Jorgensen, Theadora O - DNR

From: Brown, Kenneth <Kenneth.Brown@aecom.com>
Sent: Wednesday, September 9, 2020 11:25 AM
To: Neumann, Riley D - DNR
Cc: Detzer, Tim - DATCP; Failey, Greg; Mackinney, Joel
Subject: MKE PFAS Site Investigation - Preliminary Results
Attachments: MKE PFAS GMIA R3.pdf; 2020-07 PFAS GW.pdf; 2020-07 PFAS SW.pdf; 2020-08-19 PFAS Soils.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good Morning Riley,

We have completed the first mobilization to GMIA to collect soil, GW, and surface water samples from the possible AFFF use sites indicated in the work plan, and have summarized the preliminary data in draft tables and figures. The attached figures show only the GW and SW results for PFOS and PFOA, although in most samples other PFAS were detected and are summarized in the attached data tables. My observations of the initial results at the investigation areas:

Cargo Ramp: The SW sample SW-1 compares similarly with the USGS sample OUT-1 from May 2019. The groundwater sample had only low concentrations. We may add a well location. PFOS exceeded the ES, but only slightly, indicating that this area is likely less impacted than other areas.

Far West: The two SW samples had PFOS and PFOA exceedences, and the sample from the location where water enters the airport property was higher concentration than the sample downstream. We will try to sample again under higher flow conditions.

West Pad: Groundwater had highest PFAS concentrations at the location where Greg had seen foam. Not much in the other sample locations. We will add another well or two to see if contamination is localized or more widespread. The two SW samples were very similar in concentration. It doesn't seem that this was a major release area.

Southeast: We collected 4 SW samples from various locations along this South Ditch. The PFAS concentrations in these SW samples were similar. We will plan to sample here again under higher flow conditions, and maybe only at the point where the ditch exits the airport (SW-12).

Bailey's Pond: The two SW samples indicate that not much PFAS is entering the airport from the City of Cudahy, and PFAS seems to be entering SW from the 128th. We will sample again.

Burn Pits: This area and the fire dept are the two major release areas (no surprise). GW samples indicate both burn pits are sources of PFAS. Samples from MW-9 and MW-10 indicate that likely gw flow is to the east (we will survey wells after the next mobilization). Another 5-6 wells will be installed during the next mobilization. The two SW samples indicate that not much PFAS is entering the airport property, but PFAS may be entering the ditch somewhere at the NE corner of the airport. GW flow direction will help us figure that out.

Fire Dept: High PFAS concentrations were seen in GW on the east side of the Fire Dept, and less on the west side. Additional wells will be needed in all directions, and we will figure out how many we can manage in the next mobilization.

Please let us know if you have any comments related to the preliminary data. We are currently planning the next mobilization scope and hope to get in the field by the end of the month.

Ken

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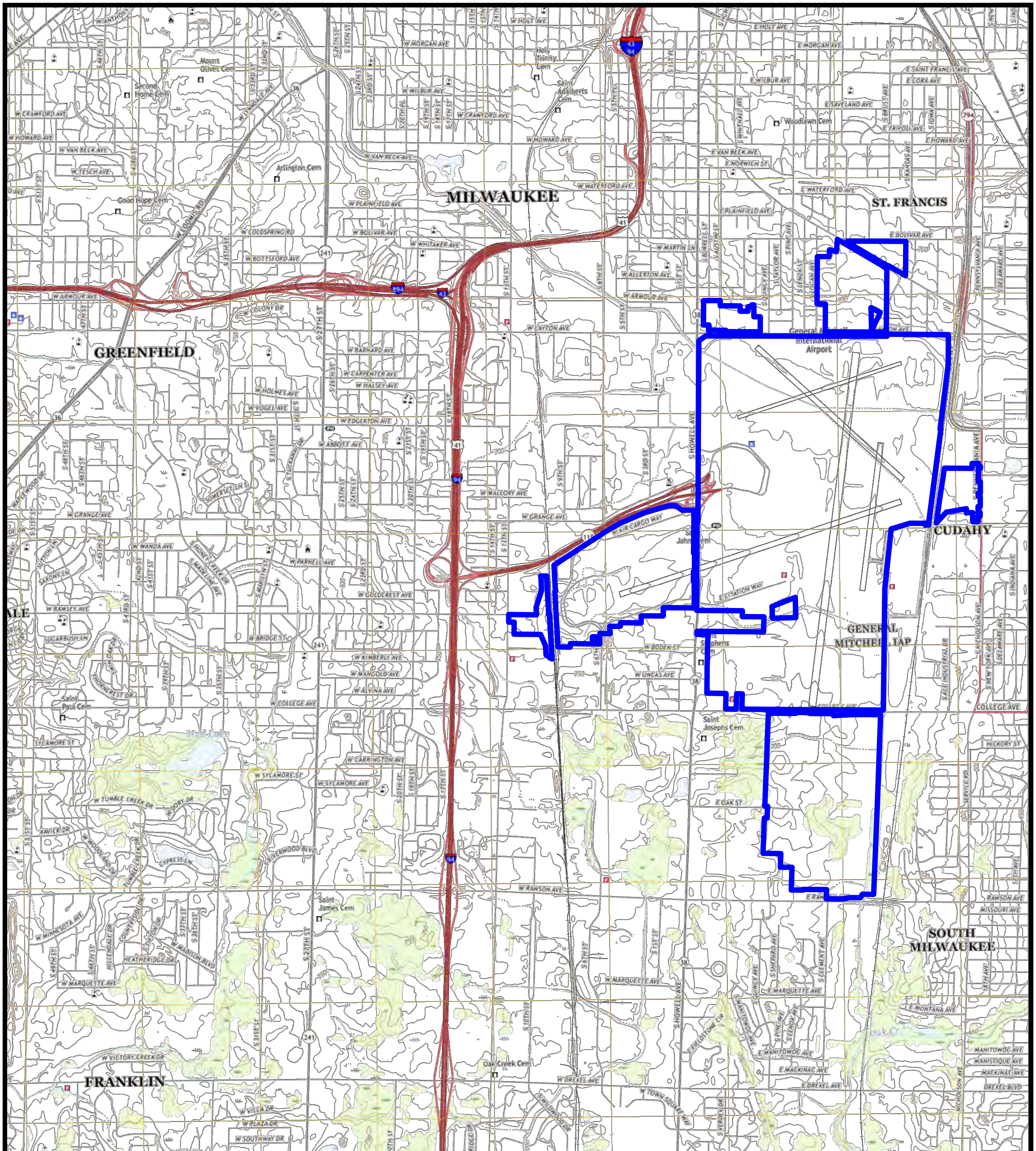

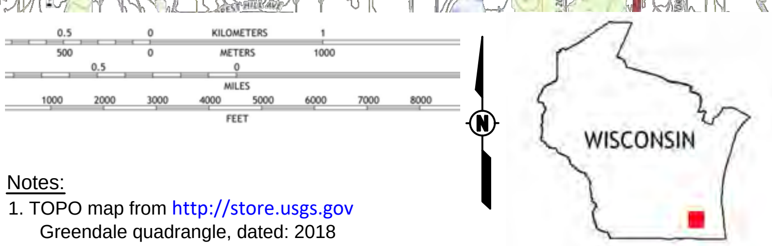

Notes:

1. TOPO map from http://store.usgs.gov
   Greendale quadrangle, dated: 2018

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MKE PFAS Investigation
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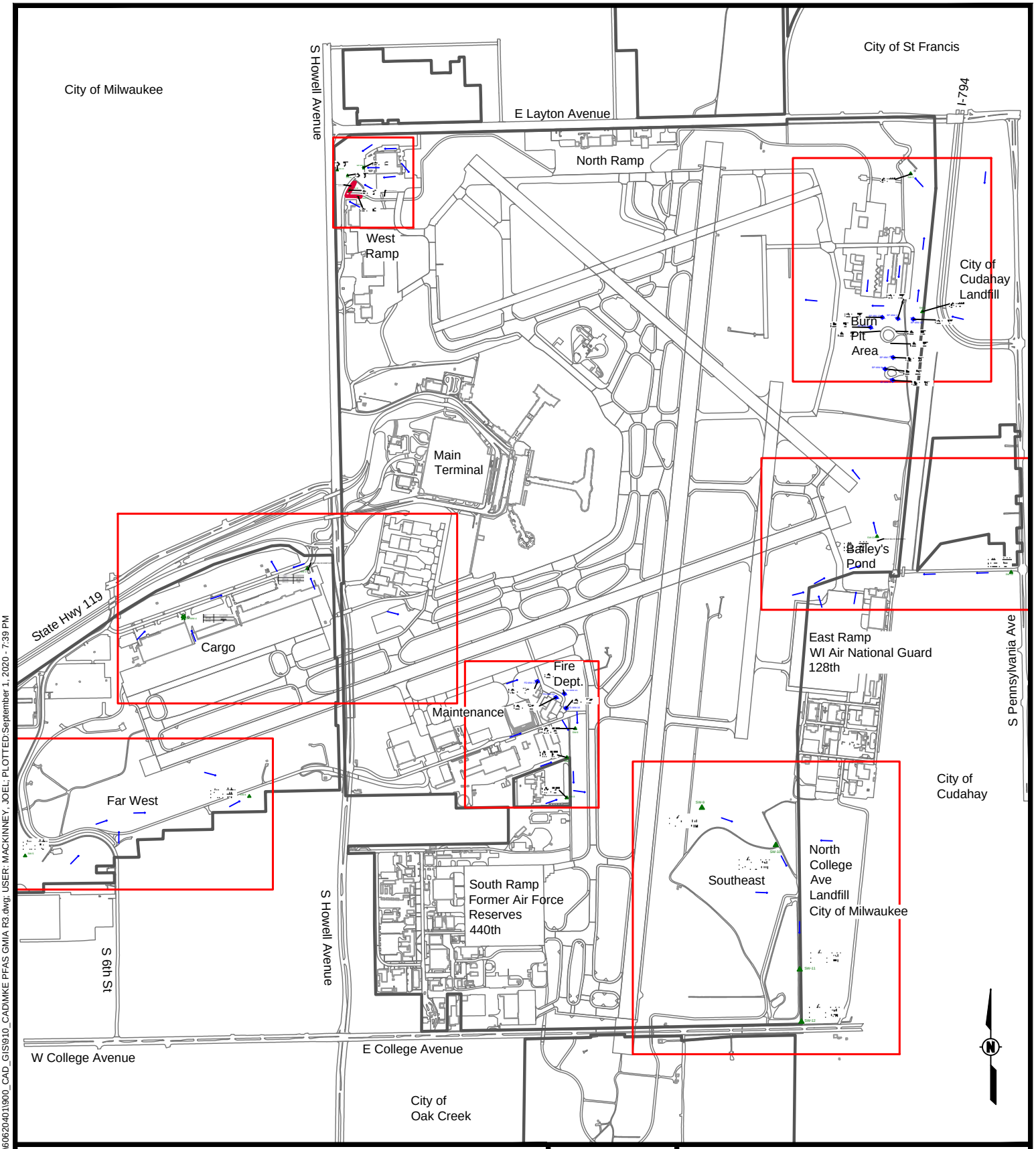
SITE LOCATION

Project Number:	Drawn By:	Date:	Figure No. 1
60620401	JSM	9/1/2020	

File: \\usmwk1fs001\prod\Data\Projects\60620401\900_CAD_GIS\910_CAD\MKE PFAS GMIA R3.dwg; USER: MACKINNEY, JOEL; PLOTTED:September 1, 2020 - 7:39 PM



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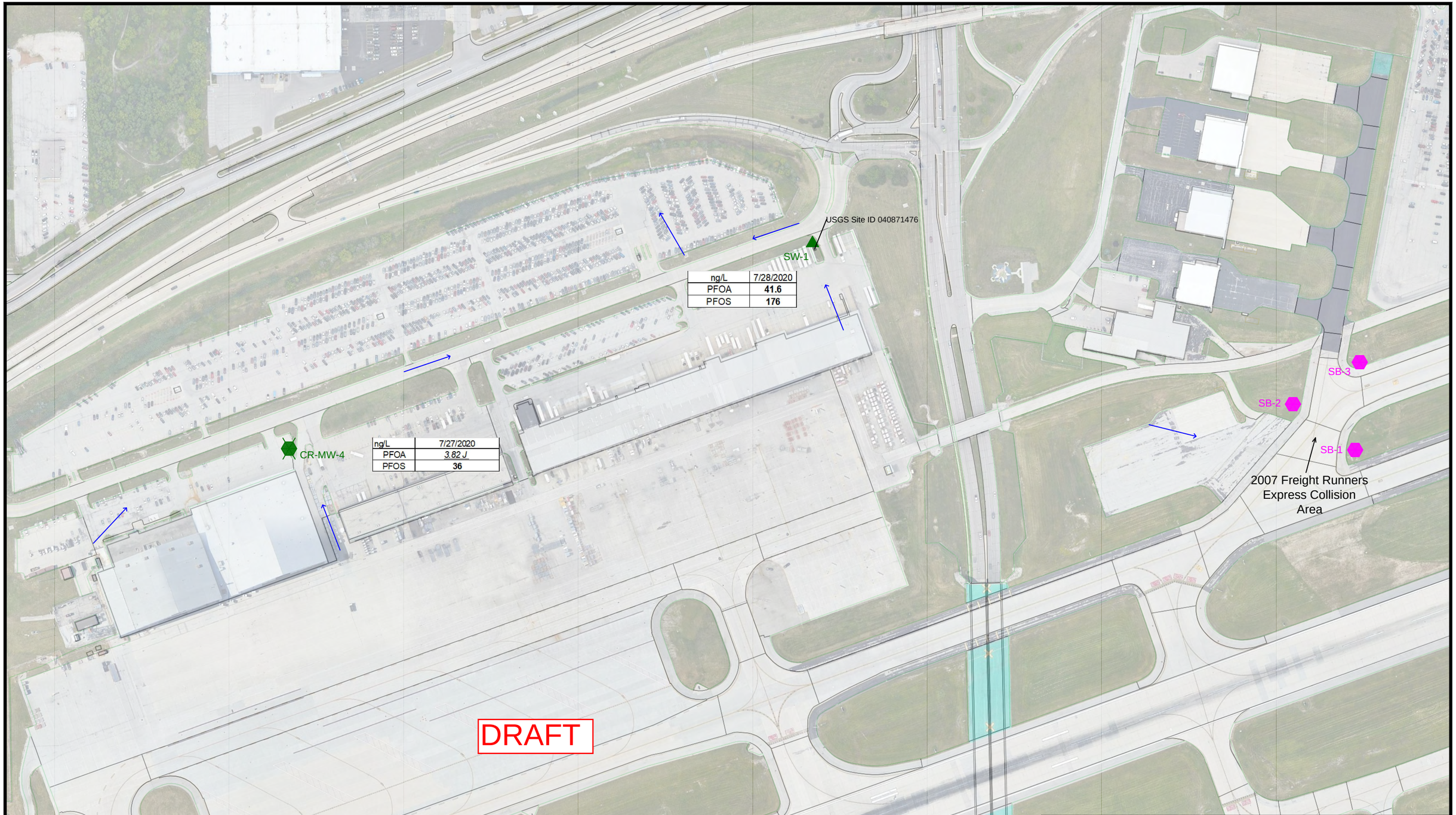
SITE LAYOUT

Project Number:	Drawn By:	Date:	Figure No.
60620401	JSM	9/1/2020	2



Legend:

- Surface Water Sample Location
- Surface/Storm Water Flow Direction
- Soil Boring and 1-inch Well Location
- Proposed Soil Boring Location

