



Rose & Westra
A Division of GZA

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

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MEMORANDUM

To: Abby Hendershott, EGLE

From: Leslie Nelson, Rose & Westra, a Division of GZA GeoEnvironmental, Inc.

Date: September 3, 2019

File No.: 16.0062335.02 Task 002

Re: Wolverine World Wide, Inc. (Wolverine) – Former Tannery
Monthly Progress Report

This Monthly Progress Report (MPR) is being provided at the request of EGLE to support the June 18, 2018 Source Investigation Task Summary (SITS) in response EGLE's request for regular progress updates.

This MPR summarizes the progress for the period July 26, 2019 through August 23, 2019. This includes actions performed, problems encountered, analytical data received during the reporting period, and anticipated developments during the next reporting period.

ACTIONS PERFORMED

During this period, July 26, 2019 through August 23, 2019, GZA has done the following:

- 1) Conducted surveying activities of new monitoring wells.
- 2) Assisted with the agreement with NKSA for discharge from the pump and treat system. Continued work on the pump and treat system design.
- 3) Conducted drilling and monitoring well installation activities at TA-PMW-317. Installed 4 monitoring wells (TA-MW-317A, B, C, and D).
- 4) Completed boring logs for TA-MW-311A, B, and C, TA-MW-315S and D, and TA-MW-316S, M, and D (attached).
- 5) Conducted activities in response to EPA's April 29, 2019 letter.

ANALYTICAL DATA RECEIVED

No data was received during this reporting period.

ANTICIPATED ACTIONS AND SCHEDULE FOR NEXT REPORTING PERIOD

During the next reporting period, August 24, 2019 through September 23, 2019, R&W/GZA anticipates completing and/or continuing to conduct the following tasks.

- 1) Conduct drilling activities at TA-PMW-314 pending drill rig availability.
- 2) Complete boring logs for TA-MW-317.



- 3) Continue to respond to the EPA's April 29, 2019, correspondence regarding CERCLA TCRA actions at and adjacent to the former Wolverine Tannery site.

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GZA
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 Engineers and Scientists

Wolverine World Wide, Inc.

Former Tannery

Rockford, Michigan

Boring No.: TA-311/MW-311A

Page: 1 of 2

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Morehouse

Date Start/Finish: 11-7-18 / 11-7-18

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Direct Push GeoProbe

O.D. / I.D.: NA NA

Hammer Wt.: NA NA

Hammer Fall: NA NA

TOC Elev.: NA NA

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				PROTECTIVE CASING	
1	1	24/14	0-2	2-1 2-1	0.0 ppm	Black, ASPHALT. Changing at 0.2 feet to; Very dark gray to dark brown, poorly sorted, fine to medium-grained SAND, some Silt, trace Gravel, moist (FILL). Changing at 0.5 feet to: Yellowish-brown, fine to medium-grained SAND, little Silt, trace Gravel, moist. Changing at 1.2 feet to: NO RECOVERY.	0.2' ASPHALT SAND 1.2' NO RECOVERY	1	PROTECTIVE CASING	Filter Sand
2	2	24/8	2-4	2-3 2-4	0.0 ppm	Yellowish-brown, fine to medium-grained SAND, little Silt, trace Gravel, moist. Changing at 2.5 feet to: Yellowish-brown, medium to coarse-grained SAND, little Gravel, trace Silt, moist. Changing at 2.7 feet to: NO RECOVERY.	2' SAND 2.7' NO RECOVERY			Bentonite / Grout
3	3	24/7	4-6	1-3 6-4	0.0 ppm	Yellowish brown, medium to coarse-grained, SAND, little Gravel, trace Silt, moist. Changing at 4.6 feet to: NO RECOVERY.	4' SAND 4.6' NO RECOVERY			
4	4	24/12	6-8	8-19 10-11	0.0 ppm	Yellowish-brown, medium to coarse-grained SAND, little Gravel, trace Silt, moist. Changing at 6.7 feet to: Yellowish-brown, medium to coarse-grained SAND, little Gravel, trace Silt, wet. Changing at 7.0 feet to: NO RECOVERY.	6' SAND 7' NO RECOVERY	2		Top of Well Screen
5	5	24/8	8-10	7-4 7-6	0.0 ppm	Yellowish-brown, GRAVEL, little coarse-grained Sand, trace Silt, wet. Changing at 8.7 feet to: NO RECOVERY.	8' GRAVEL 8.7' NO RECOVERY			Silica Sand Filter Pack
6	6	24/7	10-12	2-5 6-7	0.0 ppm	Yellowish-brown, GRAVEL, little coarse-grained Sand, trace Silt, wet. Changing at 10.6 feet to: NO RECOVERY.	10' GRAVEL 10.6' NO RECOVERY			2-Inch Dia. 5-Foot PVC Screen (0.010" Slot)
7							12' NO RECOVERY			Bottom of Well Screen

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Groundwater was encountered at approximately 6.7 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-311/MW-311A

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
13	7	24/16	12-14	2-4 9-9	0.0 ppm	Yellowish-brown, GRAVEL, little coarse-grained Sand, trace Silt, wet. Changing at 12.6 feet to: Dark grayish-brown to dark brown, poorly sorted, SILT & CLAY, some Sand, plastic, cohesive, moist. Changing at 13.3 feet to NO RECOVERY.	GRAVEL		
							12.6' SILT & CLAY		
							13.3' NO RECOVERY		
14	8	24/17	14-16	7-10 12-11	0.0 ppm	Dark grayish-brown to dark brown, SILT & CLAY, some Sand, plastic, cohesive, moist. Changing at 15.4 feet to: NO RECOVERY.	14' SILT & CLAY		
15							15.4' NO RECOVERY		
16							16'		
16						Bottom of Borehole at 16.0 Feet		3	
17									
18									
19									
20									
21									
22									
23									
24									
25									

R E M A R K S
3. Monitoring well was installed in borehole upon completion. Well screen set from 6.8 to 11.3 feet below ground surface.

BORING WELL 6233502 WWW FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



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Wolverine World Wide, Inc.

