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June 21, 2017

Mr. Kevin McKnight
Northeast Region
Wisconsin Department of Natural Resources
625 East County Road Y, Suite 700
Oshkosh, WI 54901

Subject: 2017 Groundwater Monitoring Report
Former Tecumseh Products, Former Plating Line Area
New Holstein, Wisconsin
BRRTS# 02-08-363333

Dear Mr. McKnight:

TRC is currently implementing monitored natural attenuation (MNA) and groundwater monitoring specific to the former plating line area at the former Tecumseh Products facility in New Holstein, Wisconsin (BRRTS #: 02-08-363333). On April 22, 2016, September 7, 2016, and April 26, 2017, TRC completed groundwater sampling at monitoring wells specific to the former plating line area to verify a stable residual chromium plume and confirm MNA. This letter presents the results of the data collected during the previous three groundwater monitoring events, in accordance with the proposed work plan, dated September 30, 2015. A technical review and response from the Wisconsin Department of Natural Resources (WDNR) is requested, and a $425 check is included for the review, per the State of Wisconsin Chapter NR 749 fee for long-term monitoring plans.

Evaluation of the groundwater data through August 2014 indicated the extent of chromium impacts to groundwater from the former plating line were defined, remains stable, and that natural attenuation is occurring at the site. Beginning in 2016, only the plume monitoring wells that exceeded the Enforcement Standard (ES) point-of-compliance for total dissolved chromium (>100 µg/L) were being monitored. These monitoring wells include MW-A, MW-B, MW-E, MW-8, TEC-3, and TEC-4. During the April and September 2016 sampling events, the wells were sampled for total dissolved chromium to track MNA.

The 2017 sampling event included three additional monitoring wells (TEC-1, NH-2, NH-26) and three additional analytes (dissolved hexavalent chromium, ferrous iron, total organic carbon [TOC]) to further evaluate MNA.

SUMMARY OF GROUNDWATER MONITORING

Groundwater Monitoring Program

Prior to groundwater sampling, water levels were measured at each monitoring well. Using a peristaltic pump, the low-flow sampling method was used to collect groundwater samples. In 2016, monitoring wells MW-A, MW-B, MW-E, MW-8, TEC-3, and TEC-4 were sampled and analyzed for dissolved total chromium. In 2017, monitoring wells MW-A, MW-B, MW-E, MW-8, TEC-3, TEC-4, TEC-1, NH-2, and NH-26 were sampled and analyzed for dissolved total chromium along with dissolved hexavalent chromium, ferrous iron, and TOC. During well purging, field parameters (temperature, conductivity, turbidity, dissolved oxygen, pH and oxidation/reduction potential [ORP]) were logged and allowed to stabilize prior to sampling each monitoring well. All samples were packaged in a cooler with ice and shipped to Pace Analytical Services, LLC in Green Bay, Wisconsin (Pace) under standard chain of custody procedures. Analytical methods included EPA 6010 (dissolved chromium), SM 3500-Cr B (dissolved hexavalent chromium), HACH 8146 (ferrous iron), and SM 5310C (TOC).

Purge water was drummed and discharged into the nearest sanitary sewer line, with permission from the City of New Holstein wastewater treatment plant.

Groundwater Elevations

Table 1 presents a summary of water level measurements collected during events between 2009 and 2017. The water level elevations showed a higher groundwater table in the most recent sampling event in April 2017, due to significant rainfall for days before and during the sampling event. The groundwater gradient appears to be oriented from the northeastern portion of the facility (NH-2) towards the southwestern corner of the site (MW-A and MW-E).

Groundwater Quality Results

TRC performed a Quality Assurance/Quality Control (QA/QC) review of the laboratory report, in regards to analyses, procedures, and protocols performed by Pace. Based on the results, there were no major insufficiencies regarding surrogate recoveries, analyte detections or sample duplicate recoveries. Based on an internal review by TRC, all data were considered acceptable. QC data indicate that measurement data are sufficient to meet method quality objectives, data are defensible, and QC mechanisms were effective in ensuring measurement data reliability. Samples were received by Pace within the mandated timeframe and maintained at the proper temperature.

RESULTS

The groundwater quality data are summarized in Table 2, which contains dissolved total chromium, dissolved hexavalent chromium, ferrous iron, and TOC results. The distribution of total dissolved chromium in groundwater is shown as a contaminant plume on Figure 1.

Based on the results, total dissolved chromium continues to consist predominantly of dissolved hexavalent chromium. TRC will continue to sample for total dissolved chromium only.

Total dissolved chromium concentrations exceeded the ES in 4 of the 6 monitoring wells in April 2016 (MW-A, MW-E, TEC-3, TEC-4), and exceeded the Preventative Action Limit (PAL) in all 6 monitoring wells. In September 2016, the ES was exceeded in 5 of the 6 monitoring wells (all but MW-A), while the PAL was exceeded in all 6 monitoring wells. In 2017, the ES was exceeded in 6 of the 9 wells (MW-A, MW-E, TEC-1, TEC-3, TEC-4, NH-26) while the PAL was exceeded in these same wells. Monitoring wells MW-B, MW-8, and NH-2 did not exceed the ES or PAL in 2017. TEC-4 consistently showed the highest concentrations of dissolved chromium in each of the three sampling events, with declining concentrations of 65,100, 33,100, and 15,400 (µg/L), respectively. This well continues to provide significantly higher results than all the other wells, with the next closest reported concentration being only 5,650 (µg/L) in TEC-3 in April 2016.

The total chromium concentrations in monitoring wells MW-A, MW-B, and MW-8 have fluctuated in recent events and have shown no consistent trends by falling both above and below ES limits. Monitoring wells MW-E, TEC-3, and TEC-4 have been above the ES and PAL during the last three sampling events. The three wells have shown varying trends in total chromium concentrations. While each well has exceeded the ES and PAL in all three events, TEC-4 has shown a consistent and steady decreasing trend with concentrations decreasing by 50% each event since April 2016. Meanwhile, the concentration of total dissolved chromium at TEC-3 decreased by 50% between April 2016 and September 2016 and then subsequently increased for the April 2017 event. MW-E has shown little fluctuation in concentrations, but exceeded the ES and PAL each event. MW-A, MW-E, and TEC-3 showed their highest concentrations in the spring April events, with lower concentrations occurring in the fall September event. Moreover, MW-B and MW-8 showed their highest concentrations in the fall September event with lower concentrations in the spring April events. These results suggest that there could be seasonal trends associated with each well and this will be monitored during future sampling events.

Total dissolved chromium concentrations in monitoring wells TEC-1 and NH-26 showed ES and PAL exceedances in 2017. Trends in monitoring wells TEC-1, NH-2, and NH-26 cannot be evaluated yet because they were recently added to the sampling program.

TOC was analyzed in April 2017 for the first time in the series of sampling events. TOC provides a measurement of organic matter content in the groundwater flow system. Organic matter can support the reduction and natural attenuation of dissolved hexavalent chromium. Results from the recent sampling event indicated that the highest levels of TOC were in TEC-4 (13,400 µg/L), which also showed the highest levels of total dissolved chromium. The decrease in TOC concentrations away from TEC-4 is potentially due to microbial activities within the saturated zone. These activities are expected to be inducing localized anaerobic conditions, which can be contributing to a biotically-induced reduction and natural attenuation of hexavalent chromium concentrations.

CONCLUSIONS AND RECOMMENDATIONS

Based on an evaluation of recent groundwater data, the contaminant plume remains stable and has not shown any migration from previous sampling events. Monitoring wells MW-B and MW-8 now lie outside of the impacted area. The groundwater impacts do not pose a threat to human health or the environment. The results indicate that MNA continues to control the migration of chromium impacts and is still a viable remedy for the site.

TRC proposes to conduct biennial groundwater sampling beginning in April 2019. Samples will be analyzed for only total dissolved chromium. The proposed frequency of sampling is based on the fact that sufficient data has been collected, evaluated and presented to suggest the stable nature of the chromium groundwater impacts.

If you have any questions, please contact me at (312) 578-0870, extension 11910.

