Volkert, David G - DNR

From: Rich R. Gnat <richardg@kprginc.com>
Sent: Wednesday, October 05, 2016 4:00 PM
To: Volkert, David G - DNR
Subject: Former Bask Dry Cleaners
Attachments: 10009.analytical.groundwater September2016.pdf; 10009_GW MAP Sep 2016.pdf

Dave. Attached are a summary table with the most recent round of groundwater data from well sampling along with a groundwater contour map. Would you be available tomorrow some time to discuss the results? Let me know. Thanks.

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N

LEGEND

- MW-12 ⊕ MONITORING WELL, PIEZOMETER LOCATION
- GROUNDWATER CONTOUR
- GROUNDWATER DETAIL CONTOUR
- GROUNDWATER FLOW DIRECTION

MW-11 914.43
MW-12 915.10
915.24 MW-7
914.04 MW-5
PZ-2
914.73 MW-1
913.75 MW-4
PZ-1
914.85 MW-2
MW-3 914.13
912.19 MW-6
911.31 MW-13
PZ-3
MW-10 902.70
MW-8 909.30
MW-14 860.27
MW-15 860.13
MW-16 860.17
MW-9 911.74

KOHL'S DEPARTMENT STORE BUILDING
STORAGE ROOM
FORMER BASK DRY CLEANERS
LAUNDROMAT
PAYLESS SHOE SOURCE
COMMERCIAL
COMMERCIAL
ASPHALT
2129 SUNNYSIDE DR. SAGER RESIDENCE
2008 CAPELLA CT. JOHNSON RESIDENCE
2004 CAPELLA CT. HO RESIDENCE
2000 CAPELLA CT. ZEITLER RESIDENCE
2011 CAPELLA CT. BLANCHARD RESIDENCE
2003 CAPELLA CT. ANDREAS RESIDENCE
2007 CAPELLA CT. FALVEY RESIDENCE
2151 RAMBLING ROSE RD. STOCKINGER RESIDENCE
2157 RAMBLING ROSE RD. LEX RESIDENCE
2150 RAMBLING R ZATORSKI RESI
2156 RAMBLING ROS SCHNEIDER RESIDE
SUNNYSIDE DRIVE
CAPELLA COURT
RAMBLING ROSE
SPRINGDALE ROAD
GRASS
CONCRETE WALK
GRASS MEDIAN
Springdale Rd

915 910 900 890 880 870 860

0 70'
APPROXIMATE SCALE

ENVIRONMENTAL CONSULTATION & REMEDIATION

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GROUNDWATER CONTOURS–SEPTEMBER 2016

WESTBROOK SHOPPING CENTER
WAUKESHA, WISCONSIN

Scale: 1" = 70' | Date: October 5, 2016

KPRG Project No. 10009 | FIGURE 1

Table 2. Summary of Groundwater Analytical Results - former Bask Dry Cleaners

Sample	WDNR NR 140 Standards		MW-1													MW-3												
Parameter Date	PAL	ES	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/18/12	01/18/13	10/22/14	06/30/15	06/01/16	09/20/16	06/19/08	08/21/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/18/12	01/18/13	10/22/14	06/30/15	06/02/16	09/22/16
cis-1,2-Dichloroethene	7.0	70	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41
trans-1,2-Dichloroethene	20	100	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35
Tetrachloroethene	0.5	5.0	<0.45	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.17	<0.17	<0.17	<0.17	<0.37	<0.37	<0.45	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.77 J**	**1.6**	<0.17	<0.17	<0.37	**0.53**
Trichloroethene	0.5	5.0	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.16	<0.16	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.16	<0.16
Vinyl Chloride	0.02	0.2	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	U	4.99	3.76	4.55	5.01	5.27	6.04	5.18	5.13	4.38	6.15	6.97	5.55	U	0.10	0.75	0.02	0.03	0.30	0.13	0.02	0.07	0.12	0.50	1.37	0.13
Oxidation-Reduction Potential	NE	NE	U	37.2	285	273	287.2	49.9	267.9	212.8	87.7	181.9	201.3	77.8	150.5	U	-130	97.7	-162.5	54.2	-34.1	33.6	142.3	73.4	43.7	54.7	256.4	147.8