Former Tannery

Rockford, Michigan

Boring No.: TA-MW-311B

Page: 1 of 1

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Bert Graham

Logged by: Sheryl Stephenson

Date Start/Finish: 5-13-19 / 5-13-19

Boring Location: See Survey

GS Elev.: TBD Datum: MLL State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

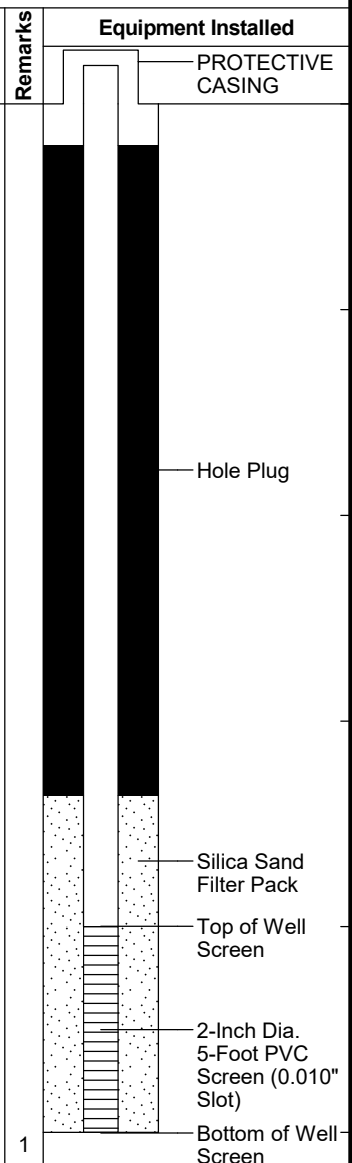
NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				PROTECTIVE CASING	
1						See SB-311C boring log for detailed soil descriptions.				
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25							Bottom of Borehole at 25.0 Feet			
26										
27										



REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 20.0 to 25.0 feet below ground surface.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



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Wolverine World Wide, Inc.

Former Tannery

Rockford, Michigan

Boring No.: TA-MW-311C

Page: 1 of 4

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: John Markosky

Date Start/Finish: 5-2-19 / 5-9-19

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 8.0" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: 140lbs NA

Hammer Fall: 30.0" NA

TOC Elev.: NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed		
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				PROTECTIVE CASING		
1						No soil samples collected from 0.0 to 14.0 feet below ground surface. See TA-311/TA-MW-311A for soil sample descriptions.					
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14	1	24/18	14-16	6-7 10-12	0.0 ppm		Very stiff, gray, CLAY & SILT, little fine Sand, dry.	CLAY & SILT	1		
15											
16	2	24/20	16-18	8-16 26-27	0.0 ppm	Dense, gray, fine SAND, some Silt, moist.	16' SAND				
17											
18	3	24/24	18-20	3-9 19-19	0.0 ppm	Medium dense, gray, fine SAND, some Silt, moist.					
19											
20	4	24/22	20-22	8-19 23-23	0.0 ppm	Dense, gray, fine to medium SAND, some Silt, moist.		2			
21											
22	5	24/24	22-24	8-12 12-14	0.0 ppm	Medium dense, gray, fine to medium SAND, some Silt, moist. Changing at 23.0 feet to:					
23											
24	6	24/24	24-26	3-7 30-39	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet. Changing at 25.5 feet to: Gray, fine SAND, some Silt, moist.					
25											
26	7	18/18	26-27.5	18-25-50/6"	0.0 ppm	Very dense, brown, fine to medium SAND, little Silt, wet. Changing at 25.5 feet to: Very dense, gray, fine SAND, some Silt, moist.	26.3' SILT				
27											
28	8	11/11	28-28.9	25-50/5"	0.0 ppm	Changing at 26.3 feet to: Very dense, gray, SILT, trace fine Sand, dry.	28' CLAY & SILT				
29											
30	9	24/24	30-32	10-35 35-36	0.0 ppm	Hard, gray, CLAY & SILT, little fine Sand, dry.	30' Clayey SILT	3			
31											
32	10	18/18	32-33.5	5-25-50/6"	0.0 ppm	Hard, gray, Clayey SILT, trace fine Sand, moist.	32' CLAY & SILT				

REMARKS

- Field screening of samples for organic vapors was performed with a MiniRae 3000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
- Installed temporary well from 20.0 to 25.0 feet below ground surface with a 5-foot well screen, and purged 20.0 gallons of water.
- Switched from CME 95 to CME 1050.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data				
34	11	23/23	34-35.9	12-38 36-50/5"	0.0 ppm	dry. Hard, gray, Silty CLAY, little fine Sand, dry.	34' CLAY & SILT Silty CLAY		
35									
36	12	12/12	36-37	23-50/6"	0.0 ppm	Hard, dark gray, Silty CLAY, some fine to coarse Sand, dry.			
37									
38	13	21/21	38-39.8	8-15 23-30/3"	0.0 ppm	Hard, light gray/gray to dark gray, Silty CLAY, some fine to coarse Sand, dry.			
39									
40	14	15/15	40-41.3	3-28-50/3"	0.0 ppm	Hard, light gray/gray to dark gray, Silty CLAY, some fine to coarse Sand, dry.	40.8' SAND		
41									
42	15	18/18	42-43.5	11-36-50/6"	0.0 ppm	Changing at 40.8 feet to: Gray, fine to medium SAND and SILT, moist. Hard, gray, Silty CLAY, some fine to coarse Sand, dry.	42' Silty CLAY		
43									
44	16	18/12	44-45.5	13-36-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.			
45									
46	17	24/24	46-48	9-29 36-44	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.			
47									
48	18	24/24	48-50	17-20 22-32	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.			
49									
50	19	24/24	50-52	8-12 32-45	0.0 ppm	Hard, gray, Silty CLAY, trace fine Sand, dry.			
51									
52	20	24/24	52-54	3-4 15-24	0.0 ppm	Very stiff, gray, Silty CLAY, trace fine Sand, dry.			
53									
54	21	16/16	54-55.3	22-33-50/4"	0.0 ppm	Hard, gray, Silty CLAY, trace fine Sand, dry.	55' SAND		
55									
56	22	24/18	56-58	10-25 42-44	0.0 ppm	Changing at 55.0 feet to: Brown and gray, fine to medium SAND, some Silt, moist. Hard, dark gray to gray, Silty CLAY, little fine to coarse Sand, dry.	56' Silty CLAY		
57									
58	23	24/24	58-60	6-20 35-39	0.0 ppm	Hard, dark gray to gray, Silty CLAY, little fine to coarse Sand, dry.			
59									
60	24	23/12	60-61.9	6-35 42-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.			
61									
62	25	18/18	62-63.5	15-37-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.			
63									
64	26	23/23	64-65.9	21-30 38-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.			
65									
66	27	23/23	66-67.9	11-25 38-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.		4	Bentonite/Grout
67									
68	28	18/18	68-69.5	18-32-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.			
69									
70	29	23/23	70-71.9	12-28 38-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry with 1.0" x 1.0" stone at 71.3 feet.			
71									

