December 8, 2017 Reference No. 058502

Mr. Nate Nemani
Corrective Action Project Manager
U.S. EPA, Region 5
Land and Chemicals Division
77 West Jackson Boulevard LU-9J
Chicago, IL 60604 3590

Dear Mr. Nemani:

Re: 2017 CA 750 Environmental Indicator Annual Monitoring Results
EPA ID #MID 041 793 340
RACER Nodular Facility - Saginaw, Michigan

This letter summarizes the CA 750 Environmental Indicators (EI) monitoring activities related to the Nodular Facility that is owned by Revitalizing Auto Communities Environmental Response (RACER) Properties, LLC, a wholly owned entity of RACER Trust in Saginaw, Michigan.

The annual CA 750 EI monitoring was completed on May 17th, 2017 prior to the abandonment of the wells to support a proposed development.

The revisions proposed in the 2016 CA 750 EI Annual Monitoring Results recommendations dated January 4, 2017 were approved via email by U.S. EPA on May 5, 2017 and incorporated into the 2017 EI monitoring program.

In addition, GHD (formerly CRA) submitted a memorandum that discussed ammonia in groundwater at the Site on April 6, 2015 for your review and it was subsequently forwarded to MDEQ for review on April 8, 2015. Results submitted since submittal of that letter have been modified to incorporate the evaluation of the toxic fraction of ammonia (unionized ammonia) consistent with the evaluation included in the memorandum.

Figure 1 presents databoxes for all RACER EI locations, as well as additional monitoring well data collected in the area of the high pH and ammonia. The databoxes show all data up to and including the 2017 EI results. As indicated on Figure 1:

Groundwater/Surface Water/EI Wells (MW-03945, MW-04051, MW-04250R, MW-04257, and MW-04757)

- Unionized ammonia was calculated for each monitoring well utilizing the pH and temperature of each individual monitoring well and averaged with the Saginaw River pH and temperature. The calculated unionized ammonia results were compared to the warmwater unionized ammonia acute toxicity criterion of (420 micrograms per litre [µg/L]), which was the criteria recommended in the mixing zone determination, dated January 12, 2010. The results were below applicable criteria and are summarized in Table 1.

GHD
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- pH was reported above the lowest applicable screening criterion (the Non-Residential Drinking Water criterion of 8.5 S.U.) in one monitoring well, MW-04250R at 8.93 S.U.

Source Area Wells (MW-04438, MW-04836, MW-05036, MW-8, and MW-04040)

- Unionized ammonia was calculated for each monitoring well utilizing the pH and temperature of each individual monitoring well and averaged with the Saginaw River pH and temperature. The calculated unionized ammonia results were compared to the warmwater unionized ammonia acute toxicity criterion of 420 µg/L), which was the criteria recommended in the mixing zone determination, dated January 12, 2010. Unionized ammonia was reported above applicable criterion (FAV criterion of 420 µg/L) in one monitoring well, MW-8 at 654.6 µg/L. This well is located approximately 1,750 feet from the nearest surface water, the Saginaw River. All other results were below applicable criteria and are summarized in Table 1.
- pH was reported above the lowest applicable screening criterion (the Non-Residential Drinking Water criterion of 8.5 S.U.) in four monitoring wells, MW-8 at 11.01 S.U., MW-04040 at 9.62 S.U., MW-04438 at 11.81 S.U. and MW-05036 at 11.39 S.U.

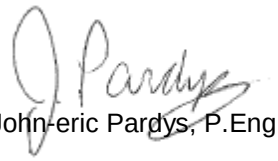
In summary, the results of the 2017 EI monitoring results are generally consistent with the data evaluated in the RCRA CA725 & CA750 Environmental Indicators Supporting Documentation dated September 17, 2003. Figures 2 and 3 present the concentration trend graphs for Ammonia and pH, respectively, for select monitoring wells MW-03945 (at the river), MW-04051 (at the river), MW-04836 (between source and river), and MW-8 (at the apparent source area).

There are no proposed changes to the EI monitoring program for 2018. Replacement monitoring wells are scheduled to be installed in 2018 to allow for sampling in November 2018. The 2018 EI monitoring program is summarized in Table 2.

Should you have any questions, please do not hesitate to call.

Yours truly,

GHD



John-eric Pardys, P.Eng.