0' 125' 250' 500'
SCALE

Notes:
Aerial image from Google Earth Pro, image dated 8/1/2019

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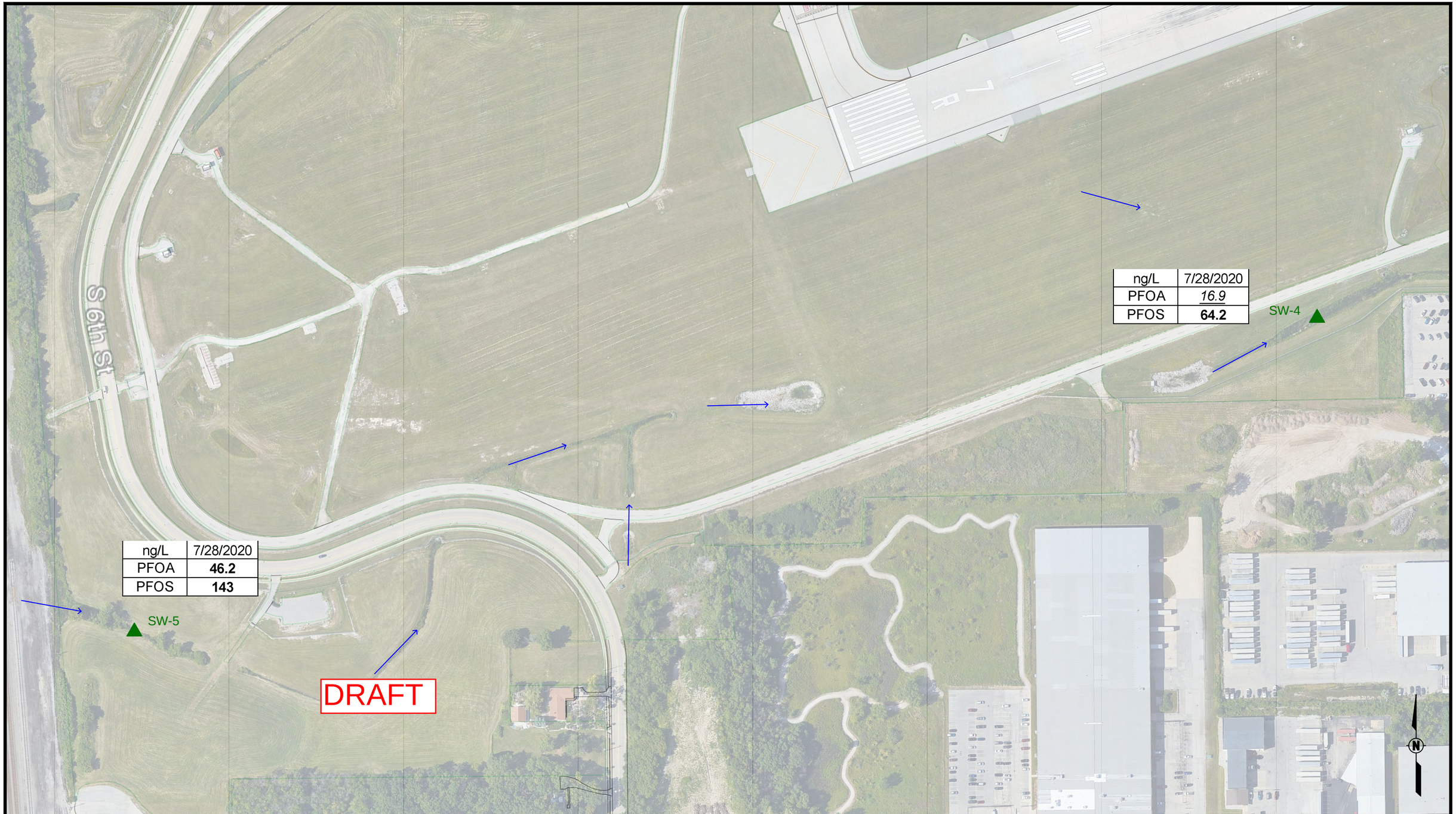
Sample Locations - Cargo Ramp

Project Number:	Drawn By:	Date:	Figure No. 3
60620401	JSM	9/1/2020	



Legend:

- Surface Water Sample Location
- Surface/Storm Water Flow Direction

0' 100' 200' 400'

SCALE

Notes:
Aerial image from Google Earth Pro, image dated 8/1/2019

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Sample Locations - Far West

Project Number:	Drawn By:	Date:	Figure No. 4
60620401	JSM	9/1/2020	

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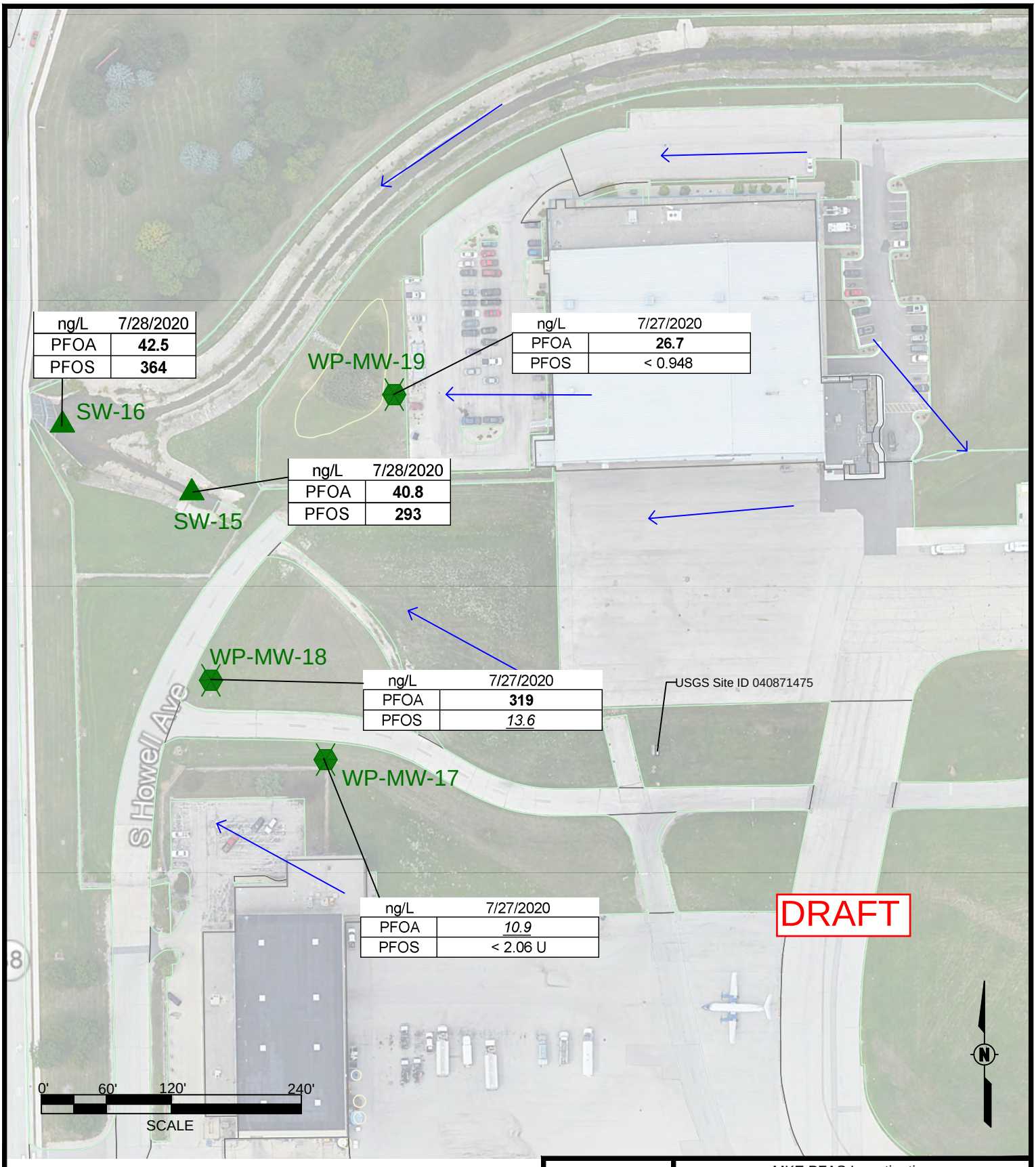

Legend:

- Soil Boring and 1-Inch Well Location
- Surface Water Sample Location
- Surface/Storm Water Flow Direction

Notes:
Aerial image from Google Earth Pro, image dated 8/1/2019

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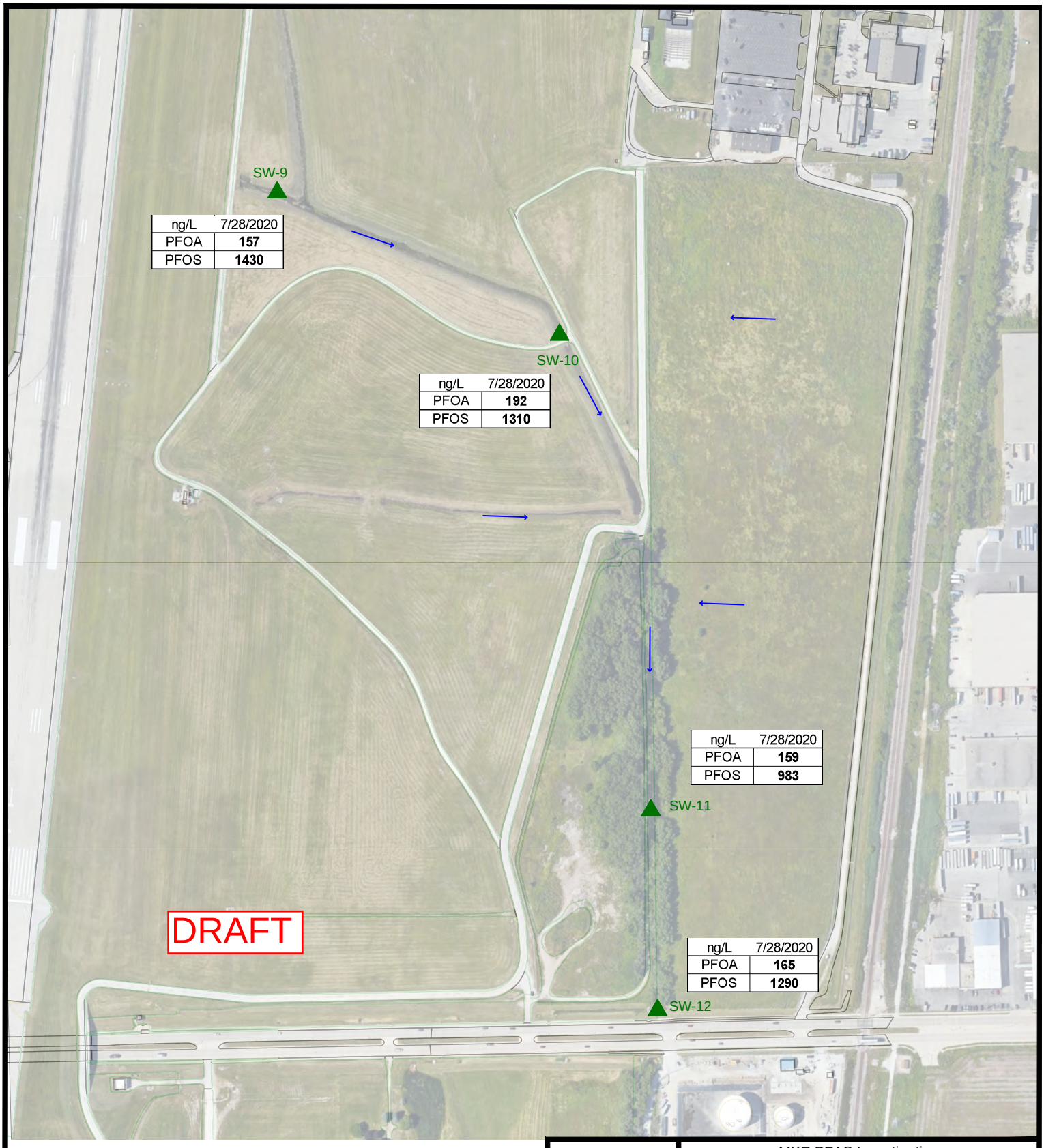
Sample Locations - West Pad

Project Number:	Drawn By:	Date:	Figure No. 5
60620401	JSM	9/1/2020	



Legend:

- Surface Water Sample Location
- Surface/Storm Water Flow Direction

Notes:
Aerial image from Google Earth Pro, image dated 8/1/2019

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Sample Locations - Southeast

Project Number:	Drawn By:	Date:	Figure No.
60620401	JSM	9/1/2020	6

DRAFT

SW-13

USGS Site ID 040871473

ng/L	7/28/2020
PFOA	**59.6**
PFOS	**703**

ng/L	7/28/2020
PFOA	*6.82*
PFOS	*10*

SW-14

Legend:

- Surface Water Sample Location
- Surface/Storm Water Flow Direction

0' 100' 200' 400'

SCALE

Notes:
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Sample Locations - Bailey's Pond

Project Number:	Drawn By:	Date:	Figure No. 7
60620401	JSM	9/1/2020	

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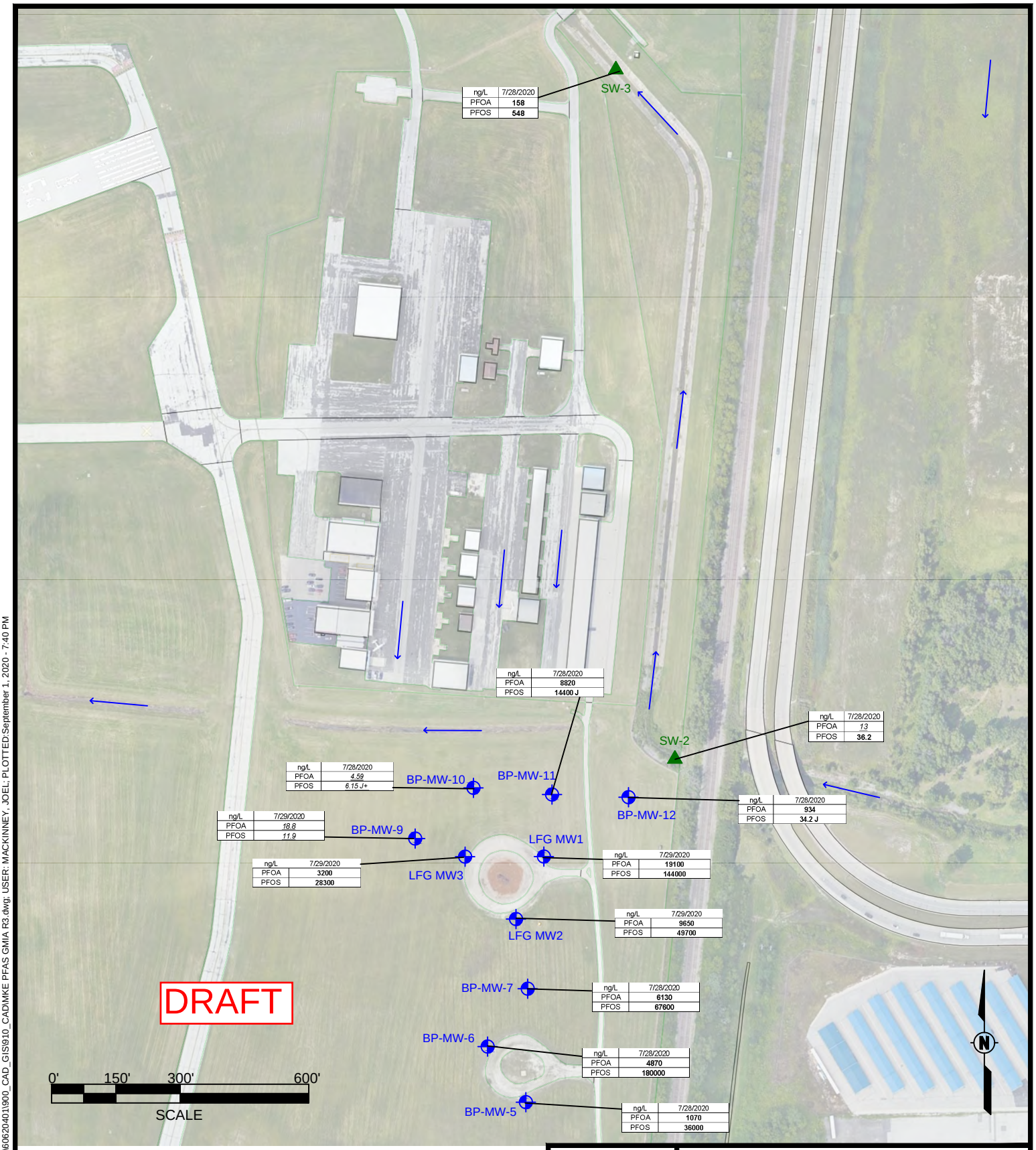

