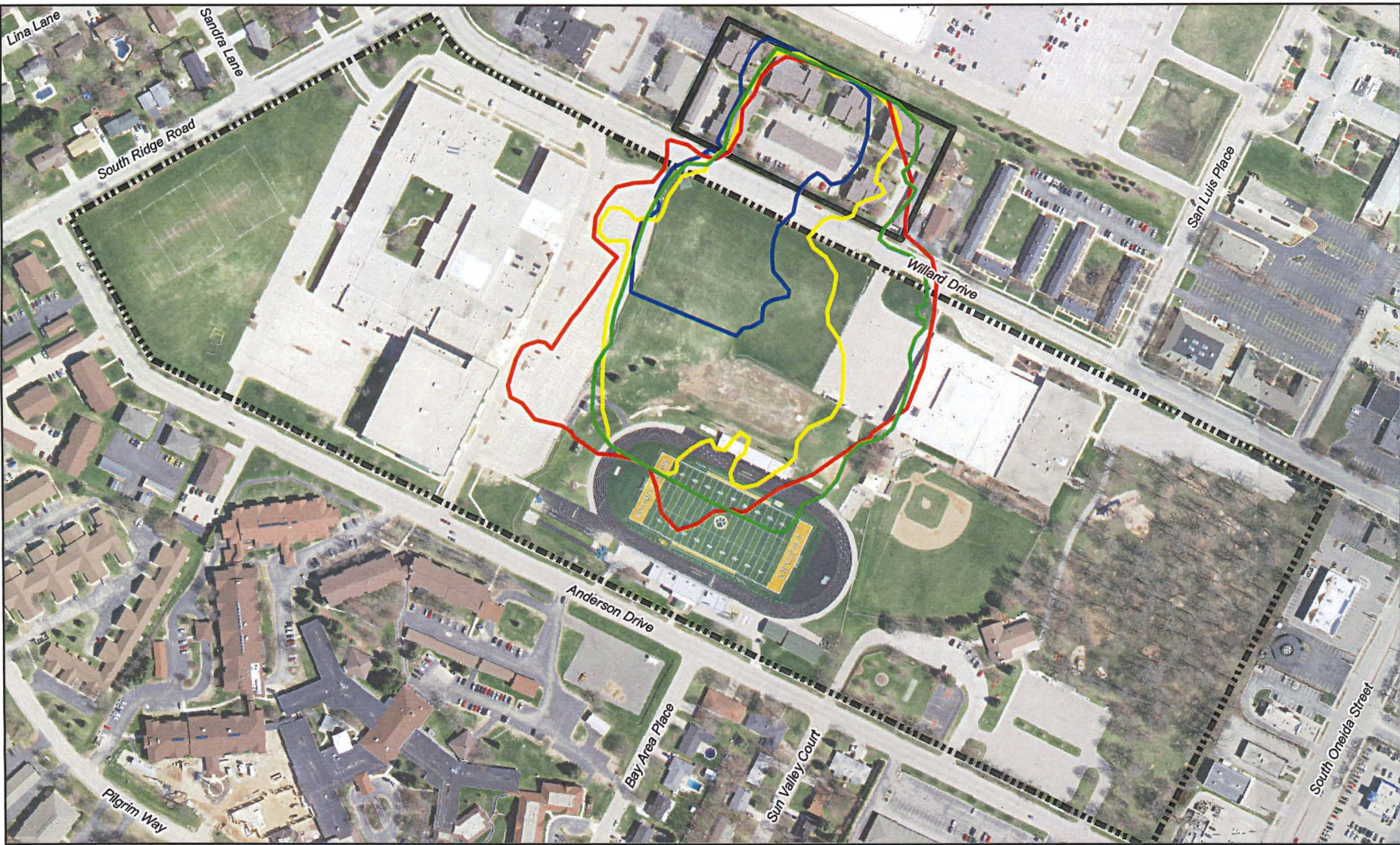
Phase II, OMNI, 2015

Phase II, Foster Wheeler, 2017

Site Investigation, Foster Wheeler, 2017

Supplemental Site Investigation, 2018

Supplemental Site investigation Addendum, 2018



Legend

Drawing A

- 1938
- 1954
- 1951
- 1960

**HISTORIC BORROW PIT
DIMENSIONS**
Site Investigation Report
Ashview Terrace Apartments Site
Ashwaubenon, Brown County, Wisconsin