JEP/kf/38

Encl.

cc: Grant Trigger, RACER
Dave Favero, RACER
Michael Tomka, GHD

MW-04250R	9/28/2005	10/7/2005	8/31/2006	9/13/2007	11/5/2008	12/17/2008	12/3/2009	11/23/2010	11/1/2011	11/8/2012	7/16/2013	11/12/2013	11/14/2014	11/3/2015	11/7/2016	5/17/2017
Ammonia	-	-	-	-	-	4080	4330	9100	4400	4800/6800	-	5000/5200	2700 J/1600 J	2200/2400	2700/2900	2000
Chromium	5.5	-	2.2 J/2.2 J	5 U	5 U/5 U	-	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	-	-	20 J/20 J	50 U	50 UJ/50 UJ	-	50 UJ	40 U	20 UJ	20 U/20 U	-	-	-	-	-	-
Cyanide (amenable)	-	-	-	-	-	-	R	10 U	10 UJ	10 U/10 U	-	10 U/10 U	-	-	-	-
Cyanide (total)	-	-	30 J/140 J	10 U	10 U/10 U	-	R	10 U	10 UJ	10 U/10 U	-	10 U/10 U	-	-	-	-
Mercury	-	-	0.0041/0.00443	0.0062	0.00477/0.00462	-	0.0027 J	0.00065 UJ	0.0024 J	0.20 U/0.20 U	-	0.20 U/0.20 U	0.20 U/0.20 U	0.20 U/0.20 U	0.20 U/0.20 U	-
pH	11.01 J	10.48	11.16/11.12	10.90	10.76 J/10.85 J	10.98	10.72 J/10.67	9.9 J/10.05	9.43/9.3 J	9.95/9.55 J/9.49 J	10.83	9.68 J/9.7/9.68 J	9.98 J/10.0 J	9.26 J/9.31 J	8.77	8.9 J/8.93
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	-	-	-	-	122	60.3	99.8
Vanadium	13.7	-	6.8 J/6.1 J	10 U	10 U/10 U	-	10.0 U	-	-	-	-	-	-	-	-	-

MW-04257	1/29/2004	1/24/2005	9/12/2007	11/12/2008	12/3/2009	11/30/2010	11/2/2011	11/8/2012	7/16/2013	11/12/2013	11/14/2014	11/3/2015	11/8/2016	5/18/2017
Ammonia	-	990	-	1170	1070	1200	820	340	-	630	350	620	380	500
Chromium	-	5.0 U	150	116 J	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	-	-	50 U	R	5 J	10 J	20 UJ	20 U	-	-	-	-	-	-
Cyanide (amenable)	-	-	-	-	R	10 U	10 UJ	10 U	-	10 U	-	-	-	-
Cyanide (total)	-	-	10 U	10 U	R	10 U	10 UJ	10 U	-	10 U	-	-	-	-
pH	6.90	7.25/6.79	7.27	7.15/7.13 J	6.97 J/6.64	6.84/7.2 J	6.88/7.0 J	6.79/6.97 J	7.22	7.30 J/7.35	7.32 J	6.96 J	7.06	7.3 J/7.32
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	-	-	5	1.8	6.0
Vanadium	-	10.0 U	10 U	10 U	10.0 U	-	-	-	-	-	-	-	-	-

MW-03945	1/29/2004	1/21/2005	10/8/2005	9/14/2007	11/5/2008	12/3/2009	11/23/2010	11/1/2011	11/8/2012	7/16/2013	11/12/2013	11/14/2014	11/3/2015	11/8/2016	5/18/2017
Ammonia	-	7700/7700	-	-	8880	7690/8040	7000/7200	6700	8800	9100	5100	7300	7600	7400	8300
Chromium	-	5.0 U/5.0 U	-	5 U	5 U	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	-	-	-	50 UJ	50 UJ	8 J/8 J	200 U/200 U	3.4 J	200 U	-	-	-	-	-	-
Cyanide (amenable)	-	-	-	-	-	R/R	10 U/10 U	10 UJ	10 U	-	10 U	-	-	-	-
Cyanide (total)	-	-	-	6 J	2 J	R/R	10 U/10 U	10 UJ	10 U	-	10 U	-	-	-	-
Mercury	-	-	-	0.0008 J	0.001 U	R/R	0.0005 UJ/0.0005 UJ	0.0005 UJ	0.20 U	-	-	-	-	-	-
pH	7.31	6.32/6.82/6.87	6.57	7.22	6.87 J/6.69	6.64 J/6.69/6.59 J	6.89/6.9 J/6.9 J	6.7 J/6.57	6.63/6.70 J	6.68	6.7/6.93 J	7.01 J	6.63 J	6.56	6.6 J/6.7
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	-	-	-	20	11.3	27.4
Vanadium	-	10.0 U/10.0 U	-	10 U	10 U	10.0 U/10.0 U	-	-	-	-	-	-	-	-	-

