

**From:** Ken Ebbott  
**To:** [Jim Mohr \(jmohr5@new.rr.com\)](mailto:jmohr5@new.rr.com); [DuFresne, Kristin I - DNR](#)  
**Cc:** [Ken Ebbott](#); [Dillon Plamann](#)  
**Subject:** Tidy Cleaners Status Report  
**Date:** Wednesday, August 30, 2017 3:16:56 PM  
**Attachments:** [Tables for Aug 2017 Status Report.pdf](#)  
[Figures Status Report Aug 2017.pdf](#)

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Kristin and Jim,

Groundwater samples were collected from the Tidy Cleaners & Laundry site (BRRTS #02-05-552220) on August 10, 2017.

### **Scope**

Four groundwater samples were collected from the site wells and analyzed for VOCs.

### **Results**

Groundwater results show low levels of PCE in wells MW-6 (9.2 ug/L), MW-7 (35.4 ug/L), and MW-8 (0.83 ug/L). Groundwater results also show low levels of TCE in wells MW-6 (3.6 ug/L), and MW-7 (0.96 ug/L). Well MW-6 had detects for cis 1,2-DCE (2.7 ug/L) and trans 1,2-DCE (1.8 ug/L), that are well below NR140 PAL standards. The deeper piezometer, well PZ-5, had no detections of any VOCs.

Contaminant concentrations appear to be stable in well MW-8, and decreasing in wells MW-6 and MW-7. Also, contamination does not appear to be traveling vertically downward to the deeper aquifer, as there have been no detects in PZ-5 for the past two rounds of sampling.

### **Recommendations**

We recommend completing the site investigation to define the extent of contamination in soil, groundwater, and vapor. This would include:

- Installation of three downgradient soil borings/ NR-141 monitoring wells (MW-9, MW-10, MW-11, Figure 5). The wells will consist of 2-inch diameter Schedule 40 PVC installed in an 8-inch diameter borehole, with flush-mounted traffic-weight lids. These wells will be developed and surveyed per NR141 code requirements. Drummed investigative waste will be properly discarded.
- In addition, two soil borings with one-time groundwater samples will be advanced at two soil boring locations (B-12, B-13, Figure 5). These 1-inch diameter temporary wells will be advanced using a geoprobe to a depth of 12 feet.
- Soil samples will be obtained for analysis of VOCs (eleven total) to define the extent of PCE impacted soil.
- Nine groundwater samples will be retained for laboratory analysis of VOCs, including one from

each of the proposed well / boring locations, and the existing four monitoring well locations.

- MW-9, B-12, and B-13 will be installed on the Tidy Cleaners property to assess utilities near the east property boundary and the extent of impacts downgradient from the building. Monitoring wells MW-10 and MW-11 will either be installed on the adjacent south property (Vanderleest Property) or in the right of ways of S. Broadway Street and 4<sup>th</sup> Street, depending on the ease of obtaining permission for access.
- Installation of two sub-slab vapor probe grab samples (SS-1, SS-2, Figure 5) to assess vapors under the Tidy Cleaners building. These one-time sample locations will consist of a small hole (less than 1 inch) advanced through the building floor, with retention of a subslab vapor sample for laboratory analysis using a Summa canister. Upon completion of sampling, the floor hole will be patched. The results will be compared to current subslab vapor standards. Elevated concentrations of PCE in soil below the building floor indicate subslab vapors are likely present, but the WDNR is requiring evaluation beneath the building as part of the site investigation.

In our opinion, we do not think additional upgradient wells are necessary west of the site, nor are any more deeper piezometers. Upgradient well MW-6 shows decreasing trends in groundwater contaminant concentrations and piezometer well PZ-5 results show no detects for groundwater contaminants.

In addition, no additional wells are needed north of monitoring well MW-8, due to the low levels observed in groundwater at that location.

Upon completion of these tasks, the Site Investigation Report will be prepared and submitted to the WDNR for review. It is assumed this work will adequately define the extent of impacts so that the investigation can be considered complete.

If this scope appears acceptable, we will work up a cost estimate for completion of the work.