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

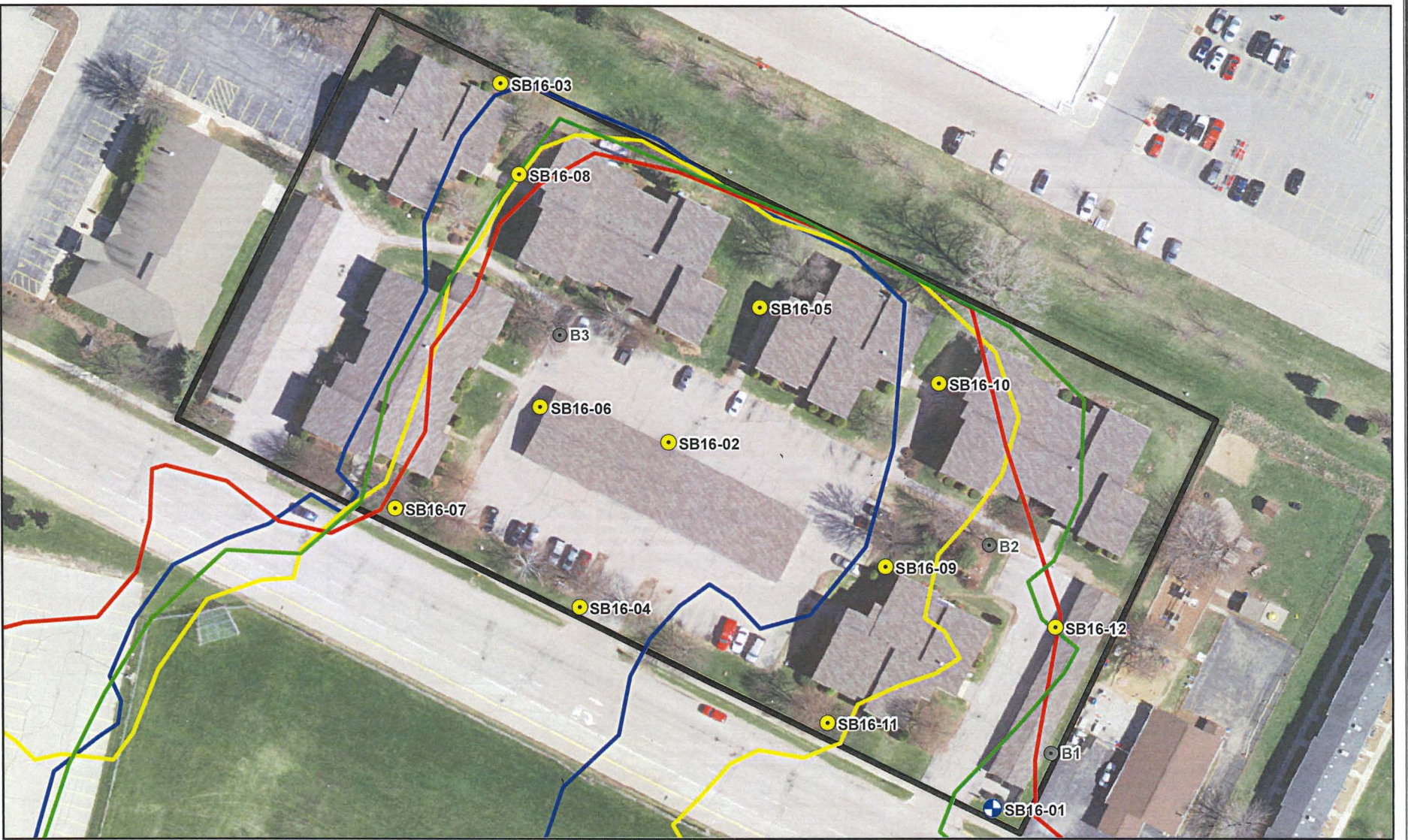
Date: 05/18/2017	Project No. 7311150004
Drawn: MJV	Figure: 3
Checked: JMR	

1:3,600

Approximate Scale in Feet

1 inch equals 300 feet





Drawing B

● Boring / Temporary Well Location
● Boring Location
■ 1938 ■ 1954 ● Historic Boring Locations
■ 1951 ■ 1960

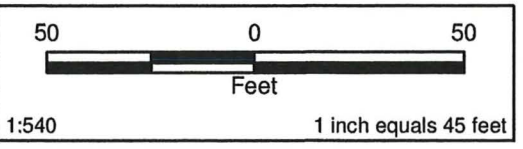
**SOIL BORING
AND TEMPORARY WELL
LOCATION MAP**
 Site Investigation Report
 Ashview Terrace Apartments Site
 Ashwaubenon, Brown County, Wisconsin

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

	Date: 05/18/2017	Project No. 7311150004
	Drawn: MJV	Figure: 5
	Checked: JMR	

1:960 Approximate Scale in Feet 1 inch equals 80 feet

amec
foster
wheeler



- Legend**
- Geoprobe Borings (to 8 ft bgs)
 - Geoprobe Boring (to 16 ft bgs)
 - Temporary Well / Geoprobe (to 24 ft bgs)
 - Soil Probes
 - Historic Boring Locations
 - Approximate Site Boundary
 - Proposed Curb Outlines
 - 12 Cover Required (in inches)
 - 6-12" Sampling Intervals Shown In Inches Below Ground Surface
 - 1-2 ft Sampling Intervals Shown In Feet Below Ground Surface
 - Sampling Interval Containing Paper Sludge
 - Sampling Interval Containing Trace Paper Sludge

Drawing C

SOIL BORING RESULTS AND LANDSCAPE PLAN
 Ashview Terrace Apartments
 Ashwaubenon, Brown County, WI

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

	Date: 04/18/2019	Project No: 7311150004	Figure:
	Drawn: MJV		wood.
	Checked: JMR		



Drawing D

Legend

- Approximate Site Boundary
- Proposed Curb Outlines

OVERALL LANDSCAPE PLAN
 Ashview Terrace Apartments
 Ashwaubenon, Brown County, WI

