Beggs, Tauren R - DNR

From: Halbur, Kathy <halbur.kathy@epa.gov>
Sent: Tuesday, March 24, 2015 12:23 PM
To: Beggs, Tauren R - DNR; Evans, Elizabeth - DHS; Bodden, Jaime
Cc: Merry, JaNelle P - DNR
Subject: Aniwa Arsenic Site
Attachments: DVR_109795Metals.docx; 109795_Pre.pdf

Hello:

As previously discussed, EPA collected water samples at the Timm residence (W19146 Marsh Road, Birnamwood, Shawano County) on 3/4/15 as part of the Aniwa Arsenic Site removal action. The purpose of the sampling was to collect additional data needed to design a Point of Entry treatment system. The results of our sampling are attached. Sample 1 was collected in the basement prior to the pressure tank. Sample 2 was collected from the kitchen faucet. Both samples were collected after 15 minutes of flushing. There is a water softener in the home. Arsenic was detected >10 µg/L in sample 1, but <10 µg/L in sample 2; coliform is absent in sample 1, but present in sample 2.

I propose that I call Mr. Timm this afternoon, inform him of the results, encourage him to chlorinate his well asap (he told us he routinely does this every spring), and offer to provide drinking water as a precautionary measure (water cooler from culligan ready to be delivered) until the POE treatment is in place and proven effective. I don't see the need to collect any additional sampling until the POE system is in place. I also don't think a formal advisory letter is appropriate in this case since EPA conducted the sampling and is providing a remedy as part of a removal action.

I would like to act on this today still if possible, so please advise as to your concurrence or concerns with this approach asap. I can be reached at 920-634-9072.

Thanks!
Kathy

Kathy Halbur, On-Scene Coordinator
U.S. EPA Region 5
Emergency Response Branch
c/o WDNR
2984 Shawano Ave
Green Bay, WI 54313-6727
Phone: 920-662-5424
Cell: 920-634-9072
Email: halbur.kathy@epa.gov

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ANALYTICAL REPORT

This report at a minimum contains the following information:

- Analytical Report of Test Results
- Description of QC Qualifiers
- Chain of Custody (copy)
- Quality Control Summary
- Case Narrative (if applicable)
- Correspondence with Client (if applicable)

This report has been specifically prepared to satisfy project or program requirements. These results are in compliance with NELAC requirements for parameters where accreditation is required or available, unless otherwise noted in the case narrative.

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PRELIMINARY
ANALYTICAL REPORT

TETRA TECH
ROB KONDRECK
1 S WACKER DRIVE
SUITE 3700
CHICAGO, IL 60606

Project Name: ANIWA ARSENIC
Project Phase:
Contract #: 2767
Project #: 103X9026000150515020
Folder #: 109795
Purchase Order #:

Arrival Temperature: 4.4
Report Date:
Date Received: 3/4/2015
Reprint Date: 3/19/2015

CT LAB#: 559224 Sample Description: TIMM-0315A Client Sample #: Sampled: 3/4/2015 1330

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Inorganic Results												
E. coli	ABSENT						1.00			3/5/15 12:00	LJS	SM 9223B
Total Coliform Bacteria	ABSENT						1.00	E		3/5/15 12:00	LJS	SM 9223B
pH	7.50	S.U.					1.00			3/6/15 12:30	LJS	EPA 9040C ^
Nitrate Nitrogen Total	0.16	mg/L	0.040			0.040	1.00			3/5/15 14:14	JJF	EPA 300.0
Metals Results												
Total Mercury	<0.030	ug/L	0.030	0.060	0.12	0.12	1.00	U	3/6/2015 08:30	3/9/15 08:51	LJF	EPA 7470A ^
Total Aluminum	<6.0	ug/L	6.0	18	36	36	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Antimony	<2.0	ug/L	2.0	6.0	12	12	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Arsenic	11.2	ug/L	4.0	12	24	24	1.00	J	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Barium	20.3	ug/L	0.29	0.90	1.8	1.8	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Beryllium	<0.10	ug/L	0.10	0.30	0.60	0.60	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Cadmium	<0.30	ug/L	0.30	1.0	2.0	2.0	1.00	U M	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Calcium	58700	ug/L	17	50	100	100	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Chromium	<0.60	ug/L	0.60	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Cobalt	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U M	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Copper	3.8	ug/L	1.2	3.5	7.0	7.0	1.00	J	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 559224 Sample Description: TIMM-0315A Client Sample #: Sampled: 3/4/2015 1330