Sincerely,

TRC

Chris Harvey, PE
Program Manager

Enclosures: Check for $425: Long-term Monitoring Plan and Report Fee

TABLES
Table 1. Groundwater Elevations 2009 - 2017
Table 2. Summary of Groundwater Analytical Data

FIGURES
Figure 1. Total Dissolved Chromium in Groundwater May 2017

ATTACHMENTS
Attachment A. Laboratory Analytical Report (May 3, 2016)
Attachment B. Laboratory Analytical Report (September 13, 2016)
Attachment C. Laboratory Analytical Report (May 4, 2017)

cc: Mr. Jason Smith/Tecumseh Products Co. – Paris, TN
Mr. Curtis Toll/Greenberg Traurig, LLP – Philadelphia
Mr. Ron Bock/TRC – Irvine, CA
Ms. Denise Danelski/WDNR – Green Bay, WI

TABLES

Table 1. Groundwater Level Elevations 2009-2017

Location	Top of Casing (TOC) Elevation (ft MSL)	June 8, 2009		September 23, 2009		December 28 & 29, 2009		March 29 & 30, 2010		March 18 & 19, 2011	
		Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation
MW-1	932.60	6.13	926.47	8.80	923.80	3.71	928.89	4.98	927.62	4.92	927.68
NH-2	935.34	--	--	--	--	--	--	--	--	--	--
MW-4	932.24	4.32	927.92	7.55	924.69	2.56	929.68	3.77	928.47	3.56	928.68
MW-5	931.81	4.30	927.51	7.24	924.57	3.10	928.71	3.27	928.54	2.99	928.82
MW-6	931.90	5.23	926.67	8.45	923.45	3.17	928.73	3.72	928.18	3.46	928.44
NH-7	935.42	Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012	
MW-8	931.89	4.07	927.82	6.73	925.16	2.99	928.90	3.33	928.56	3.11	928.78
MW-9	931.54	7.04	924.50	10.65	920.89	4.71	926.83	4.58	926.96	--	--
NH-10	935.37	--	--	--	--	--	--	--	--	--	--
NH-25	934.65	Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012	
MW-24	931.07	--	--	--	--	--	--	--	--	--	--
NH-26	934.76	Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012		Well installed in 2012	
MW-A	932.83	6.78	926.05	9.38	923.45	4.79	928.04	5.62	927.21	5.57	927.26
MW-B	932.58	5.69	926.89	8.60	923.98	3.00	929.58	4.40	928.18	4.22	928.36
MW-C	931.89	5.88	926.01	9.24	922.65	3.29	928.60	3.86	928.03	3.64	928.25
MW-D	941.90	5.81	936.09	9.96	931.94	5.18	936.72	4.04	937.86	--	--
MW-E	933.31	7.28	926.03	9.81	923.50	6.20	927.11	6.43	926.88	6.33	926.98
MW-F	933.83	8.52	925.31	10.93	922.90	7.31	926.52	7.53	926.30	7.52	926.31
MW-G	934.37	7.52	926.85	10.66	923.71	7.02	927.35	7.28	927.09	7.21	927.16
MW-H	933.63	8.81	924.82	12.40	921.23	9.06	924.57	8.45	925.18	--	--
TEC-1	932.51	4.20	928.31	6.67	925.84	3.69	928.82	3.89	928.62	3.46	929.05
TEC-1A	932.02	14.29	917.73	18.37	913.65	14.66	917.36	13.58	918.44	13.42	918.60
TEC-2	931.90	4.67	927.23	7.47	924.43	3.55	928.35	3.68	928.22	3.40	928.50
TEC-3	934.62	6.94	927.68	9.07	925.55	6.51	928.11	6.20	928.42	5.94	928.68
TEC-4	934.50	7.15	927.35	9.64	924.86	6.12	928.38	6.33	928.17	5.98	928.52

MSL - Mean Sea Level

Table 1. Groundwater Level Elevations 2009-2017

Location	Top of Casing (TOC) Elevation (ft MSL)	May 15, 2012		June 20 & 21, 2013		August 18, 2014		April 22, 2016		September 7, 2016		April 26, 2017	
		Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation	Depth To Water Below TOC	Water Level Elevation
MW-1	932.60	2.77	929.83	5.13	927.47	6.80	925.80	4.53	928.07	2.97	929.63	--	--
NH-2	935.34	--	--	--	--	3.68	931.66	4.01	931.33	3.65	931.69	3.82	931.52
MW-4	932.24	2.67	929.57	4.08	928.16	5.62	926.62	3.36	928.88	3.03	929.21	--	--
MW-5	931.81	2.39	929.42	3.70	928.11	4.89	926.92	2.87	928.94	3.35	928.46	--	--
MW-6	931.90	2.85	929.05	4.28	927.62	5.91	925.99	3.19	928.71	3.69	928.21	--	--
NH-7	935.42	Well installed in 2012		8.64	926.78	9.14	926.28	7.77	927.65	8.13	927.29	--	--
MW-8	931.89	2.63	929.26	3.63	928.26	4.74	927.15	2.91	928.98	2.42	929.47	2.33	929.56
MW-9	931.54	--	--	--	--	--	--	3.96	927.58	4.99	926.55	--	--
NH-10	935.37	--	--	--	--	9.24	926.13	8.23	927.14	8.59	926.78	--	--
NH-25	934.65	Well installed in 2012		6.34	928.31	6.73	927.92	5.83	928.82	5.49	929.16	--	--
MW-24	931.07	--	--	--	--	7.58	923.49	4.94	926.13	6.21	924.86	--	--
NH-26	934.76	Well installed in 2012		6.76	928.00	6.99	927.77	6.24	928.52	NA*	934.76	5.73	929.03
MW-A	932.83	4.47	928.36	5.72	927.11	7.33	925.50	5.23	927.60	4.56	928.27	3.92	928.91
MW-B	932.58	3.11	929.47	4.58	928.00	6.31	926.27	3.95	928.63	3.57	929.01	2.69	929.89
MW-C	931.89	2.59	929.30	4.57	927.32	6.35	925.54	3.26	928.63	3.63	928.26	--	--
MW-D	941.90	--	--	--	--	--	--	3.86	938.04	6.59	935.31	--	--
MW-E	933.31	5.32	927.99	6.44	926.87	7.98	925.33	6.01	927.30	5.60	927.71	4.92	928.39
MW-F	933.83	6.71	927.12	7.76	926.07	9.02	924.81	7.21	926.62	7.41	926.42	--	--
MW-G	934.37	5.98	928.39	7.68	926.69	9.29	925.08	7.11	927.26	5.89	928.48	--	--
MW-H	933.63	--	--	--	--	--	--	7.88	925.75	7.19	926.44	--	--
TEC-1	932.51	3.14	929.37	4.08	928.43	4.95	927.56	3.54	928.97	4.29	928.22	3.29	929.22
TEC-1A	932.02	13.17	918.85	14.18	917.84	15.76	916.26	13.60	918.42	15.17	916.85	--	--
TEC-2	931.90	2.90	929.00	3.97	927.93	4.86	927.04	3.30	928.60	NA*	931.90	--	--
TEC-3	934.62	5.38	929.24	6.23	928.39	6.88	927.74	5.90	928.72	5.78	928.84	5.31	929.31
TEC-4	934.50	5.35	929.15	6.40	928.10	7.43	927.07	5.76	928.74	5.23	929.27	4.88	929.62

MSL - Mean Sea Level

Table 2
Groundwater Analytical Results
Tecumseh Products Co. (Former)-Chromium Line
New Holstein, Wisconsin