REMARKS

4. Started using center plug at 66.0 feet below ground surface.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data					
72	30	22/22	72-73.8	15-31 43-50/4"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.	Silty CLAY			
73										
74	31	18/18	74-75.5	20-33-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
75										
76	32	17/17	76-77.4	19-28-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
77										
78	33	16/16	78-79.3	19-47-50/4"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry with 1.0" brown Sand in top of spoon.				
79										
80	34	11/11	80-80.9	22-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
81										
82	35	18/18	82-83.5	20-35-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
83										
84	36	17/17	84-85.4	18-44-50/5"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
85										
86	37	21/21	86-87.8	18-33 44-50/3"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
87										
88	38	22/22	88-89.8	6-32 43-50/4"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
89										
90	39	12/12	90-91	24-50/6"	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.				
91										
92	40	24/24	92-94	13-21 38-30	0.0 ppm	Hard, gray, CLAY, little silt, little fine to coarse Sand, dry.	92' CLAY			
93										
94	41	18/18	94-95.5	17-30-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.	94' Silty CLAY			
95										
96	42	24/23	96-98	8-22 33-50/6"	0.0 ppm	Hard, gray, Silty CLAY, little fine to coarse Sand, dry.				
97										
98	44	24/24	98-100	3-8 16-25	0.0 ppm	Very stiff, gray, CLAY, little Silt, trace fine to medium Sand, dry.	98' CLAY			
99										
100	46	23/23	100-101.9	7-24 37-50/5"	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.	100' Silty CLAY			
101										
102	47	18/18	102-103.5	21-37-50/6"	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.				
103										
104	48	16/16	104-105.3	21-48-50/4"	0.0 ppm	Hard, gray, Silty CLAY, some fine to coarse Sand, dry.				
105										
106	49	12/12	106-107	25-50/6"	0.0 ppm	Hard, gray, CLAY & SILT, some fine to coarse Sand, dry.	106' CLAY & SILT			
107										
108	50	11/11	108-108.9	35-50/5"	0.0 ppm	Hard, gray, CLAY & SILT, some fine to coarse Sand, dry.				
109										

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data				
111	51	16/10	110-111.3	39-39-50/4"	0.0 ppm	Hard, gray, CLAY & SILT, some fine to coarse Sand, dry.	CLAY & SILT		
112	52	15/15	112-113.3	14-47-50/3"	0.0 ppm	Very dense, brown, fine to medium SAND, little Silt, wet. Changing at 113.0 feet to: Brown, fine to coarse SAND, some Gravel, little Silt, wet.	112' SAND		
113	53	22/22	114-115.8	4-6 44-50/4"	0.0 ppm	Very dense, brown, fine to coarse SAND, little Gravel, little Silt, wet.	5		
114									
115	54	12/10	116-117	50-50/6"	0.0 ppm	Very dense, brown, fine to coarse SAND, little Gravel, little Silt, wet.	6		
116									
117	55	24/20	118-120	8-24 31-36	0.0 ppm	Very dense, brown, fine to medium SAND, little Silt, wet. changing at 119.0 feet to: Brown to gray, fine to coarse SAND, some Gravel, some Silt, wet.	121.2' Silty CLAY		
118									
119	56	17/17	120-121.4	9-16-50/5"	0.0 ppm	Brown to gray, fine to coarse SAND, some Gravel, little Silt, wet. Changing at 121.2 feet to: Gray, Silty CLAY, little fine to coarse Sand, dry.	7		
120									
121	57	6/6	122-122.5	50/6"	0.0 ppm	Very dense, brown, fine to coarse SAND, some Gravel, little Silt, wet.	8		
122									
123	58	21/21	124-125.8	6-21 46-50/3"	0.0 ppm	Very dense, brown, fine to coarse SAND, some Gravel, little Silt, wet. Changing at 125.0 feet to: Brown to gray, fine to coarse SAND, little Gravel, some Silt, wet.	9		
124									
125	59	10/10	126-126.8	21-50/4"	0.0 ppm	Very dense, brown to gray, fine to coarse SAND, some Silt, wet.	10		
126									
127	60	10/10	128-128.8	25-50/4"	0.0 ppm	Very dense, brown to gray, fine to coarse SAND, some Silt, wet.	11		
128									
129	61	9/9	130-130.8	21-50/3"	0.0 ppm	Very dense, brown to gray, fine to coarse SAND, some Silt, little Gravel, wet.	12		
130									
131	62	12/12	132-133	32-50/6"	0.0 ppm	Very dense, brown to gray, fine to coarse SAND, some Silt, little Gravel, wet.	138.2' CLAY		
132									
133	63	9/9	134-134.8	27-50/3"	0.0 ppm	Very dense, gray to brown, fine to coarse SAND, some Gravel, some Silt, wet.	142'		
134									
135	64	21/21	136-137.8	6-12 40-50/3"	0.0 ppm	Very dense, gray to brown, fine to coarse SAND, some Gravel, little Silt, wet.	13		
136									
137	65	8/8	138-138.7	5-50/2"	0.0 ppm	Very dense, gray to brown, fine to coarse SAND, some Gravel, little Silt, wet. Changing at 138.2 feet to: Red, CLAY, little Silt, dry.	Bottom of Borehole at 142.0 Feet		
138									
139	66	1/1	140-140.1	50/1"	0.0 ppm	Very dense, gray to brown, fine to coarse SAND, some Gravel, little Silt, wet.			
140									
141	<p>5. Installed temporary well from 115.0 to 120.0 feet below ground surface with a 5-foot well screen, and purged 125.0 gallons of water.</p> <p>6. Groundwater was encountered at approximately 119.0 feet below ground surface.</p> <p>7. 3.0" Split Spoon used from 122.0 to 124.0 feet below ground surface.</p> <p>8. Installed temporary well from 125.0 to 130.0 feet below ground surface with a 5-foot well screen, and purged 55.0 gallons of water.</p> <p>9. Installed temporary well from 133.0 to 138.0 feet below ground surface with a 5-foot well screen, and purged 55.0 gallons of water.</p> <p>10. 3.0" Split Spoon used from 134.0 to 136.0 feet below ground surface.</p> <p>11. Water flowing out of augers (artesian conditions).</p> <p>12. 3.0" Split Spoon used from 138.0 to 140.0 feet below ground surface.</p> <p>13. Monitoring well was installed in borehole upon completion. Well screen set from approximately 133.0 to 138.0 feet below ground surface.</p>								
142									
143									
144									
145									
146									
147									
148									