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Total Iron	3100	ug/L	16	50	100	100	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Lead	<1.4	ug/L	1.4	2.0	4.0	4.0	1.00	U M	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Magnesium	29300	ug/L	6.0	20	40	40	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Manganese	190	ug/L	0.70	2.0	4.0	4.0	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Nickel	1.3	ug/L	1.0	3.0	6.0	6.0	1.00	J M	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Selenium	<2.2	ug/L	2.2	6.5	13	13	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Silver	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Thallium	<2.5	ug/L	2.5	7.5	15	15	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Vanadium	<0.80	ug/L	0.80	2.5	5.0	5.0	1.00	U	3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Zinc	30.7	ug/L	1.6	5.0	10	10	1.00		3/9/2015 08:00	3/10/15 11:46	NAH	EPA 200.7 ^
Total Potassium	1460	ug/L	90	250	500	500	1.00		3/9/2015 08:00	3/10/15 11:08	MDS	EPA 200.7 ^
Total Sodium	2400	ug/L	100	300	600	600	1.00		3/9/2015 08:00	3/10/15 11:08	MDS	EPA 200.7 ^
Organic Results												
4,4'-DDD	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
4,4'-DDE	<0.0063	ug/L	0.0063	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
4,4'-DDT	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Aldrin	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
alpha-BHC	<0.0052	ug/L	0.0052	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
alpha-Chlordane	<0.0094	ug/L	0.0094	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
beta-BHC	<0.0094	ug/L	0.0094	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Chlordane (Technical)	<0.11	ug/L	0.11	0.21	0.63	0.63	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
delta-BHC	<0.0052	ug/L	0.0052	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Dieldrin	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Endosulfan I	<0.0094	ug/L	0.0094	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Endosulfan II	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Endosulfan sulfate	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Endrin	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 559224 Sample Description: TIMM-0315A Client Sample #: Sampled: 3/4/2015 1330

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Endrin aldehyde	<0.0094	ug/L	0.0094	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Endrin ketone	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
gamma-Chlordane	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Heptachlor	<0.0063	ug/L	0.0063	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Heptachlor epoxide	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Lindane	<0.0073	ug/L	0.0073	0.010	0.025	0.025	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Methoxychlor	<0.0063	ug/L	0.0063	0.010	0.042	0.042	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
Toxaphene	<0.18	ug/L	0.18	0.21	0.63	0.63	1.00	U	3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B ^
SURR:2,4,5,6-CL4-m-xylene	91	% Recovery	25			140	1.00		3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B
SURR:Decachlorobiphenyl	87	% Recovery	30			135	1.00		3/9/2015 08:30	3/9/15 13:29	JJY	EPA 8081B

CT LAB#: 559225 Sample Description: TIMM-0315A Client Sample #: Sampled: 3/4/2015 1330

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Metals Results												
Dissolved Mercury	<0.030	ug/L	0.030	0.060	0.12	0.12	1.00	U	3/6/2015 08:30	3/9/15 08:29	LJF	EPA 7470A ^
Dissolved Aluminum	<6.0	ug/L	6.0	18	36	36	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Antimony	<2.0	ug/L	2.0	6.0	12	12	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Arsenic	<4.0	ug/L	4.0	12	24	24	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Barium	20.3	ug/L	0.29	0.90	1.8	1.8	1.00		3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Beryllium	<0.10	ug/L	0.10	0.30	0.60	0.60	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Cadmium	<0.30	ug/L	0.30	1.0	2.0	2.0	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Calcium	58100	ug/L	17	50	100	100	1.00		3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Chromium	<0.60	ug/L	0.60	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Cobalt	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Copper	1.7	ug/L	1.2	3.5	7.0	7.0	1.00	J	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 559225 Sample Description: TIMM-0315A Client Sample #: Sampled: 3/4/2015 1330

