



Guterl Specialty Steel Site

Environmental Monitoring Report

2018 Sampling Results

U.S. ARMY CORPS OF ENGINEERS
Buffalo District
August 2019

BUILDING STRONG ®

Formerly Utilized Sites Remedial Action Program—Guterl Site

Site Description

The Guterl Specialty Steel Corporation Site (Guterl Site) is located in Lockport, Niagara County, New York, approximately 20 miles northeast of Buffalo, New York. The U.S. Army Corps of Engineers is investigating the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). This program was established in 1974 to identify, investigate, and if necessary, clean up or control sites throughout the United States that were contaminated as a result of the Nation's early atomic weapons and energy programs.

The 70-acre Guterl Site (Figure 1) is comprised of two areas:

- The 61-acre Allegheny Technologies Incorporated (ATI) (formerly Allegheny Ludlum Corporation) property. ATI Specialty Materials operates a specialty steel manufacturing facility in the southwest portion of this property. This property includes the 9-acre Class 2 New York State Department of Environmental Conservation Inactive Hazardous Waste Disposal Site (Site No. 932032) in the northwest corner of the site.
- The 9-acre excised area formerly owned by Guterl Specialty Steel. This area includes nine buildings located in the southeast corner of the site, some of which were used during Atomic Energy Commission (AEC) operations to roll uranium metal. These buildings are abandoned and a chain link security fence surrounds them.

Land use near the Guterl Site is mixed. It consists of private residences, light industries, and a former railroad right-of-way. The Erie Canal is south-southeast of the site.

Purpose

The purpose of groundwater monitoring at the Guterl Site is to determine the potential for movement of FUSRAP-related radiological contaminants associated with historical AEC activities. Between 1948 and 1956, the AEC New York Operations Office managed contracts there with Simonds Saw and Steel, a previous owner of the property, to roll uranium metal billets into rods.

The Corps of Engineers samples a subset of the on-site groundwater wells annually to 1) monitor conditions at the site, 2) develop baseline data for monitoring groundwater for use in assessing effectiveness of remedial alternatives once implemented, and 3) develop and evaluate alternatives to address unacceptable risks. The Corps of Engineers posts annual environmental monitoring data reports for the Guterl Site under the “Environmental Monitoring” section of the project website (see footer for website).

Scope

The Corps of Engineers selects groundwater wells at the Guterl Site for sampling based on previously collected data and the potential for transport of FUSRAP-related constituents. Normally a subset of these wells (between 20 and 24) is sampled annually; 24 wells were sampled in 2018. In 2015, the Corps sampled 51 groundwater wells. That larger array of groundwater wells is sampled every three to five years to verify the overall conditions of FUSRAP-related constituents in groundwater underlying the Guterl Site. Figure 1 shows the existing wells at the site and highlights the 24 shallow and deep groundwater wells sampled in 2018. A contracted laboratory analyzed the samples for dissolved and suspended uranium (in filtered and unfiltered aliquots, respectively), the most mobile FUSRAP-related constituent at the Guterl Site.

The Corps of Engineers also samples groundwater seeps discharging from the northern wall of the Erie Canal and surface water in the Erie Canal to monitor groundwater discharges of FUSRAP-related constituents to the waterway. Figure 1 shows the locations of two groundwater seeps sampled as well as the location of a single surface water sample. Seep and surface water locations vary slightly from year to year depending on access and sampling logistics. The samples were analyzed for dissolved and suspended uranium at the same contract laboratory.

Results and Interpretation

Groundwater Results

Table 1 presents the unfiltered and filtered analytical results for isotopic and total uranium in groundwater samples collected at the site between 2007 and 2018. The 2018 groundwater sample results are consistent with historical (i.e. 2007 and 2009 to 2017) data, as shown in Table 1. Uranium in shallow groundwater migrates in the direction of groundwater flow, from the northwest to the southeast towards the Erie Canal (Figure 2). Uranium in deep groundwater is less extensive than the shallow groundwater plume and exhibits the same northwest to southeast trend (Figure 3).

Groundwater monitoring well MW-19, which exhibited an unusually high uranium result of 46.7 micrograms per liter ($\mu\text{g/L}$) from an unfiltered sample in 2017, returned to a historically normal value of 17.9 $\mu\text{g/L}$ in 2018.

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Groundwater monitoring wells MW-605D and MW-26 continue to exhibit the highest total uranium concentrations in 2018: 275 µg/L (unfiltered) and 279 µg/L (unfiltered), respectively. Figure 2 shows that these wells are near the center of the Guterl Site and further indicate the uranium migration pathway from northwest to southeast.

Seep Results

The Corps of Engineers collected two seep samples from the northern wall of the Erie Canal immediately downgradient of the uranium plume in shallow and deep groundwater. Table 2 presents the unfiltered and filtered analytical results for isotopic and total uranium for the 2018 seep samples. Historical seep data from 2011 to 2017 are presented as reference and indicate the 2018 data are consistent with historical seep samples taken along the northern wall of the Erie Canal. The results are comparable to the uranium concentrations in the deep groundwater plume (Figure 3).

Surface Water Results

Table 3 lists the unfiltered (total) and filtered (dissolved phase) analytical results for isotopic and total uranium for the 2018 surface water sample collected in the Erie Canal. The 2018 results are similar to historical values from 2012 to 2017. These sampling results indicate that the Erie Canal water is not affected by plume seepage and remained unchanged throughout this sampling period.

Conclusions

Uranium concentrations in groundwater at the Guterl Site remain consistent with historical results and exemplify seasonal fluctuations derived from variations in groundwater recharge through contaminated site soils. This fluctuation also influences the size of the groundwater plume via dispersive forces such as recharge and nearby pumping at the quarry. However, the plume maintains a consistent shape that indicates the external influences are minimal and preferential flow paths in the aquifer govern uranium transport. Groundwater under the site is currently not a utilized source of potable (i.e. drinking) water and is also not impacting surface water in the Erie Canal. Therefore, there is no risk to human health or the environment from uranium in site groundwater.

The 2018 seep and surface water uranium concentrations are comparable to historical results. The potential uranium impacts on the Erie Canal seeps have been evaluated, and the Corps of Engineers will continue to monitor the groundwater seeps and Erie Canal surface water. The low levels of uranium in the groundwater seeps will not have an adverse impact to users of the canal. Uranium concentrations in surface water in the Erie Canal are indistinguishable from background (naturally occurring) uranium concentrations measured upstream of the site.

Next Steps

The U.S. Army Corps of Engineers will continue to annually sample groundwater, seeps, and surface water to monitor conditions and support the development of the feasibility study and proposed plan for the Guterl Site. The next round of groundwater, seeps, and surface water sampling will occur in the fall of 2019.

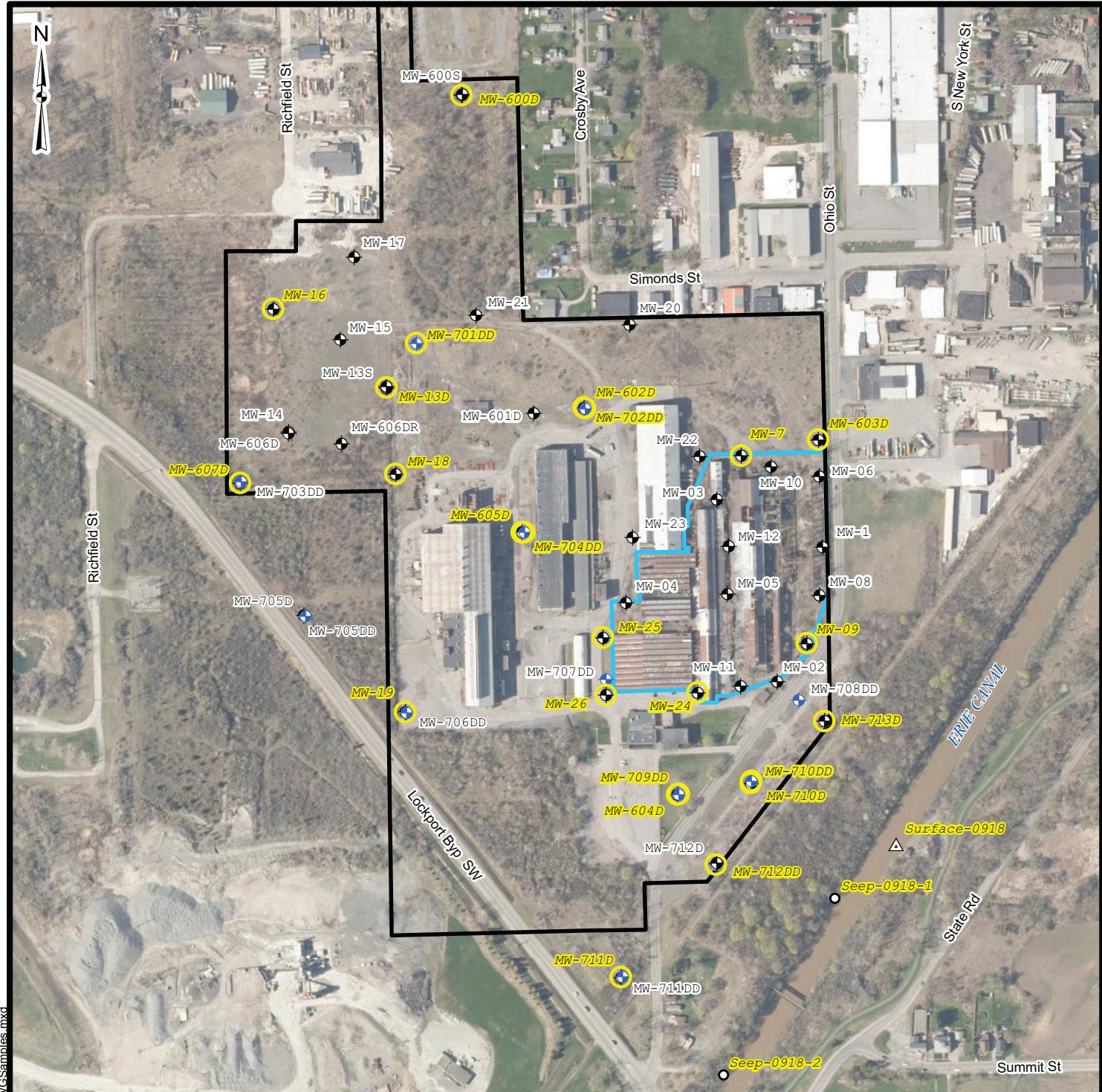
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Legend