REMARKS

5. Installed temporary well from 115.0 to 120.0 feet below ground surface with a 5-foot well screen, and purged 125.0 gallons of water.
6. Groundwater was encountered at approximately 119.0 feet below ground surface.
7. 3.0" Split Spoon used from 122.0 to 124.0 feet below ground surface.
8. Installed temporary well from 125.0 to 130.0 feet below ground surface with a 5-foot well screen, and purged 55.0 gallons of water.
9. Installed temporary well from 133.0 to 138.0 feet below ground surface with a 5-foot well screen, and purged 55.0 gallons of water.
10. 3.0" Split Spoon used from 134.0 to 136.0 feet below ground surface.
11. Water flowing out of augers (artesian conditions).
12. 3.0" Split Spoon used from 138.0 to 140.0 feet below ground surface.
13. Monitoring well was installed in borehole upon completion. Well screen set from approximately 133.0 to 138.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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Rockford, Michigan

Boring No.: TA-MW-315D

Page: 1 of 6

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: J. Markosky

Date Start/Finish: 6-6-19 / 6-7-19

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing Sampler

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 7 5/8" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

TOC Elev.: NA NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data					PROTECTIVE CASING
1	1	6/6	0-0.5	7-9-5	0.0 ppm	ASPHALT.	0.5' ASPHALT	1		
	2	18/6	0.5-2			TOPSOIL. Changing at 0.7 feet to: Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, dry.	0.7' TOPSOIL SAND			
2	3	24/6	2-4	10-12 15-16	0.0 ppm	Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, dry with 2.0" by 2.0" stone at 2.5 feet.				
4	4	24/12	4-6	11-17 16-16	0.0 ppm	Dense, orange and brown, fine to coarse SAND, some Gravel, little Silt, dry.				
6	5	24/12	6-8	3-10 16-22	0.0 ppm	Medium dense, brown, fine to coarse SAND, some Gravel, little Silt, wet.		2		
8	6	24/5	8-10	41-17 15-24	0.0 ppm	Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet.				
10	7	16/12	10-11.3	12-11 16-17	0.0 ppm	Medium dense, brown, fine to coarse SAND, little Silt, wet.		3		
12	8	24/18	12-14	24-18 26-29	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet.				
14	9	24/17	14-16	6-22 27-30	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet with 2.0" by 2.0" stone at 15.0 feet.				
16	10	16/12	16-17.3	9-47-50/4"	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet. Changing at 16.2 feet to: Gray, SAND & SILT, trace Gravel, moist.	16.2' SAND and SILT			
18	11	24/20	18-20	16-22 34-33	0.0 ppm	Very dense, gray, SAND and SILT, moist. Changing at 19.3 feet to: Brown, fine to medium SAND, little Silt, wet.	19.3' SAND			
20	12	24/18	20-22	WOH/6-10-20	0.0 ppm	Medium dense, brown, fine to medium SAND, little Silt, wet.		4		
22	13	24/24	22-24	11-20 24-31	0.0 ppm	Medium dense, brown, fine to medium SAND, little Silt, wet. Changing at 23.0 feet to: Brown, fine SAND and SILT, moist.	23' SAND and SILT			
24	14	24/18	24-26	13-21 25-30	0.0 ppm	Dense, brown, SAND and SILT, moist.				

- REMARKS**
- Field screening of samples for organic vapors was performed with a MiniRae 2000 photoionization detector equipped with a 10.6 eV lamp. Readings above background levels are shown in parts per million (ppm) of isobutylene. Background was measured at 0.0 ppm.
 - Groundwater was encountered at approximately 6.0 feet below ground surface.
 - Installed temporary well from 10.0 to 15.0 feet below ground surface with a 5-foot well screen, and purged 40.0 gallons of water.
 - Installed temporary well from 20.0 to 25.0 feet below ground surface with a 5-foot well screen, and purged 50.0 gallons of water.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-MW-315D