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

Drawn: MJV	Project No. 7311150004
Checked: JMR	Date: 02/19/2019

Figure: **1-1**

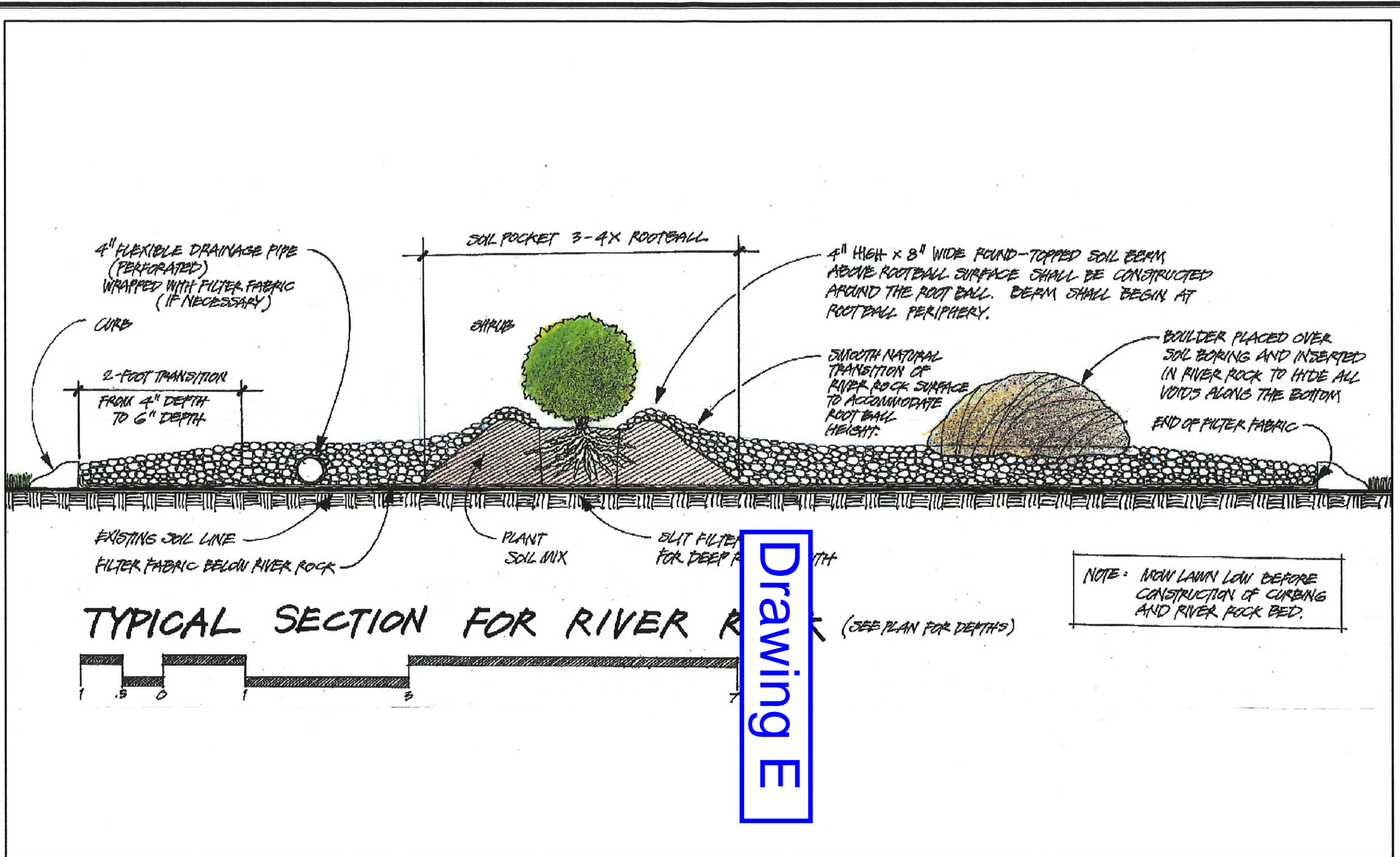
wood.

