FID # 246210820

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Feeney, John M - DNR

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From:	Gross, Stu [Stu.Gross@stantec.com]
Sent:	Thursday, July 26, 2012 11:09 AM
To:	Feeney, John M - DNR
Cc:	Dale Lythjohan (dlythjohan@wppienergy.org) (dlythjohan@wppienergy.org)
Subject:	Cedarburg Power Plant - Groundwater Summary Tables
Attachments:	Table 1.pdf; Table 2.pdf; Table 3.pdf

Good morning John-
On May 10, 2012, Stantec evaluated the physical condition of monitoring wells MW200, MW300, and MW400 at the Cedarburg Power Plant property. The wells were noted to be in good condition, were over purged, and sampled. Attached please find three tables summarizing : groundwater elevation data (Table 1), groundwater quality results (Table 2), and field analysis (Table 3).

As evidenced in Table 2, various chlorinated solvents were detected in monitoring well MW200. However, the reported compounds are similar to those previously detected in the well and contaminant concentrations are similar to or lower than historic results. Tetrachloroethene and vinyl chloride are present at concentrations above the enforcement standard in MW200. Tetrachloroethene was the only compound reported in MW300. The result was at the preventive action limit established for that compound but was also "J" flagged by the laboratory meaning that the reported result may not be statistically accurate. Tetrachloroethene was also reported in this well during previous sampling events. No elevated detections were reported in the sample collected from MW400. Based on these results and the discussion during our April meeting, Stantec intends to sample the groundwater monitoring network a second time during early August. If the analytical results are similar to historic concentrations, Stantec, on behalf of the Cedarburg Light & Water Utility, will request case closure utilizing the WDNR geographic information system registry.

Related to this work, you requested additional information related to the source of chlorinated solvent contamination present at the property. In response to this request, Stantec interviewed (by telephone), Mr. John Brunner. Mr. Brunner was a mechanic at the Cedarburg Power Plant for 23 years. Mr. Brunner stated that a parts washing area was present on the southern side of the building. Drums containing fuel oil and solvents were also located in this area and were always stored inside the building near this location. Mr. Brunner stated that Approximately 3 or 4 gallons of fuel oil was mixed with a small amount of solvent (Mr. Brunner could not remember the name of the solvent used) then transferred to the parts washer to wash various parts. Mr. Brunner stated that waste liquids from the parts washer was transferred to drums and containerized for off-site disposal. However, on occasion, small amounts (believed to be no more than 3 or 4 gallons per summer) of the waste was used to control weeds in a gravel area located between the cooling towers and the building (west and northwestern side of building). Mr. Brunner was not aware of any other use of solvents at the Property. He also stated that the area north of the power plant building (area of existing monitoring wells) was, to his knowledge, paved with asphalt during the years he worked at the facility.

John, we trust this information meets your needs. If you have any questions related to the groundwater quality results or interview with Mr. Brunner or require additional information, feel free to contact me or Dale Lythjohan at your convenience. Thank you.

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Table 1 Ground-Water Elevation Data, Cedarburg Light & Water Power Plant, Cedarburg, Wisconsin

Well ID	Elevation Ground Surface (feet)	Elevation of Reference Point* (feet)	Date	Depth to Water Below Reference Point* (feet)	Water Table Elevation (feet)
MW200	96.46	95.94	10/18/93	12.71	83.23
			10/25/93	12.78	83.16
			10/28/93	12.94	83.00
			01/07/94	13.30	82.64
			02/14/94	14.21	81.73
			12/28/94	13.02	82.92
			01/18/95	12.90	83.04
			06/08/95	12.53	83.41
			03/21/96	12.81	83.13
			06/10/96	11.49	84.45
			09/13/96	13.00	82.94
			12/06/96	12.77	83.17
			12/19/97	13.00	82.94
			03/26/99	12.70	83.24
			5/10/2012	12.10	83.84
MW300	97.22	96.54	10/18/93	14.02	82.52
			10/25/93	14.01	82.53
			10/28/93	13.98	82.56
			01/07/94	14.41	82.13
			02/14/94	15.16	81.38
			12/28/94	14.01	82.53
			01/18/95	12.91	83.63
			06/08/95	13.42	83.12
			03/21/96	13.76	82.78
			06/10/96	12.31	84.23
			09/13/96	13.91	82.63
			12/06/96	13.91	82.63
			12/19/97	14.29	82.25
			03/26/99	13.63	82.91
			5/10/2012	12.90	83.64
MW400	95.56	95.28	10/18/93	12.60	82.68
			10/25/93	12.58	82.70
			10/28/93	12.55	82.73
			01/07/94	12.87	82.41
			02/14/94	13.62	81.66
			12/28/94	12.50	82.78
			01/18/95	12.38	82.90
			06/08/95	12.03	83.25
			03/21/96	12.28	83.00
			06/10/96	10.96	84.32
			09/13/96	12.51	82.77
			12/06/96	12.36	82.92
			12/19/97	12.69	82.59
			03/26/99	12.19	83.09
			5/10/2012	11.37	83.91

