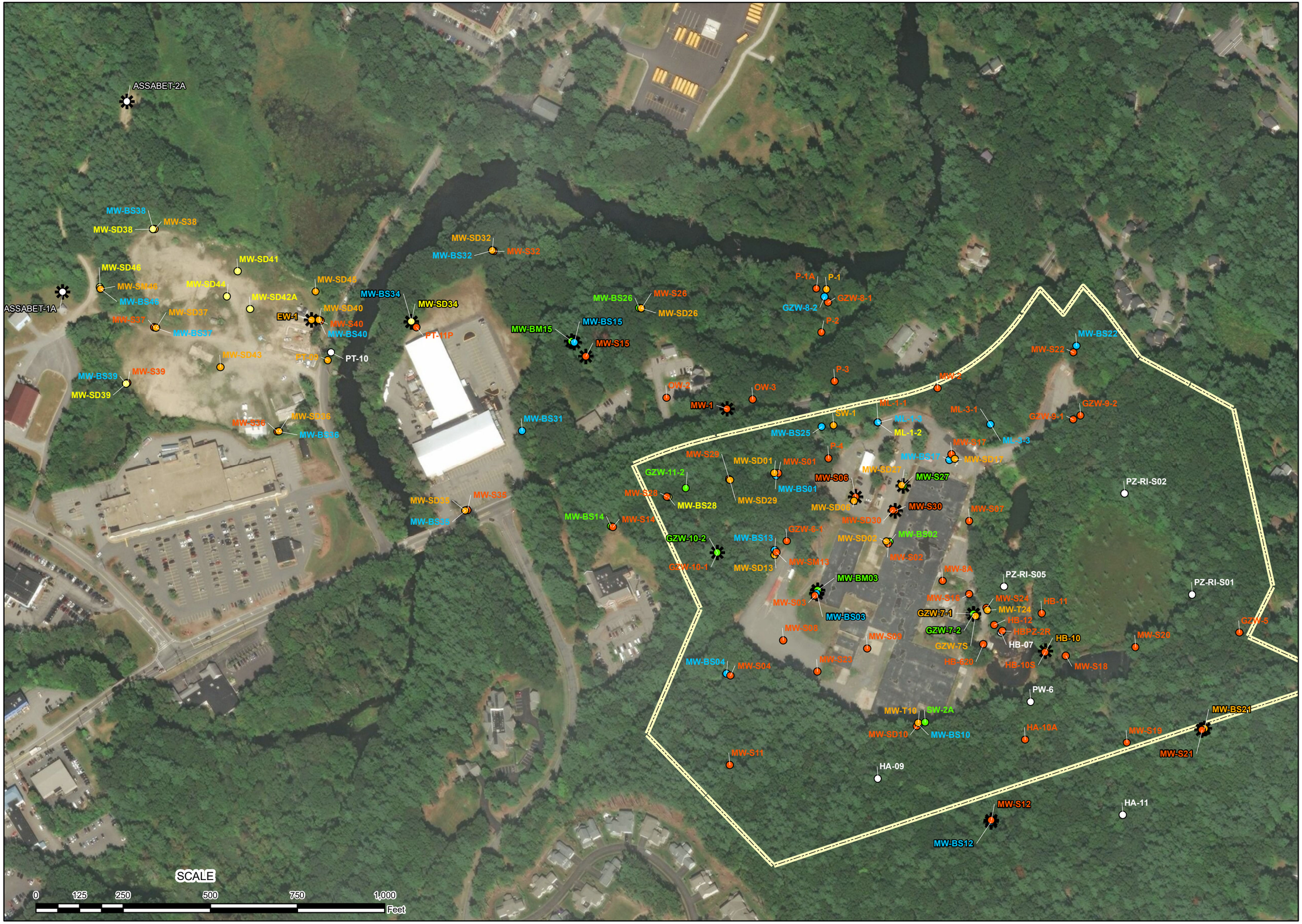

Figure 1
Sample Locations

Nuclear Metals Inc. (NTCRA)
Concord, Massachusetts

Description:

Planned well sample locations for sitewide event November, 2019.