WELL ID	Date Sampled	DISSOLVED METALS				UNDISSOLVED METALS	
		Hexavalent Chromium (CrVI)	Total Chromium[1]	Trivalent Chromium[2] (CrIII)	Lead	Ferrous Iron	Total Organic Carbon
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
NR 140 STANDARD	PAL	--	10	--	1.5	150	--
	ES	--	100	--	15	300	--
TW-1	8/13/2002	5.0	3.6	NM	--	--	--
TW-2	8/13/2002	24	*33*	8.7	--	--	--
TW-3	8/13/2002	130	***110***	NM	--	--	--
TW-4	8/13/2002	7,900	***8,200***	NM	--	--	--
TW-5	8/13/2002	700	***640***	NM	--	--	--
TW-6	8/13/2002	5	1 U	NM	--	--	--
TW-7	8/13/2002	6.3	1 U	NM	--	--	--
TW-8	8/13/2002	6.3	1.9	NM	--	--	--
TW-9	8/13/2002	8.9	0.44 U	NM	--	--	--
TW-10	8/13/2002	3.6 U	1.3 U	NM	--	--	--
MW-1	8/13/2002	1,900	***1,700***	NM	--	--	--
	11/16/2005	4,600	***4,900***	300	--	--	--
	5/24/2007	2,800	***2,800***	NM	*0.24*	--	--
	6/9/2009	680	***738***	58 J	*1.7* J	--	--
	9/24/2009	1,700	***1,660***	200 U	3.3 J	--	--
	12/28/2009	3.90 U	9.2	9.2 J	*2.2* J	--	--
	3/29/2010	5.3	*57.6*	52.3	*2.2* J	--	--
	5/18/2011	50	*54.1*	4.1	--	--	--
	5/15/2012	4.4 J	*16.1*	11.7 J	--	--	--
	6/21/2013	33	*54.9*	NM	*2.3* J	--	--
	8/19/2014	--	4.1 J	--	*3* U	--	--
MW-2	8/13/2002	3.6 U	2.3	3.6 U	--	--	--
	11/16/2005	5.0 U	2.8	NM	--	--	--
NH-2	4/24/2012	--	<2.4	--	<1.4	--	--
	8/19/2014	--	2.1 J	--	*3* J	--	--
	4/26/2017	<3.9	3.7 J	NM	NM	<28	3,400
MW-3	8/13/2002	1,900	***1,700***	NM	--	--	--
MW-4	8/13/2002	3.7	0.44 U	NM	--	--	--
	11/15/2005	5.0 U	2.0	NM	--	--	--
	5/24/2007	3.4 U	0.63	NM	0.26	--	--
	6/9/2009	3.9 U	1.3 J	NM	*2.2* J	--	--
	9/24/2009	3.9 U	0.39 U	3.9 U	1.3	--	--
	12/28/2009	3.9 U	1.2 J	3.9 U	1.3	--	--
	3/29/2010	3.9 U	0.82 J	3.9 U	1.4 J	--	--
	5/18/2011	3.9 U	1.6 J	3.9 U	--	--	--
	5/15/2012	3.9 U	2.4 U	3.9 U	--	--	--
	6/20/2013	3.4 U	1.2 U	3.9 U	1.2 U	--	--
	8/19/2014	--	2.1 U	NM	*3* U	--	--

Notes:

ES = NR140 Enforcement Standard

PAL = NR140 Preventative Action Limit

ITALICIZE = Detection over NR140 PAL Limit

BOLD = Detection over NR140 ES Limit

U = Analyte not detected at or above reporting limit

J = Estimated value. Analyte detected at a level less than the reporting limit and greater than or equal to the detection limit.

"--" = Analyte was not sampled during sampling round

NM Not measured/calculated, due to Cr(VI) result greater than total Cr result.

1 = PAL and ES values are for total chromium. As such, these values are not applicable for hexavalent chromium.

2 = Trivalent chromium is the difference between total chromium and hexavalent chromium concentrations.

Table 2
Groundwater Analytical Results
Tecumseh Products Co. (Former)-Chromium Line
New Holstein, Wisconsin

WELL ID	DATE SAMPLED	DISSOLVED METALS				UNDISSOLVED METALS	
		HEXAVALENT CHROMIUM (CrVI)	TOTAL CHROMIUM[1]	TRIVALENT CHROMIUM[2] (CrIII)	Lead	Ferrous Iron	Total Organic Carbon
	UNITS	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
NR 140 STANDARD	PAL	--	10	--	1.5	--	-
	ES	--	*100*	--	15	--	-
MW-5	8/13/2002	380	***390***	180 U	NM	--	--
	11/16/2005	330	***270***	NM	NM	--	--
	5/24/2007	1,100	***910***	NM	0.19	--	--
	6/9/2009	950	***938***	9.8 U	*3.2* J	--	--
	9/24/2009	3400	***3,510***	110	*2.6* J	--	--
	12/29/2009	240	***240***	3.9 U	*1.5* J	--	--
	3/30/2010	210	***202***	3.9 U	*2* J	--	--
	5/19/2011	140	***134***	NM	NM	--	--
	5/15/2012	350	***339***	NM	NM	--	--
	6/20/2013	290	***313***	NM	1.2 U	--	--
	8/18/2014	NM	***318***	--	*3* U	--	--
MW-6	8/13/2002	8.9	0.56 U	NM	NM	--	--
	11/15/2005	45	*65*	20	NM	--	--
	5/24/2007	3.4 U	2.6	NM	0.07	--	--
	6/9/2009	3.9 U	0.39 U	3.9	*2.6* J	--	--
	9/24/2009	3.9 U	5.0	5.0	*2* J	--	--
	12/28/2009	3.9 U	0.48 J	3.9	1.3 U	--	--
	3/29/2010	3.9 U	0.39 U	3.9	*2.3* J	--	--
	5/18/2011	3.9 U	1.2 J	3.9	NM	--	--
	5/15/2012	3.9 U	2.4 U	3.9	NM	--	--
	6/20/2013	3.4 U	1.2 U	NM	1.2 U	--	--
	8/19/2014	NM	2.1 U	NM	*3* U	--	--
NH-7	4/24/2012	NM	***261***	NM	*1.7* J	--	--
	6/20/2013	110	***111***	NM	1.2 U	--	--
	8/19/2014	NM	***114***	NM	*3* U	--	--
MW-8	8/13/2002	3,100	***3,200***	720 U	NM	--	--
	11/16/2005	3,000	***2,900***	NM	NM	--	--
	5/24/2007	1,900	***1,600***	NM	0.09	--	--
	6/9/2009	7,300	***8,730***	1400	*2.9* J	--	--
	9/24/2009	8,200	***8,470***	270	*2.6* J	--	--
	12/29/2009	5100	***5,150***	50 J	*1.9* J	--	--
	3/29/2010	1,900	***1,720***	180	*2.3* J	--	--
	5/19/2011	320	***330***	10	NM	--	--
	5/15/2012	3,100	***2,940***	NM	NM	--	--
	6/20/2013	860	***844***	NM	*1.8* J	--	--
	8/18/2014	NM	***1,320***	NM	*3* U	--	--
	4/22/2016	NM	*46.7*	NM	NM	--	--
	9/7/2016	NM	***725***	NM	NM	--	--
	4/26/2017	<3.9	<2.5	NM	NM	<28	4,500

Notes:

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PAL = NR140 Preventative Action Limit

ITALICIZE = Detection over NR140 PAL Limit

BOLD = Detection over NR140 ES Limit

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NM Not measured/calculated, due to Cr(VI) result greater than total Cr result.