MW-04051	1/29/2004	1/21/2005	10/8/2005	9/14/2007	11/5/2008	12/3/2009	11/23/2010	11/1/2011	11/8/2012	7/16/2013	11/12/2013	11/14/2014	11/3/2015	11/8/2016	5/18/2017
Ammonia	-	3450	-	-	6330	5170	5600	5700/5300	5800	-	4600	4400	5800	530	6300
Chromium	-	5.0 U	-	5 U	5 U	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	-	-	-	50 UJ	50 UJ	8 J	200 U	9.7 J/4.7 J	100 U	-	-	-	-	-	-
Cyanide (amenable)	-	-	-	-	-	R	10 U	10 UJ/10 UJ	10 U	-	10 U	-	-	-	-
Cyanide (total)	-	-	-	4 J	10 U	R	10 U	10 UJ/10 UJ	10 U	-	10 U	-	-	-	-
Mercury	-	-	-	0.0007 J	0.001 U	R	0.0005 UJ	0.0005 UJ/0.0005 UJ	0.20 U	-	-	-	-	-	-
pH	7.48	6.91/6.53	6.69	7.30	6.98 J/6.76	6.05/6.83 J	6.72/7.6 J	6.8 J/6.58/6.8 J	6.88/6.89 J	6.85	7.03 J/6.94	7.13 J	6.60 J	6.71	6.7 J/6.84
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	-	-	-	19	1.3	28.6
Vanadium	-	10.0 U	-	10 U	10 U	10.0 U	-	-	-	-	-	-	-	-	-

MW-04250	12/4/1998	7/18/2000
Chromium	186/173	28
Chromium (dissolved)	5 U/5 U	5 U
Chromium VI (hexavalent)	-	10 U
Cyanide (total)	10 U/10 U	7
Mercury	0.2/0.2 U	-
Mercury (dissolved)	0.2 U/0.2 U	-
Vanadium	89/84	33

MW-04757	11/16/1998	7/18/2000	1/5/2003	1/25/2005	8/31/2006	9/12/2007	11/12/2008	12/2/2009	11/30/2010	11/1/2011	11/7/2012	7/16/2013	11/12/2013	11/14/2014	11/3/2015	11/7/2016	5/18/2017
Ammonia	-	-	700	-	-	-	170	178	300	-	14000	1100 J/1700 J	200 U	220	300	280	300
Chromium	126 J	97.1	-	5.0 U	5 U	5 U	11.5 J	-	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	-	10 U	-	-	50 UJ	50 U	R	50 U	6 J	-	-	-	-	-	-	-	-
Cyanide (amenable)	-	-	-	-	-	-	-	-	10 U	10 UJ	10 U	-	10 U	-	-	-	-
Cyanide (total)	10 U	7	-	-	8 J	10 U	10	10 U	10 U	10 UJ	10 U	-	10 U	-	-	-	-
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	5.5	10.7
Vanadium	54 J	36.3	-	10.0 U	10 U	10 U	10 U	-	-	-	-	-	-	-	-	-	-

MW-04438	1/24/2005	10/7/2005	5/17/2017
Ammonia	-	-	1100
pH	11.89/11.76	10.91	11.6 J/11.81
Un-ionized ammonia	-	-	60.4

MW-04040	11/18/1998	8/2/2000	12/19/2002	2/5/2004	1/20/2005	10/7/2005	11/12/2014	11/3/2015	11/7/2016	5/17/2017
Ammonia	-	-	490	600	-	-	610	460	710	450
pH	7.3	7.81	7.22	7.4/7.44	7.36	7.11	-	-	7.47	9.62/7.9 J
Un-ionized ammonia	-	-	-	-	-	-	-	7	4.6	22.9

MW-04836	8/2/2000	12/14/2001	12/1/2002	1/29/2004	1/18/2005	10/7/2005	7/16/2013	11/13/2013	11/12/2014	11/3/2015	11/7/2016	5/17/2017
Ammonia	2030	50	-	-	-	-	11000	35000	33000	51000	18000	3400/3500
pH	7.74	7.37	11.19	7.70	7.45	7.32	7.72	7.31 J/7.45	7.39 J	6.82 J	7.33	7.4 J/8.01/7.3 J/8.01
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	161	47.8	107.2