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Dissolved Iron	3230	ug/L	16	50	100	100	1.00		3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Lead	<1.4	ug/L	1.4	2.0	4.0	4.0	1.00	U M	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Magnesium	29500	ug/L	6.0	20	40	40	1.00	Y	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Manganese	191	ug/L	0.70	2.0	4.0	4.0	1.00		3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Nickel	1.3	ug/L	1.0	3.0	6.0	6.0	1.00	J	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Selenium	<2.2	ug/L	2.2	6.5	13	13	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Silver	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Thallium	<2.5	ug/L	2.5	7.5	15	15	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Vanadium	<0.80	ug/L	0.80	2.5	5.0	5.0	1.00	U	3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Zinc	16.2	ug/L	1.6	5.0	10	10	1.00		3/9/2015 08:00	3/10/15 12:32	NAH	EPA 200.7 ^
Dissolved Potassium	1500	ug/L	90	250	500	500	1.00	M	3/9/2015 08:00	3/10/15 10:40	MDS	EPA 200.7
Dissolved Sodium	2430	ug/L	100	300	600	600	1.00	M	3/9/2015 08:00	3/10/15 10:40	MDS	EPA 200.7

CT LAB#: 559226 Sample Description: TIMM-0315B Client Sample #: Sampled: 3/4/2015 1350

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Inorganic Results												
E. coli	ABSENT						1.00			3/5/15 12:00	LJS	SM 9223B
Total Coliform Bacteria	PRESENT						1.00	F		3/5/15 12:00	LJS	SM 9223B
pH	7.45	S.U.					1.00			3/6/15 12:30	LJS	EPA 9040C ^
Nitrate Nitrogen Total	<0.040	mg/L	0.040			0.040	1.00	U		3/5/15 14:45	JJF	EPA 300.0
Metals Results												
Total Mercury	<0.030	ug/L	0.030	0.060	0.12	0.12	1.00	U	3/6/2015 08:30	3/9/15 09:03	LJF	EPA 7470A ^
Total Aluminum	<6.0	ug/L	6.0	18	36	36	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Antimony	<2.0	ug/L	2.0	6.0	12	12	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Arsenic	9.1	ug/L	4.0	12	24	24	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 559226 Sample Description: TIMM-0315B Client Sample #: Sampled: 3/4/2015 1350

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Total Barium	22.2	ug/L	0.29	0.90	1.8	1.8	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Beryllium	0.15	ug/L	0.10	0.30	0.60	0.60	1.00	J B	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Cadmium	<0.30	ug/L	0.30	1.0	2.0	2.0	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Calcium	59800	ug/L	17	50	100	100	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Chromium	0.71	ug/L	0.60	2.0	4.0	4.0	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Cobalt	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Copper	1.2	ug/L	1.2	3.5	7.0	7.0	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Iron	3020	ug/L	16	50	100	100	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Lead	<1.4	ug/L	1.4	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Magnesium	29800	ug/L	6.0	20	40	40	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Manganese	195	ug/L	0.70	2.0	4.0	4.0	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Nickel	1.9	ug/L	1.0	3.0	6.0	6.0	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Selenium	12.2	ug/L	2.2	6.5	13	13	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Silver	1.4	ug/L	0.70	2.0	4.0	4.0	1.00	J	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Thallium	<2.5	ug/L	2.5	7.5	15	15	1.00	U	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Vanadium	0.91	ug/L	0.80	2.5	5.0	5.0	1.00	J B	3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Zinc	10.8	ug/L	1.6	5.0	10	10	1.00		3/9/2015 08:00	3/10/15 12:20	NAH	EPA 200.7 ^
Total Potassium	1510	ug/L	90	250	500	500	1.00		3/9/2015 08:00	3/10/15 11:24	MDS	EPA 200.7 ^
Total Sodium	2510	ug/L	100	300	600	600	1.00		3/9/2015 08:00	3/10/15 11:24	MDS	EPA 200.7 ^