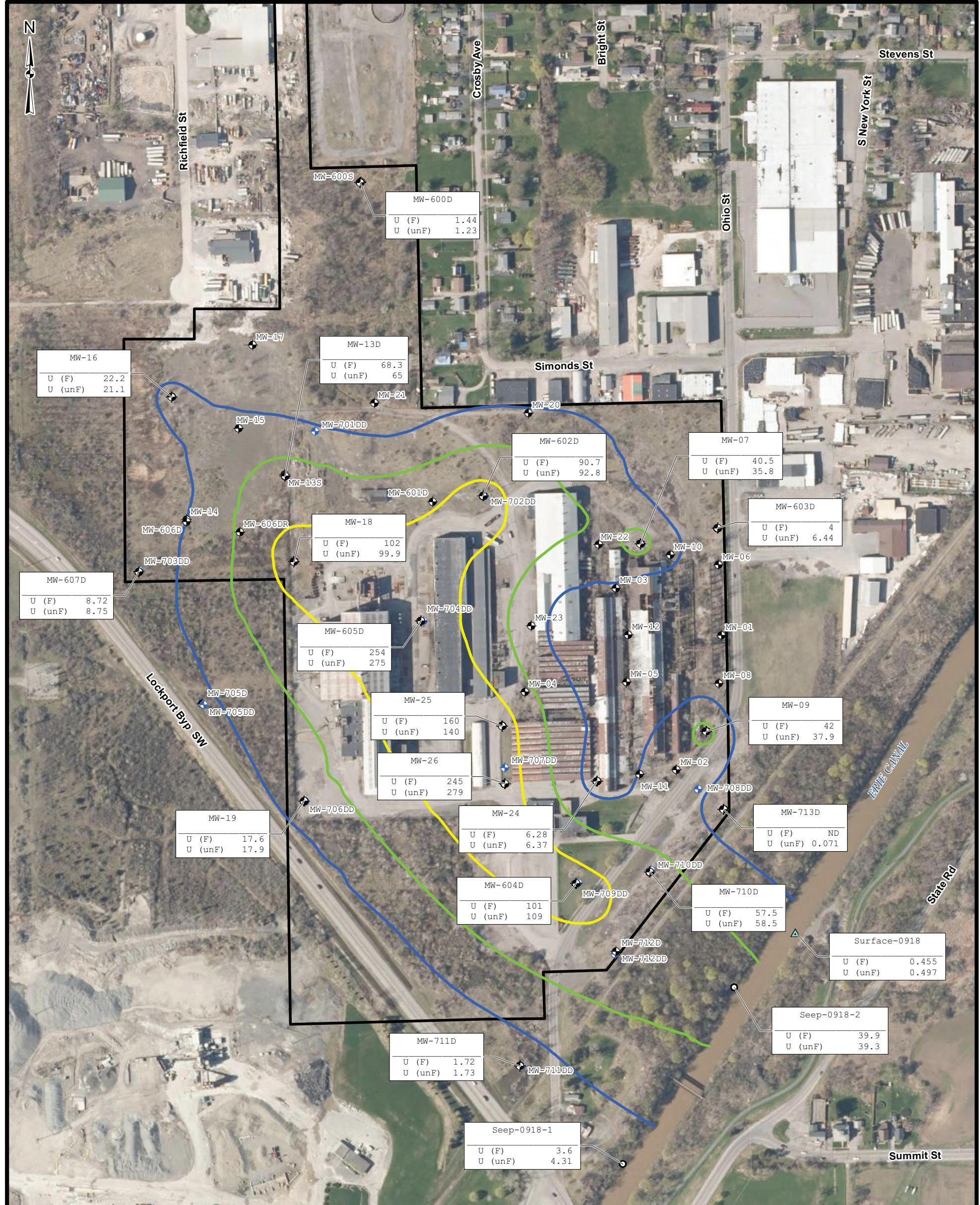
- ◆ Deep Monitoring Well
- ◆ Shallow Monitoring Well
- Monitoring Well Sampled in 2018
- Seep Location Sampled in 2018
- △ Surface Water Sample Location
- Guterl Excised Area Boundary
- ATI Specialty Materials

0 225 450 900
Feet



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2018 GROUNDWATER SAMPLING LOCATIONS

**Legend**

- Deep Monitoring Well
- Extent of Groundwater Above 10 µg/l
- Shallow Monitoring Well
- Extent of Groundwater Above 30 µg/l
- Seep Sample Location
- Extent of Groundwater Above 90 µg/l
- ▲ Surface Water Sample Location
- Site Boundary

Notes:

U (F) - Total Uranium Filtered
U (unF) - Total Uranium Unfiltered

All concentrations reported in µg/l.
µg/l - Micrograms per Liter.
ND - Not Detected

Location
MW-25
U (unF), 140
Radionuclide
Activity

0 150 300 600
Feet



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**TOTAL URANIUM IN SHALLOW GROUNDWATER
(SEPTEMBER 2018)**

**Legend**

- | | |
|---------------------------------|---------------------------------------|
| • Deep Monitoring Well | — Extent of Groundwater Above 10 µg/l |
| • Shallow Monitoring Well | — Extent of Groundwater Above 30 µg/l |
| ○ Seep Sample Location | — Extent of Groundwater Above 90 µg/l |
| ▲ Surface Water Sample Location | |
| ○ Site Boundary | |

Notes:
U (F) - Total Uranium Filtered
U (unF) - Total Uranium Unfiltered

All concentrations reported in µg/l.
µg/l - Micrograms per Liter.

Location
MW-709DD
U (unF), 73.6
Radionuclide
Activity

0 150 300 600
Feet



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**TOTAL URANIUM IN DEEP GROUNDWATER
(SEPTEMBER 2018)**



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Table 1
Groundwater Sample Results 2007–2018
Guterl Specialty Steel Corporation

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-01	8/2/2007		1.32	-0.00500 U	1.27
	11/14/2007		1.03	0.0460 U	0.720
	9/16/2009	3.209	2.06	0.0263 U	1.24
	9/20/2010	3.28	1.98	0.126 U	1.29
	8/23/2011	4.00 J	1.86	0.0200 U	1.22
	10/25/2012	3.44	1.11	0.100 J	1.05
	9/26/2013	3.43	1.28	0.136 J	1.04
	5/6/2014	3.85	1.24	0.0710 J	1.23
	8/4/2015	3.86	1.40	0 U	1.63
MW-01 (Filtered)	8/2/2007		1.46	0.0700 U	1.30
	11/14/2007		0.830	0.0560 U	0.930
	9/16/2009	3.10	1.70	0.221	1.18
	9/20/2010	2.93	2.16	0.245	1.75
	8/23/2011	3.50 J	1.32	-0.00800 U	1.24
	10/25/2012	3.29	1.15	-0.0150 U	0.799
	9/26/2013	3.47	1.24 J	0.0290 UJ	1.17 J
	5/6/2014	3.85	1.27	0.147 J	0.955
	8/4/2015	3.68	1.72	0.137	1.14
MW-02	8/7/2007		6.30	0.220	7.20
	11/14/2007		6.00	0.400	7.10
	9/15/2009	35.3	12.4	1.02	15.5
	9/20/2010	21.4	7.31	0.298	7.70
	8/23/2011	41.3 J	12.0	0.620	12.9
	10/25/2012	23.8	7.40	0.472	7.97
	8/6/2015	9.93	3.74	0.168 J	3.41
MW-02 (Filtered)	8/7/2007		6.10	0.300	6.50
	11/14/2007		5.85	0.330	7.10
	9/15/2009	37.05	12.5	0.728	12.2
	9/20/2010	21.8	6.90	0.900	6.77
	8/23/2011	39.7 J	9.68	0.360	10.4
	10/25/2012	24.0	7.21	0.279	7.58
	8/6/2015	10.5	3.09	0.246 J	3.98