MW-04835	12/17/2001	12/19/2002	1/29/2004	11/13/2013
Ammonia	-	-	-	900
pH	8.05	6.91	8.44	7.29/7.20 J

MW-8	3/7/1988	8/7/2000	12/14/2001	12/19/2002	1/14/2005	10/7/2005	7/15/2013	11/13/2013	11/12/2014	11/3/2015	11/7/2016	5/17/2017
Ammonia	17000	19100	55700	33000	30300	-	17000	10000	10000	12000	11000	12000
pH	10.2	10.98	11.06	11.19	11.01	10.13	11.35	10.7/10.7 J	10.3 J	9.81 J	10.6 J/10.74	10.6 J/11.01
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	685	265.1	654.6

MW-05036	12/3/1998	8/2/2000	12/14/2001	1/29/2004	1/18/2005	10/7/2005	7/16/2013	11/13/2013	11/12/2014	11/3/2015	11/7/2016	5/17/2017
Ammonia	-	-	2400	-	-	-	-	4900	4900	12000	3600	1700
pH	6.76	10.49	9.35	10.80	9.94	9.49	12.25	12.12/11.4 J	11.2 J	10.8 J	11.2 J/11.39	11.1 J/11.47
Un-ionized ammonia	-	-	-	-	-	-	-	-	-	647	82.0	94.1

MW-04765 (584.20)
MW-04864 (582.40)*
MW-04757 (584.36)
MW-15457 (585.25)
MW-04257 (581.57)
MW-04051 (582.16)
MW-04250 (ABANDONED)
MW-03945 (582.22)
MW-04250R (NA)
MW-04040 (585.51)
MW-04438
MW-04836 (587.54)
MW-05036 (587.81)
MW-04835 (587.66)
MW-04434 (587.76)
MW-04831 (587.83)
MW-8 (587.91)
MW-15450 (588.04)
MW-05443 (588.01)
MW-06951 (586.44)
MW-06445 (588.39)
RIVER
SAGINAW
BUILDING
PARKING
BUILDING
PARKING

0 100 200 ft

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW-04765 ● MONITORING WELL LOCATION
- (582.12) GROUNDWATER ELEVATION - NOVEMBER 2015
- 586 UPPER WATER BEARING ZONE GROUNDWATER CONTOUR - FT. AMSL (NAVD 88) - NOVEMBER 2015
- 420 UN-IONIZED AMMONIA CONTOUR

MW-04765	1/21/2005	9/12/2007
Metals		
Chromium Total	5.0 U	4.3 J
Chromium VI (Hexavalent)	-	50 U
Vanadium	10.0 U	5.5 J
Wet		
Ammonia	9000	1150
Cyanide (total)	-	3 J
pH	-	7.44

SAMPLE LOCATION
SAMPLE DATE
RESULT (ug/L) EXCEPT pH WHICH IS IN s.u.
PARAMETER
EXCEEDS CRITERIA

MICHIGAN PART 201 CRITERIA

fraction	Parameter	Lowest Criteria (ug/L or s.u. for pH)	
METAL	Chromium (total)	100	A
METAL	Chromium (VI)	11	B
METAL	Mercury	0.0013	B
METAL	Vanadium	12	B
WET	Cyanide (total)	5.2	B
WET	Cyanide (amenable)	5.2	B
WET	pH	6.5 - 8.5	A
WET	Unionized Ammonia	420	B

Chromium (total) use Chromium III (Trivalent) criteria.
A: Non-Residential Drinking Water Criteria
B: GSI Criteria

NOTES:

1. SEE TABLE 1 FOR HOW UNIONIZED AMMONIA WAS CALCULATED.
2. NOTE THAT THE GSI CRITERIA DEVELOPED FOR TOTAL CHROMIUM WAS DEVELOPED FROM THE FINAL CHRONIC VALUE CALCULATION FOR TRIVALENT CHROMIUM, AS SPECIFIED IN THE MDEQ GUIDANCE. TOTAL CHROMIUM RESULTS WERE COMPARED TO TRIVALENT CHROMIUM CRITERIA SINCE EXTENSIVE SITE DATA SUPPORTS THAT THE MAJORITY OF THE TOTAL CHROMIUM IS TRIVALENT CHROMIUM. HEXAVALENT CHROMIUM IS STILL SAMPLED AT NUMEROUS LOCATIONS AND IS COMPARED TO HEXAVALENT CHROMIUM CRITERIA.
3. GROUNDWATER ELEVATION NOT USED IN DETERMINATION OF GROUNDWATER CONTOURS.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