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New Holstein, Wisconsin

WELL ID	DATE SAMPLED	DISSOLVED METALS				UNDISSOLVED METALS	
		HEXAVALENT CHROMIUM (CrVI)	TOTAL CHROMIUM[1]	TRIVALENT CHROMIUM[2] (CrIII)	Lead	Ferrous Iron	Total Organic Carbon
	UNITS	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
NR 140 STANDARD	PAL	--	10	--	1.5	--	-
	ES	--	100	--	15	--	-
MW-9	8/13/2002	3.6 U	0.44 U	3.6	NM	--	--
	11/15/2005	5.0 U	1.7	NM	*1.8*	--	--
	5/24/2007	5.4	0.44	NM	0.06	--	--
	6/9/2009	3.9 U	0.39 U	3.9 U	*2.2* J	--	--
	9/24/2009	3.9 U	0.39 U	3.9 U	*2.1* J	--	--
	12/28/2009	3.9 U	0.39 U	3.9 U	*1.7* J	--	--
	3/29/2010	3.9 U	4.9 J	4.9 J	*2.4* J	--	--
NH-10	4/23/2012	NM	4.1 J	NM	*1.9* J	--	--
	8/19/2014	NM	2.1 U	NM	*3* U	--	--
MW-24	8/19/2014	NM	3.7 J	NM	*3* U	--	--
NH-25	4/23/2012	NM	***1,220***	NM	*1.6* J	--	--
	6/20/2013	3,100	***3,330***	NM	*2.8* J	--	--
	8/19/2014	NM	***895***	--	3 U	--	--
NH-26	4/23/2012	--	***470***	--	<1.4	--	--
	6/20/2013	480	***510***	NM	1.2 U	--	--
	8/19/2014	--	***284***	--	3 U	--	--
	4/26/2017	1,500	***1,400***	NM	NM	<28	7,400
MW-A	5/24/2007	4,000	***4,100***	100	***27.0***	--	--
	6/8/2009	1,500	***1,510***	20 U	*2.1* J	--	--
	9/24/2009	3,600	***3,710***	110	*1.5* J	--	--
	12/28/2009	1,900	***1,870***	20 U	*2.1* J	--	--
	3/29/2010	1,500	***1,390***	110	*2.3* J	--	--
	5/18/2011	590	***594***	4	--	--	--
	5/15/2012	440	***417***	NM	--	--	--
	6/21/2013	520	***484***	NM	*2.3* J	--	--
	8/19/2014	--	*18.1*	--	*3*	--	--
	4/22/2016	--	***307***	--	--	--	--
	9/7/2016	NM	*60.1*	NM	NM	--	--
	4/26/2017	330	*295*	NM	NM	<28	5,800
MW-B	5/24/2007	910	***780***	NM	0.044 U	--	--
	6/9/2009	570	***533***	20 U	*2.2* J	--	--
	9/24/2009	1,300	***1,200***	100 U	*1.6* J	--	--
	12/28/2009	740	***649***	20 U	*2.4* J	--	--
	3/29/2010	270	***263***	20 U	*2.2* J	--	--
	5/18/2011	68	*64*	NM	--	--	--
	5/15/2012	5.5 J	*10.2*	4.7 J	--	--	--
	6/20/2013	74	*73.8*	NM	1.2 U	--	--
	8/19/2014	--	*47.1*	--	*3* U	--	--
	4/22/2016	NM	*20.1*	NM	NM	--	--
	9/7/2016	NM	***585***	NM	NM	--	--
	4/26/2017	<3.9	4.7 J	NM	NM	<28	910
MW-C	5/24/2007	3.4 U	1.3	NM	0.07	--	--
	6/9/2009	3.9 U	1.1 J	3.9 U	*2.4* J	--	--
	9/24/2009	3.9 U	0.39 U	3.9 U	*4.1* J	--	--
	12/28/2009	3.9 U	4.5 J	4.5 J	*1.9* J	--	--
	3/29/2010	3.9 U	4.2 J	4.2 J	1.4 J	--	--
	5/18/2011	3.9 U	2.3 J	3.9 U	--	--	--
	5/15/2012	3.9 U	2.4 U	3.9 U	--	--	--
	6/20/2013	3.4 U	1.2 U	NM	1.2 U	--	--
	8/19/2014	--	2.1 U	--	*3* U	--	--

Notes:

ES = NR140 Enforcement Standard

PAL = NR140 Preventative Action Limit

ITALICIZE = Detection over NR140 PAL Limit

BOLD = Detection over NR140 ES Limit

U = Analyte not detected at or above reporting limit

J = Estimated value. Analyte detected at a level less than the reporting limit and greater than or equal to the detection limit.

"--" = Analyte was not sampled during sampling round

NM Not measured/calculated, due to Cr(VI) result greater than total Cr result.

1 = PAL and ES values are for total chromium. As such, these values are not applicable for hexavalent chromium.

2 = Trivalent chromium is the difference between total chromium and hexavalent chromium concentrations.

Table 2
Groundwater Analytical Results
Tecumseh Products Co. (Former)-Chromium Line
New Holstein, Wisconsin

WELL ID	DATE SAMPLED	DISSOLVED METALS				UNDISSOLVED METALS	
		HEXAVALENT CHROMIUM (CrVI)	TOTAL CHROMIUM[1]	TRIVALENT CHROMIUM[2] (CrIII)	Lead	Ferrous Iron	Total Organic Carbon
	UNITS	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
NR 140 STANDARD	PAL	--	10	--	1.5	--	
	ES	--	100	--	15		
MW-D	5/25/2007	3.4 U	1.9	NM	0.1	--	--
	6/9/2009	3.9 U	2.4 J	3.9 U	*1.7* J	--	--
	9/24/2009	3.9 U	0.42 J	3.9 U	*3* J	--	--
	12/29/2009	3.9 U	1.9 J	3.9 U	*2.5* J	--	--
	3/29/2010	3.9 U	1.0 J	3.9 U	1.4 J	--	--
MW-E	6/9/2009	290	**268**	3.9 U	*2* J	--	--
	9/24/2009	340	**353**	20 U	*2* J	--	--
	12/29/2009	870	**814**	39 U	*3.9* J	--	--
	3/30/2010	890	**808**	39 U	*1.9* J	--	--
	5/19/2011	1,000	**963**	NM	--	--	--
	5/15/2012	1,000	**920**	NM	--	--	--
	6/20/2013	1,200	**1,150**	NM	*2.9* J	--	--
	8/19/2014	--	**1,290**	--	*3* U	--	--
	4/22/2016	NM	***594***	NM	NM	--	--
	9/7/2016	NM	***507***	NM	NM	--	--
	4/26/2017	550	***533***	NM	NM	<28	6,200
MW-F	6/8/2009	3.9 U	0.46 J	3.9 U	*2.2* J	--	--
	9/23/2009	3.9 U	0.39 U	3.9 U	*2.4* J	--	--
	12/28/2009	3.9 U	1.8 J	3.9 U	*1.6* J	--	--
	3/29/2010	3.9 U	1.4 J	3.9 U	*2.2* J	--	--
	5/18/2011	3.9 U	1.7 J	3.9 U	--	--	--
	5/15/2012	3.9 U	2.4 U	3.9 U	--	--	--
	6/21/2013	3.9 U	1.2 U	NM	1.2 U	--	--
	8/19/2014	3.9 U	2.1 U	--	3 U	--	--
MW-G	6/8/2009	3.9 U	0.7 J	3.9 U	1.3	--	--
	9/23/2009	3.9 U	0.39 U	3.9 U	*4.9* J	--	--
	12/28/2009	3.9 U	0.39 J	3.9 U	*1.9* J	--	--
	3/29/2010	3.9 U	0.39 U	3.9 U	*3* J	--	--
	5/18/2011	3.9 U	1.1 J	3.9 U	--	--	--
	5/15/2012	3.9 U	2.4 U	3.9 U	--	--	--
	6/21/2013	3.4 U	1.2 U	NM	*3.1* J	--	--
	8/19/2014	--	2.1 U	--	3 U	--	--
MW-H	6/8/2009	3.9 U	0.89 J	3.9 U	1.3	--	--
	9/23/2009	3.9 U	3.9 U	3.9 U	*2.1* J	--	--
	12/28/2009	3.9 U	3.9 U	3.9 U	*2.7* J	--	--
	3/29/2010	3.9 U	3.9 U	3.9 U	*1.6* J	--	--
TEC-1	8/13/2002	500	**490**	NM	--	--	--
	11/16/2005	4,300	**3,800**	NM	*1.9*	--	--
	5/23/2007	790	**670**	NM	***20***	--	--
	6/10/2009	11,400	**12,000**	600 J	*3.5* J	--	--
	9/24/2009	3,000	**3,120**	120	*3.8* J	--	--
	12/29/2009	7,900	**7,430**	200 U	*3.3* J	--	--
	3/30/2010	6,700	**6,710**	200 U	*3.3* J	--	--
	5/19/2011	2,400	**2,620**	220	--	--	--
	5/15/2012	2,300	**2,190**	NM	--	--	--
	6/20/2013	2,300	**2,250**	NM	*4.3* J	--	--
	8/18/2014	--	**1,250**	--	*3* U	--	--
	4/26/2017	650	***598***	NM	NM	<28	2,100

Notes:

ES = NR140 Enforcement Standard
PAL = NR140 Preventative Action Limit
ITALICIZE = Detection over NR140 PAL Limit
BOLD = Detection over NR140 ES Limit
U = Analyte not detected at or above reporting limit
J = Estimated value. Analyte detected at a level less than the reporting limit and greater than or equal to the detection limit.
"--" = Analyte was not sampled during sampling round
NM Not measured/calculated, due to Cr(VI) result greater than total Cr result.
1 = PAL and ES values are for total chromium. As such, these values are not applicable for hexavalent chromium.
2 = Trivalent chormium is the difference between total chromium and hexavalent chromium concentrations.