Table 1 Ground-Water Elevation Data, Cedarburg Light & Water Power Plant, Cedarburg, Wisconsin

Well ID	Elevation Ground Surface (feet)	Elevation of Reference Point* (feet)	Date	Depth to Water Below Reference Point* (feet)	Water Table Elevation (feet)
MW500	95.53**	95.56	12/28/94	12.54	83.02
			01/03/95	12.42	83.14
			01/18/95	12.42	83.14
			06/08/95	12.62	82.94
			03/21/96	12.62	82.94
			06/10/96	11.42	84.14
			09/13/96	12.82	82.74
			12/06/96	12.72	82.84
			12/19/97	12.68	82.88
			03/26/99	12.40	83.16

NOTE: Elevations are referenced to site datum

* = Reference point is the top of the monitoring well casing
** = Elevation of top of protective metal casing

Table 2 Ground-Water Analysis Results, Cedarburg Light and Water Power Plant, Cedarburg, Wisconsin

Well I.D.	Date	Concentrations of Detected Analytes (µg/l)																		
		DRO	GRO	Benzene	Ethyl-benzene	Toluene	Total Xylenes	MTBE	n-Butyl-benzene	Chloro-ethane	1,1-Dichloro-ethane	cis-1,2-Dichloro-ethene	Naphthalene	Tetrachloro-ethene	Trichloro-ethene	Trimethyl-benzenes	1,2-Dichloro-benzene	1,1,1-Trichloro-ethane	1,2 Dibromo-ethane	Vinyl Chloride	Lead
NR 140, Wis. Adm. Code ES		NS	NS	5	700	800	2000	60	NS	400	850	70	40	5	5	480	600	200	0.05	0.2	15
NR 140, Wis. Adm. Code PAL		NS	NS	0.5	140	160	400	12	NS	80	85	7	8	0.5	0.5	96	60	40	0.005	0.02	1.5
MW200	10/28/93	720	110	<0.6	<1.0	35	5.6	<1.0	6.1	23	7.4	3.5	5.7	5.4	7.6	6.9	<1.0	<0.2	<0.08	<0.54	17
	01/13/94	<5.0	<10.0	<0.6	<1.0	2.4	1.8	<1.0	3.0	26	3.6	1.2	7.1	1.4	1.6	3.6	1.6	<0.2	<0.08	<0.54	22
	01/18/95	2000	28	<2.0	<1.0	<1.0	<2.0	<1.0	<2.0	2.2	4.9	22	0.44	19	29	<4.0	0.19	4.9	<0.08	<0.54	4
	06/08/95	810	NA	0.28	<0.32	<0.69	<1.23	.46	<.45	9.4	6.6	8.4	<.41	42	17.5	<1.14	.33	2.9	<0.08	<0.54	<1
	03/21/96	510	NA	0.28	<0.32	<0.69	<1.23	0.29	<0.45	6.1	4.1	5.5	<0.41	11	5.8	<1.14	0.69	0.65	<0.08	<0.54	NA
	06/10/96	270	NA	0.27	<0.32	<0.69	<1.23	<0.22	<0.45	6.2	5.9	6.9	<0.41	66	14	<1.14	0.43	2.8	0.14	<0.54	NA
	09/13/96	350	NA	0.48	<0.32	<0.69	<1.23	<0.22	<0.45	2.6	4.7	3.9	<0.41	15	4.7	<1.14	0.93	0.97	0.16	1.7	NA
	12/06/96	400	NA	<0.26	<0.32	<0.69	<0.42	<0.22	< 0.45	1.2	4.5	3.5	1.1	14	5.1	<1.14	NA	1.1	<0.08	<0.54	NA
	12/19/97	NA	<100	<0.21	<0.68	<1.5	<1.78	<0.21	<0.38	<0.63	3	5.4	<1	18	5.1	<1.86	<0.24	<0.87	<0.048	<0.045	NA
	03/25/99	NA	NA	<0.25	<0.32	<0.38	<1.04	<0.21	<0.43	<0.15	3.2	10	<0.73	30	12	<0.70	<0.28	1.4	<0.24	0.83 "J"	NA
	05/10/12	NA	NA	<0.074	<0.13	<0.11	<0.068	<0.24	<0.13	<0.34	0.95 "J"	5.5	<0.16	8.3	2.3	<0.32	0.51 "J"	<0.20	<0.36	0.88	NA
MW300	10/28/93	<100	<100	1.2	NA	1.5	<2.5	NA	<2.0	3.3	5.0	3.4	<2.0	3.9	<1.0	<2.0	NA	NA	<0.08	<0.54	2
	01/13/94	<5.0	<10.0	1.3	<1.0	<1.0	<2.5	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	<1.0
	01/18/95	150	<11.0	0.80	<1.0	<1.0	<2.5	<1.0	<2.0	2.3	1.1	0.90	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	1.0
	06/08/95	<100	NA	0.36	<.32	<.69	<1.23	<.22	<.45	0.93	0.9	0.67	<.41	1.82	0.33	<1.14	<.11	<.63	<0.08	<0.54	1.0