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data					
26	15	24/18	26-28	9-26 32-34	0.0 ppm	Very dense, gray, SAND and SILT, moist.	SAND and SILT	5	Bentonite/Grout	
27										
28	16	24/15	28-30	15-33 50-50/6"	0.0 ppm	Very dense, gray, SAND and SILT, moist.				
29										
30	17	24/24	30-32	6-25 49-37	0.0 ppm	Very dense, brown, fine to coarse SAND, little Silt, wet.	30' SAND			
31										
32	18	24/12	32-34	7-20 34-44	0.0 ppm	Very dense, gray, SAND and SILT, trace Clay, moist.	32' SAND and SILT			
33										
34	19	10/0	34-34.8	50-50/4"		NO RECOVERY. 6.0" recovery with 3.0" split spoon. Very dense, gray, SAND and SILT, trace Clay, moist.	34' NO RECOVERY			
35										
36	20	21/21	36-37.8	7-23 42-50/3"	0.0 ppm	Very dense, brown, fine to medium SAND, little Silt, wet. Changing at 36.8 feet to: Brown and gray, fine to coarse SAND, little Silt, little Gravel, wet with 1.5" Silt seam at 37.0 feet.	36' SAND			
37										
38	21	24/24	38-40	4-4 8-23	0.0 ppm	Medium dense, brown, fine to coarse SAND, little Silt, wet.		6		
39										
40	22	24/20	40-42	2-6 12-9	0.0 ppm	Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, wet.				
41										
42	23	17/12	42-43.4	10-38-50/5"	0.0 ppm	Very dense, brown, fine to medium SAND, some Silt, some Gravel, moist.				
43										
44	24	15/15	44-45.3	5-35-50/3"	0.0 ppm	Very dense, brown, fine to medium SAND, some Silt, some Gravel, moist.				
45										
46	25	11/11	46-46.9	28-50/5"	0.0 ppm	Very dense, brown, fine to medium SAND, some Silt, some Gravel, moist.				
47										
48	26	23/23	48-49.9	4-14 29-50/5"	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet.		7		
49										
50	27	22/22	50-51.8	2-17 31-50/4"	0.0 ppm	Dense, brown, fine to medium SAND, little Silt, wet.				
51										
52	28	24/24	52-54	2-12 27-17	0.0 ppm	Dense, brown, fine to coarse SAND, little Silt, little Gravel, wet.				
53										
54										

REMARKS

5. Installed temporary well from 29.0 to 34.0 feet below ground surface with a 5-foot well screen, and purged 50.0 gallons of water.
6. Installed temporary well from 39.0 to 44.0 feet below ground surface with a 5-foot well screen, and purged 95.0 gallons of water.
7. Installed temporary well from 49.0 to 54.0 feet below ground surface with a 5-foot well screen, and purged 50.0 gallons of water.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA_CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data					
55	29	22/20	54-55.8	2-11 33-50/4"	0.0 ppm	Dense, brown, fine to coarse SAND, little Silt, wet.	SAND	8		
56	30	23/23	56-57.9	12-17 22-50/5"	0.0 ppm	Dense, brown, fine to coarse SAND, little Silt, wet.				
57										
58	31	22/22	58-59.8	2-3 16-50/4"	0.0 ppm	Medium dense, brown and gray, fine to medium SAND, little Silt, wet.				
59										
60	32	23/12	60-61.9	2-5 23-50/5"	0.0 ppm	Medium dense, brown and gray, fine to medium SAND, little Silt, wet with 1.0" by 2.0" stone at 61.0 feet.				
61										
62	33	11/11	62-62.9	15-50/5"	0.0 ppm	Very dense, brown and gray, fine to medium SAND, little Silt, wet.				
63										
64	34	14/14	64-65.2	4-31-50/2"	0.0 ppm	Very dense, brown and gray, fine to medium SAND, little Silt, wet.				
65										
66	35	16/16	66-67.3	6-26-50/4"	0.0 ppm	Very dense, gray and brown, fine to medium SAND, little Silt, wet.				
67										
68	36	17/17	68-69.4	5-21-50/5"	0.0 ppm	Very dense, gray and brown, fine to medium SAND, little Silt, wet.		9		
69										
70	37	12/0	70-71	10-20		NO RECOVERY.	70' NO RECOVERY			
71										
72	38	23/17	72-73.9	8-15 46-50/5"	0.0 ppm	Very dense, gray and brown, fine to medium SAND, little Silt, wet.	72' SAND			
73										
74	39	18/14	74-75.5	12-40-50/6"	0.0 ppm	Very dense, gray and brown, fine SAND, little Silt, wet.				
75										
76	40	12/6	76-77	9-50/6"	0.0 ppm	Very dense, gray and brown, SAND and SILT, moist.	76' SAND and SILT			
77										
78	41	23/13	78-79.9	3-5 14-33/5"	0.0 ppm	Medium dense, brown and gray, fine to medium SAND, some Silt, wet.	78' SAND	10		
79										
80	42	22/22	80-81.8	1-10 46-50/4"	0.0 ppm	Very dense, brown, fine to coarse SAND, little Silt, wet.				
81										
82	43	24/20	82-84	2-7 36-30	0.0 ppm	Dense, brown, fine to coarse SAND, little Silt, wet.				
83										

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- 8. Installed temporary well from 59.0 to 64.0 feet below ground surface with a 5-foot well screen, and purged 55.0 gallons of water.
- 9. Installed temporary well from 69.0 to 74.0 feet below ground surface with a 5-foot well screen, and purged 50.0 gallons of water.
- 10. Installed temporary well from 79.0 to 84.0 feet below ground surface with a 5-foot well screen, and purged 60.0 gallons of water.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
84	44	18/18	84-85.5	2-19-50/6"	0.0 ppm	Very dense, brown, fine to coarse SAND, little Silt, wet.	SAND		
85									
86	46	22/10	86-87.8	2-6 37-50/4"	0.0 ppm	Dense, brown, fine to coarse SAND, little Silt, wet.			
87									
88	47	10/10	88-88.8	20-50/4"	0.0 ppm	Very dense, brown, fine to coarse SAND, some Gravel, little Silt, wet.			
89									
90	48	28/23	90-92.3	1-6 32-50/5"	0.0 ppm	Dense, brown, fine to coarse SAND, some Gravel, little Silt, wet.			
91									
92	49	15/13	92-93.3	5-26-50/3"	0.0 ppm	Very dense, gray and brown, fine to medium SAND, some Silt, little Gravel, wet.			
93							93' Clayey SILT		
94	50	16/16	94-95.3	27-40-50/4"	0.0 ppm	Very stiff, gray, Clayey SILT, litte fine Sand, dry.			
95									
96	51	10/10	96-96.8	28-50/4"	0.0 ppm	Hard, gray, SILT & CLAY, little fine to medium Sand, dry. Changing at 97.9 feet to: Gray, fine to medium SAND, some Silt, damp.			
97							96' SILT & CLAY		
98	52	24/24	98-100	7-24 30-48	0.0 ppm	Hard, gray, CLAY & SILT, trace fine Sand, dry.			
99							98' CLAY & SILT		
100	53	22/22	100-101.8	9-26 36-50/4"	0.0 ppm	Hard, dark gray, Silty CLAY, trace fine Sand, dry.			
101							100' Silty CLAY		
102	54	24/6	102-104	5-3 6-13	0.0 ppm	NO RECOVERY (slough).			
103							102' SAND		
104	55	14/12	104-105.2	35-48-50/2"	0.0 ppm	Very dense, gray, fine to medium SAND, some Silt, moist.			
105									
106	56	15/15	106-107.3	18-42-50/3"	0.0 ppm	Hard, brown, SILT & CLAY, some fine to coarse Sand, dry.			
107							106' SILT & CLAY		
108	57	11/11	108-108.9	26-50/5"	0.0 ppm	Hard, gray, Silty CLAY, some fine to medium SAND, dry.			
109							108' Silty CLAY		
110	58	24/17	110-112	16-42-50/5"	0.0 ppm	Hard, brown and gray, Silty CLAY, little fine to medium Sand, dry.			
111									
112	59	24/6	112-114	21-50/5"	0.0 ppm	Hard, brown and gray, Silty CLAY, little fine			

