

Transmitted Via FedEx

December 3, 2004

Ms. Brenda Brouillet
Michigan Department of Environmental Quality
Saginaw Bay District Office
503 N. Euclid Avenue, Suite 1
Bay City, MI 48706

Re: REALM Peninsula Area Property, Saginaw, Michigan
Part 201 Rule 716(4) Notice and Additional Proposed Response Activities
BBL Project #: 86991 #2.04

Dear Ms. Brouillet:

This notice is being provided pursuant to Rule 716(14) of Part 201. In addition, this letter presents the groundwater and surface water analytical data recently collected at the REALM Peninsula Area property, and, in consideration of new groundwater data recently obtained at the Delphi Automotive Systems Corporation (Delphi) at their Plant 2 property, presents a proposal for additional response actions. Three volatile organic compounds were detected at concentrations above the Final Acute Value (FAV) at two of the newly installed monitoring wells along the western property line and one pre-existing monitoring well located along the northern property line of the REALM Peninsula Area Property (Peninsula Area).

Based on the data from the Delphi property as well as the constituents and locations of exceedances within the Peninsula Area, we believe that the compounds detected above the FAV relate to sources situated north of the Peninsula Area, at the Delphi Plant 2 Property. REALM is providing Delphi with the data collected in this sampling effort and has had initial discussions with Delphi concerning the results. REALM will coordinate with Delphi to facilitate a plan for their additional response activities, to be conducted pursuant to Rule 716 and other provisions of Part 201.

Sample Collection

As proposed in our April 29, 2004 letter, ten new monitoring wells were installed at and near the Peninsula Area in August/September 2004. Groundwater samples were collected from the onsite monitoring wells and one surface water sample was collected in September 2004. Additional surface water samples were originally proposed, but were not collected due to the dry conditions at the time of sampling. The surface water sample was collected from a localized pool of standing water adjacent to the wetland staff gauge.

Data Summary

The analytical data are presented in the attached tables. Groundwater flows in a general southerly direction. Figure 1 shows the distribution of key constituents within groundwater and surface water. Three volatile organic compounds, specifically xylenes, ethylbenzene, and vinyl chloride, were detected above the FAV at two monitoring wells located along the western boundary of the Peninsula Area (MW04-122S1 and MW04-123WT). Based on historical hydraulic gradient data and new groundwater quality data obtained from Delphi from recent investigations at their property, the VOCs detected at these wells are attributed to a contamination source, or sources, located upgradient (north) of the Peninsula Area.

Two of these volatile organic compounds, xylene and ethylbenzene, were detected above the FAV at monitoring well MW98-111S1, which is located near the northern property boundary of the Peninsula Area. These compounds were also detected above the FAV at monitoring wells located on the upgradient Delphi property. Trichloroethene, and its degradation products vinyl chloride and 1,2-dichloroethene, were detected at elevated concentrations at a new monitoring well on the Delphi property. The degradation product vinyl chloride was detected at the monitoring wells in the northwestern portion of the Peninsula Area, in the area between the wetland and the Delphi property.

The surface water sample (SW04-01) obtained from the standing pool of water adjacent to the wetland staff gauge indicated no VOCs or semi-volatile organic compounds (SVOCs) at or near the Rule 57 surface water quality values. No analyte was detected above the FAV in the surface water sample. The only constituent detected in surface water above the Final Chronic Value (FCV) was selenium, which was reported at a concentration of 9.1 micrograms per liter (ug/L). The final chronic value for selenium is 5 ug/L. Selenium was also reported at several monitoring wells located on and near the Peninsula Area and may be the result of a naturally occurring selenium in this area.

Response Activities

REALM is providing the enclosed data set to Delphi, and will coordinate with Delphi to provide property access to facilitate any of their additional response activities.

In addition, REALM will continue to evaluate the groundwater/surface-water issue related to selenium by obtaining a confirmatory round of groundwater samples at the monitoring wells that indicated selenium detections above the GSI criterion (equal to the FCV value of 5 ug/L). It should be noted that historical groundwater and surface water sampling results at the Peninsula Area did not indicate any selenium detections above 5 ug/L.

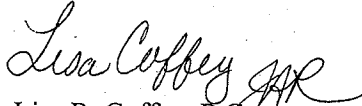
Following the collection of additional groundwater samples a summary report will be prepared. The summary report will include the analytical results from groundwater and surface water samples, boring logs for the newly installed wells, groundwater elevation contour maps, and cross sections including locations at the Delphi property and monitoring wells and the wetland at the Peninsula Area. If selenium is found to be an issue that requires further assessment, a site-specific criterion may be subsequently proposed pursuant to Rule 716(11).

Schedule

The response activities proposed by REALM will be completed within a period of approximately 60 days. If you have any questions or would like additional clarification of any of the items summarized in this letter, please contact Cheryl Hiatt at 248-753-5799.

Sincerely,

BLASLAND, BOUCK & LEE, INC.



Lisa R. Coffey, P.G.
Sr. Geologist II

LRC/plf
Attachments

cc: Ms. Rhonda Klann, MDEQ
Ms. Cheryl Hiatt, GM WFG
Mr. Dale Thrush, Delphi Automotive Systems
Ms. Carrie Kempf, MACTEC
Mr. Michael Gefell, BBL