1 inch equals 75 feet

1:900

Approximate Scale in Feet





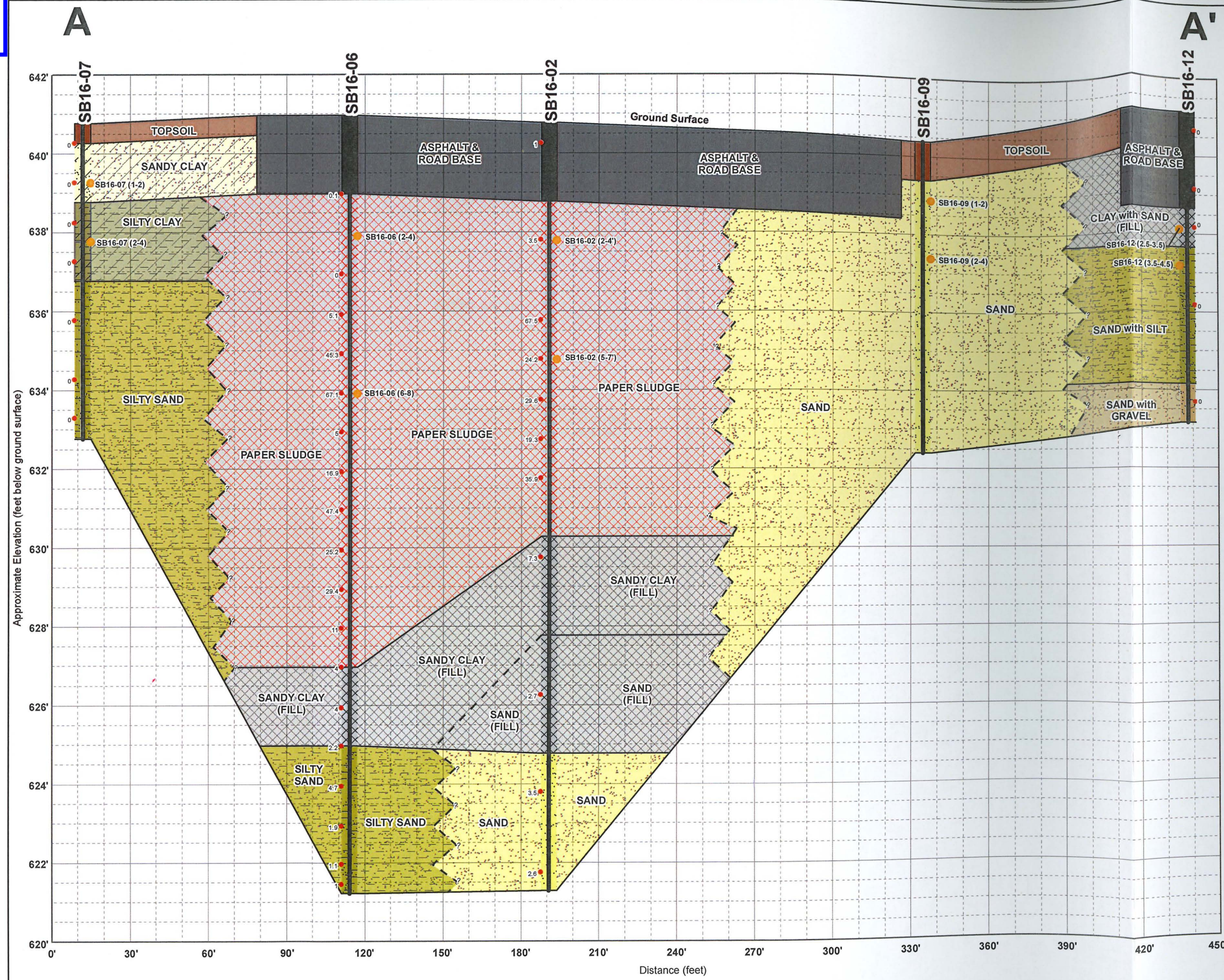
Drawing E

**TYPICAL AREA
CROSS-SECTION SCHEMATIC**
Ashview Terrace Apartments
Ashwaubenon, Brown County, WI

Drawn:	MJV	Project No.	7311150004
Checked:	JMR	Date:	02/20/2019

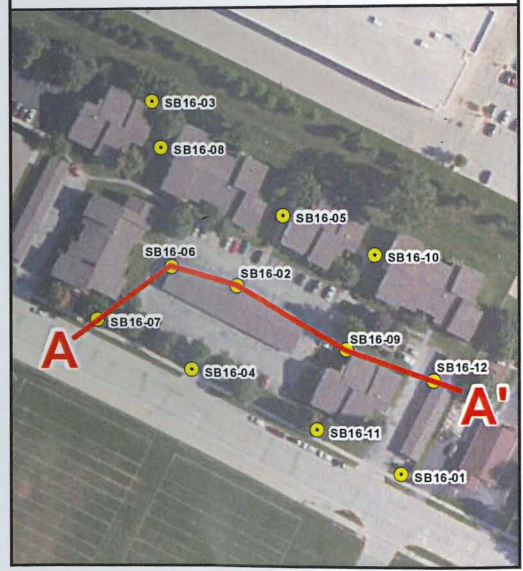
Figure: **3-1**
wood.

SCALE AS SHOWN
Horizontal Exaggeration - 15x



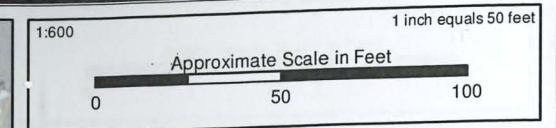
- Legend**
- Soil Sample
 - PID Response (ppm)
 - Inferred Lithologic Contact
 - Topsoil
 - Asphalt and Road Base
 - Fill
 - Fill Containing Paper Sludge
 - Sandy Clay / Clay with Sand
 - Silty Clay
 - Sand
 - Silty Sand / Sand with Silt
 - Sand with Gravel

- Notes:**
1. Detailed boring logs in Appendix A
 2. Soil samples collected June 21-22, 2016.
 3. 15x horizontal exaggeration for scale
 4. ppm - Parts per million



CROSS SECTION A-A'
Site Investigation Report
Ashview Terrace Apartments Site
Ashwaubenon, Brown County, Wisconsin

Note:		
Date: 05/18/2017	Project No. 7311150004	
Drawn: MJV	Figure: 7a	
Checked: JMR		



- Legend**
- 2017 Soil Boring / Temporary Well Location
 - 2017 Soil Boring Location
 - 2016 Soil Boring / Temporary Well Location
 - 2016 Soil Boring Location
 - Approximate Site Boundary
 - Interval or partial interval within 4 ft of ground surface
 - Interval with "Elevated" PID Readings
 - 1-2** Analytical Sample Collected
 - Contact of Fill Bottom
- BLUE highlighted results are new for 2017

SB16-03	Description	Sample
0-1	Top soil	
1-4	sandy clay - red brown	1-2
4-6.5	sandy clay - lt red brown	
6.5-9	very fine silty sand	
9-10.5	very fine silt w/s clay	9-10.5
10.5-11	very fine silty sand	
11-18	medium sand	
18	refusal	

SB17-01	Description	Sample
0-1	Top soil	
1-2	very fine silty sand	1-2
2-4	very fine silty sand	2-4
4-5	crushed/weathered rock	Fill Bottom
5-6	very fine silty sand	
6-8	very fine sand	6-8