Thanks,

Ken

**KENDRICK EBBOTT | P.G. Branch Manager**  
**Fehr Graham - Engineering & Environmental**

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**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
Tidy Cleaners, 818 S. Broadway, Green Bay, WI

Well Identification	PZ-5	MW-6	MW-7	MW-8
Top of Casing Elevation (ft. MSL)	585.33	585.67	585.79	586.48
Ground Surface Elevation (ft. MSL)	585.72	585.93	586.18	586.77
Stickup (feet)	-0.39	-0.26	-0.39	-0.29
Screened Interval (ft. MSL)	555.40 - 560.40	571.45 - 581.45	571.87 - 581.87	572.46 - 582.46
Total Depth (feet below grade)	-30.3	-14.5	-14.3	-14.3

Sample Date	PZ-5			MW-6			MW-7		
	Depth to Water (ft below TOC)	Depth to Water (ft below grade)	Groundwater Elev. (ft. MSL)	Depth to Water (ft below TOC)	Depth to Water (ft below grade)	Groundwater Elev. (ft. MSL)	Depth to Water (ft below TOC)	Depth to Water (ft below grade)	Groundwater Elev. (ft. MSL)
8/2/2011	29.35	29.74	555.98	3.29	3.55	582.38	3.16	3.55	582.63
10/17/2011	26.73	27.12	558.60	3.56	3.82	582.11	4.90	5.29	580.89
8/10/2017	14.20	14.59	571.13	3.46	3.72	582.21	5.00	5.39	580.79

Sample Date	MW-8		
	Depth to Water (ft below TOC)	Depth to Water (ft below grade)	Groundwater Elev. (ft. MSL)
8/2/2011	4.57	4.86	581.91
10/17/2011	4.76	5.05	581.72
8/10/2017	5.00	5.29	581.48

Hydrant NW Corner 4th and Broadway, Tag Bolt on Flange

Notes: ft. MSL = elevation in relation to mean sea level

**TABLE 2**  
**SOIL ANALYTICAL RESULTS - CVOCS**

TIDY CLEANERS  
818 SOUTH BROADWAY  
GREEN BAY, WI

Sample ID		Groundwater Pathway RCL (ug/kg)	Non-Industrial Direct-Contact (0-4') RCL (ug/kg)	B-1		B-2		B-3		B-4			PZ-5			MW-7		MW-8		Trip Blank		
Date				7/1/08	7/13/11			7/13/11		7/13/11			7/13/11			7/13/11		7/13/11		7/13/11		
Depth				2'	3-4'	7-8'	11-12'	3-4'	11-12'	3-4'	6.5-7'	11-12'	2-4'	10-12'	28-30'	2-4'	14-15'	4-5'	14-15'	--		
Description																						
DEPTH to Seasonal Low Water Table (ft BGS)				5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	5.5'	--	
Saturated (S) or Unsaturated (U)				U	U	S	S	U	S	U	S	S	U	S	S	U	S	U	S	U	S	--
PID Reading				NA	2.6	NA	11.0	0.0	0.0	0.0	NA	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	--
Soil Remaining																						
Notes																						
Tetrachloroethene (PCE)	(ug/kg)			4.50	30,700	3,020	1,120	416	8,730	406	7,910	646	74.8	456	41.6J	776	<25.0	<25.0	<25.0	39.7J	<25.0	<25.0
Trichloroethene (TCE)	(ug/kg)	3.60	1,260	<25.0	<25.0	64.3J	109J	<25.0	162J	33.6J	<25.0	<25.0	<25.0	104	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0		
cis-1,2-Dichloroethene	(ug/kg)	41.2	156,000	<25.0	<25.0	<25.0	<50.0	<25.0	<62.5	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0		
trans-1,2-Dichloroethene	(ug/kg)	62.6	1,560,000	<25.0	<25.0	<25.0	<50.0	<25.0	<62.5	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0		
Vinyl Chloride	(ug/kg)	0.1	67	<25.0	<25.0	<25.0	<50.0	<25.0	<62.5	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0		

Exceedance Highlights:

**BOLD Red** font indicates individual or cumulative DC RCL exceedance per DNR RCL calculator 1/16/16, and BTV exceedance for metals.

**\*B1\***: Cumulative exceedance (HI > 1), eventhough no individual DC RCL was exceeded.

**Italic Red** font indicates GW RCL Exceedance per DNR RCL calculator 1/16/16. Groundwater quality (> NR 140 ES) may be affected when GW RCLs are exceeded.