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW-129WT		MW-129WT		MW-144WT		MW-144WT	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV	FS	DUP	FS	DUP	FS	DUP	FS	DUP
Volatile Organic Compounds (ug/L)															
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	1.0 U	1.0 U	0.22 J	1.0 U	0.22 J	1.0 U	0.22 J	1.0 U
1,2-Dichloroethene, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	1.1 J	1.1 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
2-Butanone	2.4E+8 {LS}	2.4E+8 {LS}	ID {I}	2200 {I}	3800 {I}	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Acetone	3.1E+7 {I}	1.0E+9 {D,LS}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	1.0 U	1.0 U	0.37 J	1.0 U	0.37 J	1.0 U	0.37 J	1.0 U
Chlorobenzene	8.6E+4 {I}	4.7E+5 {LS}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	1.0 U	1.0 U	5.7	1.0 U	5.7	1.0 U	5.7	1.0 U
Ethylbenzene	1.7E+5 {LS}	1.7E+5 {LS}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5.3E+5 {LS}	5.3E+5 {LS}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	1.0 U	1.0 U	0.27 J	1.0 U	0.27 J	1.0 U	0.27 J	1.0 U
Trichloroethene	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	0.59 J	0.60 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes, Total	1.9E+5 {LS}	1.9E+5 {LS}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW01-118WT 9/16/2004 FS	MW01-119SI 9/16/2004 FS	MW04-118SI 9/16/2004 FS	MW04-119WT 9/16/2004 FS
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV				
Volatile Organic Compounds (ug/L)											
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	2.9 U	1.0 U	170 U	1.0 U
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	5.7 U	2.0 U	1700 [GSI]	2.0 U
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	72 U	25 UJ	4,200 U	25 UJ
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	9.1 J	2.1 J	4,200 U	2.1 J
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	5.6 [IDW]	1.0 U	170 U	0.25 J
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	82 [GSI]	1.0 U	140 J [GSI, IDW]	1.0 U
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	2.9 U	1.0 U	170 U	1.0 U
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	2.9 U	1.0 U	110 J [GSI, IDW]	1.0 U
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	2.9 U	1.0 U	38 J	1.0 U
Trichloroethene	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	2.9 U	1.0 U	170 U	1.0 U
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	2.9 U	1.0 U	8000 [GCC, GSI, IDW]	1.0 U
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	8.5	2.0 U	500 [GSI, IDW]	2.0 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW04-121S1 9/16/2004 FS	MW04-121WT 9/16/2004 FS	MW04-122S1 9/16/2004 FS
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV			
Volatile Organic Compounds (ug/L)										
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	1.0 U	1.0 U	500 U
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	2.0 U	2.0 U	6900 [GSI, IDW]
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	0.46 J	25 U	12,000 U
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	3.4 J	2.6 J	12,000 U
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	0.41 J	0.26 J	500 U
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	1.0 U	1.0 U	500 U
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	1.7	1.0 U	500 U
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	1.0 U	1.0 U	700 [GSI, IDW, FAV]
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	1.0 U	1.0 U	240 J [GSI]
Trichloroethene	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	1.0 U	1.0 U	500 U
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	1.0 U	1.0 U	13000 [GCC, IGVIA, GSI, IDW]
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	2.0 U	2.0 U	1400 [GSI, IDW, FAV]

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW04-122WT 9/16/2004		MW04-123SI 9/16/2004		MW04-123WT 9/16/2004	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV	FS		FS		FS	
Volatile Organic Compounds (ug/L)													
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	22 U	6.7 U	6.7 U	830 U		
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	540	110	110	9400 [GSI, IDW]		
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	9.8 J	170 U	170 U	21,000 U		
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	27 J	8.5 J	8.5 J	21,000 U		
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	13 J [IDW]	2.7 J	2.7 J	830 U		
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	65 [GSI]	21	21	830 U		
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	22 U	6.7 U	6.7 U	830 U		
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	22 [GSI]	6.7 U	6.7 U	830 U		
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	6.6 J	1.3 J	1.3 J	830 U		
Trichloroethane	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	22 U	6.7 U	6.7 U	830 U		
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	480 [GSI, IDW]	230 [GSI, IDW]	230 [GSI, IDW]	27000 [GSI, IDW, GCC, IGWIA, FAV]		
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	44 [GSI]	13	13	1,700 U		

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW04-124SI 9/15/2004		MW04-124WT 9/15/2004		MW97-104SI 9/16/2004		MW97-104WT 9/16/2004	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV	FS	FS	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds (ug/L)															
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	1.0 U	1.0 U	1.0 U	1.0 U	110 U	110 U	1.0 U	1.0 U
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	0.47 J	2.0 U	2.0 U	0.72 J	2400 [GSI]	2400 [GSI]	0.72 J	0.72 J
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	25 U	25 U	25 U	25 U	2,800 U	2,800 U	25 U	25 U
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	25 U	1.7 J	1.7 J	1.2 J	2,800 U	2,800 U	1.2 J	1.2 J
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	1.0 U	0.24 J	0.24 J	4.9	110 U	110 U	4.9	4.9
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	1.0 U	1.0 U	1.0 U	6	220 [GSI, IDW]	220 [GSI, IDW]	6	6
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	0.77 J	0.60 J	0.60 J	1.0 U	110 U	110 U	1.0 U	1.0 U
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	1.0 U	1.0 U	1.0 U	1.0 U	110 U	110 U	1.0 U	1.0 U
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	0.51 J	0.50 J	0.50 J	1.0 U	110 U	110 U	1.0 U	1.0 U
Trichloroethene	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	1.0 U	1.0 U	1.0 U	0.59 J	110 U	110 U	0.59 J	0.59 J
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	16 [GSI, IDW]	2.0 U	2.0 U	1.0 U	1,900 [GCC]	1,900 [GCC]	1.0 U	1.0 U
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	2.0 U	2.0 U	2.0 U	3.1	220 U	220 U	3.1	3.1

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW97-105SI 9/15/2004		MW97-105WT 9/15/2004		MW98-108SI 9/15/2004		MW98-109SI 9/15/2004	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAY	FS	FS	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds (ug/L)															
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	1.0 U		1.0 U		200 U		50 U	
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	2.0 U		2.0 U		5200 [GSI, IDW]		180	
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	25 U		25 U		5,000 U		1,200 U	
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	7.6 J		7.6 J		5,000 U		1,200 U	
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	0.25 J		0.25 J		200 U		50 U	
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	1.0 U		1.0 U		200 U		79 [GSI]	
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	0.73 J		0.73 J		200 U		50 U	
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	1.0 U		1.0 U		200 U		50 U	
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	0.45 J		0.45 J		200 U		12 J	
Trichloroethane	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	1.0 U		1.0 U		200 U		50 U	
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	1.0 U		1.0 U		5000 [GCC, GSI, IDW]		2100 [GCC,	
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	2.9		2.9		400 U		100 U	