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-03	8/9/2007		2.38	0.130 U	1.80
	11/14/2007		1.89	-0.0100 U	1.56
	9/15/2009	2.78	1.202	0.177 U	0.986
	9/20/2010	1.95	1.44	0.198 J	1.29
	8/22/2011	2.60	0.880	0.0400 U	0.920
	8/5/2015	3.84	1.50	0.0470 U	1.02
MW-03 (Filtered)	8/7/2007		2.20	0.0900	2.31
	11/14/2007		1.68	0.0680 U	1.62
	9/15/2009	2.71	1.43	0.144 U	1.64
	9/20/2010	1.86	2.02	0.473	1.38
	8/22/2011	2.50	1.06	0.0120 U	0.860
	8/5/2015	3.93	1.54	0.0550 J	1.68
MW-04	8/10/2007		17.8	0.720	16.2
	11/15/2007		17.3	0.660	15.7
	9/17/2009	30.5	15.3	0.920	13.4
	9/20/2010	39.9	13.6	1.04	13.7
	8/19/2011	48.0	14.9	0.870	14.4
	10/24/2012	39.6	15.5	0.748	13.9
	8/4/2015	38.8	12.9	0.528	12.7
MW-04 (Filtered)	8/8/2007		18.2	0.790	15.9
	11/15/2007		17.9	0.760	16.8
	9/17/2009	33.4	13.3	0.554	12.8
	9/20/2010	39.2	11.7	0.622	11.0
	8/19/2011	46.0	16.1	0.800	16.7
	10/24/2012	41.2	14.0	0.500	13.0
	8/5/2015	39.3	12.7	0.711	12.6
MW-05	8/10/2007		3.03	0.250	2.61
	11/14/2007		2.20	0.0450 U	2.09
	9/17/2009	5.16	2.08	0.180	1.56
	9/20/2010	5.95	3.62	0.546	2.64
	8/22/2011	6.10	2.36	0.0980	2.06
	8/10/2015	6.07	2.43	0.136 J	2.18
MW-05 (Filtered)	8/9/2007		3.19	0.25	2.77
	11/14/2007		2.16	0.15	1.82
	9/17/2009	5.91	2.59	0.1929	1.998
	9/20/2010	5.75	2.50	0.143	2.03
	8/22/2011	6.20	2.40	0.112	2.21
	8/10/2015	6.06	2.39	0.078 J	1.89

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-06	8/6/2007		1.55	0.0280 U	1.29
	11/14/2007		3.91	0.150	2.94
	9/15/2009	1.20	0.803	0.053 U	0.474
	9/17/2010	5.07	1.92	0.231 J	1.5
	8/12/2011	3.60	1.77	0.0340	1.16
	8/4/2015	3.77	1.86	0.0470 J	1.26
MW-06 (Filtered)	8/2/2007		1.30	0.0600 U	1.06
	11/14/2007		2.95	0.0900	2.62
	9/15/2009	0.820 U	0.308 U	0.104 U	0.317
	9/17/2010	4.87	2.81	0.380 J	2.10
	8/12/2011	3.60	1.57	0.107	1.04
	8/4/2015	3.77	1.18	0.103 J	1.01
MW-07	9/15/2009	1.27	0.271 U	0.267 U	0.487
	9/17/2010	75.8	13.2	1.09	13.6
	8/12/2011	33.4	11.8	0.670	12.1
	10/23/2012	37.4	12.9	0.620	12.3
	9/26/2013	9.07	3.67	0.0790 J	2.90
	5/6/2014	2.84	0.716	0.0780 J	0.684
	8/4/2015	33.4	10.8	0.195 J	10.2
	9/21/2016	34.0			
	9/19/2017	12.3			
	9/25/2018	35.8			
MW-07 (Filtered)	9/15/2009	1.24	0.777	0.187 U	0.331
	9/17/2010	33.9	11.2	0.693	10.9
	8/12/2011	32.4	10.5	0.540	10.6
	10/23/2012	36.6	12.4	0.612	12.3
	9/26/2013	9.95	3.49	0.0960 J	3.74
	5/6/2014	2.75	1.06	-0.00900 U	0.908
	8/4/2015	29.3	9.86	0.457	10.4
	9/21/2016	35.8			
	9/19/2017	10.9			
	9/25/2018	40.5			
MW-08	8/20/2007		0.510	0 U	0.260
	11/14/2007		0.410	0 U	0.260
	9/16/2009	0.966 U	0.754	0.0376 U	0.309 U
	9/20/2010	1.00 U	0.790	0.120 U	0.480
	8/8/2011	1.10 J	0.370 J	-0.0060 UJ	0.240 J
	8/5/2015	1.09	0.682 J	0.0380 U	0.409 J

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-08 (Filtered)	8/20/2007		0.390	-0.00500 U	0.180
	11/14/2007		0.230	0.0450 U	0.084 U
	9/16/2009	0.809 U	0.667	0.0373 U	0.111 U
	9/20/2010	1.00 U	1.19	0.348 J	0.718
	8/8/2011	1.10 J	0.400	0.0220 U	0.340
	8/5/2015	1.08	0.481	0.0650 J	0.499
MW-09	8/7/2007		4.20	0.270	4.99
	11/14/2007		4.22	0.230	4.50
	9/16/2009	18.9	6.42	0.436	6.80
	9/20/2010	19.5	8.48	1.30	8.66
	8/8/2011	21.8 J	6.07	0.320	6.48
	10/25/2012	41.0	11.3	0.427	13.7
	9/26/2013	111	34.1	1.86	35.9
	5/6/2014	46.0	13.3	0.572	15.1
	8/5/2015	47.0	14.1	0.751	15.6
	9/22/2016	32.9			
	9/19/2017	51.1			
	9/25/2018	37.9			
MW-09 (Filtered)	8/7/2007		4.74	0.160	5.17
	11/14/2007		4.03	0.220	4.11
	9/16/2009	18.02	6.86	0.677	8.38
	9/20/2010	20.8	7.44	0.617	6.85
	8/8/2011	21.1 J	6.26	0.280	6.70
	10/25/2012	41.1	12.5	0.745	13.8
	9/26/2013	117	33.0	1.35	36.4
	5/6/2014	48.7	13.0	1.00	15.2
	8/5/2015	47.5	13.9	0.592	15.5
	9/22/2016	32.5			
	9/19/2017	59.5			
	9/25/2018	42			
MW-10	9/15/2009	0.965 U	0.596	0.0394 U	0.491
	9/17/2010	1.21	1.25	0.208 J	0.700
	8/12/2011	1.60	0.580	0.0290	0.410
	8/6/2015	1.48	0.660	0.0700 J	0.587
MW-10 (Filtered)	9/15/2009	1.0029	0.198	0.0889 U	0.360
	9/17/2010	1.17	1.38	0.290 J	1.40
	8/12/2011	1.50	0.650	0.0110 U	0.530
	8/6/2015	1.34	0.482	0.0770 J	0.600