Table 2
Groundwater Analytical Results
Tecumseh Products Co. (Former)-Chromium Line
New Holstein, Wisconsin

WELL ID	DATE SAMPLED	DISSOLVED METALS				UNDISSOLVED METALS	
		HEXAVALENT CHROMIUM (CrVI)	TOTAL CHROMIUM[1]	TRIVALENT CHROMIUM[2] (CrIII)	Lead	Ferrous Iron	Total Organic Carbon
	UNITS	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
NR 140	PAL	--	10	--	1.5	--	-
STANDARD	ES	--	100	--	15	--	-
TEC-1A	8/13/2002	14	0.52 U	NM	--	--	--
	3/6/2006	5.0 U	2.8	NM	--	--	--
	5/23/2007	3.4 U	0.43 U	NM	0.07	--	--
	6/9/2009	14 J	*22.6*	9 J	*2.2* J	--	--
	9/24/2009	3.9 U	1.1 J	3.9 U	*2.1* J	--	--
	12/29/2009	3.9 U	4.3 J	4.3 J	*2* J	--	--
	3/29/2010	3.9 U	5.1	5.1	*1.5* J	--	--
	5/19/2011	32	38.7	6.7	--	--	--
	5/15/2012	3.9 U	8.2	8.2	--	--	--
	6/20/2013	3.4 U	1.2 U	NM	1.2 U	--	--
	8/18/2014	--	2.1 U	--	*3* U	--	--
TEC-2	8/13/2002	16	0.44 U	NM	--	--	--
	11/16/2005	5.0 U	0.78	NM	--	--	--
	5/24/2007	3.4 U	0.94	--	0.13	--	--
	6/9/2009	3.9 U	1.2 J	3.9 U	*2.5* J	--	--
	9/24/2009	3.9 U	0.68 J	3.9 U	*3.1* J	--	--
	12/29/2009	3.9 U	1.1 J	3.9 U	*3.2* J	--	--
	3/30/2010	3.9 U	2.7 J	3.9 U	*2.3* J	--	--
	5/19/2011	3.9 U	1.3 J	3.9 U	--	--	--
	5/15/2012	3.9 U	2.4 U	3.9 U	--	--	--
	6/20/2013	3.4 U	1.2 U	NM	*2.8* J	--	--
	8/18/2014	--	2.1 U	--	*3.0* U	--	--
TEC-3	9/23/2003	270	***310***	40	--	--	--
	11/16/2005	540	***490***	NM	--	--	--
	5/24/2007	1,000	***910***	NM	0.17	--	--
	6/10/2009	400	***789***	390	*3.5* J	--	--
	9/24/2009	99	***99***	20 U	*1.8* J	--	--
	12/29/2009	190	***201***	11 J	*2.2* J	--	--
	3/30/2010	470	***445***	20 U	1.3 J	--	--
	5/19/2011	580	***585***	5	--	--	--
	5/15/2012	250	***227***	NM	--	--	--
	6/20/2013	1,200	***1,260***	NM	1.2 U	--	--
	8/19/2014	--	***2,100***	--	*3* U	--	--
	4/22/2016	NM	***5,650***	NM	NM	--	--
	9/7/2016	NM	***2,820***	NM	NM	--	--
	4/26/2017	5,300	***5,040***	NM	NM	<28	5,800
TEC-4	9/23/2003	1,200	***1,300***	100	--	--	--
	11/16/2005	2,800	***2,700***	NM	0.40 U	--	--
	5/24/2007	4,800	***4,000***	NM	0.06	--	--
	6/10/2009	13,300	***12,500***	200 U	*2.3* J	--	--
	9/24/2009	5,500	***5,220***	500 U	*2.3* J	--	--
	12/29/2009	5,200	***5,360***	160 J	*3* J	--	--
	3/30/2010	14,300	***12,900***	390 U	*2.5* J	--	--
	5/19/2011	29,000	***29,200***	200	--	--	--
	5/15/2012	21,300	***20,300***	NM	--	--	--
	6/20/2013	33,600	***32,200***	NM	*14* U	--	--
	8/19/2014	--	***6,880***	--	*3* U	--	--
	4/22/2016	NM	***65,100***	NM	NM	--	--
	9/7/2016	NM	***33,100***	NM	NM	--	--
	4/26/2017	16,200	***15,400***	NM	NM	<28	13,400

Notes:

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PAL = NR140 Preventative Action Limit

ITALICIZE = Detection over NR140 PAL Limit

BOLD = Detection over NR140 ES Limit

U = Analyte not detected at or above reporting limit

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1 = PAL and ES values are for total chromium. As such, these values are not applicable for hexavalent chromium.

2 = Trivalent chromium is the difference between total chromium and hexavalent chromium concentrations.

FIGURE

PLOT DATA
Drawing Name: S:\PROJECTS\Tecumseh\Chromium Line Project - 107927\107927-14(CR LINE).dwg
Operator Name: ALBERTS, SCOTT
Drawing Size: 11x17
Layout: FIGURE 1
File Size: 0.99 Mb
Plot Date: May 15, 2017
Plot Time: 9:11 AM
Attached Xref's:
Attached Images: Tecumseh aerials;

MW-24 (3.7 J)
NH-10 (ND)
NH-7 (114)
OWNER: FANNIN OIL COMPANY
FORMER NORTHERN PLATING LINE
NH-26 (1400)
(NS) MW-9
(ND) TEC-2
FORMER TECUMSEH PRODUCTS FACILITY
NH-2 (3.7 J)
(NS) MW-H
MW-C (ND)
MW-6 (ND)
(318) MW-5
(895) NH-25
(<2.5) MW-8
(598) TEC-1
TEC-1A (ND)
APPROXIMATE SOIL REMOVAL AREA
(ND) MW-4
FORMER PLATING LINE
MW-B (4.7 J)
TEC-3 (5,040)
TEC-4 (15,400)
RAILROAD STREET
CANADIAN NATIONAL RAILROAD
(ND) MW-G
(4.1 J) MW-1
MW-A (295)
(533) MW-E
JEFFERSON STREET
(NS) MW-D
(ND) MW-F
MICHIGAN AVE.

LEGEND:

- MONITORING WELL LOCATION
- MONITORING WELL INSTALLED BY ROBERT E. LEE & ASSOCIATES IN 2012
- RAILROAD TRACKS
- FENCE
- (65) TOTAL DISSOLVED CHROMIUM (ug/L)
- (NS) NOT SAMPLED
- (ND) CHROMIUM NOT DETECTED
- ENFORCEMENT STANDARD POINT-OF-COMPLIANCE FOR TOTAL DISSOLVED CHROMIUM (100 ug/L) DASHED WHERE INFERRED
- TOTAL CHROMIUM BELOW ENFORCEMENT STANDARD
- TOTAL CHROMIUM ABOVE ENFORCEMENT STANDARD
- WELLS SAMPLED IN 2017. ALL OTHERS SAMPLED AUGUST 18 & 19, 2014.

N

0 60 120
SCALE IN FEET

PROJECT: BRRTS #02-08-363333
TECUMSEH PRODUCTS CO. (FORMER) - CHROMIUM LINE
NEW HOLSTEIN, WISCONSIN

TITLE: GROUNDWATER ISOCONCENTRATION MAP - 2014/2017

DRAWN BY: SA	SCALE: AS SHOWN	PROJ. NO. 107927	
CHECKED BY: TH		FILE NO. 107927-14(CR LINE).dwg	
APPROVED BY: CH	DATE PRINTED:	FIGURE 1	
DATE: MAY 2017			

TRC
230 West Monroe St.
Suite 2300
Chicago, IL 60606
Phone: 312.578.0870

ATTACHMENTS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

May 03, 2016

James Robinson
TRC Environmental
230 W. Monroe Street
Suite 2300
Chicago, IL 60606

RE: Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Dear James Robinson:
Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Laurie Woelfel

Laurie Woelfel
laurie.woelfel@pacelabs.com
Project Manager

Enclosures

cc: Chris Harvey, TRC Environmental
Mac Olsen, TRC
Jesse Papez, TRC - Madison
Peggy Popp, TRC - Madison
Meredith Westover, TRC Environmental

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Green Bay Certification IDs
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
Virginia VELAP ID: 460263
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Virginia VELAP Certification ID: 460263
Virginia VELAP ID: 460263
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40131293001	**20160422_TEC-4**	Water	04/22/16 11:30	04/23/16 10:30
40131293002	**20160422_TEC-3**	Water	04/22/16 12:05	04/23/16 10:30
40131293003	**20160422_MW-E**	Water	04/22/16 12:40	04/23/16 10:30
40131293004	**20160422_MW-8**	Water	04/22/16 13:20	04/23/16 10:30
40131293005	**20160422_MW-A**	Water	04/22/16 14:30	04/23/16 10:30
40131293006	**20160422_MW-B**	Water	04/22/16 15:10	04/23/16 10:30
40131293007	**20160422_DUP01**	Water	04/22/16 00:00	04/23/16 10:30