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1
REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria							MW98-110WT 9/17/2004		MW98-111SI 9/17/2004		MW98-111WT 9/17/2004	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds (ug/L)													
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	420 U	1.0 U	83 U	2.0 U	2.0 U	
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	--	13000 [GSI, IDW]	2.0 U	170 U	4.0 U	4.0 U	
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	10,000 U	1.6 J	2,100 U	2.0 J	2.0 J	
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	10,000 U	7.6 J	2,100 U	8.2 J	8.2 J	
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	420 U	1.0 U	95 [IDW]	13 B [IDW]	13 B [IDW]	
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	420 U	1.0 U	200 [GSI, IDW]	2.0 U	2.0 U	
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	420 U	1.0 U	83 U	9.5	9.5	
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	420 U	1.0 U	1700 [GSI, IDW, FAV]	44 [GSI]	44 [GSI]	
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	420 U	1.0 U	810 [GSI, IDW]	1.7 J	1.7 J	
Trichloroethene	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	420 U	1.0 U	83 U	2.0 U	2.0 U	
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	1400 [GCC, GSI, IDW]	1.0 U	83 U	0.88 J	0.88 J	
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	830 U	2.0 U	5400 [GSI, IDW, FAV]	150 [GSI]	150 [GSI]	

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 1

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDHQ Criteria							TW98-108WT 9/15/2004		TW98-109WT 9/15/2004	
	GCC	IGVIA	FESL	GSI	IDW	FCV	FAV	FS	FS	FS	FS
Volatile Organic Compounds (ug/L)											
1,1-Dichloroethane	2.4E+6	2.3E+6	3.8E+5	740	2500	740	1300	1.0 U		3.3 U	
1,2-Dichloroethane, Total	2.4E+6	2.3E+6	3.8E+5	740	2500	ID	ID	2.0 U		6.7 U	
2-Butanone	2.4E+8 {I,S}	2.4E+8 {I,S}	ID {I}	2200 {I}	3800 {I}	--	--	25 U		83 U	
Acetone	3.1E+7 {I}	1.0E+9 {D,I,S}	1.5E+7 {I}	1700 {I}	2100 {I}	1700	30000	1.9 J		5.4 J	
Benzene	1.1E+4 {I}	3.5E+4 {I}	6.8E+4 {I}	200 {I,X}	5 {A,I}	200	1800	0.34 J		4	
Chlorobenzene	8.6E+4 {I}	4.7E+5 {I,S}	1.6E+5 {I}	47 {I}	100 {A,I}	47	850	0.96 J		110 [GSI, IDW]	
Chloroethane	4.40E+05	5.7E+6 {S}	1.10E+05	ID	1700	1100	20000	1.0 U		3.3 U	
Ethylbenzene	1.7E+5 {I,S}	1.7E+5 {I,S}	4.3E+4 {I}	18 {I}	74 {E,I}	18	320	1.0 U		3.3 U	
Toluene	5.3E+5 {I,S}	5.3E+5 {I,S}	6.1E+4 {I}	140 {I}	790 {E,I}	140	1700	1.0 U		1.2 J	
Trichloroethane	2.20E+04	9.70E+04	ID	200 {X}	5 {A}	--	--	1.0 U		3.3 U	
Vinyl chloride	1.00E+03	1.30E+04	3.30E+04	15	2 {A}	930	17000	1.0 U		2.4 J [IDW]	
Xylenes, Total	1.9E+5 {I,S}	1.9E+5 {I,S}	7.0E+4 {I}	35 {I}	280 {E,I}	35	630	2.0 U		9.8	

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 2

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria				MW-129WT 9/17/2004		MW-129WT 9/17/2004		MW-144WT 9/15/2004		MW-144WT 9/15/2004		MW-118WT 9/16/2004		MW-119SI 9/16/2004	
	GCC	IDW	GSI	FCV	FAV	FS	DUP	FS	DUP	FS	DUP	FS	FS	FS	FS	FS
Semivolatile Organic Compounds (ug/L)																
1,2-Dichlorobenzene	1.60E+01	6.00E+02	1.60E+01	1.30E+01	2.40E+02	10 U	10 U	25 U	25 U	25 U	25 U	40 U	40 U	10 U		
1,4-Dichlorobenzene	6.40E+03	1.90E+01	3.80E+01	1.60E+01	2.00E+02	10 U	10 U	25 U	25 U	25 U	25 U	40 U	40 U	10 U		
2,4-Dimethylphenol	5.20E+05	1.00E+03	3.80E+02	3.80E+02	2.70E+03	10 U	10 U	25 U	25 U	25 U	25 U	20 U	20 U	5.0 U		
2-Methylnaphthalene	2.5E+4 (S)	2.10E+02	1.90E+01	ID	ID	5.0 U	5.0 U	12 U	12 U	12 U	12 U	20 U	20 U	5.0 U		
4-Methylphenol	NA	NA	NA	2.50E+01	4.50E+02	5.0 U	5.0 U	12 U	12 U	12 U	12 U	20 U	20 U	5.0 U		
bis(2-Chloroisopropyl) ether	5.70E+03	8.30E+00	1.50E+01	ID	ID	4.0 U	4.0 U	10 U	10 U	10 U	10 U	20 U	20 U	6.3		
bis(2-Ethylhexyl)phthalate	3.20E+01	6.00E+00	3.20E+01	ID	2.85E+02	6.7 (IDW)	6.7 (IDW)	12 U	12 U	12 U	12 U	20 U	20 U	3.8 U		
Naphthalene	3.1E+4 (S)	1.60E+04	1.30E+01	1.30E+01	2.00E+02	5.0 U	5.0 U	12 U	12 U	12 U	12 U	20 U	20 U	5.0 U		
Phenol	2.90E+07	2.00E+00	ID	4.50E+02	6.80E+03	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U		