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-11	8/20/2007		1.82	0.130	1.90
	11/14/2007		6.80	0.380	5.91
	9/15/2009	2.61	1.36	0.270	1.27
	9/20/2010	20.9	4.50	0.359	4.80
	8/8/2011	17.7 J	4.13	0.260	4.56
	10/25/2012	32.1	10.1	0.521	10.6
	8/6/2015	15.6	4.95	0.214 J	4.89
MW-11 (Filtered)	8/20/2007		1.65	0.100	1.41
	11/14/2007		5.32	0.330	5.28
	9/15/2009	6.39	2.22	0.184 U	2.34
	9/20/2010	22.1	8.62	1.19	7.77
	8/8/2011	14.5 J	4.75	0.220	4.65
	10/25/2012	33.0	10.8	0.741	12.0
	8/6/2015	13.3	4.10	0.327 J	5.13
MW-12	9/15/2009	1.310	0.700	0.0682 U	0.4215
	9/20/2010	1.68	1.35	0.0980	1.02
	8/22/2011	3.90	1.49	0.136	1.43
	8/6/2015	2.43	0.857	0.123 J	0.885
MW-12 (Filtered)	9/15/2009	0.729 U	0.614	0.0123 U	0.482
	9/20/2010	1.91	0.990	0.261 J	0.782
	8/22/2011	3.80	1.06	0.140	1.36
	8/6/2015	2.38	0.877	0 U	0.877
MW-13D	8/6/2007		19.6	0.820	21.0
	11/16/2007		20.3	1.00	22.4
	9/23/2009	101.5	30.5	1.83	32.4
	9/14/2010	72.6	27.2	0.546	29.0
	8/11/2011	79.8	23.9	1.13	24.6
	10/25/2012	109	35.2	1.86	35.5
	9/25/2013	80.0	26.1	1.45	26.2
	5/7/2014	103	32.9	1.09	33.5
	8/10/2015	88.8	29.4	1.66	29.3
	9/21/2016	87.0			
	9/20/2017	107			
	9/25/2018	65			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-13D (Filtered)	8/6/2007		21.4	0.980	20.9
	11/16/2007		20.4	1.05	22.3
	9/23/2009	105.7	34.3	1.91	35.6
	9/14/2010	69.1	19.6	0.328 J	20.9
	8/11/2011	80.2	22.6	1.13	23.6
	10/25/2012	107	35.2	1.47	36.1
	9/25/2013	80.5	22.8	1.52	23.9
	5/7/2014	98.5	25.6	1.46	27.2
	8/10/2015	85.5	24.6	1.47	30.7
	9/21/2016	84.6			
	9/20/2017	102			
	9/25/2018	68.3			
MW-14	8/1/2007		0.920	0.100	0.900
	11/12/2007		1.52	0.0210 U	1.08
	9/23/2009	6.39	2.47	0.2291	2.94
	9/14/2010	7.01	2.02	0.157 U	1.73
	8/16/2011	8.00	2.49	0.170	2.08
	8/10/2015	10.4	3.17	0.113 J	3.70
MW-14 (Filtered)	8/1/2007		0.870	0.0360 U	0.800
	11/12/2007		0.930	0.0480 U	1.17
	9/23/2009	6.10	2.44	0.2501	2.83
	9/14/2010	7.29	2.36	0.226 J	2.20
	8/16/2011	8.00	2.49	-0.0380 U	2.09
	8/10/2015	9.24	3.50	0.116 J	3.11
MW-15	8/14/2007		0.170	0.0600 U	0.110 U
	11/13/2007		4.13	0.340	4.58
	9/22/2009	0.843 U	1.03	0.140 U	0.387
	9/14/2010	1.00 U	0.688 J	0.174 J	0.459
	8/16/2011	2.00	0.370	0.0220 U	0.610
	8/6/2015	3.98	0.965	0.193 J	1.27
MW-15 (Filtered)	8/14/2007		0.120 U	-0.00500 U	0.08200 U
	11/13/2007		5.70	0.330	7.20
	9/22/2009	1.089	0.400	0.0872 U	0.633
	9/14/2010	1.39	0.812	0.0360 U	0.643
	8/16/2011	1.50	0.480	0.00300 U	0.580
	8/6/2015	4.26	1.27	0.0510 U	1.53

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-16	8/1/2007		5.55	0.310	6.30
	11/12/2007		8.60	0.430	9.60
	9/22/2009	29.8	11.4	0.701	10.3
	9/14/2010	21.9	3.04	0.198	3.57
	8/19/2011	29.3	8.80	0.440	9.70
	10/22/2012	27.1	8.54	0.382	9.42
	9/25/2013	35.7	11.3	0.556	11.1
	5/6/2014	25.3	7.20	0.268	8.00
	8/6/2015	28.2	7.75	0.448 B	8.37
	9/21/2016	26.1			
	9/19/2017	25.6			
	9/25/2018	21.1 J			
MW-16 (Filtered)	8/1/2007		5.59	0.390	6.40
	11/12/2007		9.00	0.330	9.70
	9/22/2009	32.007	11.0	0.905	11.6
	9/14/2010	26.7	7.03	0.586	8.18
	8/19/2011	27.7	8.90	0.450	10.2
	10/22/2012	28.1	9.19	0.318	9.86
	9/25/2013	36.4	10.0	0.995	11.6
	5/6/2014	26.0	7.95	0.589	8.02
	8/6/2015	28.0	9.61	0.692	9.45
	9/21/2016	26.0			
	9/19/2017	27.9			
	9/25/2018	22.2			
MW-17	7/31/2007		0.660	0.0710	0.640
	11/12/2007		0.610	0.0160 U	0.570
	9/22/2009	6.21	2.55	0.319	2.43
	9/14/2010	7.70	2.65	0.300	2.48
	8/16/2011	8.50	2.27	0.180	1.82
	8/10/2015	6.68	2.25	0.184 J	2.42
MW-17 (Filtered)	7/31/2007		0.780	0.100 U	0.930
	11/12/2007		0.480	0.0490 U	0.540
	9/22/2009	6.86	2.09	0.136 U	2.06
	9/14/2010	7.16	2.43	0.257 J	2.31
	8/16/2011	8.30	2.39	0.161	2.30
	8/10/2015	6.91	2.16	0.159 J	2.75

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-18	8/15/2007		42.0	2.20	43.2
	11/15/2007		40.4	1.61	39.2
	9/21/2009	150	51.1	5.11	51.4
	9/15/2010	126	35.3	0.373	45.0
	8/5/2011	123 J	38.8	1.72	39.6
	10/25/2012	146	48.0	2.56	49.0
	9/24/2013	155	45.4	2.43	50.0
	5/7/2014	102	27.9	1.42	29.1
	8/10/2015	127	43.9	1.86	45.4
	9/22/2016	117			
	9/20/2017	104			
	9/26/2018	99.9			
MW-18 (Filtered)	8/15/2007		42.6	1.66	41.4
	11/15/2007		41.4	2.08	44.3
	9/21/2009	122	50.5	3.07	49.8
	9/15/2010	125	37.0	0.973	40.9
	8/5/2011	125 J	37.7	1.79	36.6
	10/25/2012	149	47.3	2.87	46.8
	9/24/2013	150	46.1	1.91	47.4
	5/7/2014	117	35.7	2.00	35.9
	8/10/2015	134	42.7	1.89	44.2
	9/22/2016	121			
	9/20/2017	112			
	9/26/2018	102			
MW-19	8/6/2007		2.22	0.100 U	2.18
	11/15/2007		2.34	0.120	2.31
	9/18/2009	11.9	5.88	0.149 U	5.04
	9/15/2010	19.9	6.33	0.241 U	6.01
	8/4/2011	16.4 J	4.52	0.270	4.77
	10/22/2012	18.9	6.30	0.270	6.36
	9/24/2013	18.6	5.39	0.301	5.89
	5/6/2014	25.8	7.79	0.311	7.64
	8/4/2015	17.4	5.79	0.361	5.43
	9/22/2016	21.2			
	9/20/2017	46.7			
	9/26/2018	17.9			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-19 (Filtered)	8/6/2007		2.45	0.0610 U	1.90
	11/15/2007		2.19	0.0900 U	2.27
	9/18/2009	12.3	5.09	0.266 U	4.37
	9/15/2010	19.8	5.41	0.163 U	5.40
	8/4/2011	12.9 J	4.34	0.192	4.27
	10/22/2012	18.8	6.03	0.377	6.03
	9/24/2013	18.3	5.69	0.201	6.21
	5/6/2014	24.7	7.38	0.570	8.20
	8/4/2015	18.1	5.83	0.286	6.34
	9/22/2016	20.3			
	9/20/2017	20.9			
	9/26/2018	17.6			
MW-20	8/1/2007		3.36	0.220	3.67
	11/13/2007		3.84	0.170	3.86
	9/21/2009	13.1	4.84	0.240	4.64
	9/15/2010	12.2	4.36	0.373	3.99
	8/18/2011	13.5	4.50	0.230	4.27
	10/23/2012	9.57	3.57	0.222	2.99
	9/25/2013	14.4	4.63	0.265	5.14
	5/7/2014	17.1	4.86	0.242	5.09
	8/4/2015	13.0	4.74	0.204	4.39
MW-20 (Filtered)	8/1/2007		3.64	0.140	3.78
	11/13/2007		3.59	0.190	3.50
	9/21/2009	12.2	5.04	0.205 U	4.82
	9/15/2010	13.7	4.08	0.160	3.96
	8/18/2011	13.3	3.89	0.240	3.82
	10/23/2012	9.98	3.13	0.176	3.67
	9/25/2013	14.7	4.51	0.312	4.51
	5/7/2014	16.9	5.52	0.361	5.78
	8/4/2015	12.4	4.08	0.198	3.86