SB17-02	Description	Sample
0-1	Top soil	
1-2	sandy clay	1-2
2-4	clayey sand	2-4
4-5	very fine sand	Fill Bottom
5-7	very fine sand	5-7
7-8	sand and gravel	

SB17-03	Description	Sample
0-1	Top soil	
1-2	very fine sand	1-2
2-4	very fine sand	2-4
4-5	very fine sand	
5-7	very fine sand	5-7
7-8	sand and gravel	

SB16-08	Description	Sample
0-0.5	clayey sand	
0.5-1.5	clay w/sand	0.5-1.5
1.5-4	clay w/trace sand	2-4
4-6	silt to silt w/ very fine sand	
6-8	very fine sand w/ some silt	

SB16-05	Description	Sample
0-1	Top soil	
1-1.5	sandy clay	1-1.5
1.5-2	gry paper sludge w/odor	
2-6	gry paper sludge w/odor	2-4
6-9	gry paper sludge w/ odor and elevated PIDs	6-8
9-12	gry paper sludge w/ odor and elevated PIDs	11-12
12-15	gry paper sludge w/ odor and elevated PIDs	Fill Bottom
15-19	very fine silty sand	
19	refusal	

SB16-06	Description	Sample
0-2	Asphalt and road base	
2-4	paper sludge and clay	2-4
4-8	paper sludge and clay w/ elevated PIDs	6-8
8-13	paper sludge and clay w/ elevated PIDs	
13-14	paper sludge and clay	
14-16	sandy clay	Fill Bottom
16-19.75	very fine sand to silty sand	
19.75	refusal	

SB16-02	Description	Sample
0-2	Asphalt and road base	
2-4	paper sludge - lt gray	2-4
4-10.5	paper sludge - dk gray	5-7
10.5-12	sandy clay w/ organics	
12-13	sandy clay w/ organics w/ gravel	
13-16	very fine - med sand	Fill Bottom
16-19.5	very fine sand	
19.5	refusal	

SB16-10	Description	Sample
0-1	Top soil	
1-3	paper sludge silty clay	1-2
3-4	paper sludge	2-4
4-6	no recovery	
6-7	paper sludge	Fill Bottom
7-8	clayey sand	
8-11	very fine sand w/some silt	
11-11.25	silty sand	
11.25-12	silty sand	

SB17-04	Description	Sample
0-2	Asphalt and road base	
2-4	paper sludge	
4-8	paper sludge	
8-12	paper sludge	
12-14	paper sludge	Fill Bottom
14-16	sandy clay	
16-17	very fine sand /silty sand	
17-18	very fine sand /silty sand	17-19
18-19.7	very fine sand /silty sand	

SB16-07	Description	Sample
0-0.5	Top soil	
0.5-2	silty clay	1-2
2-3	silty clay	2-4
3-4	very fine silt w/clay	
4-6	very fine silty sand	
6-7	very fine silty sand	
7-8	very fine silty sand	

SB16-09	Description	Sample
0-1	Top soil	
1-2	very fine sand w/some silt	1-2
2-4	very fine sand w/some silt	2-4
4-7	very fine sand w/some silt	
7-8	very fine sand w/some silt	

SB16-12	Description	Sample
0-1.5	Asphalt and road base	
1.5-2.5	grave/roadbase w/ clayey sand	Fill Bottom
2.5-3.5	clayey sand	2.5-3.5
3.5-7	very fine sand w/ silt	3.5-4.5
7-8	sand w/ gravel	