Sample	WDNR NR 140 Standards		MW-4													MW-5												
Parameter Date	PAL	ES	06/19/08	08/21/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/21/12	01/18/13	10/23/14	06/30/15	06/01/16	09/23/16	06/19/08	08/21/09	12/07/09	03/18/10	06/04/10	12/17/10	06/22/11	06/21/12	01/18/13	10/22/14	07/01/15	06/02/16	09/23/16
cis-1,2-Dichloroethene	7.0	70	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	NS	<0.12	NS	<0.41	<0.41	**54.6**	<4.0	3.6 J	**170**	**17**	**1,500**	**1,300**	**470**	**370**	**100**	**39**	**7.2**	**7.2**
trans-1,2-Dichloroethene	20	100	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NS	NS	<0.25	NS	<0.35	<0.35	<17.8	<4.0	<2.0	<0.20	<1.0	15	18 J	5.0	3.2	2.1	2.8	3.9	1.6
Tetrachloroethene	0.5	5.0	**217**	<0.50	**3.2**	**3.2**	**0.69 J**	<0.50	**1.8 J**	NS	NS	**1.4**	NS	<0.37	**0.88**	**1,840**	**180**	**180**	**660**	**96**	**200**	**46**	**2.3**	**3.6**	**1.3**	**0.64**	**8.4**	**5.3**
Trichloroethene	0.5	5.0	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NS	NS	<0.19	NS	<0.16	<0.16	**16.7**	<1.6	**2.9**	**49**	**6.6**	**38**	**60**	**1.1**	**1.7**	0.26	**4.3**	**1.4**	**6.2**
Vinyl Chloride	0.02	0.2	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NS	NS	<0.10	NS	<0.20	<0.20	U	<1.6	<0.80	<0.80	<0.40	**12**	**9.0 J**	**7.3**	**2.5**	**0.89**	**8.9**	**1.1**	**1.2**
Dissolved Oxygen (mg/l)	NE	NE	U	2.75	1.31	5.20	1.10	1.67	NM	NS	NS	1.66	NS	3.64	5.21	U	3.18	0.66	NM	5.03	1.77	0.15	0.43	0.16	0.16	0.73	0.86	0.09
Oxidation-Reduction Potential	NE	NE	U	-82	209	-1.7	143.5	-4.6	NM	NS	NS	78.4	NS	240.0	49.6	U	30	-158	NM	-27.8	-13.7	-116.1	-71.4	-50.7	-56.9	-73.6	-96.7	-88.2

Sample	WDNR NR 140 Standards		MW-6													MW-7												
Parameter Date	PAL	ES	06/19/08	08/21/09	12/07/09	03/10/10	06/04/10	12/17/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/03/16	09/22/16	06/19/08	08/21/09	12/07/09	03/10/10	06/04/10	12/17/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/02/16	09/23/16
cis-1,2-Dichloroethene	7.0	70	**44.5**	NS	**21 J**	**26 J**	**26 J**	**3,400**	**1,900**	**240**	**82**	**190**	**35**	**19**	**76**	2.5	0.86 J	<0.50	<0.50	<0.50	0.62 J	<0.50	4.3	3.4	1.3	<0.12	<0.41	0.84
trans-1,2-Dichloroethene	20	100	<4.4	NS	<20	<16	<8.0	**37**	**50**	11	3.9	9.2	1.6	1.0	3.5	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	1.8	0.74	<0.35	<0.35
Tetrachloroethene	0.5	5.0	**653**	NS	**1,700**	**1,400**	**500**	**430**	**400**	**320**	**260**	**220**	**140**	**70**	**96**	**48.5**	**22**	**30**	**35**	**30**	**34**	**29**	**1.7**	**1.2**	<0.17	<0.17	**1.5**	**2.1**
Trichloroethene	0.5	5.0	**8.9**	NS	**8.4 J**	**690**	**640**	**450**	**230**	**160**	**57**	**69**	**22**	**6.5**	**13**	**4.7**	**3.2**	**1.9**	**1.4**	**2.0**	**11**	**2.8**	**18**	**10**	**6.0**	**2.3**	**2.2**	**7.8**
Vinyl Chloride	0.02	0.2	U	NS	<8.0	<6.4	<3.2	<2.0	<4.0	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	**0.28**	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	U	NS	2.43	0.64	1.20	0.33	0.46	0.77	3.74	0.08	0.94	1.93	0.24	U	2.84	2.10	1.86	1.80	0.61	0.05	0.38	0.00	0.21	0.64	1.83	0.55
Oxidation-Reduction Potential	NE	NE	U	NS	-46.7	-171.2	-117.8	-30.7	13.1	-18.1	75.2	92.2	78.5	100.3	81.8	U	-53.4	-194	-199.9	-142.9	-90.6	-196.8	-106.3	-36.7	-62.8	-71.6	-70.7	-48.8