**Notes:**

- NS = No standard established
- NA = Not analyzed for parameter
- NR = Not Reported
- RCL = Residual Contaminant Level

**TABLE 3**  
**GROUNDWATER ANALYTICAL RESULTS - DETECTED VOC PARAMETERS**  
Tidy Cleaners, 818 S. Broadway, Green Bay, WI

Sample ID	Sample Date	Water Elevation (ft msl)	Methylene Chloride (ug/l)	Chloro methane (ug/l)	PCE (ug/l)	TCE (ug/l)	cis 1,2 DCE (ug/l)	trans 1,2 DCE (ug/l)	VC (ug/l)
B-1	07/01/08				<b>2,550</b>				
B-2	7/14/2011		<8.6	<4.8	<b>2,940</b>	<b>435</b>	<b>31.4</b>	<b>61.7</b>	<3.6
B-3	7/14/2011		<2.2	<1.2	<b>1,110</b>	<b>140</b>	<b>23.6</b>	<b>40.5</b>	<0.90
B-4	7/13/2011		<b>1.2J</b>	<0.48	<b>153</b>	<b>13.4</b>	<1.7	<1.8	<0.36
PZ-5	8/2/2011	555.98	<0.43	0.35J	<b>1.2</b>	<0.48	<0.83	<0.89	<0.18
PZ-5	10/17/2011	558.60	<0.43	<0.24	<0.45	<0.48	<0.83	<0.89	<0.18
PZ-5	8/10/2017	571.13	<0.23	<0.50	<0.50	<0.33	<0.26	<0.26	<0.18
MW-6	8/2/2011	582.38	<0.43	0.27J	<b>89.2</b>	<b>32.1</b>	<b>12.3</b>	12.5	<0.18
MW-6	10/17/2011	582.11	<0.43	<0.24	<b>83.4</b>	<b>16.8</b>	<b>9.0</b>	7.1	<0.18
MW-6	8/10/2017	582.21	<0.23	<0.50	<b>9.2</b>	<b>3.6</b>	2.7	1.8	<0.18
MW-7	8/2/2011	582.63	<0.43	<0.24	<b>60.7</b>	<b>2.4</b>	<0.83	<0.89	<0.18
MW-7 Dup	8/2/2011		<0.43	<0.24	<b>58.4</b>	<b>2.4</b>	<0.83	<0.89	<0.18
MW-7	10/17/2011	580.89	<0.43	<0.24	<b>39.0</b>	<b>1.0</b>	<0.83	<0.89	<0.18
MW-7	8/10/2017	580.79	<0.23	<0.50	<b>35.4</b>	<b>0.96 J</b>	<0.26	<0.26	<0.18
MW-8	8/2/2011	581.91	<0.43	<0.24	<0.45	<0.48	<0.83	<0.89	<0.18
MW-8	10/17/2011	581.72	<0.43	<0.24	<b>0.67 J</b>	<0.48	<0.83	<0.89	<0.18
MW-8 Dup	10/17/2011		<0.43	<0.24	<b>0.89J</b>	<0.48	<0.83	<0.89	<0.18
MW-8	8/10/2017	581.48	<0.23	<0.50	<b>0.83 J</b>	<0.33	<0.26	<0.26	<0.18
Trip Blank	7/13/2011		<b>0.86J</b>	<0.24	<0.45	<0.48	<0.83	<0.89	<0.18
Trip Blank	10/17/2011		<b>2.1</b>	<0.24	<0.45	<0.48	<0.83	<0.89	<0.18
Trip Blank	8/10/2017		<0.23	<0.50	<0.50	<0.33	<0.26	<0.26	<0.18
NR 140.10 Preventive Action Limit			<b>0.5</b>	3.0	<b>0.5</b>	<b>0.5</b>	<b>7</b>	<b>20</b>	0.02
NR 140.10 Enforcement Standard			5	30	<b>5</b>	<b>5</b>	70	100	0.2

Notes: PCE = Tetrachloroethene  
TCE= Trichloroethene  
DCE = Dichloroethene  
VC = Vinyl Chloride  
NA= Not analyzed for parameter  
**BOLD** value exceeds NR 140 Preventive Action Limit (PAL)  
**BOLD** and Boxed value indicates exceedance of NR 140.10 Enforcement Standard (ES)  
J = Estimated concentration above