11. Installed temporary well from 89.0 to 94.0 feet below ground surface with a 5-foot well screen, and purged 70.0 gallons of water.

REMARKS

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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Former Tannery

Rockford, Michigan

Boring No.: TA-MW-315D

Page: 5 of 6

File No.: 16.0062335.02

Check: Katherine McDonald

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
113						to medium Sand, dry.	Silty CLAY		
114	60	11/11	114-114.9	31-50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to medium Sand, dry.			
115									
116	61	9/9	116-116.8	40-50/3"	0.0 ppm	Hard, brown, Silty CLAY, little fine to medium Sand, dry.			
117									
118	62	5/5	118-118.4	50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to medium Sand, dry.			
119									
120	63	5/5	120-120.4	50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to medium Sand, dry with 1.0" by 1.0" stone at 121.9 feet.			
121									
122	64	11/11	122-122.9	37-50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to medium Sand, dry.			
123									
124	65	11/11	124-124.9	33-50/5"	0.0 ppm	Hard, brown, Silty CLAY, some fine to coarse Sand, dry.			
125									
126	66	6/6	126-126.5	50/6"	0.0 ppm	Hard, brown, Silty CLAY, some fine to coarse Sand, dry.			
127									
128	67	11/11	128-128.9	18-50/5"	0.0 ppm	Hard, brown, Silty CLAY, some fine to coarse Sand, dry.			
129									
130	68	14/14	130-131.2	6-32-50/2"	0.0 ppm	Hard, brown, Silty CLAY, some fine to coarse Sand, dry.			
131									
132	69	9/9	132-132.8	30-50/3"	0.0 ppm	Hard, brown, Silty CLAY, some fine to coarse Sand, dry.			
133									
134	70	7/7	134-134.6	48-50/1"	0.0 ppm	Hard, brown, Silty CLAY, little fine to coarse Sand, dry.			
135									
136	71	11/11	136-136.9	20-50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to coarse Sand, dry.			
137									
138	72	11/11	138-138.9	25-50/5"	0.0 ppm	Hard, brown, Silty CLAY, little fine to coarse Sand, dry.			
139									
140	73	10/10	140-140.8	30-50/4"	0.0 ppm	Hard, brown, Silty CLAY, little fine to coarse Sand, dry.			
141									

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Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-MW-315D

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
142	74	10/10	142-142.8	30-50/4"	0.0 ppm	Hard, brown, Silty CLAY, little fine to coarse Sand, dry with lenses of gypsum around 142.5 feet.	Silty CLAY	12	
143									
144	75	9/9	144-144.8	36-50/3"	0.0 ppm	Hard, brown, CLAY, some Silt, trace fine to medium Sand, dry.	144' CLAY		
145									
146	76	4/4	146-146.3	50/4"	0.0 ppm	Hard, brown and red, CLAY, some Silt, little fine to medium Sand, dry.			
147									
148	77	5/5	148-148.4	50/5"	0.0 ppm	Hard, brown and red, CLAY, some Silt, little fine to medium Sand, dry.			
149									
150						Bottom of Borehole at 150.0 Feet	150'		
151									
152									
153									
154									
155									
156									
157									
158									
159									
160									
161									
162									
163									
164									
165									
166									
167									
168									
169									
170									

BORING WELL 6233502 WWW FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA_CORP.GDT 7/31/19

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12. Monitoring well was installed in borehole upon completion. Well screen set from approximately 86.0 to 93.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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Rockford, Michigan

Boring No.: TA-MW-315S

Page: 1 of 1

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: J. Markosky

Date Start/Finish: 6-6-19 / 6-7-19

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 7 5/8" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				PROTECTIVE CASING	
1						See TA-MW-315D boring log for detailed soil descriptions.				
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										Bottom of Borehole at 11.0 Feet
12										
13										
14										

REMARKS

1. Monitoring well was installed in borehole upon completion. Well screen set from approximately 6.0 to 11.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



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Rockford, Michigan

Boring No.: TA-MW-316D

Page: 1 of 4

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: D. Peacock

Date Start/Finish: 5-21-19 / 5-21-19

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

GROUNDWATER READINGS

Type: Hollow Stem Auger Split Spoon

O.D. / I.D.: 12.25" / 4.25" 2.0" / 1 3/8"

Hammer Wt.: NA 140lbs

Hammer Fall: NA 30.0"