CT LAB#: 559227 Sample Description: TIMM-0315B Client Sample #: Sampled: 3/4/2015 1350

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Metals Results												
Dissolved Mercury	<0.030	ug/L	0.030	0.060	0.12	0.12	1.00	U	3/6/2015 08:30	3/9/15 08:41	LJF	EPA 7470A ^
Dissolved Aluminum	<6.0	ug/L	6.0	18	36	36	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Antimony	<2.0	ug/L	2.0	6.0	12	12	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

CT LAB#: 559227 Sample Description: TIMM-0315B Client Sample #: Sampled: 3/4/2015 1350

Analyte	Result	Units	DL	DOD LOD	DOD LOQ	RL	DF	Qualifier	Prep Date/Time	Analysis Date/Time	Analyst	Method
Dissolved Arsenic	7.5	ug/L	4.0	12	24	24	1.00	J	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Barium	22.0	ug/L	0.29	0.90	1.8	1.8	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Beryllium	<0.10	ug/L	0.10	0.30	0.60	0.60	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Cadmium	<0.30	ug/L	0.30	1.0	2.0	2.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Calcium	60700	ug/L	17	50	100	100	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Chromium	<0.60	ug/L	0.60	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Cobalt	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Copper	<1.2	ug/L	1.2	3.5	7.0	7.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Iron	2970	ug/L	16	50	100	100	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Lead	<1.4	ug/L	1.4	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Magnesium	30000	ug/L	6.0	20	40	40	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Manganese	195	ug/L	0.70	2.0	4.0	4.0	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Nickel	1.7	ug/L	1.0	3.0	6.0	6.0	1.00	J	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Selenium	7.1	ug/L	2.2	6.5	13	13	1.00	J	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Silver	<0.70	ug/L	0.70	2.0	4.0	4.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Thallium	<2.5	ug/L	2.5	7.5	15	15	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Vanadium	<0.80	ug/L	0.80	2.5	5.0	5.0	1.00	U	3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Zinc	11.0	ug/L	1.6	5.0	10	10	1.00		3/9/2015 08:00	3/10/15 13:06	NAH	EPA 200.7 ^
Dissolved Potassium	1520	ug/L	90	250	500	500	1.00		3/9/2015 08:00	3/10/15 10:55	MDS	EPA 200.7
Dissolved Sodium	2510	ug/L	100	300	600	600	1.00		3/9/2015 08:00	3/10/15 10:55	MDS	EPA 200.7

Unless specifically stated to the contrary, soil/sediment/sludge sample results reported on a Dry Weight Basis

DATA VALIDATION REPORT

FOR LABORATORY REPORT NO. 109795

This data validation report documents the validation of analytical results for two groundwater samples (including total and dissolved fractions) collected on 4 March 2015 from the Aniwa Arsenic site in Aniwa, Wisconsin. The samples were collected by Tetra Tech START personnel to determine the potential risk to human health and the environment from site contamination. The samples were hand-delivered to the CT Laboratories, Inc. (CT), facility in Baraboo, Wisconsin, for analysis. CT identified the samples as Sample Delivery Group No. 109795 and analyzed them for mercury by U.S. Environmental Protection Agency (EPA) SW-846 Method 7470A and for other metals by EPA water method 200.7. CT performed other analyses on these samples, but those are reported separately.