**TABLE 4 GROUNDWATER ANALYTICAL RESULTS - NATURAL ATTENUATION PARAMETERS**


Tidy Cleaners, 818 S. Broadway, Green Bay, WI

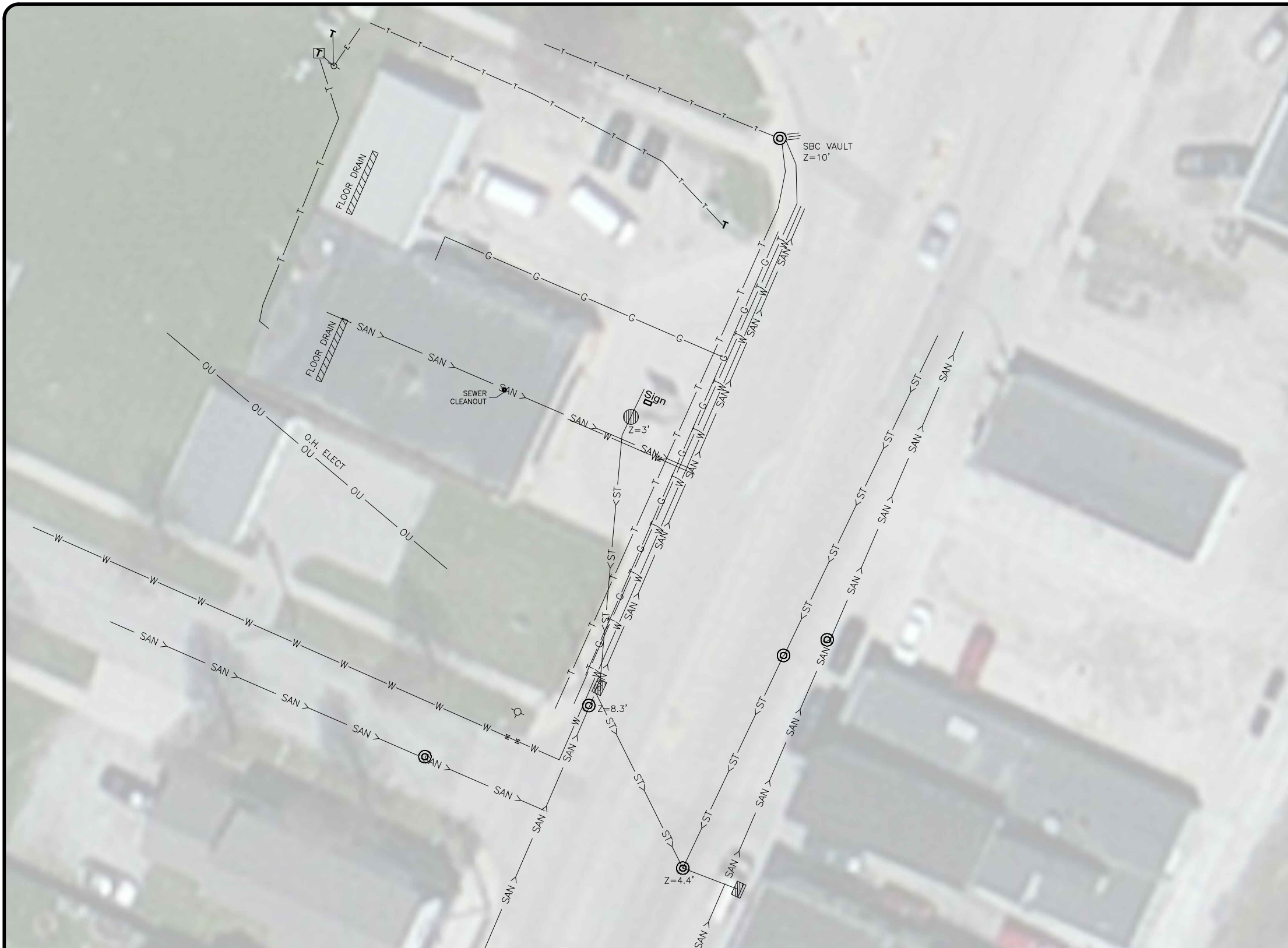
		COMPOUNDS											
		FIELD PARAMETERS					LABORATORY PARAMETERS						
Sample ID	Sample Date	Dissolved Oxygen (field) (mg/l)	ORP (eV)	Spec. Cond. (ms)	pH	Temp ( C ) (°C)	Dissolved Iron (ug/l)	Dissolved Manganese (ug/l)	Sulfate (mg/l)	Nitrate plus Nitrite (mg/l)	Methane (ug/l)	Ethane (ug/l)	Ethene (ug/l)
PZ-5	8/2/2011	42.5	90.9	1.194	6.62	13.25	NA	NA	NA	NA	NA	NA	NA
PZ-5	10/17/2011	15.5	151.9	1.276	7.59	11.97	16.8	27.4	<b>566</b>	1.3	<0.64	<0.36	<0.30
PZ-5	8/10/2017	3.32	162.9	0.640	6.94	13.30	NA	NA	NA	NA	NA	NA	NA
MW-6	8/2/2011	35.4	93.7	0.603	6.74	15.11	NA	NA	NA	NA	NA	NA	NA