Map Legend:

- PFAS Sample Location

Well Formation

- Undefined
- SOB
- MOB
- Till
- BR
- WBR
- Site Boundary

Spatial Projection:

Coordinate System:
MA State Plane Mainland
FIPS Zone: 2001
Units: US Survey Feet
Datum: NAD83

Plot Info:

File: AllWells_201911_event.mxd
Project No.: 3243
Plot Date: 15 October, 2019
Arc Operator: HG
Reviewed by: HG

ddms

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Sitewide Groundwater Sampling Results November 2019 - PFAS
Nuclear Metals, Inc. Superfund Site - West Concord, Massachusetts

				Sample Location	MW-S12		MW-S12 (dup)		MW-BS12		MW-S21		MW-BS21		HB-10		GZW-7-1		GZW-7-2		MW-BM03		MW-BM15		MW-BS03		MW-S30	
				Sample Date	11/14/2019		11/14/2019		11/15/2019		11/14/2019		11/15/2019		11/13/2019		11/14/2019		11/18/2019		11/15/2019		11/19/2019		11/15/2019		11/15/2019	
				Formation	Overburden		Overburden		Bedrock		Overburden		Bedrock		Overburden		Overburden		Bedrock		Bedrock		Bedrock		Bedrock		Overburden	
Analyte	**Cas No.**	**Limit**	**Source**	**Unit**																								
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	120226-60-0	--	--	ng/l	< 4.51	U	< 4.51	U	< 4.45	U	< 4.42	U	< 4.56	U	< 4.63	U	< 4.43	U	< 4.75	U	< 4.43	U	< 4.45	U	< 5.51	U	< 4.43	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	**1.93**	J+	< 1.85	U	< 1.77	U	< 1.90	U	**1.3**	J	**12.6**	J+	< 2.20	U	< 1.77	U
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	UJ	< 1.82	UJ	< 1.85	UJ	< 1.77	UJ	< 1.90	UJ	< 1.77	UJ	< 17.8	UJ	< 2.20	UJ	< 1.77	UJ
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	756426-58-1	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	--	--	ng/l		R		R		R	< 44.2	UJ		R	< 46.3	UJ		R	< 47.5	UJ		R		R	< 55.1	UJ		R
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	--	--	ng/l	< 180	UJ	< 180	UJ	< 178	U	< 177	UJ	< 182	U	< 185	U		R	< 19.0	UJ	< 177	U	< 17.8	U	< 220	U	< 177	U
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	--	--	ng/l	< 45.1	U	< 45.1	U	< 44.5	U	< 44.2	U	< 45.6	U	< 46.3	U	< 44.3	U	< 47.5	U	< 44.3	U	< 44.5	U	< 55.1	U	< 44.3	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	UJ	< 2.20	U	< 1.77	U
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	--	--	ng/l	< 180	UJ	< 180	UJ	< 178	U		R	< 182	U	< 185	UJ		R	< 19.0	UJ	< 177	U	< 17.8	U	< 220	UJ	< 177	U
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	--	--	ng/l	< 45.1	U	< 45.1	U	< 44.5	U	< 44.2	U	< 45.6	U	< 46.3	U	< 44.3	U	< 47.5	U	< 44.3	U	< 44.5	U	< 55.1	U	< 44.3	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	**0.73**	J	< 1.77	U	< 1.90	UJ	< 1.77	UJ	**0.672**	J	< 2.20	U	< 1.77	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	**0.5**	J	**0.326**	J	**1.73**	J	**0.662**	J	< 1.77	U	< 1.78	U	< 2.20	U	**0.911**	J
Perfluorobutanoic Acid (PFBA)	375-22-4	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	U	**0.741**	J	**1.25**	J	**1.97**	J-	**0.544**	J	**0.943**	J		R	**0.581**	J	**1.05**	J
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Perfluorododecanoic Acid (PFDoA)	307-55-1	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	UJ	< 2.20	U	< 1.77	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Perfluorohexadecanoic Acid (PFHxDA)	67905-19-5	--	--	ng/l	< 3.61	UJ	< 3.61	UJ	< 3.56	UJ	< 3.53	U	< 3.65	UJ	< 3.70	UJ	< 3.55	UJ	< 3.80	UJ	< 3.55	UJ	< 3.56	U	< 4.40	UJ	< 3.55	UJ