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 2

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria				MW04-118SI 9/16/2004		MW04-119WT 9/16/2004		MW04-121SI 9/16/2004		MW04-121WT 9/16/2004		MW04-122SI 9/16/2004		MW04-122WT 9/16/2004	
	GCC	IDW	GSI	FCV	FAV	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
Semi-volatile Organic Compounds (ug/L)																
1,2-Dichlorobenzene	1.60E+01	6.00E+02	1.60E+01	1.30E+01	2.40E+02	19 J [GCC]	10 U	40 U	40 U	10 U	10 U	40 U	40 U	100 U	100 U	100 U
1,4-Dichlorobenzene	6.40E+03	1.90E+01	3.80E+01	1.60E+01	2.00E+02	40 U	10 U	40 U	40 U	10 U	10 U	40 U	40 U	100 U	100 U	100 U
2,4-Dimethylphenol	5.20E+05	1.00E+03	3.80E+02	3.80E+02	2.70E+03	20 U	5.0 U	20 U	20 U	5.0 U	5.0 U	20 U	20 U	50 U	50 U	50 U
2-Methylnaphthalene	2.5E+4 {S}	2.10E+02	1.90E+01	ID	ID	20 U	5.0 U	20 U	20 U	5.0 U	5.0 U	20 U	20 U	50 U	50 U	50 U
4-Methylphenol	NA	NA	NA	2.50E+01	4.50E+02	20 U	5.0 U	20 U	20 U	5.0 U	5.0 U	20 U	20 U	50 U	50 U	50 U
bis(2-Chloroisopropyl) ether	5.70E+03	8.30E+00	1.50E+01	ID	ID	12 J [IDW]	5.0 U	20 U	20 U	5.0 U	5.0 U	20 U	24	7.8 J	7.8 J	7.8 J
bis(2-Ethylhexyl)phthalate	3.20E+01	6.00E+00	3.20E+01	ID	2.85E+02	20 U	5.0 U	20 U	20 U	3.8 U	3.8 U	20 U	20 U	50 U	50 U	50 U
Naphthalene	3.1E+4 {S}	1.60E+04	1.30E+01	1.30E+01	2.00E+02	20 U	5.0 U	20 U	20 U	5.0 U	5.0 U	20 U	9.0 J	50 U	50 U	50 U
Phenol	2.90E+07	2.00E+00	ID	4.50E+02	6.80E+03	5.0 U	0.63 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 2

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria					MW04-123SI 9/16/2004		MW04-123WT 9/16/2004		MW04-124SI 9/15/2004		MW04-124WT 9/15/2004		MW97-104SI 9/16/2004		MW97-104WT 9/16/2004	
	GCC	IDW	GSI	FCV	FAV	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
Semi-volatile Organic Compounds (ug/L)																	
1,2-Dichlorobenzene	1.60E+01	6.00E+02	1.60E+01	1.30E+01	2.40E+02	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	17 [GCC]	13	40 U	40 U
1,4-Dichlorobenzene	6.40E+03	1.90E+01	3.80E+01	1.60E+01	2.00E+02	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5.0 U	5.0 U	20 U	20 U
2,4-Dimethylphenol	5.20E+05	1.00E+03	3.80E+02	3.80E+02	2.70E+03	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U
2-Methylnaphthalene	2.5E+4 {S}	2.10E+02	1.90E+01	ID	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U
4-Methylphenol	NA	NA	NA	2.50E+01	4.50E+02	5.0 U	5.0 U	1.3 J #	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.4	5.0 U	20 U	20 U
bis(2-Chloroisopropyl) ether	5.70E+03	8.30E+00	1.50E+01	ID	ID	5.0 U	5.0 U	6.7	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U
bis(2-Ethylhexyl)phthalate	3.20E+01	6.00E+00	3.20E+01	ID	2.85E+02	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U
Naphthalene	3.1E+4 {S}	1.60E+04	1.30E+01	1.30E+01	2.00E+02	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U
Phenol	2.90E+07	2.00E+00	ID	4.50E+02	6.80E+03	20 U	20 U	25 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	20 U	20 U	20 U	20 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 2

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria				MW97-105SI 9/15/2004		MW97-105WT 9/15/2004		MW98-108SI 9/15/2004		MW98-109SI 9/15/2004		MW98-110SI 9/17/2004		MW98-110WT 9/17/2004	
	GCC	IDW	GSI	FCV	FAV	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
Semi-volatile Organic Compounds (ug/L)																
1,2-Dichlorobenzene	1.60E+01	6.00E+02	1.60E+01	1.30E+01	2.40E+02	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	6.40E+03	1.90E+01	3.80E+01	1.60E+01	2.00E+02	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	5.20E+05	1.00E+03	3.80E+02	3.80E+02	2.70E+03	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Methylnaphthalene	2.5E+4 (S)	2.10E+02	1.90E+01	ID	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methylphenol	NA	NA	NA	2.50E+01	4.50E+02	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
bis(2-Chloroisopropyl) ether	5.70E+03	8.30E+00	1.50E+01	ID	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
bis(2-Ethylhexyl)phthalate	3.20E+01	6.00E+00	3.20E+01	ID	2.85E+02	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	3.1E+4 (S)	1.60E+04	1.30E+01	1.30E+01	2.00E+02	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Phenol	2.90E+07	2.00E+00	ID	4.50E+02	6.80E+03	5.0 U	0.63 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 2

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria					MW98-111SI 9/17/2004 FS	MW98-111WT 9/17/2004 FS	TW98-108WT 9/15/2004 FS	TW98-109WT 9/15/2004 FS
	GCC	IDW	GSI	FCV	FAV				
Semivolatile Organic Compounds (ug/L)									
1,2-Dichlorobenzene	1.60E+01	6.00E+02	1.60E+01	1.30E+01	2.40E+02	40 U	50 U	10 U	40 U
1,4-Dichlorobenzene	6.40E+03	1.90E+01	3.80E+01	1.60E+01	2.00E+02	40 U	50 U	10 U	4.1 J
2,4-Dimethylphenol	5.20E+05	1.00E+03	3.80E+02	3.80E+02	2.70E+03	4.5 J	25 U	5.0 U	20 U
2-Methylnaphthalene	2.5E+4 {S}	2.10E+02	1.90E+01	ID	ID	3.2 J	25 U	5.0 U	20 U
4-Methylphenol	NA	NA	NA	2.50E+01	4.50E+02	20 U	25 U	5.0 U	20 U
bis(2-Chloroisopropyl) ether	5.70E+03	8.30E+00	1.50E+01	ID	ID	47 [IDW, GSI]	6.5 J	0.98 J	4.0 J
bis(2-Ethylhexyl)phthalate	3.20E+01	6.00E+00	3.20E+01	ID	2.85E+02	6.2 J [IDW]	25 U	11 [IDW]	20 U
Naphthalene	3.1E+4 {S}	1.60E+04	1.30E+01	1.30E+01	2.00E+02	88 [GSI]	5.7 J	5.0 U	20 U
Phenol	2.90E+07	2.00E+00	ID	4.50E+02	6.80E+03	20 U	25 U	5.0 U	20 U