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-21	8/14/2007		1.91	0.0700 U	1.65
	11/13/2007		2.00	0.0200 U	2.34
	9/22/2009	2.52	1.45	0.0804 U	1.05
	9/15/2010	4.46	1.730	0.694	1.51
	8/18/2011	3.10	0.730	0.058	0.790
	10/25/2012	5.40	1.80	0.0920	1.93
	9/25/2013	1.91	0.497 J	0.03700 UJ	0.420 J
	5/6/2014	3.13	0.926	0.104 J	0.861
	8/10/2015	2.42	0.897	0.0530 U	0.638
MW-21 (Filtered)	8/14/2007		1.69	0.0460 U	1.32
	11/13/2007		1.97	0.120	1.75
	9/22/2009	3.52	1.20	0.256	1.22
	9/15/2010	3.57	2.02	0.269	1.49
	8/18/2011	3.20	1.03	0.0370 U	0.930
	10/25/2012	5.20	1.65	0.139	1.91
	9/25/2013	2.11	1.04	-0.0160 U	0.572
	5/6/2014	2.51	0.695	0.106 J	0.724
	8/10/2015	2.49	1.16	0.0700 J	0.790
MW-22	8/8/2007		23.3	1.24	22.7
	11/15/2007		4.85	0.260	4.98
	9/16/2009	76.3	31.7	2.43 U	29.2
	9/17/2010	9.09	3.19	0.229	2.47
	8/5/2011	73.6 J	24.3	1.03	24.8
	10/23/2012	12.9	4.31	0.294	3.99
	8/4/2015	83.2	25.2	1.11	26.1
MW-22 (Filtered)	8/8/2007		21.5	1.00	21.8
	11/15/2007		4.49	0.190	4.10
	9/16/2009	82.0	28.4	2.04	21.8
	9/17/2010	8.72	2.69	0.218 J	2.82
	8/5/2011	65.1 J	21.6	1.05	21.2
	10/23/2012	12.3	4.38	0.251	4.45
	8/4/2015	73.2	24.5	1.37	24.7
MW-23	8/10/2007		2.06	0.0440 U	1.97
	11/15/2007		3.18	0.0900 U	3.50
	9/17/2009	6.91	3.26	0.212 U	2.41
	9/20/2010	7.29	3.89	0.316 J	4.81
	8/4/2011	6.70 J	1.79	0.114	1.73
	10/24/2012	8.72	2.88	0.108	3.07
	9/26/2013	5.58	1.49 J	0.0280 UJ	1.22 J
	5/6/2014	5.55	1.99	0.0660 U	2.15
	8/5/2015	7.38	2.72	0.158 J	2.35

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-23 (Filtered)	8/10/2007		2.71	0.160	2.34
	11/15/2007		3.79	0.0760 U	3.36
	9/17/2009	5.85	2.71	0.4117	3.30
	9/20/2010	8.51	2.63	0.198 J	2.63
	8/4/2011	6.30 J	1.74	0.136	1.64
	10/24/2012	8.46	2.46	0.162	2.64
	9/26/2013	5.10	1.51	0.116 J	1.68
	5/6/2014	5.18	1.65	0.228	1.65
	8/5/2015	6.12	2.07	0.0940 J	2.15
MW-24	8/8/2007		0.280	0.0250 U	0.260
	11/15/2007		2.18	0.130	1.83
	9/17/2009	2.75	9.53	5.99	4.28
	9/21/2010	24.6	8.75	0.895	10.2
	8/4/2011	39.8 J	13.1	0.430	12.6
	10/24/2012	8.02	2.78	0.107	2.75
	8/5/2015	9.65	3.47	0.112 J	3.35
	9/22/2016	5.29			
	9/20/2017	5.42			
	9/26/2018	6.37			
MW-24 (Filtered)	8/8/2007		0.370	0 U	0.260
	11/15/2007		3.45	0.16	3.37
	9/17/2009	6.92	3.76	0.182 U	3.73
	9/21/2010	29.4	10.2	0.793	10.8
	8/4/2011	42.7 J	12.5	0.510	11.6
	10/24/2012	11.9	4.12	0.178	4.39
	8/5/2015	12.5	4.24	0.357	4.56
	9/22/2016	6.25			
	9/20/2017	5.84			
	9/26/2018	6.28			
MW-25	9/17/2009	150.5	65.7	5.18	69.72
	9/21/2010	198	52.1	2.88	55.0
	8/12/2011	175	55.7 J	3.22 J	56.4 J
	10/24/2012	166	68.8	3.21	63.4
	9/25/2013	154	51.9	2.82	49.9
	5/7/2014	166	53.0	2.79	53.4
	8/5/2015	108	42.0	2.72	37.2
	9/21/2016	133			
	9/20/2017	105			
	9/25/2018	140			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-25 (Filtered)	9/17/2009	170.2	64.5	3.65	62.2
	9/21/2010	211	53.5	3.97	55.9
	8/12/2011	171	58.5 J	3.28 J	60.5 J
	10/24/2012	162	53.0	2.25	60.9
	9/25/2013	160	66.4	4.61	60.3
	5/7/2014	170	50.3	2.63	52.3
	8/5/2015	111	44.9	2.41	45.2
	9/21/2016	144			
	9/20/2017	136			
	9/26/2018	160			
MW-26	8/10/2007		65.8	2.65	65.6
	11/16/2007		80.0	5.30	77.9
	9/17/2009	148	61.9	4.04	62.03
	9/21/2010	162	46.6	2.08	49.3
	8/10/2011	107	34.7	1.97	35.0
	2/1/2012	145 J	39.7 J	1.62	38.3 J
	5/4/2012	145	52.7	2.36	54.4
	8/6/2012	155	49.0	2.48	47.6
	10/24/2012	243	77.3	3.86	76.9
	9/25/2013	4.95	10.3	0.150 J	2.20
	5/7/2014	219	70.4	3.94	72.7
	8/4/2015	255	93.2	6.29	93.8
	9/21/2016	209			
	9/20/2017	259			
	9/26/2018	279			
MW-26 (Filtered)	8/9/2007		60.0	2.79	58.7
	11/16/2007		82.0	4.17	78.0
	9/17/2009	144	66.4	2.94	65.3
	9/21/2010	160	43.7	2.22	44.3
	8/10/2011	94.6	32.1	1.62	32.7
	2/1/2012	152 J	48.4 J	2.10	48.4 J
	5/4/2012	139	54.5	2.62	55.7
	8/6/2012	147	46.6	1.87	46.3
	10/24/2012	260	69.8	3.66	70.5
	9/25/2013	4.18	8.82	0.363	2.09
	5/7/2014	223	62.8	2.93	63.0
	8/4/2015	248	76.8	3.54	82.1
	9/21/2016	209			
	9/20/2017	263			
	9/26/2018	245			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-600D	8/17/2007		1.17	0.0800 U	0.690
	11/13/2007		0.660	0 U	0.660
	9/22/2009	2.40	0.908	0.171 U	0.711
	9/15/2010	2.25	1.13	0.548	0.817
	8/22/2011	2.40	0.920	0.0320 U	0.780
	10/22/2012	1.41	0.715	0.0400	0.616
	9/24/2013	2.12	0.946	0.0570 J	0.588
	5/6/2014	2.26	1.17	0.0500 U	0.714
	8/10/2015	2.11	0.756	-0.0120 U	0.740
	9/21/2016	1.92			
	9/19/2017	1.39			
	9/26/2018	1.23			
MW-600D (Filtered)	8/17/2007		3.78	0.170	3.30
	11/13/2007		0.860	0.0430 U	0.860
	9/22/2009	1.92	1.28	0.0349 U	0.543
	9/15/2010	2.56	1.55	0.103 U	0.801
	8/22/2011	2.50	1.28	0.0500 U	0.930
	10/22/2012	1.54	0.761	0.00600 U	0.635
	9/24/2013	1.82	0.693	0.0280 J	0.537
	5/6/2014	2.08	1.04	0.193 J	0.790
	8/10/2015	2.10	0.880	-0.0150 U	0.901
	9/21/2016	1.86			
	9/19/2017	1.47			
	9/26/2018	1.44			
MW-600S	9/22/2009	2.61	1.37	0 U	1.40
	8/10/2015	2.34	1.31	0.0220 U	0.725
MW-600S (Filtered)	9/22/2009	1.49	0.913	0.0751 U	0.727
	8/10/2015	2.27	1.36	0.0460 U	0.683
MW-601D	8/13/2007		5.83	0.400	5.23
	11/13/2007		7.10	0.450	7.00
	9/21/2009	2.17	0.916	0.173 U	0.840
	9/15/2010	7.81	5.52	0.486	3.10
	8/18/2011	9.60	2.54	0.104	2.66
	10/23/2012	7.30	2.66	0.0770	2.36
	8/6/2015	4.09	1.53	0.154	1.27
MW-601D (Filtered)	8/15/2007		6.30	0.240	6.5
	11/13/2007		8.00	0.480	8.4
	9/21/2009	3.43	1.53	0.121 U	1.17
	9/15/2010	9.78	3.94	0.677	2.79
	8/18/2011	10.6	2.56	0.130	2.61
	10/23/2012	8.17	2.82	0.244	2.83
	8/6/2015	4.03	1.12	0.137	1.34