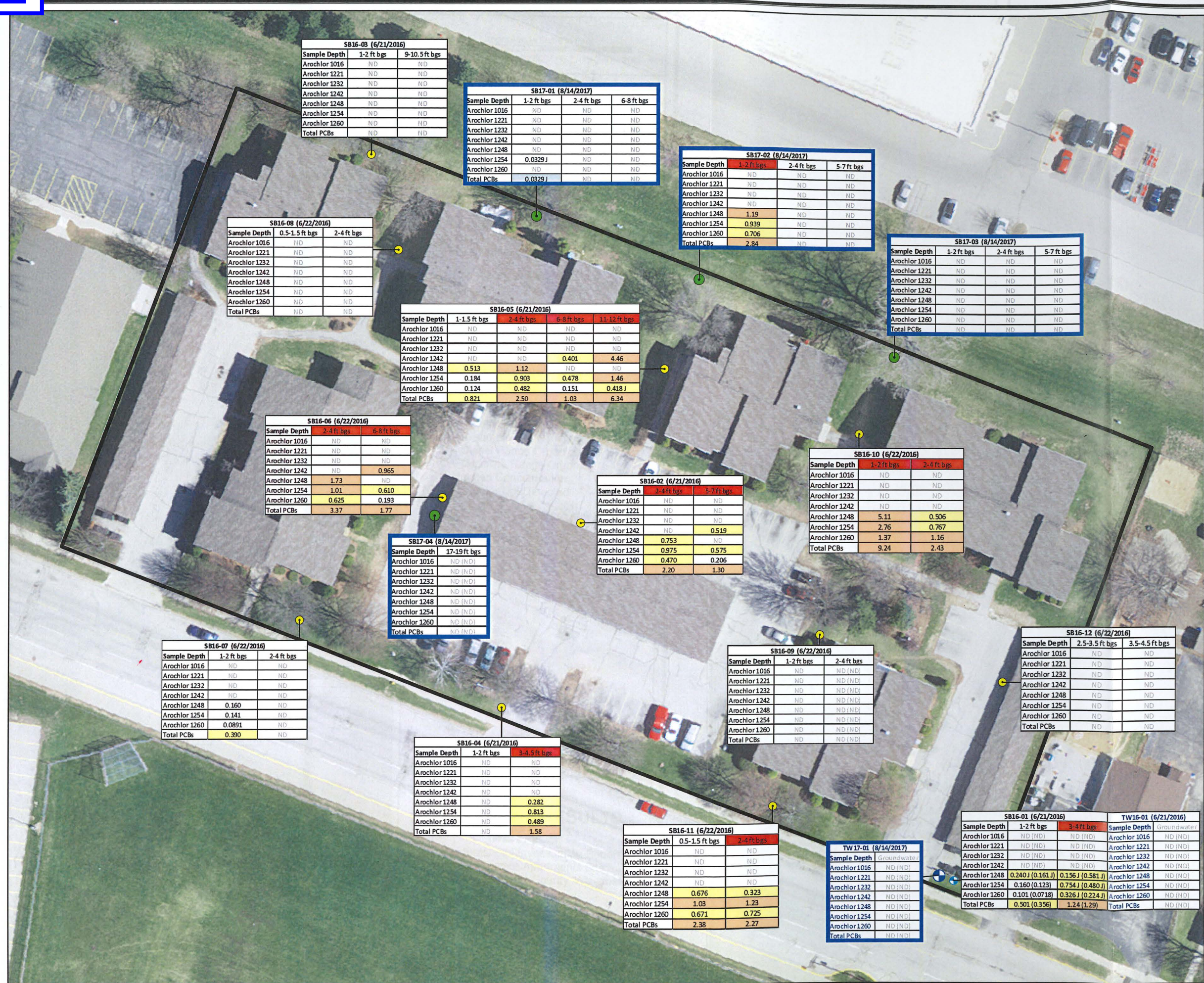
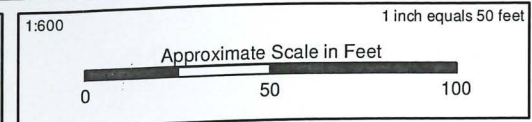
SB16-04	Description	Sample
0-1	Top soil	
1-2	gravel w/ sandy clay	1-2
2-3	very fine sand w/gravel	
3-4.5	gray paper sludge w/ clayey sand	3-4.5
4.5-8	clayey sand	Fill Bottom
8-9	sand w/sand/ gravel/ trace clay	
9-11	very fine silty sand w/gravel	
11-15	very fine sand w/gravel	
15	refusal	

SB16-11	Description	Sample
0-0.5	Top soil	
0.5-1.5	clayey sand	0.5-1.5
1.5-4	paper sludge	2-4
4-7	clayey sand	Fill Bottom
7-8	very fine sand w/some silt	

SB16-01	Description	Sample
0-1	Top soil	
1-3	clayey sand	1-2
3-3.9	fine clayey sand w/ paper sludge	3-4
3.9-4.5	sandy clay	Fill Bottom
4.5-8	clay w/ sand	
8-9	clayey sand w/s gravel	
9-12	sand w/gravel	
12-13	very fine - fine sand - poorly sorted	
13-16	very fine to fine sand - well sorted	
16-19	very fine - fine sand - poorly sorted	
19-20	very fine - fine sand - poorly sorted - wet	
20-22	very fine - fine sand - poorly sorted - damp	
22-24	clay w/ very fine sand	

SOIL BORING STRATIGRAPHY SUMMARY

Supplemental Site Investigation Report
Ashview Terrace Apartments Site
Ashwaubenon, Brown County, Wisconsin



- Legend**
- 2017 Soil Boring / Temporary Well Location
 - 2017 Soil Boring Location
 - 2016 Soil Boring / Temporary Well Location
 - 2016 Soil Boring Location
 - Approximate Site Boundary
 - Exceedance of Non-Industrial RCL
 - Exceedance of Industrial RCL
 - Exceedance of Soil to Groundwater RCL
 - Sampling Interval Containing Paper Sludge

Soil results in milligrams per kilogram
 Groundwater results in micrograms per liter
 Duplicate sample results in parenthesis
 J = Estimated Concentration
 ND = Parameter Not Detected
 BLUE highlighted results are new for 2017

SB16-03 (6/21/2016)

Sample Depth	1-2 ft bgs	9-10.5 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	ND	ND
Arochlor 1254	ND	ND
Arochlor 1260	ND	ND
Total PCBs	ND	ND

SB17-01 (8/14/2017)

Sample Depth	1-2 ft bgs	2-4 ft bgs	6-8 ft bgs
Arochlor 1016	ND	ND	ND
Arochlor 1221	ND	ND	ND
Arochlor 1232	ND	ND	ND
Arochlor 1242	ND	ND	ND
Arochlor 1248	ND	ND	ND
Arochlor 1254	0.0329 J	ND	ND
Arochlor 1260	ND	ND	ND
Total PCBs	0.0329 J	ND	ND

SB17-02 (8/14/2017)

Sample Depth	1-2 ft bgs	2-4 ft bgs	5-7 ft bgs
Arochlor 1016	ND	ND	ND
Arochlor 1221	ND	ND	ND
Arochlor 1232	ND	ND	ND
Arochlor 1242	ND	ND	ND
Arochlor 1248	1.19	ND	ND
Arochlor 1254	0.939	ND	ND
Arochlor 1260	0.706	ND	ND
Total PCBs	2.84	ND	ND