Sample	WDNR NR 140 Standards		MW-8													MW-9												
Parameter Date	PAL	ES	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/03/16	09/22/16	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/18/12	01/18/13	10/22/14	06/30/15	06/02/16	09/22/16
cis-1,2-Dichloroethene	7.0	70	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41
trans-1,2-Dichloroethene	20	100	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35
Tetrachloroethene	0.5	5.0	<0.45	<0.50	<0.50	<0.50	<0.50	**1.2 J**	<0.50	**1.3**	**1.7**	**1.8**	**2.7**	**1.8**	**2.9**	<0.45	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.17	<0.17	<0.17	<0.17	<0.37	<0.37
Trichloroethene	0.5	5.0	<0.48	<0.20	<0.20	<0.20	<0.20	**0.58 J**	<0.20	**0.62**	0.41	0.36	<0.19	<0.16	<0.16	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.16	<0.16
Vinyl Chloride	0.02	0.2	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	U	2.57	4.96	3.91	6.00	1.86	7.05	3.92	1.44	1.80	3.09	4.89	2.11	U	4.93	3.83	5.84	4.91	4.80	4.98	4.27	4.71	3.65	5.61	6.06	3.94
Oxidation-Reduction Potential	NE	NE	U	-60.7	143	212.9	80.5	-1.2	127.07	61.5	76.5	137.7	123.3	240.2	195.1	U	-67.9	60	-44.1	26.2	18.5	74.13	159.2	70.6	74.7	73.3	63.2	117.7

Sample	WDNR NR 140 Standards		MW-10												MW-11												
Parameter Date	PAL	ES	06/19/08	08/20/09	12/07/09	03/18/10	06/04/10	12/16/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/03/16	09/22/16	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/02/16	09/22/16
cis-1,2-Dichloroethene	7.0	70	<0.83	2.5	2.2	<0.50	1.0 J	1.5 J	1.1 J	0.77 J	<0.12	**12.0**	4.3	2.8	**7.7**	<0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41
trans-1,2-Dichloroethene	20	100	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35
Tetrachloroethene	0.5	5.0	**2.8**	**15**	**11**	**7.4**	**13**	**13**	**13**	**13**	**12**	**11**	**14**	**9.6**	**16**	**6.5**	**2.9**	**1.8**	**3.1**	**3.9**	**1.7 J**	**4.6**	**1.4**	**2.5**	**1.1**	**1.5**	**1.4**	**1.1**
Trichloroethene	0.5	5.0	<0.48	**0.94**	**1.2**	0.41 J	**0.85 J**	**1.7 J**	**0.93 J**	**0.89**	**0.85**	**4.0**	**3.5**	**1.9**	**4.4**	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.16	<0.16
Vinyl Chloride	0.02	0.2	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	U	5.19	4.24	NM	5.01	3.46	6.46	5.15	7.25	4.67	7.85	7.19	7.33	U	2.66	2.31	5.82	3.55	1.81	2.23	1.77	2.43	1.78	3.15	4.13	4.27
Oxidation-Reduction Potential	NE	NE	U	-60.7	154	NM	145.9	14.1	155.3	103.3	74.9	136.9	114.0	275.2	180.9	U	-84.2	155	121.1	-23.4	-9.0	59.7	184.9	69.7	118.9	79.0	147.3	144.0