Legend:

- Monitoring Well
- Surface Water Sample Location
- Surface/Storm Water Flow Direction

Notes: Aerial image from Google Earth Pro, image dated 8/1/2019

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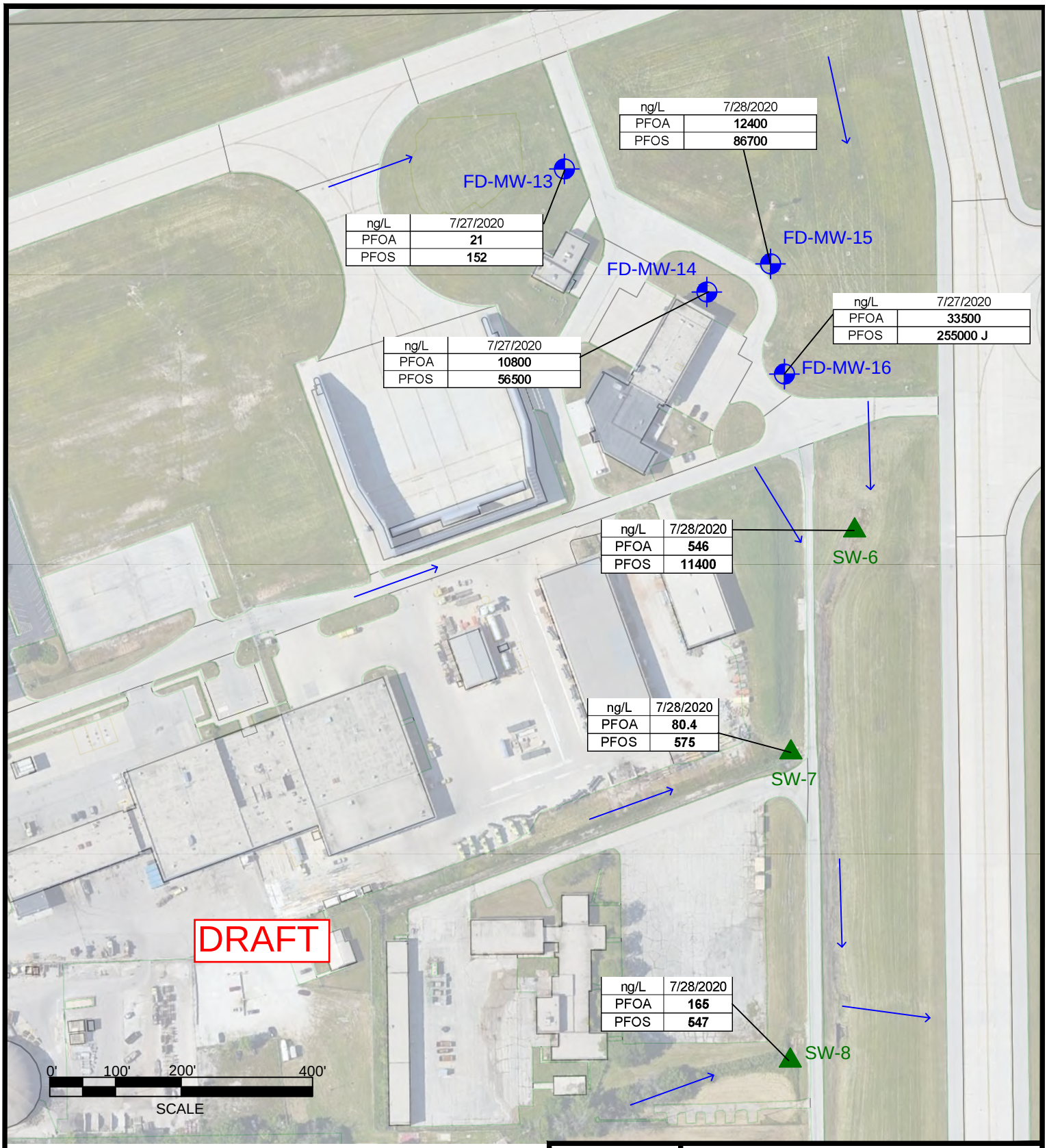
Sample Locations - Burn Pit

Project Number:	Drawn By:	Date:	Figure No.
60620401	JSM	9/1/2020	8



Legend:

- Monitoring Well
- Surface Water Sample Location
- Surface/Storm Water Flow Direction

Notes:
Aerial image from Google Earth Pro, image dated 8/1/2019

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Sample Locations - Fire Department

Project Number:	Drawn By:	Date:	Figure No. 9
60620401	JSM	9/1/2020	

Table X
Analytes Detected in Groundwater Samples - PFAS
MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	BP-MW-05	BP-MW-06	BP-MW-07	BP-MW-09	BP-MW-10	BP-MW-10	BP-MW-11	BP-MW-12
					Field Sample ID:	BP-MW-5 20200728	BP-MW-6 20200728	BP-MW-7 20200728	BP-MW-9 20200729	BP-MW-10 20200728	BP-MW-10D 20200728	BP-MW-11 20200728	BP-MW-12 20200728
					Sample Type:	N	N	N	N	N	FD	N	N
					Sample Date:	7/28/2020	7/28/2020	7/28/2020	7/29/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	332	1370	3200	377	994	1010	5370	458
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	1350	1410	2490	1060	2000	1860	12300	806
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	47.8	175	53.1	3.53 J	8.47	9.52	164	24
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	818	4890	15700	1050	2460	2460	17000	2040
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	3070	2710	7580	888	289	295	28700	386
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	2750	14200	10900	1840	4420	4090	31800	2040
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	23100	44300	43600	574	159	179	75800	3260
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	2140	16900	29100 J	5.78	4.62	6.1	23300	9590
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	694	2050	4080	130	97.6	116	4550	371
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	2230	10400	5970	< 1.07	< 0.991	< 1.06	2620	28.2
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	**1070**	**4870**	**6130**	*18.8*	*4.59*	*5.14*	**8820**	**934**
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**36000**	**180000**	**67600**	*11.9*	*6.15 J+*	< 2.94 U	**14400 J**	**34.2 J**
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	117	4410	< 2.36	< 2.35	< 2.18	< 2.34	< 2.46	< 2.37
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	65.9	285	89.1	< 0.922	< 0.857	< 0.918	105	14.3
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	< 4.19	< 43.7	< 4.44	< 4.41	< 4.09	< 4.39	< 4.62	< 4.45
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	3.12 J	107	< 1.71	< 1.70	< 1.58	< 1.69	< 1.78	< 1.71
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	< 1.33	< 13.9	< 1.41	< 1.40	< 1.30	< 1.39	< 1.47	< 1.41
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	< 3.39	< 3.53	< 3.59	< 3.56	< 3.31	< 3.55	< 3.73	< 3.60
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	< 1.92	32.8	< 4.26 U	15.1	< 3.06 UJ	11.2 J	6.00 J+	< 3.79 U
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	< 0.858	< 0.894	< 0.908	< 0.902	< 0.838	< 0.898	< 0.945	< 0.911
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	< 1.14	< 1.19	< 1.20	< 1.20	< 1.11	< 1.19	< 1.25	< 1.21
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	< 1.48	< 1.55	< 1.57	< 1.56	< 1.45	< 1.55	< 1.63	< 1.58
MeFOSAA	MeFOSAA	2355-31-9	--	--	ng/L	< 1.79	< 1.86	< 1.89	< 1.88	< 1.75	< 1.87	< 1.97	< 1.90