MW-6	10/17/2011	5.6	-260.7	0.767	7.33	14.82	23.5	18.9	34.0	0.27	272	<0.36	<0.30
MW-6	8/10/2017	0.55	152.1	0.575	7.04	15.70	NA	NA	NA	NA	NA	NA	NA
MW-7	8/2/2011	90.5	111.8	2.015	6.56	13.87	NA	NA	NA	NA	NA	NA	NA
MW-7	10/17/2011	10.8	6.4	2.116	7.17	16.21	8.2 J	13.6	53.0	<b>3.9</b>	<0.64	<0.36	<0.30
MW-7	8/10/2017	2.31	153.5	0.740	7.26	20.00	NA	NA	NA	NA	NA	NA	NA
MW-8	8/2/2011	68.2	112.0	0.945	6.52	13.84	NA	NA	NA	NA	NA	NA	NA
MW-8	10/17/2011	7.0	35.1	1.229	7.20	15.46	48.4	6.4	45.7	<b>4.8</b>	<0.64	<0.36	<0.30
MW-8	8/10/2017	1.14	160.3	1.090	7.20	19.20	NA	NA	NA	NA	NA	NA	NA
NR 140 Preventive Action Limit		NS	NS	NS	NS	NS	150	25	<b>125</b>	<b>2</b>	NS	NS	NS
NR 140 Enforcement Standard		NS	NS	NS	NS	NS	300	50	<b>250</b>	10	NS	NS	NS