Perfluorohexanoic Acid (PFHxA)	307-24-4	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	U	< 1.82	UJ	< 1.85	U	**4.31**	J-	< 1.90	U	< 1.77	UJ		R	< 2.20	U	< 1.77	UJ
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Perfluorooctadecanoic Acid (PFODA)	16517-11-6	--	--	ng/l	< 3.61	UJ	< 3.61	UJ	< 3.56	UJ	< 3.53	U	< 3.65	UJ	< 3.70	UJ	< 3.55	UJ	< 3.80	UJ	< 3.55	UJ	< 3.56	UJ	< 4.40	UJ	< 3.55	UJ
Perfluorooctanesulfonamide (FOSA)	754-91-6	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	U	< 1.82	UJ	**0.9**	J	< 1.77	UJ		R	< 1.77	UJ	< 1.78	UJ	< 2.20	UJ	< 1.77	UJ
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	**0.325**	J	< 1.85	U	< 1.77	U	**0.49**	J	< 1.77	U	< 1.78	U	< 2.20	U	**0.369**	J
Perfluoropentanoic Acid (PFPeA)	2706-90-3	--	--	ng/l	< 1.80	UJ	**0.437**	J	**0.537**	J	< 1.77	U	**1.11**	J	**0.726**	J	**5.89**	J-	< 1.90	U	< 1.77	UJ		R	< 2.20	U	**2.16**	J-
Perfluorotetradecanoic Acid (PFTA)	376-06-7	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	U	< 2.20	U	< 1.77	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	U	< 1.90	U	< 1.77	U	< 1.78	UJ	< 2.20	U	< 1.77	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	--	--	ng/l	< 1.80	U	< 1.80	U	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	UJ	< 1.90	U	< 1.77	U	< 1.78	UJ	< 2.20	U	< 1.77	U
Perfluorooctanoic Acid (PFOA)	335-67-1	--	--	ng/l	**0.361**	J	**0.383**	J	< 1.78	U	**0.237**	J	< 1.82	U	**4.24**		**4.17**	J-	**209**	J+	**4.32**			R	**5.36**		**3.87**	J-
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	UJ	**0.66**	J-	**6.6**	J-	**0.464**	J	**1.02**	J	**4.35**	J-	< 1.78	U	**0.89**	J-	**11.3**	J-
Perfluorononanoic Acid (PFNA)	375-95-1	--	--	ng/l	< 1.80	U	< 1.80	UJ	< 1.78	U	< 1.77	U	< 1.82	U	< 1.85	U	< 1.77	UJ	< 1.90	U	< 1.77	U	**0.302**	J	< 2.20	U	< 1.77	UJ
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	UJ	**2.98**	J-	**0.385**	J	**0.663**	J	**1.05**	J	**0.525**	J	< 1.78	UJ	< 2.20	UJ	**0.901**	J
Perfluoroheptanoic Acid (PFHpA)	375-85-9	--	--	ng/l	< 1.80	UJ	< 1.80	UJ	< 1.78	UJ	< 1.77	U	**0.438**	J	**0.73**	J	**1.86**	J-	**1.28**	J	**0.539**	J		R	**0.454**	J	**1.05**	J
Perfluorodecanoic Acid (PFDA)	335-76-2	--	--	ng/l	< 1.80	U	< 1.80	UJ	< 1.78	U	< 1.77	U	**0.347**	J	< 1.85	U	< 1.77	UJ	< 1.90	U	< 1.77	U	< 1.78	UJ	< 2.20	U	< 1.77	UJ
PFAS, Total (MCP 6)	TOTAL PFAS 6	20	MassDEP	ng/l	**0.361**		**0.383**		< 1.78		**0.237**		**4.43**		**12**		**7.16**		**212**		**9.73**		**0.302**		**6.7**		**17.1**	
PFOA or PFOS	PFOA or PFOS	40	EPA Screening	ng/l	**0.361**		**0.383**		< 1.78		**0.237**		**0.66**		**6.6**		**4.17**		**209**		**4.35**		< 1.78		**5.36**		**11.3**	
PFOA/PFOS, Total	TOTAL PFOA PFOS	70	EPA PRG	ng/l	**0.361**		**0.383**		< 1.78		**0.237**		**0.66**		**10.8**		**4.63**		**210**		**8.67**		< 1.78		**6.25**		**15.2**	
PFAS, Total	TPFAS	--	--	ng/l	**0.361**		**0.82**		**0.537**		**0.597**		**9.03**		**15.9**		**21.1**		**214**		**12**		**13.6**		**8.02**		**21.6**	