TOC Elev.: NA NA

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data					PROTECTIVE CASING
1	1	24/18	0-2	2-3 3-3	NA	Brown, TOPSOIL. Changing at 1.0 foot to: Light brown, fine to medium SAND, some Silt, dry.	TOPSOIL 1' SAND	1	PROTECTIVE CASING	
2	2	24/18	2-4	4-3 4-4	NA	Light brown and tan, fine to medium SAND, some Silt, dry.				
3										
4	3	24/18	4-6	1-2 4-3	NA	Light brown and tan, fine to medium SAND, some Silt, dry. Changing at 4.6 feet to: Dark brown, CLAY & SILT, trace fine to medium Sand, moist. Changing at 5.6 feet to: Light brown, fine to medium SAND, some Silt, trace Gravel, wet.	4.3' CLAY & SILT			
5							5.6' SAND			
6	4	24/0	6-8	3-4 5-5		NO RECOVERY.	6' NO RECOVERY			
7										
8	5	24/10	8-10	1-7 8-8	NA	Dark brown, CLAY & SILT, trace fine medium Sand, wet.	8' CLAY & SILT			
9										
10	6	24/24	10-12	3-10 11-13	NA	Brown, SILT, little fine to coarse Sand, dry.	10' SILT			
11										
12	7	24/24	12-14	4-8 10-12	NA	Brown, SILT, little fine to coarse Sand, dry.				
13										
14	8	24/12	14-16	6-11 15-16	NA	Brown, SILT, little fine to coarse Sand, dry.				
15										
16	9	24/24	16-18	5-12 13-15	NA	Brown, SILT, little fine to coarse Sand, dry.				
17										
18	10	24/18	18-20	6-10 17-17	NA	Brown, SILT, little fine to coarse Sand, dry.				
19										
20	11	24/24	20-22	4-12 10-13	NA	Brown, SILT, little fine to coarse Sand, trace Rock fragments, dry.				
21										
22	12	24/20	22-24	1-8 11-14	NA	Brown, SILT, little fine to coarse Sand, trace Rock fragments, dry.				
23										
24	13	24/24	24-26	6-9 9-12	NA	Brown, SILT, little fine to coarse Sand, trace Rock fragments, dry.				

REMARKS

1. Groundwater was encountered at approximately 5.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-MW-316D

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (6")	Test Data					
26	14	24/20	26-28	7-10 12-14	NA	Brown, SILT, little fine to coarse Sand, trace Rock fragments, dry.	SILT			
27										
28	15	24/24	28-30	4-6 10-10	NA	Brown, SILT, little fine to coarse Sand, trace Rock fragments, dry.				
29										
30	16	24/24	30-32	5-7 9-11	NA	Brown, SILT and Clayey SILT, little fine to coarse Sand, dry.	30' Clayey SILT			
31										
32	17	24/24	32-34	5-10 11-14	NA	Brown, Clayey SILT, little fine to coarse Sand, trace Rock fragments, dry.				
33										
34	18	24/24	34-36	4-7 6-30	NA	Brown, CLAY & SILT, trace fine Sand, dry. Changing at 35.0 feet to: Brown and gray, fine to medium SAND, some silt, trace Gravel, wet.	34' CLAY & SILT			
35							35' SAND	2		
36	19	24/24	36-38	5-10 8-14	NA	Brown and gray, fine to medium SAND, little Silt, little Gravel, wet with lenses of coarse Sand from approximately 37.0 to 37.5 feet.				
37										
38	20	24/24	38-40	2-3 10-17	NA	Brown and gray, fine to medium SAND, little Silt, little Gravel, wet.				
39										
40	21	23/23	40-41.9	2-5 30-50/5"	NA	Gray and brown, fine to coarse SAND, little Silt, little Gravel, wet.				
41										
42	22	24/24	42-44	2-2 20-38	NA	Gray and brown, fine to coarse SAND, little Silt, little Gravel, wet. Lense of coarse SAND at 42.7 feet.				
43										
44	23	24/18	44-46	3-20-50/6"	NA	Gray and brown, fine to coarse SAND, little Silt, wet.			Bentonite Seal	
45								3		
46	24	24/24	46-48	8-16 25-35	NA	Gray and brown, fine to medium SAND, little Silt, wet. Changing at 47.8 feet to: Brown, CLAY & SILT, dry.				
47										
48	25	24/18	48-50	6-14 27-50	NA	Brown, CLAY & SILT, dry.	48' CLAY & SILT			
49										
50								4		
51										
52										
53	26	24/24	53-55	NR (not recorded)	NA	Gray and brown, fine to medium SAND, little Silt, wet.	53' SAND			
54										

REMARKS

- Installed temporary well from 35.0 to 45.0 feet below ground surface with a 5-foot well screen, and purged 40.0 gallons of water.
- Installed temporary well from 45.0 to 55.0 feet below ground surface with a 5-foot well screen, and purged 35.0 gallons of water.
- At 50.0 feet below ground surface boring was abandoned due to complications with water pipe. Blind drilled another boring to 50.0 feet to set casing but hit no clay. Continued to 55 feet below ground surface without clay. Cuttings at 53.0 to 55.0 feet below ground surface remained sand. Installed temporary well from 45.0 to 55.0 feet below ground surface with a well screen from 50.0 to 55.0 feet.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
55							SAND	5	
56	27	24/14	56-58	13-15 15-25	NA	Gray and brown, fine to coarse SAND, little Silt, wet. Changing at 57.8 feet to: Gray, fine SAND, some Silt, wet.			
57									
58	28	24/12	58-60	6-8 14-30	NA	Gray and brown, fine to medium SAND, little Silt, wet. Changing at 59.8 feet to: Gray, fine SAND, some Silt, wet.			
59									
60	29	23/23	60-61.9	4-9 35-50/5"	NA	Gray, fine to medium SAND, little Silt, wet.		6	
61									
62	30	12/8	62-63	11-50	NA	Gray, fine to medium SAND, little Silt, wet.			
63									
64	31	17/0	64-65.4	4-16-50/5"		NO RECOVERY.	64' NO RECOVERY		
65									
66	32	16/16	66-67.3	17-37-50/4"	NA	Gray, fine to medium SAND, little Silt, wet. Changing at 67.5 feet to: Gray, Clayey SILT, some Gravel, wet.	66' SAND		
67							66.8' Clayey SILT		
68	33	1/1	68-68.1	50/1"	NA	Gray, Clayey SILT, some Gravel, wet.			
69									
70	34	22/22	70-71.8	27-23 49-50/4"	NA	Gray, Clayey SILT, some Gravel, wet. Changing at 70.2 feet to: Brown, Silty CLAY, dry. Changing at 70.5 feet to: Brown, fine to coarse SAND, little Gravel, trace Silt, wet. Changing at 71.0 feet to: Brown, Silty CLAY, dry.	70.2' Silty CLAY		
71									
72	35	17/15	72-73.4	14-32-50/5"	NA	Stiff, Clayey SILT, dry.	72' Clayey SILT		
73									
74	36	17/17	74-75.4	14-32-50/5"	NA	Stiff, gray, Clayey SILT, dry. Changing at 74.3 feet to: Dense, gray, fine SAND, some Silt, dry.	74.3' SAND		
75									
76	37	17/17	76-77.4	14-32-50/5"	NA	Loose, gray, medium SAND, trace Silt, dry.			
77									
78	38	9/9	78-78.8	14-32-50/5"	NA	Stiff, CLAY & SILT, little Gravel, dry.	78' CLAY & SILT		
79							Clayey SILT		
80	39	17/17	80-81.4	14-32-50/5"	NA	Hard, Clayey SILT, trace coarse Sand, dry.			
81									
82	40	17/17	82-83.4	14-32-50/5"	NA	Very stiff, gray, CLAY, moist. Changing at 82.6 feet to: Hard, gray, CLAY & SILT, dry.	82' CLAY		
83							82.6' CLAY & SILT		