RACER
NODULAR IRON INDUSTRIAL LAND
SAGINAW, MICHIGAN
SUMMARY OF EI LOCATIONS AND RESULTS (1998 - 2017)

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
M.T.	J.P.	JUNE 2017	
Scale: 1" = 200'	Project N°: 58502-T01	Report N°: NEMA036	Drawing N°: figure 1

58502-T01(NEMA036)GN-WA001 NOV 22, 2017

Figure 2 Ammonia Trend Graph

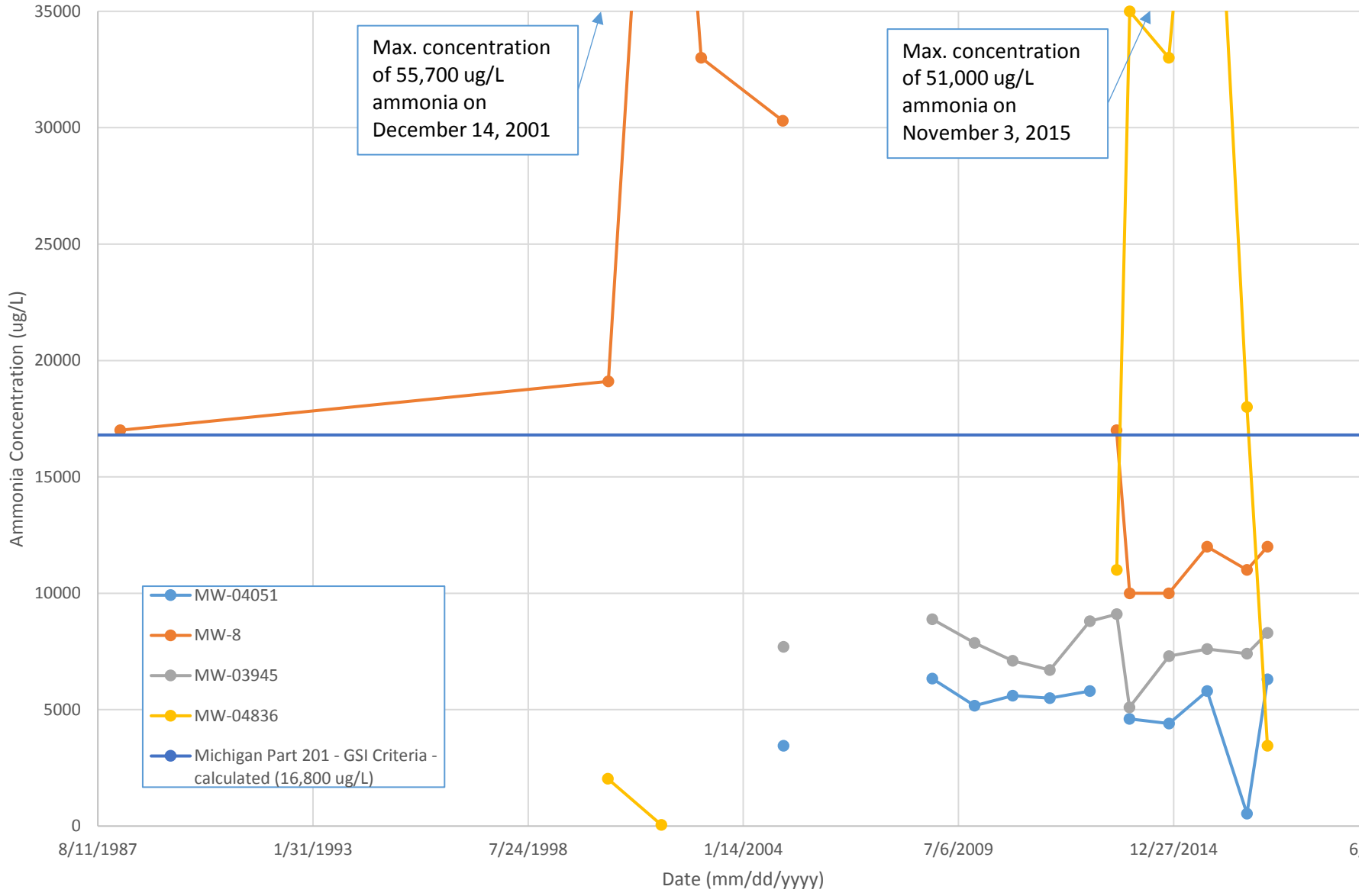


Figure 3 pH Trend Graph

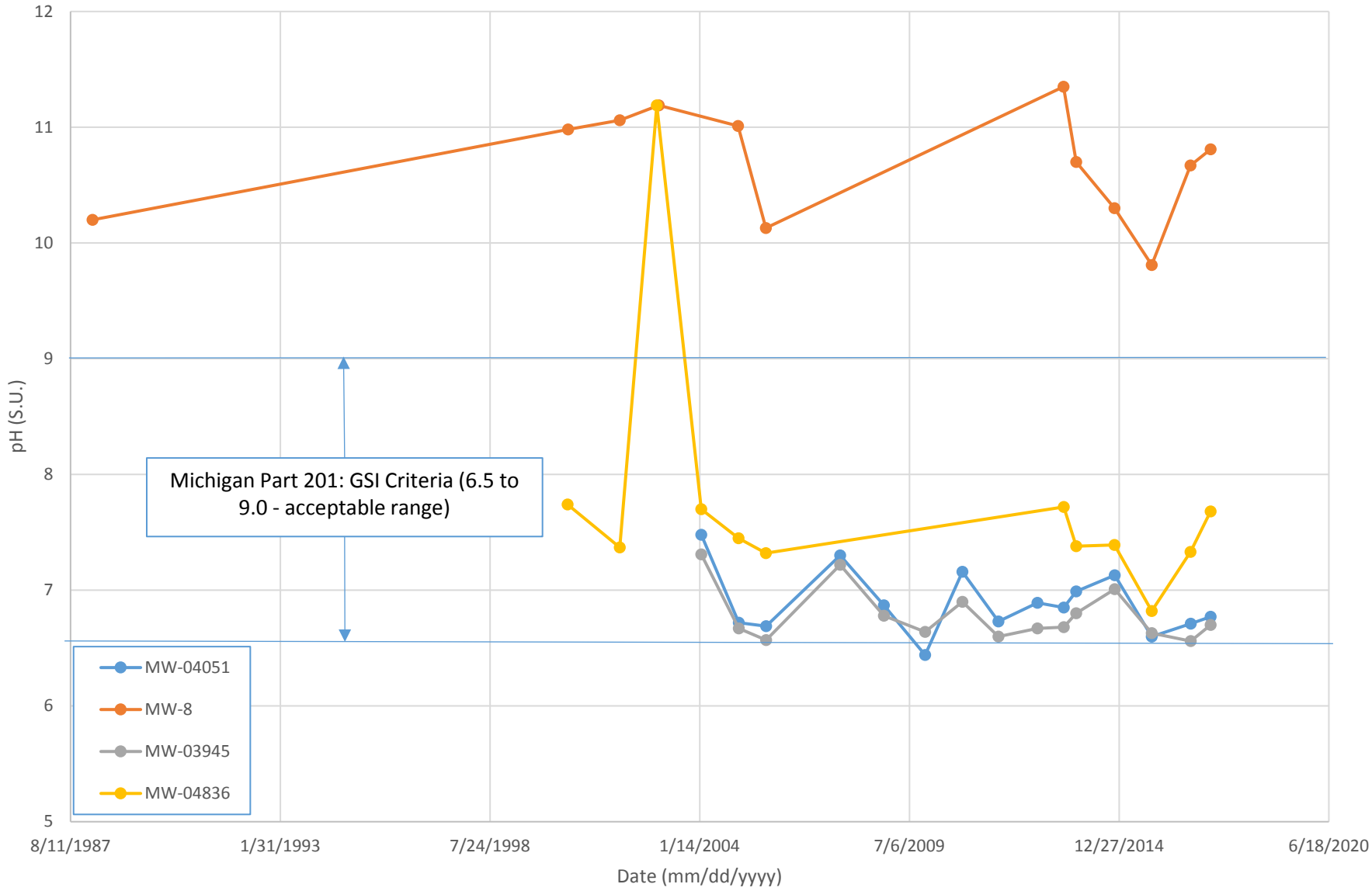


Table 1

Groundwater Ammonia FAV Compliance Worksheet
GSI Compliance Sampling Event of May 2017
Nodular Iron Industrial Land
Saginaw, Michigan