Notes:

U	Analyte not detected above the laboratory reporting limit
J	Analyte is estimated
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J-	The result is an estimated quantity, but the result may be biased low.
J+	The result is an estimated quantity, but the result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample
(dup)	Duplicate sample
ng/l	Nanograms per liter
PFAS	Per- and polyfluoroalkyl substances
Bold	Analyte detected above the laboratory reporting limit (detect)
Red	Highest detected concentration
PFAS, Total (6)	Summation of results for: PFDA, PFHpA, PFHxS, PFOA, PFNA and PFOS
Shade	Value exceeds Comparison Limit

Background

Sitewide Groundwater Sampling Results November 2019 - PFAS
Nuclear Metals, Inc. Superfund Site - West Concord, Massachusetts

				Sample Location	MW-S27		MW-S06		GZW-10-2		MW-1		MW-S15		MW-BS15		MW-SD34		MW-BS34	
				Sample Date	11/13/2019		11/14/2019		11/15/2019		11/14/2019		11/15/2019		11/18/2019		11/14/2019		11/15/2019	
				Formation	Overburden		Overburden		Bedrock		Overburden		Overburden		Bedrock		Overburden		Bedrock	
Analyte	**Cas No.**	**Limit**	**Source**	**Unit**																
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	UJ	< 1.73	U	< 1.71	U	< 1.71	U
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	120226-60-0	--	--	ng/l	< 4.61	U	< 4.34	U	< 4.79	U	< 4.51	U	< 4.40	U	< 4.32	U	< 4.27	U	< 4.27	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	--	--	ng/l	< 1.84	U	< 1.74	U	**1.33**	J	< 1.80	U	< 1.76	U	**12.4**	J+	< 1.71	U	< 1.71	U
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	--	--	ng/l	< 1.84	UJ	< 1.74	UJ	< 1.92	UJ	< 1.80	UJ	< 1.76	UJ	< 1.73	UJ	< 1.71	UJ	< 1.71	UJ
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	756426-58-1	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	--	--	ng/l		R		R	< 47.9	UJ		R	< 44.0	UJ	< 43.2	UJ	< 42.7	UJ		R
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	--	--	ng/l	< 184	UJ	< 174	UJ	< 192	U	< 180	U	< 176	U	< 17.3	UJ	< 171	UJ	< 171	U
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	--	--	ng/l	< 46.1	U	< 43.4	U	< 47.9	U	< 45.1	U	< 44.0	U	< 43.2	U	< 42.7	U	< 42.7	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	--	--	ng/l	< 1.84	U	< 1.74	UJ	**1.28**	J	**1.51**	J	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	--	--	ng/l	< 184	UJ	< 174	UJ	< 192	U	< 180	U	< 176	U	< 17.3	UJ	< 171	UJ	< 171	U
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	--	--	ng/l	< 46.1	U	< 43.4	U	< 47.9	U	< 45.1	U	< 44.0	U	< 43.2	U	< 42.7	U	< 42.7	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	--	--	ng/l	< 1.84	U	< 1.74	UJ	< 1.92	U	**1.56**	J	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	--	--	ng/l	**1.04**	J	**0.694**	J	**0.433**	J	**1.06**	J	**6.13**		**0.516**	J	**0.348**	J	< 1.71	U