Draft

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X
Analytes Detected in Groundwater Samples - PFAS
MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	CR-MW-04	FD-MW-13	FD-MW-14	FD-MW-14	FD-MW-15	FD-MW-16	LFG-MW-01	LFG-MW-02
					Field Sample ID:	CR-MW-4 20200727	FD-MW-13 20200727	FD-MW-14 20200727	FD-MW-14D 20200727	FD-MW-15 20200728	FD-MW-16 20200727	LFG MW1 20200729	LFG MW2 20200729
					Sample Type:	N	N	N	FD	N	N	N	N
					Sample Date:	7/27/2020	7/27/2020	7/27/2020	7/27/2020	7/28/2020	7/27/2020	7/29/2020	7/29/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	4.83	2080	10300	11000	7660	24800	16200	4520
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	< 1.98	2380	21700	27400	17600	55500	15600	7070
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	< 1.54	124	876	1060	1240	7420	782	65.1
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	< 1.41	4490	41700	45200	28100	61700	56300	16900
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	< 2.67	447	32100 J	44400 J	31200	114000	53800	22600
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	7.46	3780	50500	64800	37700	125000 J	81900	21300
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	19	461	91800	104000	94500	150000	92700	92800
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	8.52	644	30400 J	29200 J	30500 J	30400 J	30800 J	24300 J
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	2.52 J	63.7	9890	9010	5810	17100	17100	4560
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	< 1.04	3.22 J	7030	7230	19300	107000	12500	12200
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	*3.82 J*	**21**	**10800**	**11600**	**12400**	**33500**	**19100**	**9650**
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**36**	**152**	**56500**	**47200**	**86700**	**255000 J**	**144000**	**49700**
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	< 2.28	< 2.36	519	544	738	3910	75.3	14600
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	< 0.895	1.46 J	790	819	662	889	722	549
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	< 4.28	< 4.42	< 21.5	< 44.6	< 22.3	1340 J	< 4.65	925
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	< 1.65	< 1.70	61.5	71.4	35.8	226	2.37 J	510
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	< 1.36	< 1.41	< 6.85	< 14.2	< 7.08	< 53.9	< 1.48	< 1.45
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	< 3.46	< 3.58	< 3.49	< 3.61	< 3.60	22.3	< 3.76	12.6
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	7.71 J+	13.5	31.9	29.7	< 3.23 U	502 J	6.15 J	1160
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	< 0.875	< 0.906	< 0.882	< 0.913	< 0.912	< 0.868	< 0.952	1.02 J
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	< 1.16	< 1.20	2.16 J	1.83 J	< 1.21	7.78	< 1.26	30.8
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	< 1.51	< 1.57	1.61 J	< 1.58	< 1.58	7.51	< 1.65	2.62 J
MeFOSAA	MeFOSAA	2355-31-9	--	--	ng/L	< 1.82	< 1.89	< 1.84	< 1.90	< 1.90	5.18	< 1.98	5.45 J

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X
Analytes Detected in Groundwater Samples - PFAS
MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	LFG-MW-03	WP-MW-17	WP-MW-18	WP-MW-19
					Field Sample ID:	LFG MW3 20200729	WP-MW-17 20200727	WP-MW-18 20200727	WP-MW-19 20200727
					Sample Type:	N	N	N	N
					Sample Date:	7/29/2020	7/27/2020	7/27/2020	7/27/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**				
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	7670	18.2	324	23.1
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	11300	< 2.26	2.45 J	2.92 J
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	246	< 1.75	5.79	< 1.63
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	22400	38.8	1690	74.6
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	13000	< 3.05	< 2.77	< 2.84
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	35000	23.9	1070	52.4
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	28700	2.16 J	11	12.7
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	23300	7.17 J	296	91.4
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	3720	14.9	713	51.3
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	1100	< 1.18	< 1.07	< 1.10
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	**3200**	*10.9*	**319**	**26.7**
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**28300**	< 2.06 U	*13.6*	< 0.948
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	6590	< 2.60	6.24	< 2.42
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	133	475	3260	1.46 J
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	110	< 4.88	< 4.43	< 4.55
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	134	< 1.88	8.43	< 1.75
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	2.18 J	< 1.55	< 1.41	< 1.45
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	< 3.54	< 3.95	< 3.58	< 3.68
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	647	13.9	9.58 J+	11.8
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	< 0.896	< 0.999	< 0.907	< 0.931
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	11.2	< 1.32	< 1.20	< 1.23
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	< 1.55	< 1.73	< 1.57	< 1.61
MeFOSAA	MeFOSAA	2355-31-9	--	--	ng/L	< 1.87	< 2.08	< 1.89	< 1.94

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X

Analytes Detected in Surface Water Samples - PFAS

MKE PFAS Investigation, Milwaukee, Wisconsin

Draft

					Location:	SW-01	SW-02	SW-03	SW-04	SW-05	SW-06	SW-06	SW-07
					Field Sample ID:	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6 D	SW-6	SW-7
					Sample Type:	N	N	N	N	N	N	FD	N
					Sample Date:	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	23.3	17.2	209	14.8	15.8	443	433	136
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	9.78	6.07	315	8.76	9.93	625	565	25.4
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	< 1.53	< 1.57	5.13	< 1.53	< 1.59	35	32.1	< 1.61
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	12	31.6	633	7.2	6.3	1800	1730	568
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	8.94	3.98 J	362	8.64	11.1	1010	919	39.2
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	27.5	21.1	1010	7.42	13.8	1970	1880	298
PFHxDA	Perfluorohexadecanoic acid	67905-19-5	--	--	ng/L	< 0.325	< 0.332	< 0.330	< 0.324	< 0.336	< 0.337	< 0.324	< 0.340
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	79.3	56.7	2140	60.4	102	7300	7500	389
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	16.9	< 2.26	1170	< 2.21	< 2.29	14200	14300	297
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	10.6	6.1	107	3.85 J	5.29	296	267	138
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	1.73 J	< 1.06	43.8	2.25 J	6.43	621	517	10.6
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	**41.6**	*13*	**158**	*16.9*	**46.2**	**560**	**546**	**80.4**
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**176**	**36.2**	**548**	**64.2**	**143**	**11400**	**11400**	**575**
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	< 2.27	< 2.33	< 2.31	< 2.27	< 2.36	372	342	21.9
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	1.84 J	2.22 J	4.46 J	1.19 J	1.79 J	54.1	50.4	13
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	< 4.27	< 4.37	< 4.34	< 4.27	< 4.43	12.5	11.1	< 4.47
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	4.38 J	< 1.68	2.34 J	< 1.64	< 1.70	44.4	42.7	9.83
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	< 1.36	< 1.39	< 1.38	< 1.36	< 1.41	27.4	41.2	< 1.42
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	< 3.46	< 3.53	< 3.51	< 3.45	< 3.58	239	364	5.27
PFTrDA	Perfluorotridecanoic acid	72629-94-8	--	--	ng/L	< 0.545	< 0.558	< 0.554	< 0.545	< 0.565	1.43 J	2.56 J	< 0.571
PFTeDA	Perfluorotetradecanoic acid	376-06-7	--	--	ng/L	< 0.833	< 0.852	< 0.847	< 0.833	< 0.863	2.05 J	2.87 J	< 0.872
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	6.11	8.4	7.79	6.33	20.6	49	50.4	16.1
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	< 0.874	< 0.894	< 0.888	< 0.873	< 0.906	22.5	29.4	< 0.915
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	< 1.16	< 1.19	< 1.18	< 1.16	< 1.20	9.13	11.4	2.15 J
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	3.63 J	< 1.55	< 1.54	< 1.51	< 1.57	< 1.57	< 1.51	3.51 J