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40131293001	**20160422_TEC-4**	EPA 6010	DLB	1	PASI-G
40131293002	**20160422_TEC-3**	EPA 6010	DLB	1	PASI-G
40131293003	**20160422_MW-E**	EPA 6010	DLB	1	PASI-G
40131293004	**20160422_MW-8**	EPA 6010	DLB	1	PASI-G
40131293005	**20160422_MW-A**	EPA 6010	DLB	1	PASI-G
40131293006	**20160422_MW-B**	EPA 6010	DLB	1	PASI-G
40131293007	**20160422_DUP01**	EPA 6010	DLB	1	PASI-G

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_TEC-4 **Lab ID: 40131293001** Collected: 04/22/16 11:30 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**64500**	ug/L	20.0	4.1	2		04/28/16 21:37	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_TEC-3 **Lab ID: 40131293002** Collected: 04/22/16 12:05 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**5650**	ug/L	10.0	2.1	1		04/28/16 21:39	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_MW-E **Lab ID: 40131293003** Collected: 04/22/16 12:40 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**594**	ug/L	10.0	2.1	1		04/28/16 21:42	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
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ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_MW-8 **Lab ID: 40131293004** Collected: 04/22/16 13:20 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**46.7**	ug/L	10.0	2.1	1		04/28/16 21:44	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_MW-A **Lab ID: 40131293005** Collected: 04/22/16 14:30 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**307**	ug/L	10.0	2.1	1		04/28/16 21:47	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_MW-B **Lab ID: 40131293006** Collected: 04/22/16 15:10 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**20.1**	ug/L	10.0	2.1	1		04/28/16 21:49	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Sample: 20160422_DUP01 **Lab ID: 40131293007** Collected: 04/22/16 00:00 Received: 04/23/16 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**65100**	ug/L	20.0	4.1	2		04/28/16 21:51	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
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(920)469-2436

QUALITY CONTROL DATA

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

QC Batch: ICP/12153 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40131293001, 40131293002, 40131293003, 40131293004, 40131293005, 40131293006, 40131293007

METHOD BLANK: 1327368 Matrix: Water
Associated Lab Samples: 40131293001, 40131293002, 40131293003, 40131293004, 40131293005, 40131293006, 40131293007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.1	10.0	04/28/16 21:16	

LABORATORY CONTROL SAMPLE: 1327369

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	475	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1327370 1327371

Parameter	Units	40131313001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	<2.1	500	500	472	464	94	93	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 107927 HARP FORMER CR LINE
Pace Project No.: 40131293

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40131293001	**20160422_TEC-4**	EPA 6010	ICP/12153		
40131293002	**20160422_TEC-3**	EPA 6010	ICP/12153		
40131293003	**20160422_MW-E**	EPA 6010	ICP/12153		
40131293004	**20160422_MW-8**	EPA 6010	ICP/12153		
40131293005	**20160422_MW-A**	EPA 6010	ICP/12153		
40131293006	**20160422_MW-B**	EPA 6010	ICP/12153		
40131293007	**20160422_DUP01**	EPA 6010	ICP/12153		

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

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CHAIN OF CUSTODY

40131293

(Please Print Clearly)	
Company Name:	TRC Environmental
Branch/Location:	Chicago
Project Contact:	James Robinson
Phone:	312 800 5923 or 651 263 4429
Project Number:	107927
Project Name:	Harp Former Cr Line
Project State:	WI
Sampled By (Print):	James Robinson
Sampled By (Sign):	
PO #:	Regulatory Program:

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☒ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
SI = Sludge	WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: Diss. Chromium total	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	20160422_TEC-4	4/22	1130	GW		Y / D	X		1-250mlpD	
002	20160422_TEC-3		1205				X			
003	20160422_MW-E		1240				X			
004	20160422_MW-8		1320				X			
005	20160422_MW-A		1430				X			
006	20160422_MW-B		1510				X			
007	20160422_DUP01		0000				X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	JmRobinson@TRCsolutions.com
Email #2:	
Telephone:	651 263 4429
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	4/22/15 17:00		
via FedEx	4/23/16 1030	MMcKay/PACE	4/23/16 1030

PACE Project No.
40131293

Receipt Temp = n/a °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical™

Project #: **WO#: 40131293**

40131293

Client Name: TRC

Courier: ☑ Fed Ex ☐ UPS ☐ Client ☐ Pace Other: _____

Tracking #: 8718 1210 8059

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used NA **Type of Ice:** Wet Blue Dry (None) ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: NA /Corr: **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☑ no

Person examining contents:
Date: 4-23-16
Initials: MM

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☑N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☑Yes	☐No	☐N/A	11.
Sample Labels match COC:	☐Yes	☑No	☐N/A	12. 005 - time on sample label 1425 007 - time on sample label 1130.
-Includes date/time/ID/Analysis Matrix: W				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☑Yes	☐No	☐N/A	13. ☑ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct 4/23/16 MM
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☑Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes	☑No		Initial when completed MM / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14.
Trip Blank Present:	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: LHW **Date:** 4/25/16

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

September 13, 2016

James Robinson
TRC Environmental
230 W. Monroe Street
Suite 2300
Chicago, IL 60606

RE: Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Dear James Robinson:
Enclosed are the analytical results for sample(s) received by the laboratory on September 08, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Laurie Woelfel

Laurie Woelfel
laurie.woelfel@pacelabs.com
Project Manager

Enclosures

cc: Zarek Boutaghou, TRC
Chris Harvey, TRC Environmental
Tanner Hess, TRC
Jesse Papez, TRC - Madison
Peggy Popp, TRC - Madison

Pace Analytical Services, Inc.
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(920)469-2436

CERTIFICATIONS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
Virginia VELAP ID: 460263
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
US Dept of Agriculture #: S-76505
Virginia VELAP Certification ID: 460263
Virginia VELAP ID: 460263
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
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(920)469-2436

SAMPLE SUMMARY

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40137927001	**MW-A**	Water	09/07/16 13:24	09/08/16 13:15
40137927002	**F-DUP 1**	Water	09/07/16 13:25	09/08/16 13:15
40137927003	**MW-B**	Water	09/07/16 13:54	09/08/16 13:15
40137927004	**MW-E**	Water	09/07/16 15:51	09/08/16 13:15
40137927005	**MW-8**	Water	09/07/16 16:24	09/08/16 13:15
40137927006	**TEC-4**	Water	09/07/16 16:59	09/08/16 13:15
40137927007	**TEC-3**	Water	09/07/16 17:29	09/08/16 13:15

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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SAMPLE ANALYTE COUNT

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40137927001	**MW-A**	EPA 6010	DLB	1	PASI-G
40137927002	**F-DUP 1**	EPA 6010	DLB	1	PASI-G
40137927003	**MW-B**	EPA 6010	DLB	1	PASI-G
40137927004	**MW-E**	EPA 6010	DLB	1	PASI-G
40137927005	**MW-8**	EPA 6010	DLB	1	PASI-G
40137927006	**TEC-4**	EPA 6010	DLB	1	PASI-G
40137927007	**TEC-3**	EPA 6010	DLB	1	PASI-G

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: MW-A **Lab ID: 40137927001** Collected: 09/07/16 13:24 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**60.1**	ug/L	10.0	2.1	1		09/13/16 12:03	7440-47-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: F-DUP 1 **Lab ID: 40137927002** Collected: 09/07/16 13:25 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**76.9**	ug/L	10.0	2.1	1		09/13/16 12:06	7440-47-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: MW-B **Lab ID: 40137927003** Collected: 09/07/16 13:54 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**585**	ug/L	10.0	2.1	1		09/13/16 12:08	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: MW-E **Lab ID: 40137927004** Collected: 09/07/16 15:51 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**507**	ug/L	10.0	2.1	1		09/13/16 12:11	7440-47-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: MW-8 **Lab ID: 40137927005** Collected: 09/07/16 16:24 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**725**	ug/L	10.0	2.1	1		09/13/16 11:57	7440-47-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: TEC-4 **Lab ID: 40137927006** Collected: 09/07/16 16:59 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**33100**	ug/L	10.0	2.1	1		09/13/16 12:18	7440-47-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Sample: TEC-3 **Lab ID: 40137927007** Collected: 09/07/16 17:29 Received: 09/08/16 13:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**2820**	ug/L	10.0	2.1	1		09/13/16 12:20	7440-47-3	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