GSI Compliance Point Number (WELL ID)	Measured Total NH_3 (ug/L)	Groundwater Temperature (^oC)	Groundwater pH	Saginaw River Temperature (^oC)[4]	Saginaw River pH [4]	Average Temperature (^oC)[1]	Average pH[2]	% Unionized NH_3[3]	Calculated Unionized NH_3 (ug/L)
MW-04257	500	14.31	7.32	23.5	7.90	18.91	7.52	1.19%	6.0
MW-04051	6300	13.81	6.84	23.5	7.90	18.66	7.10	0.45%	28.6
MW-03945	8300	13.27	6.70	23.5	7.90	18.39	6.97	0.33%	27.4
Other Wells									
MW-04250R	2000	14.04	8.93	23.5	7.90	18.77	8.16	4.99%	99.8
MW-04757	300	12.59	8.23	23.5	7.90	18.05	8.03	3.58%	10.7
MW-04836	3500	13.41	8.01	23.5	7.90	18.46	7.95	3.06%	107.2
MW-04040	450	12.67	9.62	23.5	7.90	18.09	8.19	5.09%	22.9
MW-8	12000	14.18	11.01	23.5	7.90	18.84	8.20	5.45%	654.6
MW-05036	1700	14.58	11.47	23.5	7.90	19.04	8.20	5.53%	94.1
MW-04438	1100	14.33	11.81	23.5	7.90	18.92	8.20	5.49%	60.4

Notes:

1. Temperature is the average of the groundwater temperature and the Saginaw river temperature
2. pH value for average of groundwater and Saginaw River H^+ concentrations
3. Ammonia toxicity equations taken from Steven C. Chapra "Surface Water-Quality Modeling", McGraw-Hill Series in Water Resources and Environmental Engineering 1997
4. The Saginaw River temperature and pH were taken from the USGS Station 04157005 - Saginaw River at Holland Avenue, Saginaw MI (apporximately 3.7 miles upstream)

Boxed Value indicates exceedance of FAV criterion of 420 ug/L.

Table 2

Revised EI Monitoring Program
Nodular Facility, Saginaw, Michigan

IU	Location	Parameter	Monitoring Purpose	Propose to Eliminate from EI Monitoring	Comments
G	MW-04250/MW-04250R	pH	GSI	No	
G	MW-04250/MW-04250R	ammonia	GSI	No	
G	MW-04250/MW-04250R	temperature	GSI	No	
G	MW-04757	ammonia	GSI	No	
G	MW-04757	pH	GSI	No	
G	MW-04757	temperature	GSI	No	
Wells added in 2007 per EPA's email request dated August 8, 2007.					
G	MW-03945	pH	GSI	No	
G	MW-03945	ammonia	GSI	No	
G	MW-03945	temperature	GSI	No	
G	MW-04051	pH	GSI	No	
G	MW-04051	ammonia	GSI	No	
G	MW-04051	temperature	GSI	No	
G	MW-04257	pH	GSI	No	
G	MW-04257	ammonia	GSI	No	
G	MW-04257	temperature	GSI	No	
Wells added in 2013 per RACER's recommendation dated October 23, 2013					
G	MW-04836	pH	GSI	No	
G	MW-04836	ammonia	GSI	No	
G	MW-04836	Temperature	GSI	No	
G	MW-05036	pH	GSI	No	
G	MW-05036	ammonia	GSI	No	
G	MW-05036	Temperature	GSI	No	
G	MW-8	pH	GSI	No	
G	MW-8	ammonia	GSI	No	
G	MW-8	Temperature	GSI	No	
Well added to the the 2014 monitoring program					
G	MW-04040	ammonia	GSI	No	
G	MW-04040	pH	GSI	No	
G	MW-04040	temperature	GSI	No	
Sampling Locationadded to the 2016 monitoring program					
G	Saginaw River (next to MW-03945)	pH	GSI	No	
G	Saginaw River (next to MW-03945)	temperature	GSI	No	

Notes:

- Table updated to remove select parameters based on 4 consecutive rounds below criteria.
- Wells evaluated using most recent groundwater data compared to appropriate EI criteria.
- Since 2005 all samples for metals analyses have been collected using low flow sampling techniques and were unfiltered.
- GSI = Selected to monitor stability based on exceedances of groundwater surface water interface criteria in most recent s