Perfluorobutanoic Acid (PFBA)	375-22-4	--	--	ng/l	**2.14**	J-	**1.61**	J	**0.402**	J	**2.64**	J-	**27.6**		**0.578**	J	**0.713**	J	< 1.71	UJ
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorododecanoic Acid (PFDoA)	307-55-1	--	--	ng/l	< 1.84	U	< 1.74	UJ	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorohexadecanoic Acid (PFHxDA)	67905-19-5	--	--	ng/l	< 3.69	UJ	< 3.47	UJ	< 3.83	UJ	< 3.61	UJ	< 3.52	UJ	< 3.46	U	< 3.41	UJ	< 3.41	UJ
Perfluorohexanoic Acid (PFHxA)	307-24-4	--	--	ng/l	< 1.84	UJ	< 1.74	UJ	< 1.92	U	**5.73**	J-	**33**		< 1.73	U	< 1.71	U	< 1.71	UJ
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	--	--	ng/l	< 1.84	U	< 1.74	U	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorooctadecanoic Acid (PFODA)	16517-11-6	--	--	ng/l	< 3.69	UJ	< 3.47	UJ	< 3.83	UJ	< 3.61	UJ	< 3.52	UJ	< 3.46	U	< 3.41	UJ	< 3.41	UJ
Perfluorooctanesulfonamide (FOSA)	754-91-6	--	--	ng/l	< 1.84	UJ	< 1.74	UJ	< 1.92	UJ	< 1.80	UJ		R	< 1.73	UJ	< 1.71	UJ	< 1.71	UJ
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	--	--	ng/l	< 1.84	U	**0.281**	J	**0.64**	J	**0.44**	J	**1.97**		**0.502**	J	**0.249**	J	< 1.71	U
Perfluoropentanoic Acid (PFPeA)	2706-90-3	--	--	ng/l	**3.64**	J-	**2.69**	J-	**0.935**	J	**6.31**	J-	**49.3**		< 1.73	U	**0.604**	J	**0.816**	J
Perfluorotetradecanoic Acid (PFTA)	376-06-7	--	--	ng/l	< 1.84	U	< 1.74	UJ	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	--	--	ng/l	< 1.84	U	< 1.74	UJ	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	--	--	ng/l	< 1.84	UJ	< 1.74	UJ	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
Perfluorooctanoic Acid (PFOA)	335-67-1	--	--	ng/l	**4.15**	J-	**7.2**	J-	< 1.92	U	**6.58**	J-	**5.04**		< 1.73	U	**5.95**		< 1.71	UJ
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	--	--	ng/l	**5.37**	J-	**15.1**	J-	**0.966**	J	**7.2**	J-	**2.58**		**6.71**	J	**8.03**	J-	**0.59**	J
Perfluorononanoic Acid (PFNA)	375-95-1	--	--	ng/l	< 1.84	UJ	< 1.74	UJ	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	UJ
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	--	--	ng/l	**0.849**	J	**1.06**	J	**0.912**	J	**1.54**	J	**4.02**	J-	**1.24**	J	**0.877**	J	< 1.71	UJ
Perfluoroheptanoic Acid (PFHpA)	375-85-9	--	--	ng/l	**1.21**	J	**1.53**	J	**0.284**	J	**2.4**	J-	**5.38**		**0.495**	J	**0.601**	J	< 1.71	UJ
Perfluorodecanoic Acid (PFDA)	335-76-2	--	--	ng/l	**0.332**	J	**0.337**	J	< 1.92	U	< 1.80	U	< 1.76	U	< 1.73	U	< 1.71	U	< 1.71	U
PFAS, Total (MCP 6)	TOTAL PFAS 6	20	MassDEP	ng/l	**11.9**		**25.2**		**2.16**		**17.7**		**17**		**8.44**		**15.46**		**0.59**	
PFOA or PFOS	PFOA or PFOS	40	EPA Screening	ng/l	**5.37**		**15.1**		**0.966**		**7.2**		**5.04**		**6.71**		**8.03**		**0.59**	
PFOA/PFOS, Total	TOTAL PFOA PFOS	70	EPA PRG	ng/l	**9.52**		**22.3**		**0.966**		**13.8**		**7.62**		**6.71**		**14**		**0.59**	
PFAS, Total	TPFAS	--	--	ng/l	**18.7**		**30.5**		**7.18**		**36.9**		**135**		**22.4**		**17.4**		**1.41**	