**Notes:** NS = No standard established

**Bold** value exceeds NR 140.10 or 140.12 PAL

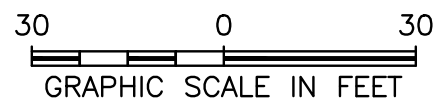
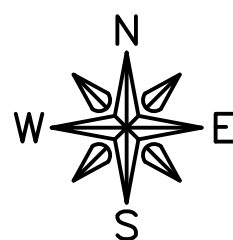
**Bold** and **Boxed** value indicates exceedance of NR 140 Enforcement Standard

 Dissolved oxygen field data is suspect due to meter malfunction



**LEGEND**

- W— WATER MAIN
- < SAN — SANITARY SEWER
- < ST — STORM SEWER
- G— GAS LINE
- T— TELEPHONE LINE
- ⊙ MANHOLE
- ⊗ WATER VALVE
- ▨ ○ CATCH BASIN



**FEHR GRAHAM** ILLINOIS IOWA WISCONSIN  
ENGINEERING & ENVIRONMENTAL

TIDY CLEANERS  
818 S. BROADWAY  
GREEN BAY, WI 54304

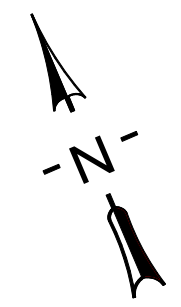
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TITLE:

**SITE UTILITIES**

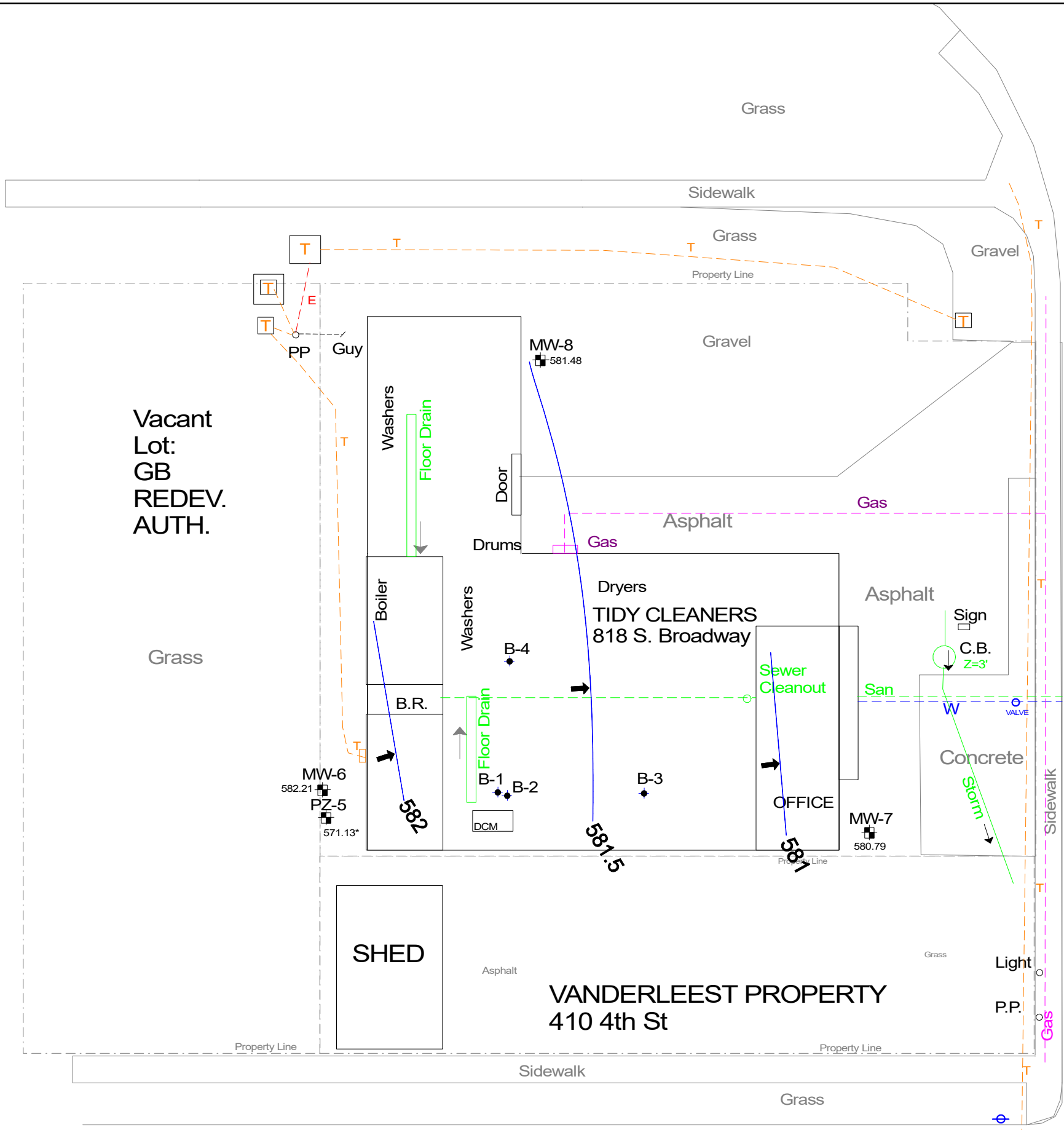
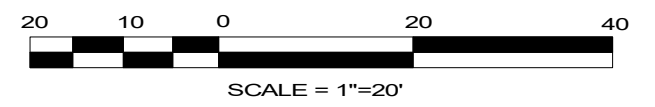
BRRTS: 00-00-000000  
JOB NO.:14-1144  
PLOT DATE: 8/29/17