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-602D	8/15/2007		36.0	1.77	37.5
	11/15/2007		25.6	1.39	26.0
	9/21/2009	150	53.7	3.49	47.4
	9/15/2010	109	37.3	0.828	37.3
	8/11/2011	113	36.5	1.84	36.0
	10/23/2012	110	37.2	1.95	35.7
	9/25/2013	162	47.4	3.11	49.5
	5/6/2014	115	37.9	2.86	39.1
	8/5/2015	3.48	4.56	0.168 J	1.64
	9/21/2016	106			
	9/19/2017	86.2			
	9/25/2018	92.8			
MW-602D (Filtered)	8/15/2007		39.1	2.15	39.0
	11/15/2007		27.6	1.77	29.8
	9/21/2009	133	47.7	3.85	47.0
	9/15/2010	117	34.3	0.849	37.7
	8/11/2011	112	36.9	2.08	36.8
	10/23/2012	110	36.3	1.70	36.5
	9/25/2013	153	43.8	2.76	46.4
	5/6/2014	120	33.7	2.18	35.2
	8/5/2015	3.41	4.09	0 U	1.09
	9/21/2016	103			
	9/19/2017	88.7			
	9/25/2018	90.7			
MW-603D	8/14/2007		4.06	0.200	3.84
	11/14/2007		5.06	0.100	4.28
	9/17/2009	4.84	2.65	0.492	2.12
	9/15/2010	4.86	2.89	0.199	2.11
	8/5/2011	11.1 J	2.86	0.107	2.76
	10/23/2012	6.58	2.51	0.115	2.23
	9/26/2013	7.68	2.25	0.152 J	2.37
	5/6/2014	8.08	2.23	0.237 J	2.37
	8/4/2015	7.55	2.17	0.117 J	2.29
	9/21/2016	5.11			
	9/19/2017	5.77			
	9/25/2018	6.44			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-603D (Filtered)	8/17/2007		1.15	0.0200 U	0.860
	11/14/2007		3.92	0.0660 U	3.42
	9/17/2009	4.88	2.47	0.290	2.33
	9/15/2010	6.40	2.79	0.261	2.74
	8/5/2011	8.20 J	3.01	0.196	2.97
	10/23/2012	6.71	2.64	0.0900	2.15
	9/26/2013	7.44	2.56	0.121 J	2.38
	5/6/2014	7.95	3.00	0.0450 U	2.79
	8/4/2015	7.32	2.11	0.270	1.93
	9/21/2016	5.07			
	9/19/2017	5.55			
	9/25/2018	4			
MW-604D	8/15/2007		23.5	0.960	23.7
	11/15/2007		39.0	1.92	38.2
	9/18/2009	117	39.3	3.10	39.3
	9/15/2010	140	44.	0.778	41.2
	8/10/2011	103	37.1	1.79	37.0
	2/2/2012	76.7 J	23.1	1.05	21.9
	5/4/2012	86.5	29.2	1.28	28.8
	8/6/2012	108	35.1	1.50	35.2
	10/23/2012	112	36.1	1.65	35.4
	9/24/2013	97.2	28.4	1.27	30.6
	5/7/2014	63.6	20.4	0.699	20.5
	8/4/2015	123	34.7	1.88	42.4
	9/21/2016	101			
	9/20/2017	90.2			
	9/25/2018	109			
MW-604D (Filtered)	8/13/2007		22.8	1.55	24.7
	11/15/2007		43.2	1.81	42.3
	9/18/2009	104	43.5	3.06	43.4
	9/15/2010	121	36.2	0.617	37.2
	8/10/2011	101	31.4	1.52	30.4
	2/2/2012	76.4 J	22.0	1.28	23.1
	5/4/2012	76.4	31.0	1.52	29.9
	8/6/2012	105	34.5	1.57	33.5
	10/23/2012	111	32.2	1.71	32.6
	9/24/2013	97.9	31.3	1.55	29.9
	5/7/2014	67.9	19.9	0.519	19.6
	8/4/2015	111	35.9	2.37	40.9
	9/21/2016	102 J			
	9/20/2017	102			
	9/25/2018	101			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-605D	8/16/2007		67.0	4.90	63.0
	11/16/2007		66.9	3.23	68.2
	9/18/2009	274	100.6	5.45	100.7
	9/21/2010	248	74.1	3.09	74.8
	8/10/2011	214	67.5	3.43	65.8
	2/1/2012	299 J	87.3	3.59	91.0
	5/5/2012	265	86.2	4.09	87.8
	8/6/2012	259	85.8	3.75	82.6
	10/24/2012	270	79.7	3.59	79.1
	9/25/2013	247	88.7	4.50	84.3
	5/6/2014	292	87.4	4.67	83.7
	8/5/2015	273	92.2	5.17	95.2
	9/21/2016	273			
	9/20/2017	268			
	9/25/2018	275			
MW-605D (Filtered)	8/13/2007		68.0	3.60	64.0
	11/16/2007		70.0	3.40	64.2
	9/18/2009	238	97.3	12.1	88.77
	9/21/2010	254	81.8	8.28	84.0
	8/10/2011	209	68.6 J	3.38 J	67.1 J
	2/1/2012	302 J	92.9	3.99	91.2
	5/5/2012	256	90.2	4.37	89.6
	8/6/2012	251	78.7	3.67	77.5
	10/24/2012	266	85.2	4.75	84.0
	9/25/2013	255	74.6	4.21	74.5
	5/6/2014	267	78.6	5.23	80.4
	8/5/2015	272	94.7	4.68	94.0
	9/21/2016	271			
	9/20/2017	248			
	9/25/2018	254			
MW-606D	9/23/2009	7.24	2.86	0.268	3.03
	9/14/2010	6.91	1.76	0.180 U	1.92
	8/16/2011	7.50	2.60 J	0.19 0J	2.91 J
MW-606D (Filtered)	9/23/2009	5.67	2.62	0.213	3.10
	9/14/2010	6.09	1.58	0.118 U	1.69
	8/16/2011	7.40	2.88 J	0.0680 J	2.37 J
MW-606DR	11/16/2007		2.66	0.160	2.90
	9/23/2009	9.29	3.92	0.795 U	3.66
	9/14/2010	12.8	5.77	0.824	4.56
	8/15/2011	12.8	3.37	0.230	3.73
	8/10/2015	6.20	2.38	0.220 J	2.02

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-606DR (Filtered)	11/16/2007		2.51	0.200	2.40
	9/23/2009	15.0	5.67	0.433	5.45
	9/14/2010	14.7	4.95	0.396	4.76
	8/15/2011	12.4	4.2 J	0.170 J	4.54 J
	8/10/2015	7.61	2.45	0.0670 J	2.61
MW-607D	8/15/2007		0.0330 U	-0.00800 U	-0.0100 U
	11/13/2007		0.0230 U	-0.00500 U	0.0640
	9/23/2009	14.9	5.50	0.270	4.92
	9/14/2010	10.0	3.36	0.178 U	3.71
	8/19/2011	19.5	5.35	0.240	4.99
	10/22/2012	13.9	4.86	0.133	5.05
	9/25/2013	13.4	4.29	0.263	4.40
	5/6/2014	15.8	5.01	0.205	4.25
	8/6/2015	11.2	3.19	0.201 J	4.45
	9/21/2016	6.35			
	9/19/2017	12.2			
	9/25/2018	8.75			
MW-607D (Filtered)	8/15/2007		0.0640 U	0.0190 U	0.0270 U
	11/13/2007		0.150	-0.00900 U	0.00900 U
	9/23/2009	17.7	6.07	0.456	6.521
	9/14/2010	10.9	4.95	0 U	3.01
	8/19/2011	12.3	3.88	0.119	4.04
	10/22/2012	12.2	3.62	0.316	4.74
	9/25/2013	13.0	3.63	0.313	3.61
	5/6/2014	14.7	4.51	0.217	4.77
	8/6/2015	12.7	3.98	0.215 J	4.45
	9/21/2016	5.97			
	9/19/2017	14.6			
	9/26/2018	8.72			
MW-701DD	8/19/2011	1.40	0.890	0.0410	0.390
	8/4/2015	0.633	0.158 J	-0.00900 U	0.233
	9/22/2016	0.946 J			
	9/19/2017	2.05			
	9/25/2018	1.42			
MW-701DD (Filtered)	8/19/2011	1.50	0.770	0.0360	0.460
	8/4/2015	1.68	0.228 J	0.0660 J	0.228
	9/22/2016	1.30 J			
	9/19/2017	1.78			
	9/26/2018	0.895			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-702DD	8/11/2011	4.50	6.65	0.103	1.84
	8/5/2015	144	52.2	2.74	51.8
	9/21/2016	2.70			
	9/19/2017	2.17			
	9/25/2018	0.97			
MW-702DD (Filtered)	8/11/2011	5.80	4.94	0.123	1.47
	8/5/2015	132	40.0	1.52	39.0
	9/21/2016	2.52			
	9/19/2017	1.22			
	9/25/2018	1.28			
MW-703DD	8/19/2011	0.280	0.0970	0.0150 U	0.070
	8/6/2015	0.248 J	0.148 J	0.0780 J	0.159 J
MW-703DD (Filtered)	8/19/2011	1.00 U	0.0230 U	0 U	0.0280 U
	8/6/2015	0.254 J	0.132 J	0.0810 J	0.0260 U
MW-704DD	8/10/2011	23.5	9.35	0.380	7.31
	2/2/2012	81.3 J	29.8	1.20	23.8
	5/5/2012	67.0	25.3	0.990	20.4
	8/6/2012	102	32.7	0.960	26.1
	10/22/2012	72.4	26.0	0.950	21.5
	8/5/2015	27.4	11.2	0.408	8.73
	9/21/2016	37.3			
	9/20/2017	20.9			
	9/25/2018	13.2			
MW-704DD (Filtered)	8/10/2011	26.3	10.8	0.460	8.36
	2/2/2012	80.2 J	26.3	1.15	22.6
	5/5/2012	65.8	27.8	1.15	21.1
	8/6/2012	68.1	27.6	0.810	22.3
	10/22/2012	73.4	27.9	1.20	22.6
	8/5/2015	28.8	12.7	0.659	10.2
	9/21/2016	37.3			
	9/20/2017	24.2			
	9/25/2018	16.8			
MW-705D	8/9/2011	0.890 J	0.212	0.0180 U	0.185
	8/6/2015	1.60	1.61	0.0380 U	0.494
MW-705D (Filtered)	8/9/2011	2.80 J	0.500	0.0220 U	0.470
	8/6/2015	1.17	1.46	0.0790 J	0.284
MW-705DD	8/9/2011	1.70	0.510	0.0290	0.291
	8/6/2015	0.918	0.243	-0.009 BU	0.327
MW-705DD (Filtered)	8/9/2011	0.370	0.253	0 U	0.189
	8/6/2015	0.889	0.458	0.0190 BU	0.270
MW-706DD	8/15/2011	1.80	0.980	0.0290 U	0.480
	8/4/2015	1.05	0.758	0.0880	0.365

