



September 1, 1993

GLO33316.A0

Ms. Sharon L. Shaver  
Department of Natural Resources  
Richards Street Annex  
4041 North Richards Street  
P.O. Box 12436  
Milwaukee, WI 53212

Dear Ms. Shaver:

Subject: Results from July 1993 Groundwater Sampling  
and Analysis at Former Mercury Marine Plant No. 1

As we discussed at our last meeting with you, CH2M HILL sampled the groundwater monitoring wells at the former Mercury Marine Plant No. 1 in Cedarburg, Wisconsin on July 13, 1993. CH2M HILL sampled the five monitoring wells installed during the site investigation earlier this year and two of the wells installed by the WDNR (wells MW6 and P6). Groundwater samples were analyzed for VOCs and selected samples were analyzed for indicator parameters alkalinity, iron, manganese, hardness, TOC, TDS, and TSS.

The results of the groundwater analysis are summarized on Table 1 attached. With two significant exceptions, the results of the groundwater sampling compare generally with the data obtained from the groundwater grab samples taken during monitoring well installation. The exceptions are the following:

- At MW-3, where the only VOC detected was TCE at 2.7  $\mu\text{g/L}$ , below the NR 140 TCE enforcement standard. The earlier groundwater grab sample had TCE at 280  $\mu\text{g/L}$  (in addition to 1,1-DCA at 7.8  $\mu\text{g/L}$ , 1,2-DCE at 100  $\mu\text{g/L}$ , and vinyl chloride at 11  $\mu\text{g/L}$ ).
- At MW-2, where PCE was detected. This is the only well PCE was identified at former Plant No. 1.

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The result from MW-3 is considered more reliable than the result of the grab sample and it calls into question the earlier hypothesis that groundwater contamination may be migrating beyond the property boundary toward the south. Based on this new information, it appears unlikely that groundwater contamination extends beyond the former plant property. Because this is a critical point of measurement, we recommend that Mercury Marine resample and analyze groundwater from MW-3 for VOCs. If resampling confirms the results of the July sampling, then we believe the next stage of work at former Plant No. 1 should focus directly on the information required for remediation of the former degreaser area.

The result from MW-2 suggests the possibility of VOC contamination from offsite since PCE has not been found in the samples taken from the former degreaser area. We recommend that Mercury Marine resample and analyze groundwater from MW-2 for VOCs. If the presence of PCE is confirmed, it will be a consideration in future remedial action planning and monitoring.

In summary, we recommend resampling and analyzing the groundwater from MW-2 and MW-3 as soon as possible. We will perform the sampling next week, September 7—10. This would yield analytical results in early October.

If you have any questions regarding this additional work at the site, please give me or Laura Peterson a call.

Sincerely,

CH2M HILL

  
John T. Fleissner  
Project Manager

1001291E.WP5

Enclosure

cc: Tom Baumgartner/Mercury Marine  
Tom McElligott/Quarles and Brady  
Frank Nameth/Scot Division—Ardox Corp.  
Jim Schmidt/DNR  
Linda Meyer/DNR

**Table 1**  
**Analytical Data Results for Groundwater Samples**  
**Former Mercury Marine Plant No. 1 Site**

Field Sample ID:	MW01	MW02	MW03	MW04	MW05	MW06
Laboratory ID:	1487-84348	1487-84349	1487-84350	1487-84351	1487-84352	1487-84353
Sample Collection Date:	7/13/93	7/13/93	7/13/93	7/13/93	7/13/93	7/13/93
<b>Volatile Organic Compounds (VOCs)</b>						
Benzene	µg/L	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/L	1 U	1 U	1 U	1 U	1 U
Bromoform	µg/L	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	µg/L	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Chloroethane	µg/L	1 U	1 U	1 U	38	1 U
Chloroform	µg/L	1 U	1 U	1 U	1 U	2.9
1,2-Dibromo-3-chloropropane	µg/L	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	1.5	1 U	1 U	250	4.2
1,2-Dichloroethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	1 U	3.7	1 U	32	1 U
cis-1,2-Dichloroethene	µg/L	5.3	2.4	1 U	1900	20
trans-1,2-Dichloroethene	µg/L	1 U	1 U	1 U	37	1 U
1,2-Dichloropropane	µg/L	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	1.7 B	1.7 B	1.5 B	1.7 B	1.1 B
Methyl ethyl ketone	µg/L	5 U	5 U	5 U	5 U	5 U
M-t-butyl-ether	µg/L	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	µg/L	1 U	140	1 U	1 U	1 U
Tetrahydrofuran	µg/L	5 U	5 U	5 U	5 U	5 U
Toluene	µg/L	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	µg/L	170	21	1 U	1900	220
1,1,2-Trichloroethane	µg/L	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	420	1 U	2.7	1000	1600
Trichlorofluoromethane	µg/L	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	µg/L	1 U	1 U	1 U	16	1 U
o-Xylene	µg/L	1 U	1 U	1 U	1 U	1 U
m/p-Xylene	µg/L	1 U	1 U	1 U	1 U	1 U
<b>Indicator Parameters</b>						
Alkalinity	ppm	390	400		330	420
Iron	µg/L	3,700	36,000		25,000	16,000
Manganese	µg/L	110 J	1,500 J		2,300 J	380 J
Hardness, Total	mg/L	2,400	1,200		2,400	500
Total Organic Carbon	mg/L	10	4		29	5
Total Dissolved Solids	mg/L	620	840		390	630
Total Suspended Solids	mg/L	5,400	310		14,000	1,400

**Table 1**  
**Analytical Data Results for Groundwater Samples**  
**Former Mercury Marine Plant No. 1 Site**

	Field Sample ID:	MW06-FR	P6	MFB01	TB01	TB02
	Laboratory ID:	1487-84354	1487-84355	1487-84356	1487-84357	1487-84358
	Sample Collection Date:	7/13/93	7/13/93	7/13/93	7/9/93	7/9/93
				(Method Field Blank)	(Field Blank)	(Field Blank)
<b>Volatile Organic Compounds (VOCs)</b>						
Benzene	µg/L	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/L	1 U	1 U	1 U	1 U	1 U
Bromoform	µg/L	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	µg/L	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Chloroethane	µg/L	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	2.1	1 U	1.2	1 U	1 U
1,2-Dibromo-3-chloropropane	µg/L	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,2-Dibromoethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	4.8	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	24	2.6	1 U	1 U	1 U
trans-1,2-Dichloroethene	µg/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	µg/L	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	µg/L	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	1 U	1 U	1.8 B	1.5 B	1.6 B
Methyl ethyl ketone	µg/L	5 U	5 U	5 U	5 U	5 U
M-t-butyl-ether	µg/L	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	µg/L	1 U	1 U	1 U	1 U	1 U
Tetrahydrofuran	µg/L	5 U	5 U	5 U	5 U	5 U
Toluene	µg/L	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	µg/L	88	1.9	1 U	1 U	1 U
1,1,2-Trichloroethane	µg/L	1 U	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	820	84	1 U	1 U	1 U
Trichlorofluoromethane	µg/L	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	µg/L	1 U	1 U	1 U	1 U	1 U
o-Xylene	µg/L	1 U	1 U	1 U	1 U	1 U
m/p-Xylene	µg/L	1 U	1 U	1 U	1 U	1 U
<b>Indicator Parameters</b>						
Alkalinity	ppm			2		
Iron	µg/L			U		
Manganese	µg/L			U		
Hardness, Total	mg/L			U		
Total Organic Carbon	mg/L			U		
Total Dissolved Solids	mg/L			U		
Total Suspended Solids	mg/L			U		