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X

Analytes Detected in Surface Water Samples - PFAS

MKE PFAS Investigation, Milwaukee, Wisconsin

Draft

					Location:	SW-08	SW-09	SW-10	SW-11	SW-12	SW-13	SW-14	SW-14
					Field Sample ID:	SW-8	SW-9	SW-10	SW-11	SW-12	SW-13	SW-14	SW-14 D
					Sample Type:	N	N	N	N	N	N	N	FD
					Sample Date:	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020	7/28/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	142	105	125	109	106	43.1	11.4	11.3
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	17.1	88.7	134	94	90.2	91.1	5.81	6.16
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	20.6	12.4	11.5	10.3	11.2	< 1.60	< 1.58	< 1.54
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	353	474	558	479	445	153	8.72	11.1
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	21.5	106	151	113 J	102	94.1	< 2.76	< 2.68
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	1070	627	564	550	545	166	5.38	5.78
PFHxDA	Perfluorohexadecanoic acid	67905-19-5	--	--	ng/L	0.460 J	< 0.332	< 0.335	< 0.322	< 0.336	< 0.338	< 0.335	< 0.326
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	213	770	1120	765	774	794	2.91 J	3.52 J
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	18100	8170	5010	6170	7270	112	2.77 J	< 2.22
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	144	89.7	102	101	99.3	28	2.67 J	3.38 J
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	< 1.02	18.4	26.6	22.9	21.1	16.9	< 1.07	< 1.04
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	**165**	**157**	**192**	**159**	**165**	**59.6**	*6.82*	*7.9*
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**547**	**1430**	**1310**	**983**	**1290**	**703**	*10*	*12.2*
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	1350	488	82.9	49.6	64.7	< 2.37	< 2.35	< 2.28
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	39.8	19.8	13.2	14.1	17.3	5.28	1.16 J	1.48 J
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	< 4.23	5.6	< 4.41	< 4.24	< 4.42	< 4.44	< 4.41	< 4.29
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	121	58.8	19.2	19.4	24.9	8.6	2.26 J	2.39 J
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	2.94 J	7.04	< 1.40	< 1.35	< 1.40	< 1.41	< 1.40	< 1.36
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	331	263	< 3.57	12.6	< 3.57	< 3.59	< 3.57	< 3.47
PFTrDA	Perfluorotridecanoic acid	72629-94-8	--	--	ng/L	1.84 J	< 0.558	< 0.563	< 0.541	< 0.564	< 0.567	< 0.563	< 0.548
PFTeDA	Perfluorotetradecanoic acid	376-06-7	--	--	ng/L	1.55 J	1.51 J	< 0.861	< 0.827	< 0.862	< 0.867	< 0.860	< 0.837
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	19.5	24.6	21	15.3	11.8	19.3	22.9	30.9
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	24.4	18.4	< 0.903	2.01 J	< 0.904	< 0.909	< 0.902	< 0.878
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	20.3	18.4	< 1.20	2.34 J	1.61 J	< 1.21	< 1.20	1.47 J
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	< 1.50	2.32 J	< 1.56	1.96 J	2.03 J	< 1.57	< 1.56	< 1.52

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X

Analytes Detected in Surface Water Samples - PFAS

MKE PFAS Investigation, Milwaukee, Wisconsin

Draft

					Location:	SW-15	SW-16
					Field Sample ID:	SW-15	SW-16
					Sample Type:	N	N
					Sample Date:	7/28/2020	7/28/2020
ABBR.	**Analyte**	**CAS No**	**ES**	**PAL**	**Units**		
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ng/L	37.5	36.6
PFBS	Perfluorobutanesulfonic acid	375-73-5	--	--	ng/L	71.5	70.3
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ng/L	< 1.62	< 1.58
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ng/L	102	106
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ng/L	74.3 J	76.4 J
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ng/L	125	137
PFHxDA	Perfluorohexadecanoic acid	67905-19-5	--	--	ng/L	< 0.342	< 0.333
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ng/L	488	497
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ng/L	80.3	80.7
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ng/L	24.8	26.8
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ng/L	7.91	8.04
PFOA	Perfluorooctanoic acid	335-67-1	**20**	*2*	ng/L	**40.8**	**42.5**
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**20**	*2*	ng/L	**293**	**364**
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ng/L	< 2.40	2.71 J
PFNA	Perfluorononaoic acid	375-95-1	--	--	ng/L	5.1	4.03 J
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ng/L	< 4.50	< 4.39
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ng/L	6.41	7.41
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ng/L	< 1.43	< 1.39
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ng/L	< 3.64	< 3.55
PFTrDA	Perfluorotridecanoic acid	72629-94-8	--	--	ng/L	< 0.575	< 0.560
PFTeDA	Perfluorotetradecanoic acid	376-06-7	--	--	ng/L	< 0.878	< 0.856
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ng/L	29.6	16.2
PFDoA	Perfluorododecanoic acid	307-55-1	--	--	ng/L	< 0.922	< 0.898
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ng/L	< 1.22	< 1.19
EtFOSAA	EtFOSAA	2991-50-6	--	--	ng/L	< 1.59	< 1.55

Notes:
-- No NR 140 ES or PAL established.
PFAS = Per- and polyfluoroalkyl substances
ng/L = nanogram per liter
Bold value = NR 140 Enforcement Standard (ES) Exceedance, Proposed.
Italic value = NR 140 Preventive Action Limit Exceedance, Proposed.

Data Qualifiers:
J = Estimated (+/- indicates the direction of bias)
R = Rejected
U = Nondetect

Table X

Analytes Detected in Soil Samples - PFAS

Draft

MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	BP-MW-05	BP-MW-05	BP-MW-06	BP-MW-06	BP-MW-07	BP-MW-09	BP-MW-10	BP-MW-10
					Depth Range:	1 - 2 ft	6 - 7 ft	2 - 3 ft	5 - 6 ft	1 - 2 ft	1 - 2 ft	1 - 2 ft	4 - 5 ft
					Field Sample ID:	BP-MW-5 1-2'	BP-MW-5 6-7'	BP-MW-6 2-3'	BP-MW-6 5-6'	BP-MW-7 1-2'	BP-MW-09 1-2'	BP-MW-10 1-2'	BP-MW-10 4-5'
					Sample Type:	N	N	N	N	N	N	N	N
					Sample Date:	7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/15/2020	7/15/2020	7/15/2020	7/15/2020
ABBR.	**Analyte**	**CAS No**	**NonIndustrail**	**Industrail**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ug/kg	< 0.345	< 0.336	< 0.331	< 0.332	0.962	< 0.347	< 0.344	< 0.335
PFBS	Perfluorobutanesulfonic acid	375-73-5	1260000	16400000	ug/kg	< 0.303	< 0.295	< 0.291	< 0.292	< 0.293	0.537	0.855	0.302 J
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ug/kg	< 0.359	< 0.349	< 0.345	< 0.346	< 0.347	< 0.361	< 0.358	< 0.349
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ug/kg	< 0.396	< 0.386	0.430 J	< 0.382	3.7	0.663	1.14	0.436 J
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ug/kg	< 0.655	0.865 J	< 0.630	< 0.632	< 0.634	1.4	1.79	< 0.637
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ug/kg	0.267 J	0.653 J	0.385 J	1.17	2.7	0.415 J	1.47	0.374 J
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ug/kg	2.3	4.11	4.79	5.75	4.94	33.8	34.3	1.46
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ug/kg	1.17	6.45	3.05	26.5	< 0.630	< 0.656	< 0.651	< 0.633
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ug/kg	< 0.476	< 0.464	< 0.457	< 0.459	1.31	< 0.480	< 0.476	< 0.463
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ug/kg	< 0.735	1.51	< 0.706	< 0.709	1.19	2.56	1.36	< 0.715
PFOA	Perfluorooctanoic acid	335-67-1	1260	16400	ug/kg	0.474 J	0.739	< 0.450	1.86	1.85	0.524	0.785	< 0.455
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**1260**	16400	ug/kg	300	**2120**	159	786	117	97.1	67.3	< 0.416
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ug/kg	1.88	44.2	< 0.691	163	< 0.695	< 0.725	< 0.719	< 0.699
PFNA	Perfluorononaoic acid	375-95-1	--	--	ug/kg	< 0.311	< 0.303	< 0.299	0.346 J	< 0.301	0.371 J	< 0.311	< 0.302
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ug/kg	< 1.15	< 1.12	3.09	2.29	< 1.11	< 1.15	< 1.14	< 1.11
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ug/kg	0.481 J	0.661 J	0.7	2.26	< 0.435	< 0.454	< 0.450	< 0.438
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ug/kg	< 0.687	< 0.669	< 0.660	0.799 J	< 0.665	< 0.693	< 0.687	< 0.668
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ug/kg	< 1.01	< 0.986	< 0.972	6.99	< 0.979	< 1.02	< 1.01	< 0.984
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ug/kg	< 1.00	< 0.978	2.78	21	< 0.971	< 1.01	< 1.00	< 0.976
PFDoS	Perfluorododecanesulfonic acid	79780-39-5	--	--	ug/kg	< 0.598	< 0.582	< 0.574	< 0.576	< 0.578	< 0.602	< 0.597	< 0.581
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ug/kg	< 0.257	< 0.250	0.460 J	0.421 J	< 0.249	< 0.259	< 0.257	< 0.250