Tetra Tech validated the data from the samples in general accordance with the EPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Inorganic Data Review, dated August 2014. The NFG guidelines were modified as appropriate to correspond to the specific requirements of the non-CLP method used in these analyses and the START Quality Assurance Project Plan (QAPP) dated April 2014. The validation was based on the following quality control (QC) parameters, as applicable to each analysis:

- Holding time and sample preservation
- Initial and continuing calibrations
- Blanks
- Laboratory control sample (LCS) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Serial dilution results
- Sample duplicate results
- Sample quantitation

The next sections discuss the validation results for the analyses, with the focus on the QC parameters with irregularities. The final section provides an overall evaluation of the validation of all analyses. CT did not include an electronic date deliverable (EDD), so Tetra Tech annotated the sample results from CT, added validation qualifiers, and attached that to this report. These added qualifiers may include:

- No qualifier: results are acceptable as reported
- U: Analyte analyzed for but not detected above the listed reporting limit
- J: Analyte detected but concentration is estimated for QC reasons
- J-: Analyte detected but concentration is estimated for QC reasons and may be biased low
- J+: Analyte detected but concentration is estimated for QC reasons and may be biased high
- UJ: Analyte not detected and the sample reporting limit is considered estimated for QC reasons
- R: Results are rejected. The analyte may or may not be present. Re-sampling and re-analysis are necessary to verification.

1.0 Mercury Analyses

There were no problems with holding times and sample preservation, initial and continuing calibrations, blanks, LCS results, MS/MSD results, sample duplicate results, and sample quantitation. Mercury was not detected in the samples and no qualifications were applied.

2.0 Other Metals Analyses

The other metals analyses had no problems with sample preservation and holding times, initial and continuing calibrations, and LCS results.

Many metals were found in various laboratory blanks, all in concentrations less than their reporting limit (RL). When the metal detected in one or more blank samples was not detected in an associated field

sample, no qualifications were applied. When the metal was detected in a sample at a concentration that was both above the RL and more than 10 times the blank concentration, no qualifications were applied. In the few cases in which the metal was reported in the sample at a concentration less than the RL, that result was qualified as nondetected and flagged "U", with the concentration raised to the RL.

The MS/MSD analyses were performed on sample TIMM-0315A. Iron recoveries (both total and dissolved) could not be determined because the unspiked sample concentration was about 8 times the amount of the spike. No qualifications were applied for these data gaps. Some recoveries were outside the laboratory's QC limits of 80 to 120 percent but within the NFG limits of 75 to 125 percent. Other recoveries were outside the NFG limits in one sample but within them in the other sample and in the average recovery. No qualifications were applied for these minor irregularities. However, dissolved thallium recoveries were 69 and 67 percent. (Total thallium recoveries were 77 and 82 percent.) The nondetected results for dissolved thallium in both samples were qualified as estimated and flagged "UJ" to indicate the apparent matrix interference.

The serial dilution analyses were performed on sample TIMM-0315A. Most results were not usable because of the low concentration of the metals in the samples. However, recoveries were 116 percent for dissolved calcium, 134 percent for total calcium, 102 percent for dissolved magnesium, and 120 percent for total magnesium, versus QC limits of 90 to 110 percent recovery. These results indicate significant matrix interference. Therefore the results for dissolved calcium, total calcium, and total magnesium in both samples were qualified as estimated, possibly biased low, and flagged "J-" to indicate the problem.

In the laboratory duplicate analysis performed on sample TIMM-0315A, several low-concentration results yielded relative percent differences (RPD) above the QC limit of 20 percent. These metals were all well within the low-concentration QC limit of ±1 RL, so no qualifications were applied. However total magnesium yielded a 47 percent RPD, so that result in sample TIMM-0315A was qualified as estimated and flagged "J".

A number of the detected metal results were less than the RL, which corresponds to the limit of quantitation. CT correctly flagged these results "J" to indicate that they are estimated.

3.0 Overall Evaluation

No significant problems were encountered and few qualifications were applied. The qualifications were due to typical low-concentration laboratory contamination, routinely found in sensitive analyses such as these, and some matrix interferences. No qualifications were required by the arsenic results. All results may be used, as qualified, for any purpose.