	03/21/96	400	NA	1.1	<0.32	<0.69	0.62	<0.22	<0.45	3.9	<0.37	0.32	4.9	1.5	<0.18	<1.14	0.31	<0.63	<0.08	<0.54	NA
	06/10/96	<100	NA	0.41	<0.32	<0.69	<1.23	<0.22	<0.45	1.3	0.75	0.75	1.7	2.1	0.45	<1.14	0.12	<0.63	<0.08	<0.54	NA
	09/13/96	<100	NA	0.34	<0.32	<0.69	<1.23	<0.22	<0.45	1.5	0.63	0.59	0.56	3.2	0.49	<1.14	0.14	<0.63	<0.08	<0.54	NA
	12/06/96	170	NA	0.59	<0.32	<0.69	<0.42	<0.22	< 0.45	18	1	0.46	1.2	2	<0.18	<1.14	0.32	<0.63	0.12	0.71	NA
	12/19/97	NA	<100	0.56	<0.68	<1.5	0.67	<0.21	<0.38	2.7	0.43	<0.32	3.4	1	<0.13	<1.86	<0.24	<0.37	<0.048	<0.045	NA
	03/25/99	NA	NA	0.64 "J"	0.7 "J"	0.66 "J"	2.6 "J"	<0.21	<0.43	4.5	0.61 "J"	<0.34	10	1.1 "J"	<0.39	0.73"J"	0.56 "J"	<0.35	<0.24	<0.32	NA
	05/10/12	NA	NA	<0.074	<0.13	<0.11	<0.068	<0.24	<0.13	<0.34	<0.19	<0.12	<0.16	0.50 "J"	<0.19	<0.32	<0.27	<0.20	<0.36	<0.10	NA
MW400	10/28/93	<100	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	<1.0
	01/13/94	<5.0	<10.0	<0.6	<1.0	<1.0	<2.5	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	<1.0
	01/18/95	120	<11.0	<0.6	<1.0	<1.0	<2.5	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	1.0
	06/08/95	<100	NA	<.26	<.32	<.69	<1.23	0.33	<.45	<.5	<.27	<.29	<.41	<.56	<.18	<1.14	<.11	<.63	<0.08	<0.54	2
	03/21/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.37	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	06/10/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.27	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	09/13/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.27	<0.29	<0.41	0.68	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	12/06/96	<100	NA	<0.26	<0.32	<0.69	<0.42	<0.22	< 0.45	< 0.5	<0.27	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	12/19/97	NA	<100	<0.21	<0.68	<1.5	<1.78	<0.21	<0.38	<0.63	<0.31	<0.32	<1	<0.13	<0.13	<1.86	<0.24	<0.37	<0.048	<0.045	NA
	03/25/99	NA	NA	<0.25	<0.32	<0.38	<1.04	<0.21	<0.43	<0.15	<0.32	<0.34	<0.73	<0.56	<0.39	<0.70	<0.28	<0.35	<0.24	<0.32	NA
	05/10/12	NA	NA	<0.074	<0.13	<0.11	<0.068	<0.24	<0.13	<0.34	<0.19	<0.12	<0.16	<0.17	<0.19	<0.32	<0.27	<0.20	<0.36	<0.10	NA
MW500	01/18/95	<100	<11	<0.6	<1.0	<1.0	<2.5	<1.0	<2.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<2.0	<1.0	<0.2	<0.08	<0.54	<1.0
	06/08/95	<100	NA	<.26	<.32	<.69	<1.23	<.22	<.45	<.5	<.27	<.29	<.41	<.56	<.18	<1.14	<.11	<.63	<0.08	<0.54	2
	03/21/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.37	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	06/10/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.27	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	09/13/96	<100	NA	<0.26	<0.32	<0.69	<1.23	<0.22	<0.45	<0.5	<0.27	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	12/06/96	<100	NA	<0.26	<0.32	<0.69	<0.42	<0.22	< 0.45	< 0.5	<0.27	<0.29	<0.41	<0.56	<0.18	<1.14	<0.11	<0.63	<0.08	<0.54	NA
	12/19/97	NA	<100	<0.21	<0.68	<1.5	<1.78	<0.21	<0.38	<0.63	<0.31	<0.32	<1	<0.13	<0.13	<1.86	<0.24	<0.37	<0.048	<0.045	NA
	03/25/99	NA	NA	<0.25	<0.32	<0.38	<1.04	<0.21	<0.43	<0.15	<0.32	<0.34	<0.73	<0.56	<0.39	<0.70	<0.28	<0.35	<0.24	<0.32	NA