Notes:

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UJ	The analyte was analyzed for but was not detected. The report
J-	The result is an estimated quantity, but the result may be biase
J+	The result is an estimated quantity, but the result may be biase
R	The data are unusable. The sample results are rejected due to
(dup)	Duplicate sample
ng/l	Nanograms per liter
PFAS	Per- and polyfluoroalkyl substances
Bold	Analyte detected above the laboratory reporting limit (detect)
Red	Highest detected concentration
PFAS, Total (6)	Summation of results for: PFDA, PFHpA, PFHxS, PFOA, PFNA ar
Shade	Value exceeds Comparison Limit

Sitewide Groundwater Sampling Results November 2019 - PFAS
Nuclear Metals, Inc. Superfund Site - West Concord, Massachusetts

				Sample Location	EW-1		ASSABET_MIX		ASSABET-1A		ASSABET-1A (dup)		ASSABET-2A	
				Sample Date	11/18/2019		11/18/2019		11/18/2019		11/18/2019		11/18/2019	
				Formation	Overburden									
Analyte	**Cas No.**	**Limit**	**Source**	**Unit**										
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	763051-92-9	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	39108-34-4	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
1H,1H,2H,2H-Perfluorododecanesulfonic Acid (10:2FTS)	120226-60-0	--	--	ng/l	< 4.50	U	< 4.43	U	< 4.45	U	< 4.37	U	< 4.50	U
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	757124-72-4	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	27619-97-2	--	--	ng/l	< 1.80	U	**1.48**	J+	< 1.78	UJ	**2.03**	J	< 1.80	U
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	919005-14-4	--	--	ng/l	< 1.80	UJ	< 1.77	UJ	< 1.78	UJ	< 1.75	UJ	< 1.80	UJ
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	756426-58-1	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	13252-13-6	--	--	ng/l		R	< 44.3	UJ		R	< 43.7	UJ		R
N-Ethyl Perfluorooctane Sulfonamide (NEtFOSA)	4151-50-2	--	--	ng/l	< 18.0	UJ	< 17.7	UJ	< 17.8	U	< 17.5	U	< 18.0	UJ
N-Ethyl Perfluorooctanesulfonamido Ethanol (NEtFOSE)	1691-99-2	--	--	ng/l	< 45.0	U	< 44.3	U	< 44.5	U	< 43.7	U	< 45.0	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
N-Methyl Perfluorooctane Sulfonamide (NMeFOSA)	31506-32-8	--	--	ng/l	< 18.0	UJ	< 17.7	UJ	< 17.8	U	< 17.5	U	< 18.0	UJ
N-Methyl Perfluorooctanesulfonamido Ethanol (NMeFOSE)	24448-09-7	--	--	ng/l	< 45.0	U	< 44.3	U	< 44.5	U	< 43.7	U	< 45.0	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2355-31-9	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	--	--	ng/l	**0.762**	J	**3.86**		**5.01**		**4.58**		**2.16**	