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 3

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria Values						MW-129WT 9/17/2004	MW-129WT 9/17/2004	MW-144WT 9/15/2004	MW-144WT 9/15/2004
	IDW	GCC	IGVIA	GSI	FCV	FAV	FS	DUP	FS	DUP
Inorganics, Dissolved (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	38	37	8.3	8
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	132	130	110	107
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U	2.0 U	0.24 B	0.27 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	2.0 U	2.0 U	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	21,300 J [IDW]	21,300 J [IDW]	14,600 J [IDW]	14,100 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	5.5 J	5.6 J	5.6	5.4
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	2	1.4 B	11 [GSI]	11 [GSI]
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	10 U	10 U	10 U	10 U
Inorganics, Total (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	39	38	8.3	7.9
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	131	129	111	109
Cadmium	5.0E+0 {A,B}	1.9E+5 {B}	NLV {B}	4.5E+0 {B,G,X}	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	0.27 B	2.0 U	0.28 B	0.26 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	2.0 U	0.35 B	0.72 B
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	21,500 J [IDW]	21,400 J [IDW]	14,600 J [IDW]	14,000 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	5.4 J	5.5 J	5.6	5.3
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	2.3	1.2 B	12 [GSI]	10 [GSI]
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	4.1 B	4.5 B	10 U	10 U
Miscellaneous Parameters										
Hardness, Total (ug/CaCO ₃ /L)							--	--	--	--
pH (S.U.)							--	--	--	--

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 3

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria Values						MW01-118WT 9/16/2004		MW01-119S1 9/16/2004		MW04-118S1 9/16/2004		MW04-119WT 9/16/2004	
	IDW	GCC	IGVIA	GSI	FCV	FAV	FS		FS		FS		FS	
Inorganics, Dissolved (ug/L)														
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	23.2		4.6		3.2		4.2	
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	93. J		1370 [GSI]		741 J		290	
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U		2.0 U		2.0 U		2.0 U	
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U		2.0 U		0.39 B		2.0 U	
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	3.540 J [IDW]		3.960 J [IDW]		6.600 J [IDW]		15400 J [IDW]	
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U		1.0 U		1.0 U		1.0 U	
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	3.5		2.8		5.2		3.1	
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.3 B		15.2 [GSI]		1.3 B		15.3 [GSI]	
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	10. U		41.1		20		13.6	
Inorganics, Total (ug/L)														
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	22		4.1		3.7		4.5	
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	90.4 J		1340 [GSI]		920 J		307	
Cadmium	5.0E+0 {A,B}	1.9E+5 {B}	NLV {B}	4.5E+0 {B,G,X}	--	--	0.50 U		0.50 U		0.50 U		0.50 U	
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U		2.0 U		2.0 U		1.5 B	
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	0.33 B		0.37 B		0.75 B		3.9	
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	3.700 J [IDW]		4060 [IDW]		8.880 J [IDW]		16700 [IDW]	
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	3.5		1.0 U		0.24 B		2.8	
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	3.4		2.7		6.8		4	
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.1 B		13.8 [GSI]		2.0 U		15.5 [GSI]	
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	5.9 B		35.5		28.4		13.6	
Miscellaneous Parameters														
Hardness, Total (ug/CaCO ₃ /L)							--		--		--		--	
pH (S.U.)							--		--		--		--	

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 3

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria Values						MW97-104S1 9/16/2004 FS	MW97-104AWT 9/16/2004 FS	MW97-105S1 9/15/2004 FS	MW97-105WT 9/15/2004 FS
	IDW	GCC	IGVIA	GSI	FCV	FAV				
Inorganics, Dissolved (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	0.56 B	0.72 J	4.5	9.3
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	785 J	662	256	599
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U	2.0 U	0.60 B	0.71 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	0.29 B	2.0 U	0.32 BJ	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	7,480 J [IDW]	1950 J [IDW]	7,350 J [IDW]	16,200 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	4.4	2.2	11.8 J	11.6 J
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.1 B	1.8 B	13.6 [GSI]	13.7 [GSI]
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	21.6	17.8 J	6.1 B	14.5
Inorganics, Total (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	0.83 B	0.72 B	4.5	8.8
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	821 J	675	264	559
Cadmium	5.0E+0 {A,B}	1.9E+5 {B}	NLV {B}	4.5E+0 {B,G,X}	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U	2.0 U	0.89 B	0.90 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	0.33 B	2.0 U	0.48 BJ	1.1 BJ
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	8,140 J [IDW]	2120 [IDW]	7,610 J [IDW]	16,300 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U	1
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	4.6	2.3	12.1 J	11.7 J
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	2.1	2.3	13.6 [GSI]	11.6 [GSI]
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	19.4	16.9 J	12.8	26.3
Miscellaneous Parameters										
Hardness, Total (ug/CaCO ₃ /L)							--	--	--	--
pH (S.U.)							--	--	--	--

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 3

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria Values					MW98-108SI 9/15/2004 FS	MW98-109SI 9/15/2004 FS	MW98-110SI 9/17/2004 FS	MW98-110WT 9/17/2004 FS
	IDW	GCC	IGVIA	GSI	FCV	FAV			
Inorganics, Dissolved (ug/L)									
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	0.99 B	1.3 B	3.6
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	229 J	325 J	266
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U	2.0 U	2.0 U
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	2.0 U	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	9,180 J [IDW]	5,050 J [IDW]	5,170 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	5	3.7	3.6 J
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.8 B	1.0 B	4.8
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	10. U	5.7 B	5.0 B
Inorganics, Total (ug/L)									
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	0.98 B	1.6 B	3.6
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	220 J	321 J	282
Cadmium	5.0E+0 {A,B}	1.9E+5 {B}	NLV {B}	4.5E+0 {B,G,X}	--	--	0.50 U	0.50 U	0.50 U
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	2.0 U	2.0 U	2.0 U
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	2.0 U	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	10,100 J [IDW]	5,010 J [IDW]	5,520 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	4.9	3.4	4.0 J
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.5 B	1.4 B	4.8
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	10. U	5.5 B	6.0 B
Miscellaneous Parameters									
Hardness, Total (ug/CaCO ₃ /L)							--	--	--
pH (S.U.)							--	--	--