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- Installed temporary well from 55.0 to 65.0 feet below ground surface with a 5-foot well screen, and purged 35.0 gallons of water.
- Casing was set at 71.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				
84	41	11/11	84-84.9	43-50/5"	NA	Hard, gray, CLAY & SILT, dry.	CLAY & SILT		
85									
86	42	11/11	86-86.9	16-50/5"	NA	Hard, gray, CLAY & SILT, dry. Changing at 24.9 feet to: Medium loose, brown, medium SAND, dry.	86.9' SAND		
87									
88	43	17/10	88-89.4	12-38-50/4"	NA	Medium dense, gray, fine to medium SAND, moist.			
89									
90	44	17/12	90-91.4	38-50/5"	NA	Dense, gray, medium SAND, moist.			
91									
92	45	17/17	92-93.4	15-36-50/5"	NA	Medium dense, gray, fine to medium SAND, moist. Changing at 93.7 feet to: Hard, dark gray, SILT, little Clay, dry.	93.7'		
93									
94	46	18/1	94-95.5	22-22-33	NA	Some SILT and SAND with Rock obstruction at bottom of spoon.	SILT and SAND		
95									
96							96'		
97						Bottom of Borehole at 97.0 Feet		7	
98									
99									
100									
101									
102									
103									
104									
105									
106									
107									
108									
109									
110									
111									
112									

REMARKS

7. Monitoring well was installed in borehole upon completion. Well screen set from approximately 89.0 to 94.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.



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Engineers and Scientists

Wolverine World Wide, Inc.

Former Tannery

Rockford, Michigan

Boring No.: TA-MW-316M

Page: 1 of 2

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: D. Peacock

Date Start/Finish: 5-22-19 / 5-22-19

Boring Location: See Survey

GS Elev.: TBD Datum: MLL State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data					PROTECTIVE CASING
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
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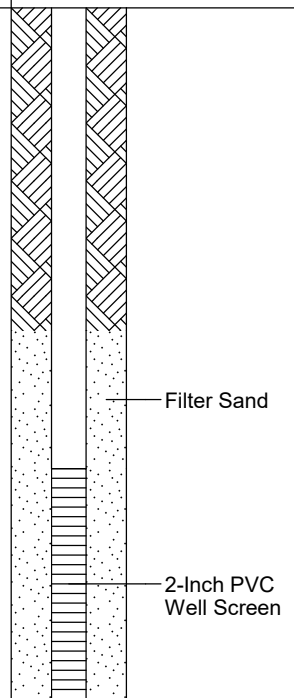
Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-MW-316M

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA_CORP.GDT 7/31/19



Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data					
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36	1	24/18	36-38	22-20 25-30		Medium dense, light brown, fine to medium SAND, some fine Gravel, moist.	SAND			
37										
38	2	16/16	38-39.3	15-31-50/4"		Medium dense, light brown, fine to medium SAND, little coarse Sand, trace fine Gravel, moist.				
39										
40							40'			
41						Bottom of Borehole at 40.0 Feet		1		
42								2		
43										
44										
45										
46										
47										
48										
49										
50										
51										
52										
53										
54										



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1. Groundwater was not encountered during drilling or upon completion.
2. Monitoring well was installed in borehole upon completion. Well screen set from 35.0 to 40.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING WELL: 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA_CORP.GDT 7/31/19



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Former Tannery

Rockford, Michigan

Boring No.: TA-MW-316S

Page: 1 of 1

File No.: 16.0062335.02

Check: Katherine McDonald

Contractor: Stearns Drilling Company

Foreman: Jerry H.

Logged by: D. Peacock

Date Start/Finish: 5-21-19 / 5-21-19

Boring Location: See Survey

GS Elev.: TBD Datum: M State Plane S Zone NAD 83

Auger/
Casing

Sampler

Type: Hollow Stem Auger

Split Spoon

O.D. / I.D.: 12.25" / 4.25"

2.0" / 1 3/8"

Hammer Wt.: NA

140lbs

Hammer Fall: NA

30.0"

TOC Elev.: NA

NA

GROUNDWATER READINGS

Date	Time	Depth	Casing	Stab
NM				

Surveyed By: NA Survey Date:

Depth	Sample Information					Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed	
	No.	Pen./ Rec. (in.)	Depth (Ft.)	Blows (/6")	Test Data				PROTECTIVE CASING	
1							SAND			
2										
3										
4	1	24/15	4-6	2-2 3-6		Loose, dark brown, fine to medium SAND, dry. Changing at 4.7 feet to: Loose, light brown, fine to medium SAND, wet. Changing at 5.0 feet to: Loose, dark brown, fine to medium SAND, little Silt, trace Gravel, wet.		1		Cement Filter Sand
5										
6	2	24/6	6-8	2-2 4-7		Soft to medium stiff, light brown, CLAY & SILT, moist.				2-Inch PVC Well Screen
7										
8						Bottom of Borehole at 8.0 Feet	8'	2		
9										

REMARKS

- Groundwater was encountered at approximately 4.7 feet below surface.
- Monitoring well was installed in borehole upon completion. Well screen set from 2.5 to 8.0 feet below ground surface.

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: TA-MW-316S

BORING WELL 6233502 WWW.FORMER TANNERY ROCKFORD 10_16_18.GPJ GZA CORP.GDT 7/31/19