NOTE:

Only those VOCs detected are summarized in this table
µg/l = micrograms per liter
DRO = diesel range organics
GRO = gasoline range organics
MTBE = methyl-tertiary-butyl-ether
NA = not analyzed
* = duplicate sample
<x = analyte not detected to the laboratory detection limit of x
NS = no water quality standard

XXX = exceeds Chapter NR 140, Wisconsin Administrative Code (NR 140, Wis. Adm. Code) Preventive Action Limit (PAL)

XXX = exceeds NR 140, Wis. Adm. Code Enforcement Standard (ES)

Table 3 Inorganic Field Analysis, Cedarburg Light and Water Power Plant, Cedarburg, Wisconsir

Well Number	Date Analyzed	Dissolved Oxygen (mg/l)	Nitrate/Nitrogen-Nitrogen Concentration (mg/l)	Ferrous Iron Concentration (mg/l)	Sulfate Concentration (mg/l)	ORP (mV)	Temperature (°C)	pH (su)	Conductivity (µS)
MW200	12/19/97	1	1.1 F	0.26 F	0 F	110	13	7	4300
	03/25/99	1	0.11 F	<0.695	58	-	10	-	-
	05/10/12	7.46	-	-	-	-79.6	51.16	7.68	7291
MW300	12/19/97	0.80	0.7 F	0.96 F	0 F	-35	14	7	3700
	03/25/99	1.67	0.21 F	2	6	-	12	-	-
	05/10/12	43.6	-	-	-	43.6	53.61	7.76	1489
MW400	12/19/97	0	1.4 F	5.00 F	0 F	<-80	14	7	2100
	03/25/99	0	0.31 F	15	3	-	11	-	-
	05/10/12	7.91	-	-	-	65.6	52.63	7.75	2188
MW500	12/19/97	4.99	0.5 F	0.01 F	68 F	235	13	6.74	970
	03/25/99	7.31	1.70 F	<0.139	39	-	11	-	-

Note:

mg/l = milligrams per liter
ORP = oxidation - reduction potential
mV = milli-volts
°C = degrees centigrade
su = standard units
µS = micro Siemens
F = sample was filtered before analysis
- = not analyzed