FIGURE:  
**A.1.a.II**



### LEGEND

- B-4 Geoprobe Boring w/ Water Sample
- MW-8 Monitoring Well
- GROUNDWATER FLOW DIRECTION
- 582.21 GROUNDWATER ELEVATION
- 571.13\* NOT USED IN CONTOUR

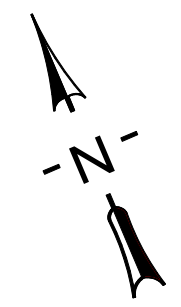


S. BROADWAY

4TH STREET

TITLE: Groundwater Elevation & Contour Aug. 10, 2017			
SITE: Tidy Cleaners Green Bay, WI 54304			
SCALE: 1"=20'	DESCRIPTION: TID-2010-01 14-1144	DATE: 9/19/12	FILE CODE: base map.skf
		DRAWN BY: KAE	FIGURE 3





### LEGEND

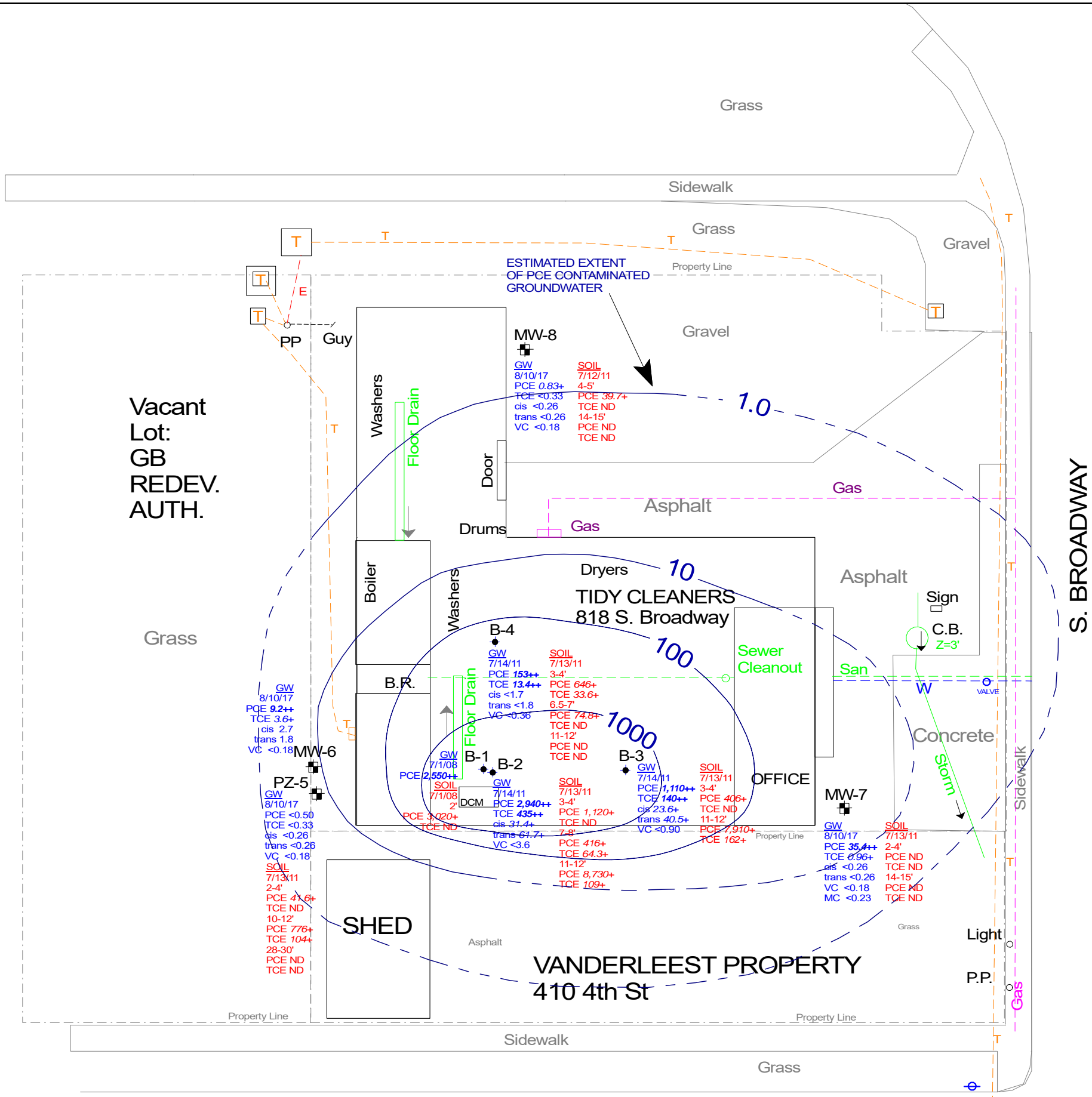
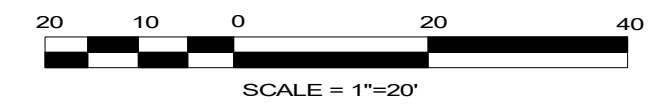
- B-4 Geoprobe Boring w/ Water Sample
- MW-8 Monitoring Well

**GROUNDWATER**

8/10/17	SAMPLE DATE
PCE	TETRACHLOROETHENE (ug/L)
TCE	TRICHLOROETHENE (ug/L)
cis	cis-1,2-DICHLOROETHENE (ug/L)
trans	trans-1,2-DICHLOROETHENE (ug/L)
VC	VINYL CHLORIDE (ug/L)
<i>ITALICS+</i>	EXCEEDS NR140 PREVENTIVE ACTION LIMIT
<b>BOLD++</b>	EXCEEDS NR140 ENFORCEMENT STANDARD

**SOIL**

7/13/11	SAMPLE DATE
3-4'	SAMPLE DEPTH
PCE	TETRACHLOROETHENE (ug/kg)
TCE	TRICHLOROETHENE (ug/kg)
ND	NO DETECT
<i>ITALICS+</i>	EXCEEDS GROUNDWATER PATHWAY RCL



Vacant Lot: GB REDEV. AUTH.