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 3

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

GROUNDWATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled Sample Type	MDEQ Criteria Values						MW98-111SI 9/17/2004 FS	MW98-111WT 9/17/2004 FS	TW98-108WT 9/15/2004 FS	TW98-109WT 9/15/2004 FS
	IDW	GCC	IGVIA	GSI	FCV	FAV				
Inorganics, Dissolved (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	0.89 B	1.3 B	3.3	1.3 B
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	4920 [IDW, GSI]	686	489 J	467 J
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	0.75 B	0.18 B	2.0 U	0.31 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	2.0 U	2.0 U	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	39,400 J [IDW]	761 J [IDW]	2,660 J [IDW]	1,420 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	1.0 U	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	3.9 J	4.3 J	1.4 B	2.4
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	2.0 U	0.90 B	1.2 B	2.9
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	135	17.6	18.2	13.8
Inorganics, Total (ug/L)										
Arsenic	5.0E+1 {A}	4.30E+03	NLV	1.5E+2 {X}	1.5E+02	6.8E+02	1.6 B	3.4	3.4	1.5 B
Barium	2.0E+3 {A,B}	1.4E+7 {B}	NLV {B}	1.2E+3 {B,G,X}	5.7E+06	--	4740 [IDW, GSI]	709	511 J	469 J
Cadmium	5.0E+0 {A,B}	1.9E+5 {B}	NLV {B}	4.5E+0 {B,G,X}	--	--	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	1.0E+2 {A,B,H}	2.9E+8 {B,H}	NLV {B,H}	1.6E+2 {B,G,H,X}	6.2E+04	--	0.87 B	1.3 B	2.0 U	0.62 B
Copper	1.0E+3 {B,E}	7.4E+6 {B}	NLV {B}	2.6E+1 {G}	1.0E+04	--	2.0 U	4.0 J	2.0 U	2.0 U
Iron	3.0E+2 {B,E}	5.8E+7 {B}	NLV {B}	NA {B}	--	--	38,000 J [IDW]	1,180 J [IDW]	2,710 J [IDW]	1,530 J [IDW]
Lead	4.0E+0 {B,L}	ID {B}	NLV {B}	2.8E+1 {G,X}	--	--	1.0 U	0.59 B	1.0 U	1.0 U
Nickel	1.0E+2 {A,B}	7.4E+7 {B}	NLV {B}	1.2E+2 {B,G}	5.4E+04	--	3.4 J	4.5 J	1.4 B	2.3
Selenium	5.0E+1 {A,B}	9.7E+5 {B}	NLV {B}	5.0E+0 {B}	5.0E+00	1.2E+02	1.4 B	1.9 B	1.3 B	3.3
Zinc	5.0E+3 {B,E}	1.1E+8 {B}	NLV {B}	2.0E+4 {B,G}	1.2E+05	--	116	17.6	13.4	12.3
Miscellaneous Parameters										
Hardness, Total (ug/CaCO ₃ /L)							--	--	--	--
pH (S.U.)							--	--	--	--

Note: Only Detected Compounds are shown.

See Generic Notes pages.

TABLE 4

REALM INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN

SURFACE WATER ANALYTICAL RESULTS - SEPTEMBER 2004

Location ID Date Sampled (ug/L)	MDEQ Criteria				FCV	FAV	SW04-01 9/17/2004 FS
	GCC	GSI	IDW				
Volatile Organic Compounds (ug/L)							
2-Butanone	2.4E+8 {I,S}	2200 {I}	3800 {I}		--	--	1.5 J
Acetone	3.1E+7 {I}	1700 {I}	2100 {I}		1.7E+03	3.0E+04	7.3 J
Chlorobenzene	8.6E+4 {I}	47 {I}	100 {A,I}		4.7E+01	8.5E+02	0.21 J
Toluene	5.3E+5 {I,S}	140 {I}	790 {E,I}		1.4E+02	1.7E+03	0.19 J
Vinyl chloride	1.00E+03	15	2 {A}		9.3E+02	1.7E+04	1.0 U
Xylenes, Total	1.9E+5 {I,S}	35 {I}	280 {E,I}		3.5E+01	6.3E+02	2.0 U
Semivolatile Organic Compounds (ug/L)							
bis(2-Ethylhexyl)phthalate	3.20E+01	3.20E+01	6.00E+00		ID	ID	0.57 J
Inorganics, Total (ug/L)							
Arsenic	4.30E+03	1.5E+2 {X}	5.0E+1 {A}		1.5E+02	6.8E+02	10.2
Barium	1.4E+7 {B}	1.2E+3 {B,G,X}	2.0E+3 {A,B}		2.7E+06	--	1,290
Cadmium	1.9E+5 {B}	4.5E+0 {B,G,X}	5.0E+0 {A,B}		8.8E+02	--	0.20 B
Chromium	2.9E+8 {B,H}	1.6E+2 {B,G,H,X}	1.0E+2 {A,B,H}		6.2E+04	--	6
Copper	7.4E+6 {B}	2.6E+1 {G}	1.0E+3 {B,E}		1.0E+04	--	18.3 J
Iron	5.8E+7 {B}	NA {B}	3.0E+2 {B,E}		--	--	26,300 J
Lead	ID {B}	2.8E+1 {G,X}	4.0E+0 {B,L}		--	--	12.4
Mercury	5.6E+1 {B,S,Z}	1.3E+3 {Z}	2.0E+0 {A,B,Z}		--	--	0.20 U
Nickel	7.4E+7 {B}	1.2E+2 {B,G}	1.0E+2 {A,B}		5.4E+04	--	11. J
Selenium	9.7E+5 {B}	5.0E+0 {B}	5.0E+1 {A,B}		5.0E+00	1.2E+02	9.1 [FCV]
Silver	1.5E+6 {B}	2.0E-1 {B,M}	9.8E+1 {B}		--	--	0.50 UJ
Zinc	1.1E+8 {B}	2.0E+4 {B,G}	5.0E+3 {B,E}		1.2E+05	--	124
Miscellaneous Parameters							
Hardness, Total (ug/CaCO ₃ /L)							370,000
pH (S.U.)							8

Note: FCV was calculated used the total hardness and pH of the sample, except for selenium and arsenic.
See Generic Notes pages.

**REALM, INC.
PENINSULA AREA PROPERTY
SAGINAW, MICHIGAN**

GENERIC NOTES

General Notes:

All concentrations in micrograms per liter ($\mu\text{g/L}$) or micrograms per kilogram ($\mu\text{g/kg}$); equivalent to parts per billion (ppb), unless otherwise noted. Detections are shown in bold, and concentrations above the relevant criteria are shaded.

-- = Sample was not analyzed for the listed constituent.

REALM, INC. = Remediation and Liability Management Company, Inc.