SB17-03 (8/14/2017)

Sample Depth	1-2 ft bgs	2-4 ft bgs	5-7 ft bgs
Arochlor 1016	ND	ND	ND
Arochlor 1221	ND	ND	ND
Arochlor 1232	ND	ND	ND
Arochlor 1242	ND	ND	ND
Arochlor 1248	ND	ND	ND
Arochlor 1254	ND	ND	ND
Arochlor 1260	ND	ND	ND
Total PCBs	ND	ND	ND

SB16-08 (6/22/2016)

Sample Depth	0.5-1.5 ft bgs	2-4 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	ND	ND
Arochlor 1254	ND	ND
Arochlor 1260	ND	ND
Total PCBs	ND	ND

SB16-05 (6/21/2016)

Sample Depth	1-1.5 ft bgs	2-4 ft bgs	6-8 ft bgs	11-12 ft bgs
Arochlor 1016	ND	ND	ND	ND
Arochlor 1221	ND	ND	ND	ND
Arochlor 1232	ND	ND	ND	ND
Arochlor 1242	ND	ND	0.401	4.46
Arochlor 1248	0.513	1.12	ND	ND
Arochlor 1254	0.184	0.903	0.478	1.46
Arochlor 1260	0.124	0.482	0.151	0.418 J
Total PCBs	0.821	2.50	1.03	6.34

SB16-06 (6/22/2016)

Sample Depth	2-4 ft bgs	6-8 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	0.965
Arochlor 1248	1.73	ND
Arochlor 1254	1.01	0.610
Arochlor 1260	0.625	0.193
Total PCBs	3.37	1.77

SB16-02 (6/21/2016)

Sample Depth	2-4 ft bgs	5-7 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	0.519
Arochlor 1248	0.753	ND
Arochlor 1254	0.975	0.575
Arochlor 1260	0.470	0.206
Total PCBs	2.20	1.30

SB16-10 (6/22/2016)

Sample Depth	1-2 ft bgs	2-4 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	5.11	0.506
Arochlor 1254	2.76	0.767
Arochlor 1260	1.37	1.16
Total PCBs	9.24	2.43

SB17-04 (8/14/2017)

Sample Depth	17-19 ft bgs
Arochlor 1016	ND (ND)
Arochlor 1221	ND (ND)
Arochlor 1232	ND (ND)
Arochlor 1242	ND (ND)
Arochlor 1248	ND (ND)
Arochlor 1254	ND (ND)
Arochlor 1260	ND (ND)
Total PCBs	ND (ND)

SB16-07 (6/22/2016)

Sample Depth	1-2 ft bgs	2-4 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	0.160	ND
Arochlor 1254	0.141	ND
Arochlor 1260	0.0891	ND
Total PCBs	0.390	ND

SB16-09 (6/22/2016)

Sample Depth	1-2 ft bgs	2-4 ft bgs
Arochlor 1016	ND	ND (ND)
Arochlor 1221	ND	ND (ND)
Arochlor 1232	ND	ND (ND)
Arochlor 1242	ND	ND (ND)
Arochlor 1248	ND	ND (ND)
Arochlor 1254	ND	ND (ND)
Arochlor 1260	ND	ND (ND)
Total PCBs	ND	ND (ND)

SB16-12 (6/22/2016)

Sample Depth	2.5-3.5 ft bgs	3.5-4.5 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	ND	ND
Arochlor 1254	ND	ND
Arochlor 1260	ND	ND
Total PCBs	ND	ND

SB16-04 (6/21/2016)

Sample Depth	1-2 ft bgs	3-4.5 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	ND	0.282
Arochlor 1254	ND	0.813
Arochlor 1260	ND	0.489
Total PCBs	ND	1.58

SB16-11 (6/22/2016)

Sample Depth	0.5-1.5 ft bgs	2-4 ft bgs
Arochlor 1016	ND	ND
Arochlor 1221	ND	ND
Arochlor 1232	ND	ND
Arochlor 1242	ND	ND
Arochlor 1248	0.676	0.323
Arochlor 1254	1.03	1.23
Arochlor 1260	0.671	0.725
Total PCBs	2.38	2.27

TW 17-01 (8/14/2017)

Sample Depth	Groundwater
Arochlor 1016	ND (ND)
Arochlor 1221	ND (ND)
Arochlor 1232	ND (ND)
Arochlor 1242	ND (ND)
Arochlor 1248	0.240 J (0.161 J)
Arochlor 1254	0.160 (0.123)
Arochlor 1260	0.101 (0.0718)
Total PCBs	0.501 (0.356)

SB16-01 (6/21/2016)

Sample Depth	1-2 ft bgs	3-4 ft bgs	Sample Depth	Groundwater
Arochlor 1016	ND (ND)	ND (ND)	Arochlor 1016	ND (ND)
Arochlor 1221	ND (ND)	ND (ND)	Arochlor 1221	ND (ND)
Arochlor 1232	ND (ND)	ND (ND)	Arochlor 1232	ND (ND)
Arochlor 1242	ND (ND)	ND (ND)	Arochlor 1242	ND (ND)
Arochlor 1248	0.240 J (0.161 J)	0.156 J (0.581 J)	Arochlor 1248	ND (ND)
Arochlor 1254	0.160 (0.123)	0.754 J (0.480 J)	Arochlor 1254	ND (ND)
Arochlor 1260	0.101 (0.0718)	0.326 J (0.224 J)	Arochlor 1260	ND (ND)
Total PCBs	0.501 (0.356)	1.24 (1.29)	Total PCBs	ND (ND)