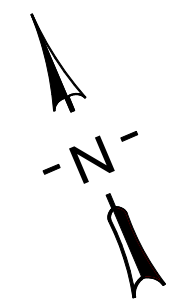
4TH STREET

VANDERLEEST PROPERTY  
410 4th St

TIDY CLEANERS  
818 S. Broadway

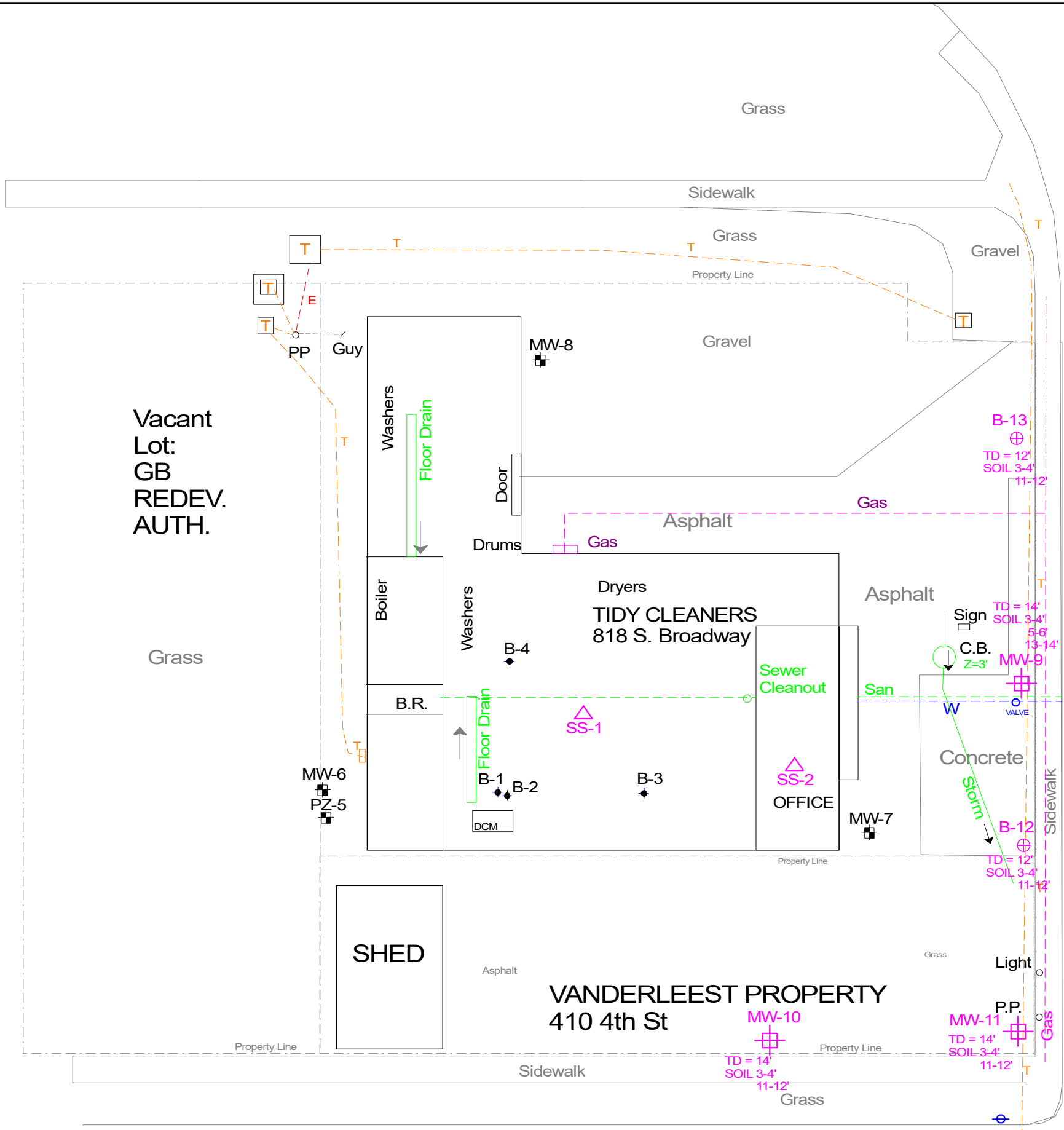
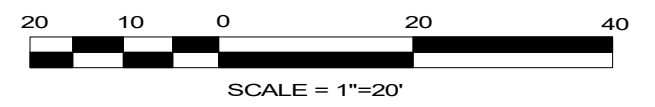
S. BROADWAY

TITLE: <b>Soil and Groundwater Chemistry</b>			
SITE: <b>Tidy Cleaners Green Bay, WI 54304</b>			
SCALE: 1"=20'	DESCRIPTION: TID-2010-01 14-1144	DATE: 9/19/12	FILE CODE: base map.skf
		DRAWN BY: KAE	<b>FIGURE 4</b>



### LEGEND

- B-4 Geoprobe Boring w/ Water Sample
- MW-8 Monitoring Well
- ⊕ PROPOSED MONITORING WELL
- △ PROPOSED SUB-SLAB VAPOR SAMPLE
- ⊕ PROPOSED SOIL BORING



S. BROADWAY

4TH STREET

TITLE: PROPOSED SOIL BORINGS, MONITORING WELLS, & VAPOR POINTS			
SITE: Tidy Cleaners Green Bay, WI 54304			
SCALE: 1"=20'	DESCRIPTION: TID-2010-01 14-1144	DATE: 9/19/12	FILE CODE: base map.skf
		DRAWN BY: KAE	FIGURE 5