Generic MDEQ Criteria Values, updated December 2002:

IDW = Industrial Drinking Water Criteria.

GSI = Groundwater Surface Water Interface Criteria.

IIA = Industrial & Commercial II, III, & IV Groundwater Volatilization to Indoor Air Inhalation Criteria.

GCC = Groundwater Contact Criteria.

FE = Flammability and Explosivity Screening Levels.

GAI = Acute Inhalation Screening Levels.

FAV = Rule 57 Surface Water Final Acute Value.

SDBL = Statewide Default Background Levels.

IDWP = Industrial and Commercial Drinking Water Protection Criteria.

GSIP = Groundwater Surface Water Interface Protection Criteria.

GCCP = Groundwater Contact Protection Criteria.

ISVIA = Soil Volatilization to Indoor Air Inhalation Criteria.

IVSICI = Infinite Source Volatile Soil Inhalation Criteria.

IPSIC = Particulate Soil Inhalation Criteria.

IDC = Industrial and Commercial II Direct Contact Criteria.

Location ID:

MW = Permanent monitoring wells (Note: 97 indicates the well was installed in 1997, 98 indicates the well was installed in 1998).

TW = Temporary monitoring wells (Note: 97 indicates the well was installed in 1997, 98 indicates the well was installed in 1998).

WT = Water table monitoring wells.

S1 = Well screened at base of sand unit.

SW = Surface water sampling location.

SD = Sediment sampling location.

Sample Type:

FS = Primary field sample.

DUP = Duplicate field sample.

Data Qualifiers:

VOCs¹ = Samples collected during the May 2000 sampling event had select SVOC compounds analyzed under the VOC scan (8260).

B = (Organic) The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

(Inorganic) The analyte has been positively identified. The concentration is between the instrument detection limit and the required reporting limit.

D = Concentration is based on a diluted sample analysis.

E = The compound was quantitated above the calibration range.

J = The compound/constituent was positively identified; however, the associated numerical value is an estimated concentration only.

M = Matrix interference.

ND = Not detected.

U = The compound/constituent was analyzed for but not detected. The associated value is the compound/constituent quantitation limit.

UJ = The compound/constituent was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

< = The compound/constituent was not detected at or above the associated value.

MDEQ Criteria Qualifiers:

ID = *Inadequate data* to develop criterion.

IP = Development of generic GSI value *in process*. This notation is used for those hazardous substances on the Rule 57 Water Quality Values table where the NLS (no literature search) notation is indicated for one or more of the endpoints required for development of a generic GSI. Additional work needed to address these endpoints may either be underway, or not yet initiated by the Surface Water Quality Division.

NA = Criterion or value is *not available* or, as is the case for Csat, *not applicable*.

NLL = Not likely to leach.

NLV = Not likely to volatilize.

{A} = Criterion is the State of Michigan Drinking Water Standard established pursuant to Section 5 of 1976 PA 399, MCL 325.1005.

{B} = Background, as defined in Rule 299.5701(b), may be substituted if higher than the calculated cleanup criteria. Background levels may not exceed criteria for some inorganic compounds.

{D} = Calculated criterion exceeds 100%, hence it is reduced to 100% (i.e., 1.0E+9 ppb).

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MDEQ Criteria Qualifiers (Cont'd.):

{E} = Criterion is the aesthetic drinking water value, as required by Sec. 20120a(5) of the act. A Notice of Aesthetic Impact may be employed as an institutional control mechanism if groundwater concentrations exceed the aesthetic DWC, but do not exceed the applicable health-based DWC. Health-based DWC are provided in the table below.

Hazardous Substance	CAS #	Residential Health-Based DWC	Industrial-Commercial Health-Based DWC
Aluminum	7429905	300	4,100
tertiary Amyl methyl ether	994058	910	2,600
Copper	7440508	1,400	4,000
Diethyl ether	60297	3,700	10,000
Ethylbenzene	100414	700	700
Iron	7439896	2,000	5,600
Manganese	7439965	860	2,500
Methyl-tert-butyl ether (MTBE)	1634044	240	690
Toluene	108883	1,000	1,000
1,2,4-Trimethylbenzene	95636	1,000	2,900
1,3,5-Trimethylbenzene	108678	1,000	2,900
Xylenes	1330207	10,000	10,000

{G} = GSI criterion is pH or water hardness dependent. The Final Chronic Value (FCV) for the protection of aquatic life must be calculated based on the pH or hardness of the receiving surface water. Where water hardness exceeds 400 mg CaCO₃/L, use 400 mg CaCO₃/L for the FCV calculation. The FCV formula provides values in units of ug/L (ppb). The generic GSI criterion is the lesser of the calculated FCV, the wildlife value (WV) and the surface water human non-drinking water value (HNDV). The soil GSI protection criteria for these hazardous substances are the greater of the 20 X GSI and the GSI soil-water partition values using the GSI criteria developed with the procedure described in this footnote.

Hazardous Substance	FCV Formula ug/L	FCV Conversion Factor (CF)	WV ug/L	HNDV ug/L
Barium ^x	EXP(1.0629*(LnH)+1.1869)	NA	NA	1.6E+5
Beryllium	EXP(2.5279*(LnH)-10.7689)	NA	NA	1,200
Cadmium ^x	(EXP(0.7852*(LnH)-2.715))*CF	1.101672-((LnH)*0.04184)	NA	130
Chromium (III) ^x	(EXP(0.819*(LnH)+0.6848))*CF	0.86	NA	9,400
Copper	(EXP(0.8545*(LnH)-1.702))*CF	0.96	NA	64,000
Lead ^x	(EXP(1.273*(LnH)-3.296))*CF	1.46203-((LnH)*0.14571)	NA	190
Manganese	EXP(0.8784*(LnH)+3.5199)	NA	NA	59,000
Nickel	(EXP(0.846*(LnH)+0.0584))*CF	0.997	NA	2.1E+5
Pentachlorophenol ^x	EXP(1.005*(pH)-5.134)	NA	NA	2.8
Zinc	(EXP(0.8473*(LnH)+0.884))*CF	0.986	NA	22,000

Where,

EXP(x) = The base of the natural logarithm raised to power x (e^x).

LnH = The natural logarithm of water hardness in mg CaCO₃/L.

* = The multiplication symbol.

^x = The GSI criterion developed here may not be protective for surface water that is used as a drinking water source. Refer to footnote {X} for further guidance.