Sample	WDNR NR 140 Standards		MW-12												MW-13												
Parameter Date	PAL	ES	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/17/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/03/16	09/23/16	06/19/08	08/20/09	12/07/09	03/10/10	06/04/10	12/17/10	06/22/11	06/21/12	01/18/13	10/22/14	06/30/15	06/03/16	09/22/16
cis-1,2-Dichloroethene	7.0	70	2.0	2.1	2.6	1.4 J	1.3 J	2.2	1.3 J	2.9	1.7	NS	2.5	1.4	1.9	**34.8**	**26**	**25**	**24**	**17**	**16**	**40**	**23**	**9.7**	**16**	**16**	**16**	**20**
trans-1,2-Dichloroethene	20	100	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	NS	<0.25	<0.35	<0.35	1.1	1.7	0.80 J	1.6 J	0.79 J	0.74 J	1.30 J	1.1	0.62	<0.25	0.95	0.86	1.1
Tetrachloroethene	0.5	5.0	**48.7**	**54**	**34**	**31**	**51**	**19**	**49**	**23**	**29**	NS	**22**	**12**	**12**	**13.8**	**63**	**58**	**54**	**41**	**39**	**60**	**40**	**32**	**21**	**32**	**27**	**36**
Trichloroethene	0.5	5.0	**4.3**	**4.6**	**2.8**	**3.5**	**4.6**	**2.3**	**3.8**	**2.5**	**1.9**	NS	**1.5**	**0.96**	**0.89**	**1.7**	**2.6**	**2.4**	**3.1**	**2.1**	**6.5**	**18**	**11**	**6.5**	**3.9**	**4.1**	**3.2**	**3.9**
Vinyl Chloride	0.02	0.2	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	NS	<0.10	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	U	2.98	2.34	7.14	2.97	1.25	2.67	2.35	3.78	NS	3.61	4.52	2.53	U	0.09	1.23	0.45	0.31	0.39	0.52	1.04	0.36	0.37	1.07	0.95	0.09
Oxidation-Reduction Potential	NE	NE	U	-70.4	175	144.7	126.6	-16.0	56.36	22.9	79.6	NS	86.3	223.2	189.3	U	-117	56.9	53.6	47.2	-13.2	21.1	-18.1	57.0	36.8	22.8	51.3	-53.9

Sample	WDNR NR 140 Standards		MW-14		MW-15		MW-16		PZ-1														
Parameter Date	PAL	ES	06/01/16	09/20/16	06/01/16	09/20/16	06/02/16	09/22/16	06/19/08	08/21/09	12/07/09	03/10/10	06/04/10	12/16/10	06/22/11	06/21/12	01/18/13	10/22/14	07/01/15	06/01/16	09/23/16
cis-1,2-Dichloroethene	7.0	70	<0.41	<0.41	4.1	**13**	1.2	1.0	0.97	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.12	<0.12	<0.12	<0.12	<0.41	<0.41
trans-1,2-Dichloroethene	20	100	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.89	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<0.25	<0.25	<0.35	<0.35
Tetrachloroethene	0.5	5.0	**0.7**	**2.4**	**57**	**130**	**49**	**54**	**0.54**	<0.50	<0.50	<0.50	<0.50	**1.4 J**	<0.50	<0.17	**1.6**	<0.17	<0.17	<0.37	<0.37
Trichloroethene	0.5	5.0	<0.16	<0.16	**0.99**	**2.8**	**0.8**	**0.92**	<0.48	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.19	<0.19	<0.19	<0.19	<0.16	<0.16
Vinyl Chloride	0.02	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	U	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20
Dissolved Oxygen (mg/l)	NE	NE	5.75	5.26	4.70	4.56	5.41	7.06	U	4.31	1.82	5.64	1.45	0.71	1.12	4.33	4.64	2.80	2.43	4.68	4.14
Oxidation-Reduction Potential	NE	NE	-29.1	0.3	-3.7	22.5	-39.2	102.1	U	-69.9	183	-76.8	71.8	-11.3	5.83	101	43.4	117.2	54.0	260.4	78.5

Notes: All values are in µg/l unless otherwise noted.
PAL - Preventative Action Limit
ES - Enforcement Standard
NE - Standard Not Established

NS - Not Sampled
NM - Not Measured
U Pre Injection Data (unknown)

BOLD - Result exceeds the PAL
BOLD - Result exceeds the ES

ET - Endpoint timeout caused by matrix interference.
J - Estimated value. Result between method detection limit and limit of quantification.
M - The MS and or MSD were outside control limits.
pH - The pH was outside range and the sample was adjusted.