QC Batch: 234703 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40137927001, 40137927002, 40137927003, 40137927004, 40137927005, 40137927006, 40137927007

METHOD BLANK: 1390558 Matrix: Water
Associated Lab Samples: 40137927001, 40137927002, 40137927003, 40137927004, 40137927005, 40137927006, 40137927007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.1	10.0	09/13/16 11:52	

LABORATORY CONTROL SAMPLE: 1390559

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	474	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1390560 1390561

Parameter	Units	40137927005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	725	500	500	1190	1190	93	93	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
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(920)469-2436

QUALIFIERS

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G Pace Analytical Services - Green Bay

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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 107927 TECUMSEH CR LINE
Pace Project No.: 40137927

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40137927001	**MW-A**	EPA 6010	234703		
40137927002	**F-DUP 1**	EPA 6010	234703		
40137927003	**MW-B**	EPA 6010	234703		
40137927004	**MW-E**	EPA 6010	234703		
40137927005	**MW-8**	EPA 6010	234703		
40137927006	**TEC-4**	EPA 6010	234703		
40137927007	**TEC-3**	EPA 6010	234703		

40137927

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MN: 612-607-1700 WI: 920-469-2436

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	TRC Environmental
Branch/Location:	Chicago
Project Contact:	C. Harvey
Phone:	312-578-0870
Project Number:	107927
Project Name:	Tecumseh Cr Line
Project State:	WI
Sampled By (Print):	N. DeRose
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes

A = Air	W = Water
B = Biota	DW = Drinking Water
C = Charcoal	GW = Ground Water
O = Oil	SW = Surface Water
S = Soil	WW = Waste Water
Sl = Sludge	WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: Total Diss. Chromium	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	MW-A	9/7/16	1324	GW			X		1-250mlpA	
002	F-Dup1		1325				X			
003	MW-B		1354				X			
004	MW-E		1551				X			
005	MW-8		1624				X	MS/MSD	3-250mlpA	
006	TEC-4		1659				X			
007	TEC-3		1729				X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	Nderose@trcsolutions.com
Email #2:	Thess@trcsolutions.com
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	9/7/16 1826		9/7/16 1211
	9/8/16 1315		9-8-16 1315

PACE Project No.

Receipt Temp = RO I °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical™

Project # **WO# : 40137927**

40137927

Client Name: TRC

Courier: ☐ Fed Ex ☐ UPS ☐ Client ☒ Pace Other: _____

Tracking #: _____

(1) **Custody Seal on Cooler/Box Present:** ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used N/A **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROI /Corr: **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Person examining contents:
Date: 9-8-16
Initials: SW

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☑N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☑Yes	☐No	☐N/A	11.
Sample Labels match COC:	☑Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☑Yes	☐No	☐N/A	13. ☑ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12) (2)	☑Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes	☑No		Initial when completed SKW / Lab Std #ID of preservative / Date/ Time:
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14.
Trip Blank Present:	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: (1) No date and initials on custody seal. 9-8-16 SW

Project Manager Review: _____ **Date:** 9/8/16

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

May 04, 2017

Chris Harvey
TRC Environmental
230 W. Monroe St
Suite 2300
Chicago, IL 60606

RE: Project: 107927 TECUMSEH
Pace Project No.: 40148955

Dear Chris Harvey:
Enclosed are the analytical results for sample(s) received by the laboratory on April 27, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Laurie Woelfel

Laurie Woelfel
laurie.woelfel@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tyler Gomoll, TRC Solutions
Tanner Hess, TRC

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40148955001	**MW-A**	Water	04/26/17 11:45	04/27/17 07:30
40148955002	**MW-B**	Water	04/26/17 12:20	04/27/17 07:30
40148955003	**MW-E**	Water	04/26/17 14:10	04/27/17 07:30
40148955004	**MW-8**	Water	04/26/17 14:35	04/27/17 07:30
40148955005	**TEC-1**	Water	04/26/17 15:05	04/27/17 07:30
40148955006	**TEC-3**	Water	04/26/17 16:00	04/27/17 07:30
40148955007	**TEC-4**	Water	04/26/17 15:35	04/27/17 07:30
40148955008	**NH-2**	Water	04/26/17 16:35	04/27/17 07:30
40148955009	**NH-26**	Water	04/26/17 17:05	04/27/17 07:30
40148955010	**DUP 1**	Water	04/26/17 14:40	04/27/17 07:30

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(920)469-2436

SAMPLE ANALYTE COUNT

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40148955001	**MW-A**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955002	**MW-B**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955003	**MW-E**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955004	**MW-8**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955005	**TEC-1**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955006	**TEC-3**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955007	**TEC-4**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955008	**NH-2**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955009	**NH-26**	EPA 6010	DLB	1	PASI-G
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G
40148955010	**DUP 1**	EPA 6010	DLB	1	PASI-G

Pace Analytical Services, LLC
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(920)469-2436

SAMPLE ANALYTE COUNT

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 3500-Cr B (Online)	DEY	1	PASI-G
		HACH 8146	DEY	1	PASI-G
		SM 5310C	TJJ	1	PASI-G

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: MW-A **Lab ID: 40148955001** Collected: 04/26/17 11:45 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**295**	ug/L	10.0	2.5	1		05/04/17 11:50	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**0.33**	mg/L	0.050	0.0097	2.5		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**5.8**	mg/L	2.5	0.76	3		05/02/17 18:39	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: MW-B **Lab ID: 40148955002** Collected: 04/26/17 12:20 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**4.7J**	ug/L	10.0	2.5	1		05/04/17 11:58	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**<0.0039**	mg/L	0.020	0.0039	1		04/27/17 09:50		1q
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**9.1**	mg/L	8.4	2.5	10		05/02/17 19:36	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: MW-E **Lab ID: 40148955003** Collected: 04/26/17 14:10 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**533**	ug/L	10.0	2.5	1		05/04/17 12:00	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**0.55**	mg/L	0.020	0.0039	1		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**6.2**	mg/L	2.5	0.76	3		05/02/17 20:51	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: MW-8 **Lab ID: 40148955004** Collected: 04/26/17 14:35 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**<2.5**	ug/L	10.0	2.5	1		05/04/17 12:09	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**<0.0039**	mg/L	0.020	0.0039	1		04/27/17 09:50		1q
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**4.5**	mg/L	1.7	0.50	2		05/02/17 21:10	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: TEC-1 **Lab ID: 40148955005** Collected: 04/26/17 15:05 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**598**	ug/L	10.0	2.5	1		05/04/17 12:11	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**0.65**	mg/L	0.10	0.019	5		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**2.1**	mg/L	0.84	0.25	1		05/02/17 21:28	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: TEC-3 **Lab ID: 40148955006** Collected: 04/26/17 16:00 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**5040**	ug/L	10.0	2.5	1		05/04/17 12:14	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**5.3**	mg/L	0.20	0.039	10		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**5.8**	mg/L	2.5	0.76	3		05/02/17 21:47	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: TEC-4 **Lab ID: 40148955007** Collected: 04/26/17 15:35 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**15400**	ug/L	10.0	2.5	1		05/04/17 12:17	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**16.2**	mg/L	1.0	0.19	50		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**13.4**	mg/L	8.4	2.5	10		05/02/17 22:06	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: NH-2 **Lab ID: 40148955008** Collected: 04/26/17 16:35 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**3.7J**	ug/L	10.0	2.5	1		05/04/17 12:20	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**<0.0039**	mg/L	0.020	0.0039	1		04/27/17 09:50		1q
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**3.4**	mg/L	2.5	0.76	3		05/02/17 22:25	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: NH-26 **Lab ID: 40148955009** Collected: 04/26/17 17:05 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**1400**	ug/L	10.0	2.5	1		05/04/17 12:22	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**1.5**	mg/L	0.10	0.019	5		04/27/17 09:50		
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**7.4**	mg/L	5.0	1.5	6		05/02/17 22:43	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Sample: DUP 1 **Lab ID: 40148955010** Collected: 04/26/17 14:40 Received: 04/27/17 07:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Dissolved	Analytical Method: EPA 6010								
Chromium, Dissolved	**<2.5**	ug/L	10.0	2.5	1		05/04/17 12:25	7440-47-3	P4
Chromium, Dissolved Hexavalent	Analytical Method: SM 3500-Cr B (Online)								
Chromium, Hexavalent, Dissolved	**<0.0039**	mg/L	0.020	0.0039	1		04/27/17 09:50		1q
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.028**	mg/L	0.093	0.028	1		04/28/17 09:20		H6
5310C TOC	Analytical Method: SM 5310C								
Total Organic Carbon	**4.4**	mg/L	1.7	0.50	2		05/02/17 23:02	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 107927 TECUMSEH
Pace Project No.: 40148955