{H} = Valence-specific chromium data (Cr III and Cr VI) shall be compared to the corresponding valence-specific cleanup criteria.

If both Cr III and Cr VI are present in groundwater, the total concentration of both cannot exceed the DWC of 100 ug/L. If analytical data are provided for "total" chromium only, then values for Cr VI must be applied as the cleanup criteria. Cr III cleanup criterion for protection of drinking water can only be used at sites where groundwater is prevented from being used as a public water supply, currently and in the future, through an approved land or resource use restriction.

{I} = Hazardous substance may exhibit the characteristic of ignitability as defined in 40 CFR 261.21.

{J} = Hazardous substance may be present in several isomer forms. Isomer-specific concentrations shall be added together for comparison to criteria.

{M} = Calculated criterion is below the analytical Target Detection Limit (TDL), therefore, the criterion defaults to the TDL.

{P} = Amenable cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with all groundwater criteria. Total cyanide methods or method OIA-1677 shall be used to quantify cyanide concentrations for compliance with soil criteria. Industrial/commercial direct contact criteria may not be protective of the potential for release of hydrogen cyanide gas. Additional land or resource use restrictions may be necessary to protect for the acute inhalation concerns associated with hydrogen cyanide gas.

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MDEQ Criteria Qualifiers (Cont'd.):

- {Q} = Criteria for carcinogenic polycyclic aromatic hydrocarbons (PAHs) were developed using "relative potential potencies" (RPPs) to benzo(a)pyrene.
- {R} = Hazardous substance may exhibit the characteristic of reactivity as defined in 40 CFR 261.23.
- {S} = Criterion defaults to the hazardous substance-specific water solubility limit.
- {T} = Refer to the Toxic Substances Control Act (TSCA), 40 CFR 761, Subparts D and G, as amended, to determine the applicability of TSCA cleanup standards. Alternatives to compliance with the standards listed below are possible under Subpart D. New releases may be subject to the standards identified in Subpart G. Use Part 201 soil direct contact criteria in the table below if TSCA standards are not applicable.

Land Use Category	TSCA, Subpart D	Part 201
Residential & Commercial I	1,000 ppb, or 10,000 ppb if capped	4,000 ppb
Industrial & Commercial II	1,000 ppb, or 10,000 ppb if capped	16,000 ppb
Commercial III	1,000 ppb, or 10,000 ppb if capped	33,000 ppb
Commercial IV	1,000 ppb, or 10,000 ppb if capped	22,000 ppb

- {W} = Concentrations of trihalomethanes in groundwater shall be added together to determine compliance with the State of Michigan Drinking Water Standard of 100 ug/L. Concentrations of trihalomethanes in soil must be added together to determine compliance with the DWPC of 2,000 ug/kg.
- {X} = The GSI criterion shown is not protective for surface water that is used as a drinking water source. For groundwater discharges to the Great Lakes and their connecting waters or discharges in close proximity to water supply intake(s) in inland surface waters, the generic GSI criterion is the Surface Water Human Drinking Water Value (HDV) listed in the table below except for those HDV indicated with an asterisk. For HDV with an asterisk, the generic GSI criterion is the lesser of the HDV, the WV and the calculated FCV (see formulas in footnote {G}). Soil protection criteria based on the HDV are listed below except for those values with an asterisk. Soil GSI protection criteria for compounds with an asterisk are the greater of the 20 X GSI or GSI soil-water partition values using the GSI criteria developed with the procedure described in this footnote.

Hazardous Substance	Chemical Abstract Service Number	Surface Water Human Drinking Water Values (HDV) (ug/L)	Soil GSI Protection Criteria for HDV (ug/Kg)
Acrylonitrile	107131	0.87	17
Alachlor	15972608	3.5	70
Antimony	7440360	2	1,400
Arsenic	7440382	50	23,000
Atrazine	1912249	4.3	86
Barium	7440393	1,900*	*
Benzene	71432	12	240
Butyl benzyl phthalate	85687	6.9	13,000
Cadmium	7440439	2.5*	*
Carbon tetrachloride	56235	5.6	110
Chloride	16887006	50,000	1.0E+6
Chloroform	67663	77	1,500
Chromium (III)	16065831	120*	*
Cyanazine	21725462	10 {M}	500 {M}
3,3'-Dichlorobenzidine	91941	0.3 {M}	2,000 {M}
1,2-Dichloroethane	107062	6	120
1,1-Dichloroethylene	75354	24	480
1,2-Dichloropropane	78875	9.1	180
N,N-Dimethylacetamide	127195	700	14,000
1,4-Dioxane	123911	34	680
Ethylene glycol	107211	56,000	1.1E+6
Heptachlor	76448	0.01 {M}	NLL
beta-Hexachlorocyclohexane	319857	0	20 {M}
Hexachloroethane	67721	5.3	310
Isophorone	78591	310	6,200
Isopropyl alcohol	67630	28,000	560,000
Lead	7439921	14*	*
Manganese	7439965	3600	72,000
Methyl-tert-butyl ether (MTBE)	1634044	100	2,000

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Hazardous Substance	Chemical Abstract Service Number	Surface Water Human Drinking Water Values (HDV) (ug/L)	Soil GSI Protection Criteria for HDV (ug/Kg)
Methylene chloride	75092	47	940
Mirex	2385855	0.02 {M}	NLL
Molybdenum	7439987	120	2,400
Nitrobenzene	98953	4.7	200 {M}
Pentachlorophenol	87865	1.8*	*
1,2,4,5-Tetrachlorobenzene	95943	2.8	3,300
1,1,1,2-Tetrachloroethane	630206	19	380
1,1,2,2-Tetrachloroethane	79345	3.2	64
Tetrachloroethylene	127184	11	220
Tetrahydrofuran	109999	350	7,000
Thallium	7440280	1.2	1,400
1,1,2-Trichloroethane	79005	12	240
Trichloroethylene	79016	29	580

{AA} = Comparison to these criteria may take into account an evaluation of whether the hazardous substances are adsorbed to particulates rather than dissolved in water and whether filtered groundwater samples were used to evaluate groundwater.

{Z} = The current TDL for mercury is 0.2 ppb; however, a TDL of 5.0E-4 using USEPA Method 1631, will be required after September 30, 2000.

{ }* = Site-specific background value has been used as the constituent criteria value.