Perfluorobutanoic Acid (PFBA)	375-22-4	--	--	ng/l	**1.32**	J	**5.02**		**6.66**	J-	**6.53**		**2.31**	J-
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorododecane Sulfonic Acid (PFDoDS)	79780-39-5	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorododecanoic Acid (PFDoA)	307-55-1	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluoroheptanesulfonic Acid (PFHpS)	375-92-8	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorohexadecanoic Acid (PFHxDA)	67905-19-5	--	--	ng/l	< 3.60	UJ	< 3.55	U	< 3.56	UJ	< 3.50	U	< 3.60	U
Perfluorohexanoic Acid (PFHxA)	307-24-4	--	--	ng/l	< 1.80	UJ	**10.4**		**14.5**	J-	**14.7**		< 1.80	UJ
Perfluorononanesulfonic Acid (PFNS)	68259-12-1	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorooctadecanoic Acid (PFODA)	16517-11-6	--	--	ng/l	< 3.60	UJ	< 3.55	U	< 3.56	UJ	< 3.50	U	< 3.60	U
Perfluorooctanesulfonamide (FOSA)	754-91-6	--	--	ng/l	< 1.80	UJ	< 1.77	UJ	< 1.78	UJ	< 1.75	U	< 1.80	UJ
Perfluoropentanesulfonic Acid (PFPeS)	2706-91-4	--	--	ng/l	**0.227**	J	**0.454**	J	**0.584**	J	**0.563**	J	**0.356**	J
Perfluoropentanoic Acid (PFPeA)	2706-90-3	--	--	ng/l	< 1.80	UJ	**14.5**		**21**		**20.9**		**3.06**	J-
Perfluorotetradecanoic Acid (PFTA)	376-06-7	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorotridecanoic Acid (PFTrDA)	72629-94-8	--	--	ng/l	< 1.80	U	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	--	--	ng/l	< 1.80	UJ	< 1.77	U	< 1.78	U	< 1.75	U	< 1.80	U
Perfluorooctanoic Acid (PFOA)	335-67-1	--	--	ng/l	< 1.80	UJ	**9.05**	J+	**11.9**	J+	**11.5**	J+	< 1.80	UJ
Perfluorooctanesulfonic Acid (PFOS)	1763-23-1	--	--	ng/l	**3.02**	J	**7.74**	J	**9.51**	J	**11.1**	J	**2.97**	J
Perfluorononanoic Acid (PFNA)	375-95-1	--	--	ng/l	**0.486**	J	**4.23**		**5.49**		**5.65**		**0.324**	J
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	--	--	ng/l	**0.831**	J	**3.39**		**3.52**		**3.71**	J+	**2.52**	
Perfluoroheptanoic Acid (PFHpA)	375-85-9	--	--	ng/l	**0.712**	J	**3.13**		**3.66**	J-	**3.82**		**2.37**	J-
Perfluorodecanoic Acid (PFDA)	335-76-2	--	--	ng/l	< 1.80	UJ	**0.457**	J	**0.651**	J	**0.682**	J	< 1.80	U
PFAS, Total (MCP 6)	TOTAL PFAS 6	20	MassDEP	ng/l	**5.05**		**27.5**		**34.7**		**36.5**		**8.18**	
PFOA or PFOS	PFOA or PFOS	40	EPA Screening	ng/l	**3.02**		**9.1**		**11.9**		**11.5**		**2.97**	
PFOA/PFOS, Total	TOTAL PFOA PFOS	70	EPA PRG	ng/l	**3.02**		**16.8**		**21.4**		**22.6**		**2.97**	
PFAS, Total	TPFAS	--	--	ng/l	**7.36**		**63.7**		**82.5**		**85.8**		**16.1**	

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