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-706DD (Filtered)	8/15/2011	1.70	0.950	0.0120 U	0.420
	8/4/2015	1.20	0.782	0.182	0.232
MW-707DD	8/18/2011	34.5			
	2/1/2012	13.6 J	7.76 J	0.140	5.14
	5/4/2012	10.8	12.8	0.280	3.54
	8/7/2012	11.2	14.8	0.108	3.55
	10/23/2012	9.40	14.7	0.240	3.32
	8/4/2015	7.01	7.01	0.161 J	1.85
MW-707DD (Filtered)	8/18/2011	33.9			
	2/1/2012	14.1 J	14.5 J	0.230	4.32
	5/4/2012	10.6	12.30	0.180	3.51
	8/7/2012	8.30	9.00	0.129	2.73
	10/23/2012	8.40	12.2	0.128	2.49
	8/4/2015	1.39	6.66	0.0540 J	1.68
MW-708DD	8/11/2011	22.4	7.18	0.310	7.03
	1/31/2012	24.7 J	7.10	0.290	7.20
	5/5/2012	18.0	6.97	0.200	6.72
	8/4/2012	20.2	7.04	0.400	7.12
	10/22/2012	20.0	6.59	0.290	5.72
	9/25/2013	23.2	7.22	0.259	7.02
	5/7/2014	15.2	4.74	0.140 J	4.60
	8/6/2015	20.4	6.37	0.409 B	7.19
MW-708DD (Filtered)	8/11/2011	23.0	7.19	0.300	6.90
	1/31/2012	22.3 J	7.99	0.490	7.76
	5/5/2012	18.3	7.37	0.260	7.35
	8/4/2012	19.3	7.26	0.270	6.68
	10/22/2012	20.1	7.02	0.350	6.41
	9/25/2013	20.7	7.64	0.412	7.17
	5/7/2014	16.3	4.87 J	0.269 J	4.71 J
	8/6/2015	20.1	6.96	0.380 B	7.24
MW-709DD	8/10/2011	52.8	16.8	0.710	16.0
	2/2/2012	88.3 J	25.5	1.48	26.3
	5/4/2012	80.0	27.7	1.05	28.7
	8/7/2012	82.7	28.4	1.83	28.6
	10/23/2012	85.9	27.6	1.41	27.8
	9/24/2013	33.9	13.1	0.378	12.3
	5/7/2014	74.8	23.6	1.32	24.4
	8/4/2015	72.7	22.9	0.514	23.8
	9/21/2016	84.7			
	9/20/2017	72.5			
	9/25/2018	73.6			

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-709DD (Filtered)	8/10/2011	55.4	18.5	0.700	17.4
	2/2/2012	88.5 J	27.5	1.01	25.5
	5/4/2012	80.4	27.2	1.23	25.9
	8/7/2012	84.3	28.7	1.66	29.4
	10/23/2012	83.8	28.2	1.26	27.1
	9/24/2013	68.5	21.0	1.15	23.7
	5/7/2014	81.2	25.1	1.18	26.5
	8/4/2015	75.2	27.5	1.20	23.3
	9/21/2016	82.8			
	9/20/2017	69			
MW-710D	9/25/2018	79.4			
	8/15/2011	67.5	19.1 J	1.02	19.9
	1/30/2012	59.1 J	16.6	0.810	16.8
	5/4/2012	52.5	18.3	0.990	17.6
	8/7/2012	53.8	18.8	1.12	18.2
	10/22/2012	66.0	19.9	1.13	19.7
	9/26/2013	60.3	17.9	1.26	16.9
	5/6/2014	44.8	14.0	0.880	11.7
	8/6/2015	64.2	21.9	1.08	21.3
	9/21/2016	60.9			
MW-710D (Filtered)	9/20/2017	56.9			
	9/25/2018	58.5			
	8/15/2011	66.1	24.0 J	1.20	23.8
	1/30/2012	57.8 J	17.3	0.900	17.5
	5/4/2012	49.5	18.7	0.910	19.4
	8/7/2012	52.3	19.9	1.08	20.0
	10/22/2012	66.8	20.3	1.07	20.1
	9/26/2013	59.1	18.6	1.200	20.9
	5/6/2014	44.5	12.5	0.693	13.0
	8/6/2015	64.0	22.0	1.10	21.1
MW-710DD	9/21/2016	58.8			
	9/20/2017	58.7			
	9/25/2018	57.5			
	8/18/2011	60.8	18.6	1.02	19.1
	1/30/2012	71.4 J	19.6	0.930	21.3
	5/4/2012	59.1	21.7	0.960	22.1
	8/7/2012	29.6	8.79	0.590	9.60
	10/22/2012	28.6	8.85	0.360	8.82
	8/6/2015	52.3	18.2	1.26	18.0

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-710DD (Filtered)	8/18/2011	67.0	21.0	1.38	21.3
	1/30/2012	71.9 J	20.0	1.17	20.4
	5/4/2012	56.6	19.0	1.00	19.1
	8/7/2012	28.9	9.28	0.430	9.50
	10/22/2012	28.3	9.34	0.470	9.06
	8/6/2015	46.5	15.2	0.818	14.1
	9/21/2016	70.2			
	9/20/2017	60.9			
	9/25/2018	64.1			
MW-711D	8/9/2011	9.00	2.78	0.0920	2.68
	10/23/2012	4.02	1.54	0.125	1.36
	9/26/2013	4.88	1.30	0.0330 U	1.49
	5/7/2014	4.95	1.38	0.181 J	1.27
	8/4/2015	5.24	2.16	0.0680 J	1.60
	9/21/2016	2.44			
	9/19/2017	3.04			
	9/25/2018	1.73			
MW-711D (Filtered)	8/9/2011	7.40	2.70	0.160	2.30
	10/23/2012	4.09	0.984	0.0790	1.05
	9/26/2013	4.88	1.79	0.0730 J	1.46
	5/7/2014	5.46	1.82	0.0570 U	2.04
	8/4/2015	5.42	2.24	0.096	2.26
	9/21/2016	2.94			
	9/19/2017	3.58			
	9/25/2018	1.72			
MW-711DD	8/15/2011	1.70 J	0.800 J	-0.0070 UJ	0.710 J
	10/23/2012	1.49	1.02	0.0390	1.03
	9/26/2013	3.88	1.53	0.110	1.20
	5/7/2014	1.72 J	0.932	0.0310 J	0.913
	8/4/2015	4.29	1.95	0.130	1.89
MW-711DD (Filtered)	8/15/2011	2.90 J	1.29	0.110 U	0.550
	10/23/2012	1.63	1.41	-0.0200 U	0.830
	9/26/2013	1.24	0.462	0.0490 U	0.481
	5/7/2014	0.955	0.216 J	0.0350 J	0.198
	8/4/2015	4.46	1.73	0.0840 J	1.48