ANALYTICAL RESULTS PCBs

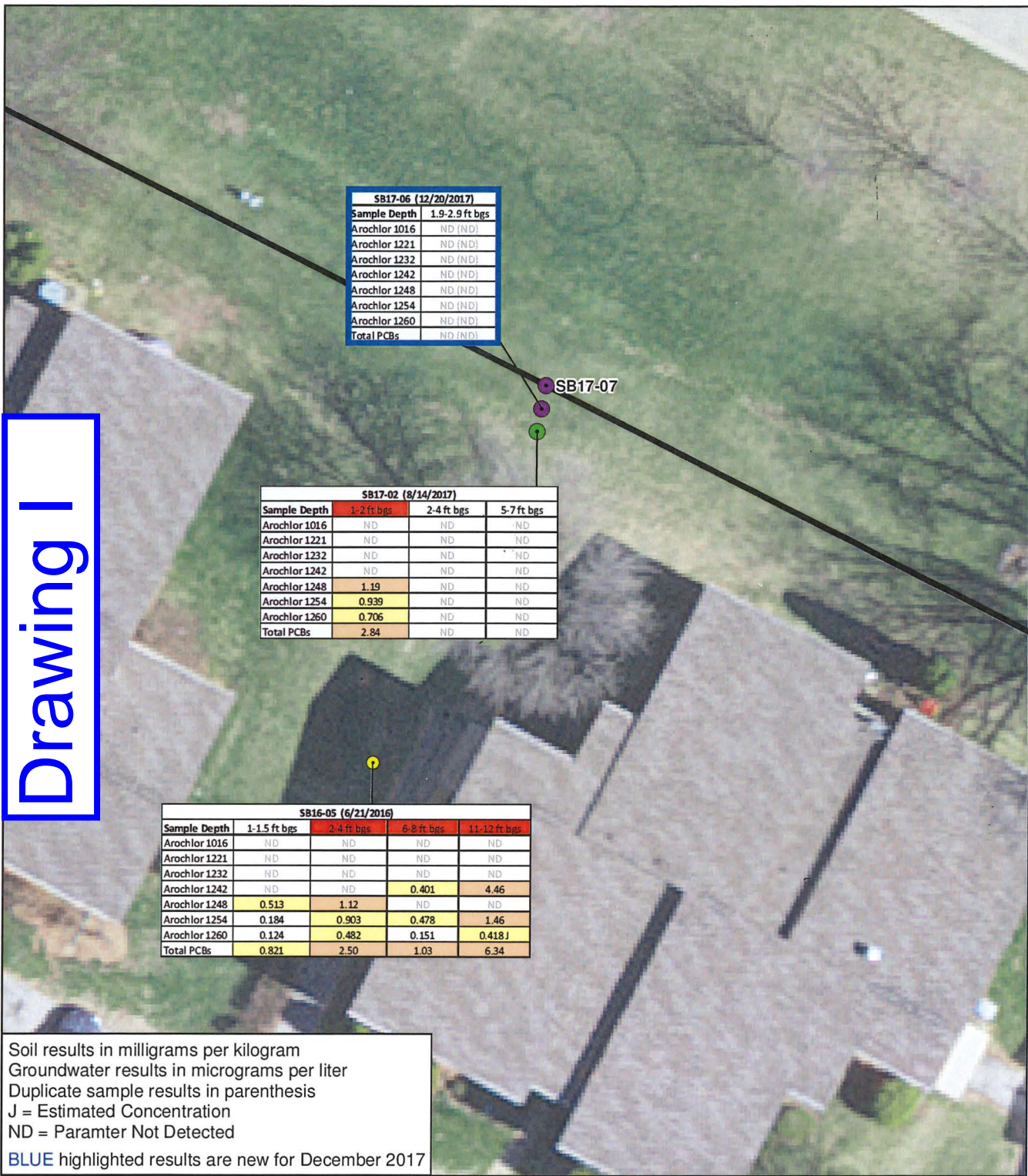
Supplemental Site Investigation Report
 Ashview Terrace Apartments Site
 Ashwaubenon, Brown County, Wisconsin

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

Date: 11/17/2017 Project No. 7311150004
 Drawn: MJV Figure: 7
 Checked: JMR



Drawing I



Soil results in milligrams per kilogram
 Groundwater results in micrograms per liter
 Duplicate sample results in parenthesis
 J = Estimated Concentration
 ND = Parameter Not Detected
 BLUE highlighted results are new for December 2017

Legend

- December 2017 Hand Auger Borings
- 2017 Soil Boring Location
- 2016 Soil Boring Location
- Approximate Site Boundary
- Exceedance of Non-Industrial RCL
- Exceedance of Industrial RCL
- Exceedance of Soil to Groundwater RCL
- Sampling Interval Containing Paper Sludge

1:240 Approximate Scale in Feet 1 inch equals 20 feet

ANALYTICAL RESULTS - PCBs
 Supplemental Site Investigation Report Addendum
 Ashview Terrace Apartments Site
 Ashwaubenon, Brown County, Wisconsin

Note: Imagery courtesy of Brown County Planning & Land Services (May 2014)

Date: 01/11/2018	Project No. 7311150004
Drawn: MJV	Figure: 4
Checked: JMR	