QC Batch: 254483 Analysis Method: EPA 6010
QC Batch Method: EPA 6010 Analysis Description: ICP Metals, Trace, Dissolved
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

METHOD BLANK: 1500494 Matrix: Water
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Dissolved	ug/L	<2.5	10.0	05/04/17 11:44	

LABORATORY CONTROL SAMPLE: 1500495

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Dissolved	ug/L	500	542	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1500496 1500497

Parameter	Units	40148955001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Dissolved	ug/L	295	500	500	843	823	110	106	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 107927 TECUMSEH
Pace Project No.: 40148955

QC Batch: 254002 Analysis Method: SM 3500-Cr B (Online)
QC Batch Method: SM 3500-Cr B (Online) Analysis Description: Chromium, Dissolved Hexavalent by 3500
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

METHOD BLANK: 1497815 Matrix: Water
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/L	<0.0039	0.020	04/27/17 09:50	

LABORATORY CONTROL SAMPLE: 1497816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/L	.3	0.30	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1497817 1497818

Parameter	Units	40148955001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/L	0.33	.75	.75	1.1	1.0	103	95	90-110	5	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: 107927 TECUMSEH
Pace Project No.: 40148955

QC Batch: 254098 Analysis Method: HACH 8146
QC Batch Method: HACH 8146 Analysis Description: Iron, Ferrous
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

METHOD BLANK: 1498507 Matrix: Water
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.028	0.093	04/28/17 09:20	

LABORATORY CONTROL SAMPLE: 1498508

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	.6	0.59	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1498509 1498510

Parameter	Units	40148955001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Ferrous	mg/L	<0.028	.6	.6	0.54	0.55	90	92	80-120	2	20	

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QUALITY CONTROL DATA

Project: 107927 TECUMSEH
Pace Project No.: 40148955

QC Batch: 254329 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

METHOD BLANK: 1499923 Matrix: Water
Associated Lab Samples: 40148955001, 40148955002, 40148955003, 40148955004, 40148955005, 40148955006, 40148955007, 40148955008, 40148955009, 40148955010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	<0.25	0.84	05/02/17 16:46	

LABORATORY CONTROL SAMPLE: 1499924

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	2.5	2.2	89	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1499925 1499926

Parameter	Units	40148955001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	5.8	3	3	9.0	9.0	105	104	80-120	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1499927 1499928

Parameter	Units	40148955002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	9.1	10	10	19.6	19.4	105	103	80-120	1	10	

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QUALIFIERS

Project: 107927 TECUMSEH
Pace Project No.: 40148955

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-G	Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

1q	Analyte was measured in the associated method blank at a concentration of -0.0061 mg/L.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
P4	Sample field preservation does not meet EPA or method recommendations for this analysis.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 107927 TECUMSEH
Pace Project No.: 40148955

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40148955001	**MW-A**	EPA 6010	254483		
40148955002	**MW-B**	EPA 6010	254483		
40148955003	**MW-E**	EPA 6010	254483		
40148955004	**MW-8**	EPA 6010	254483		
40148955005	**TEC-1**	EPA 6010	254483		
40148955006	**TEC-3**	EPA 6010	254483		
40148955007	**TEC-4**	EPA 6010	254483		
40148955008	**NH-2**	EPA 6010	254483		
40148955009	**NH-26**	EPA 6010	254483		
40148955010	**DUP 1**	EPA 6010	254483		
40148955001	**MW-A**	SM 3500-Cr B (Online)	254002		
40148955002	**MW-B**	SM 3500-Cr B (Online)	254002		
40148955003	**MW-E**	SM 3500-Cr B (Online)	254002		
40148955004	**MW-8**	SM 3500-Cr B (Online)	254002		
40148955005	**TEC-1**	SM 3500-Cr B (Online)	254002		
40148955006	**TEC-3**	SM 3500-Cr B (Online)	254002		
40148955007	**TEC-4**	SM 3500-Cr B (Online)	254002		
40148955008	**NH-2**	SM 3500-Cr B (Online)	254002		
40148955009	**NH-26**	SM 3500-Cr B (Online)	254002		
40148955010	**DUP 1**	SM 3500-Cr B (Online)	254002		
40148955001	**MW-A**	HACH 8146	254098		
40148955002	**MW-B**	HACH 8146	254098		
40148955003	**MW-E**	HACH 8146	254098		
40148955004	**MW-8**	HACH 8146	254098		
40148955005	**TEC-1**	HACH 8146	254098		
40148955006	**TEC-3**	HACH 8146	254098		
40148955007	**TEC-4**	HACH 8146	254098		
40148955008	**NH-2**	HACH 8146	254098		
40148955009	**NH-26**	HACH 8146	254098		
40148955010	**DUP 1**	HACH 8146	254098		
40148955001	**MW-A**	SM 5310C	254329		
40148955002	**MW-B**	SM 5310C	254329		
40148955003	**MW-E**	SM 5310C	254329		
40148955004	**MW-8**	SM 5310C	254329		
40148955005	**TEC-1**	SM 5310C	254329		
40148955006	**TEC-3**	SM 5310C	254329		
40148955007	**TEC-4**	SM 5310C	254329		
40148955008	**NH-2**	SM 5310C	254329		
40148955009	**NH-26**	SM 5310C	254329		
40148955010	**DUP 1**	SM 5310C	254329		

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

40148955

(Please Print Clearly)	
Company Name:	TRC
Branch/Location:	Chicago
Project Contact:	Chris Harvey
Phone:	312-578-0870
Project Number:	107927
Project Name:	Tecumseh
Project State:	WI
Sampled By (Print):	Tanner Hess
Sampled By (Sign):	
PO #:	108274
Regulatory Program:	

Quote #:	00036759
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: Dissolved Hex Chrome *	Dissolved Total Metals (Chromium) *	Ferrous Iron	TOC					CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					Y/N	Pick Letter											
001	MW-A	4/26	1145	GW			X	X	X	X		3-250 mlp			AAD 1-125 mlpp	Hex Chrome and total chrome ~~to be field~~ TH filtered in Lab.	
002	MW-B		1220														
003	MW-E		1410														
004	MW-8		1435														
005	TEC-1		1505														
006	TEC-3		1600														
007	TEC-4		1535														
008	NH-2		1635														
009	NH-26		1705														
010	Dup 1		1440														

* Diss Hex Cr + T-Cr to be lab filtered

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	4/26/17 1840	Susan Kilyk Pace	4-27-17 0730
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.: 40148955

Receipt Temp = ROI °C

Sample Receipt pH: (OK) Adjusted

Cooler Custody Seal: Present / ~~Not Present~~

Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Pace Analytical™

Project #: **WO# : 40148955**

40148955

Client Name: TRC

Courier: ☐ Fed Ex ☐ UPS ☑ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used N/A **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROI /Corr: _____ **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☒ no

Person examining contents:
Date: 4-27-17
Initials: SKW

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1. Original and a copy 4-27-17 SKW
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes	☐No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used: 4/27/17 SKW	☐Yes	☑No	☐N/A	9. Lab added preservative DA to each sample point 4-27-17 SKW
-Pace Containers Used:	☑Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☑N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☑No	☐N/A	11. Lab to filter 4-27-17 SKW
Sample Labels match COC:	☑Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☑Yes	☐No	☐N/A	13. ☑ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 (≤2), NaOH+ZnAct ≥9, NaOH ≥12)	☑Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☑Yes	☐No	4-27-17 SKW	Initial when completed: SKW / Lab Std #ID of preservative / Date/Time:
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14.
Trip Blank Present:	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 4/27/17

F-GB-C-031-Rev.03 (9April2015) SCUR Form