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
MW-712DD	8/18/2011	38.7	13.2	0.590	12.7
	10/22/2012	28.3	9.92	0.590	10.3
	9/24/2013	13.5	4.54	0.286	4.37
	5/6/2014	10.3	3.60	0.206 J	2.99
	8/4/2015	31.4	10.4	0.568	10.4
	9/21/2016	41.0			
	9/19/2017	28.2			
	9/26/2018	33.8			
MW-712DD (Filtered)	8/18/2011	38.8	14.0	0.630	12.4
	10/22/2012	30.8	9.97	0.577	10.2
	9/24/2013	14.2	4.76 J	0.346 J	4.48 J
	5/6/2014	11.1	2.87 J	0.252 J	3.42 J
	8/4/2015	31.7	11.50	0.320	10.8
	9/21/2016	32.1			
	9/19/2017	30.9			
	9/26/2018	32.8			
MW-713D	8/4/2011	5.1 J	2.62	0.0610	1.26
	1/31/2012	1.00 J	0.320	0.100 U	0.230
	5/4/2012	0.330 J	0.0810	0.100 U	0.122
	8/4/2012	1.00 U	0.127	0.100 U	0.0930
	10/23/2012	1.00 U	0.0660	0.100 U	0.0810
	9/25/2013	0.309	0.0560 U	0.0300 U	-0.0730 U
	5/6/2014	0.168 J	0.0820 J	0.0520 U	0.153 J
	8/6/2015	0.261 J	0.185	0 U	0.113 J
	9/22/2016	0.052 U			
	9/19/2017	2.24			
	9/25/2018	0.071 J			
MW-713D (Filtered)	8/4/2011	4.70 J	2.67	0.0760	1.40
	1/31/2012	0.250 J	0.190	0.100 U	0.0710
	5/4/2012	1.00 U	0.103	0.100 U	0.0750
	8/4/2012	1.00 U	0.133	0.100 U	0.100 U
	10/23/2012	1.00 U	0.100 U	0.100 U	0.0200
	9/25/2013	0.0980 J	0.196	-0.00900 U	0.107 J
	5/6/2014	0.269 J	0.112 J	0.0290 U	0.0910 J
	8/6/2015	0.284 J	0.189	0.0210 U	0.0320 U
	9/22/2016	0.056 U			
	9/19/2017	0.815 J			
	9/25/2018	0.047 U			

Notes: The shaded rows identify 2018 data.

- Analysis for uranium, Method ASTM D5174 Modified.
- Analysis for isotopic uranium, Method EML U-02 Modified.

pCi/L: Picocuries per liter

$\mu\text{g/L}$: micrograms per liter

J: Estimated

U: Nondetect (Results are below the Minimum Detectable Activity/Minimum Detectable Concentration.)



US Army Corps
of Engineers®
Buffalo District

Table 2
Groundwater Seep Sample Results 2011-2018
Former Guterl Specialty Steel Corporation

Location ID	Sample Date	Total Uranium (µg/L)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
Seep-1108-01	8/8/2011	44.9 J	13.2	0.720	13.2
Seep-1108-01 (Filtered)	8/8/2011	44.3 J	15.4	0.670	15.3
Seep-1108-02	8/8/2011	6.30 J	2.09	0.0280 U	1.59
Seep-1108-02 (Filtered)	8/8/2011	6.20 J	1.89	0.0880	2.13
Seep-1112-01	12/8/2011	5.85			
Seep-1112-02	12/8/2011	3.47			
Seep-1112-03	12/8/2011	24.8			
Seep-1112-04	12/8/2011	25.9			
Seep-1112-05	12/8/2011	24.9			
Seep-1112-06	12/8/2011	23.2			
Seep-1205-01	5/7/2012	5.30	1.88	0.0840	1.99
Seep-1205-01 (Filtered)	5/7/2012	5.30	1.90	0.171	2.04
Seep-1205-02	5/7/2012	5.80	2.34	0.048	2.00
Seep-1205-02 (Filtered)	5/7/2012	5.90	2.56	0.220	2.28
Seep-1205-03	5/7/2012	20.7	7.30	0.360	7.25
Seep-1205-03 (Filtered)	5/7/2012	20.8	6.88	0.370	7.44
Seep-1210-1	10/25/2012	35.4	10.6	0.547	10.7
Seep -1210-1 (Filtered)	10/25/2012	33.0	11.1	0.660	12.5
Seep -1210-2	10/25/2012	0.895	0.272	0.0270 U	0.198
Seep -1210-2 (Filtered)	10/25/2012	0.913	0.161	-0.0460 U	0.380
Seep -1210-3	10/25/2012	36.2	12.3	0.571	12.3
Seep -1210-3 (Filtered)	10/25/2012	36.8	11.7	0.750	13.0

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
Seep-0913-1	9/23/2013	24.4	7.66	0.249	8.25
Seep-0913-1 (Filtered)	9/23/2013	23.6	8.42	0.487	7.96
Seep-0913-2	9/23/2013	26.3	9.12	0.423	8.21
Seep-0913-2 (Filtered)	9/23/2013	25.7	8.23	0.468	8.52
Seep-0514-1	5/5/2014	6.01	2.13	0.056 J	1.88
Seep-0514-1 (Filtered)	5/5/2014	5.97	2.47	0.181	2.12
Seep-0514-2	5/5/2014	17.7	5.93	0.298	5.24
Seep-0514-2 (Filtered)	5/5/2014	17.9	5.38	0.411	5.57
Seep-0815-1	8/6/2015	38.2	12.7	0.749	13.7
Seep-0815-1 (Filtered)	8/6/2015	37.6	12.5	0.868	13.3
Seep-0917-1	9/19/2017	30.9			
Seep-0917-1 (Filtered)	9/19/2017	33			
Seep-0917-2	9/19/2017	6.89			
Seep-0917-2 (Filtered)	9/19/2017	7.05			
Seep-0918-1	9/25/2018	4.31			
Seep-0918-1 (Filtered)	9/25/2018	3.6			
Seep-0918-2	9/25/2018	39.3			
Seep-0918-2 (Filtered)	9/25/2018	39.9			

Notes:

- There were no seep samples taken in 2016.
- Analysis for uranium, Method ASTM D5174 Modified.
- Analysis for isotopic uranium, Method EML U-02 Modified.

pCi/L: Picocuries per liter

$\mu\text{g/L}$: micrograms per liter

U: Non-detect (results are below the Minimum Detectable Activity/Minimum Detectable Concentration).

J: Estimated



US Army Corps
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Table 3
Erie Canal Surface Water Sample Results 2012-2018
Former Guterl Specialty Steel Corporation

Location ID	Sample Date	Total Uranium ($\mu\text{g/L}$)	Uranium-234 (pCi/L)	Uranium-235 (pCi/L)	Uranium-238 (pCi/L)
Surface Water -1	1/25/2012	0.609	0.174	-0.0280 U	0.234
Surface Water -1 (Filtered)	1/25/2012	0.587	0.241	0.0340 J	0.174
Surface Water #1	5/7/2012	0.520	0.310	0.100 U	0.217
Surface Water #1 (Filtered)	5/7/2012	0.510	0.184	0.100 U	0.171
Surface-1210-1	10/25/2012	0.599	0.358 J	0.117	0.316
Surface-1210-1 (Filtered)	10/25/2012	0.595	0.240 J	0 U	0.0880
Surface-0913	09/23/2013	0.502	0.106 J	0 U	0.0340 U
Surface-0913 (Filtered)	09/23/2013	0.368 J	0.164 J	0.0300 J	0.0580 U
Surface-0514	05/05/2014	0.546	0.0970 J	0.0550 J	0.0600 U
Surface-0514 (Filtered)	5/5/2014	0.562	0.0960 U	0.0270 U	0.112 J
Surface-0815	8/6/2015	0.534	0.216 J	0.0490 J	0.194
Surface-0815 (Filtered)	8/6/2015	0.535	0.273	0.0170 U	0.147 J
Surface-0917	9/19/2017	0.483 J			
Surface-0917 (Filtered)	9/19/2017	0.978			
Surface-0918	9/25/2018	0.497 J			
Surface-0918 (Filtered)	9/25/2018	0.455 J			

Notes:

- There were no surface water samples taken in 2016.
- Analysis for total uranium, Method ASTM D5174 Modified.
- Analysis for isotopic uranium, Method EML U-02 Modified.
- The Environmental Protection Agency Maximum Contaminant Level (MCL) for total uranium in drinking water is 30 $\mu\text{g/L}$.

pCi/L: Picocuries per liter

$\mu\text{g/L}$: micrograms per liter

J: Estimated

U: Non-detect (results are below the Minimum Detectable Activity/Minimum Detectable Concentration)