Notes:

-- No Generic RCL established.
PFAS = Per- and Polyfluoroalkyl Substances
ug/kg = micrograms per kilogram

Data Qualifiers:
J = Estimated

Table X

Analytes Detected in Soil Samples - PFAS

Draft

MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	BP-MW-11	BP-MW-11	BP-MW-12	BP-MW-12	CR-MW-04	CR-MW-04	CR-MW-04	FD-MW-13
					Depth Range:	1 - 2 ft	4 - 5 ft	1 - 2 ft	6 - 7 ft	1 - 2 ft	5 - 6 ft	5 - 6 ft	1 - 2 ft
					Field Sample ID:	BP-MW-11 1-2'	BP-MW-11 4-5'	BP-MW-12 1-2'	BP-MW-12 6-7'	CR-MW-4 1-2'	CR-MW-4 5-6'	CR-MW-4 5-6' D	FD-MW-13 1-2'
					Sample Type:	N	N	N	N	N	N	FD	N
					Sample Date:	7/15/2020	7/15/2020	7/13/2020	7/13/2020	7/13/2020	7/13/2020	7/13/2020	7/14/2020
ABBR.	**Analyte**	**CAS No**	**NonIndustrail**	**Industrail**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ug/kg	2.21	11	0.885	< 0.338	< 0.336	< 0.337	< 0.345	0.962
PFBS	Perfluorobutanesulfonic acid	375-73-5	1260000	16400000	ug/kg	8.42	39.9	< 0.298	1.35	< 0.296	< 0.296	< 0.303	0.615
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ug/kg	< 0.356	0.724	< 0.353	< 0.352	< 0.350	< 0.351	< 0.359	< 0.349
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ug/kg	14.2	50.3	1.79	1.46	< 0.387	< 0.388	< 0.397	7.72
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ug/kg	13.5	37.6	< 0.645	2.23	< 0.640	< 0.641	< 0.656	1.88
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ug/kg	22.7	108	1.11	2.21	< 0.210	< 0.211	< 0.215	8.22
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ug/kg	201	158	11.1	52	11.5	< 0.380	< 0.389	41
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ug/kg	208	60	0.699 J	< 0.639	< 0.636	< 0.637	< 0.652	52.9
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ug/kg	5.54	11.1	0.501	0.793	< 0.465	< 0.466	< 0.477	2.49
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ug/kg	45	1.1	< 0.723	< 0.721	< 0.717	< 0.719	< 0.736	8.87
PFOA	Perfluorooctanoic acid	335-67-1	1260	16400	ug/kg	12.5	10.1	0.739	1.95	0.672	< 0.458	< 0.469	3.24
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**1260**	16400	ug/kg	**3550**	11.5	48.8	2.46 J	14.3	< 0.419	< 0.429	613 J
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ug/kg	1.54 J	< 0.702	< 0.708	< 0.706	< 0.702	< 0.704	< 0.720	4
PFNA	Perfluorononaoic acid	375-95-1	--	--	ug/kg	7.77	< 0.303	0.337 J	< 0.305	< 0.303	< 0.304	< 0.311	1.32
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ug/kg	1.32 J	< 1.12	< 1.13	< 1.12	< 1.12	< 1.12	< 1.15	< 1.12
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ug/kg	0.579	< 0.439	< 0.443	< 0.442	< 0.439	< 0.441	< 0.451	0.653 J
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ug/kg	< 0.682	< 0.671	< 0.676	< 0.674	< 0.671	< 0.672	< 0.688	< 0.669
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ug/kg	< 1.00	< 0.988	< 0.996	< 0.993	< 0.988	< 0.990	< 1.01	< 0.985
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ug/kg	1.63 J	< 0.980	< 0.988	< 0.985	< 0.980	< 0.982	< 1.01	< 0.977
PFDoS	Perfluorododecanesulfonic acid	79780-39-5	--	--	ug/kg	< 0.593	< 0.583	< 0.588	< 0.586	< 0.583	< 0.585	< 0.598	< 0.582
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ug/kg	< 0.255	< 0.251	< 0.253	< 0.252	< 0.251	< 0.251	< 0.257	< 0.250

Notes:

-- No Generic RCL established.
PFAS = Per- and Polyfluoroalkyl Substances
ug/kg = micrograms per kilogram

Data Qualifiers:
J = Estimated

Table X

Analytes Detected in Soil Samples - PFAS

Draft

MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	FD-MW-13	FD-MW-14	FD-MW-14	FD-MW-15	FD-MW-15	FD-MW-16	FD-MW-16	FD-MW-16
					Depth Range:	6 - 7 ft	1 - 2 ft	5 - 6 ft	1 - 2 ft	5 - 6 ft	1 - 2 ft	4 - 5 ft	4 - 5 ft
					Field Sample ID:	FD-MW-13 6-7'	FD-MW-14 1-2'	FD-MW-14 5-6'	FD-MW-15 1-2'	FD-MW-15 5-6'	FD-MW-16 1-2'	FD-MW-16 4-5'	FD-MW-16 4-5' D
					Sample Type:	N	N	N	N	N	N	N	FD
					Sample Date:	7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/14/2020	7/14/2020
ABBR.	**Analyte**	**CAS No**	**NonIndustrail**	**Industrail**	**Units**								
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ug/kg	2.43	2.01	0.812	1.04	3.65	7.02	5.71	4.72
PFBS	Perfluorobutanesulfonic acid	375-73-5	1260000	16400000	ug/kg	8.99	0.581	0.55	1.42	4.57	10.1	2.57	2.53
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ug/kg	0.522	< 0.356	< 0.359	< 0.359	0.363 J	2.01	1.34	1.14
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ug/kg	14.3	10	5.32	4.95	15.1	43.3	20.6	19.3
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ug/kg	13.3	1.46	2.25	6.9	18.4	21.7	5.62	5.68
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ug/kg	19.4	8.13	6.51	6.79	21.4	63.5	35.3	28
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ug/kg	76.1	35.6	50.5	138	454	409	112	110
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ug/kg	108	60.4	169	307	952	1480	1240 J	726 J
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ug/kg	2.20 J	2.82	2.19	2.3	6.37	5.57	2.3	2.17
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ug/kg	1.44	13.9	8.21	12.7	110	77.6	41.4	33.3
PFOA	Perfluorooctanoic acid	335-67-1	1260	16400	ug/kg	2.83	5.76	5.15	9.82	34.7	< 0.451	< 0.453	< 0.451
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**1260**	16400	ug/kg	23.2	**2360**	800	**2460**	**2760**	**6380 J**	**3170 J**	**2510 J**
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ug/kg	< 0.705	2.36	0.946 J	28.9	120	180	37.3 J	22.2 J
PFNA	Perfluorononaoic acid	375-95-1	--	--	ug/kg	< 0.304	3.75	0.985	6.62	5.86	5.1	1.31	1.18
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ug/kg	< 1.12	5.25	< 1.15	1.5	1.41 J	14.0 J	1.79	1.32 J
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ug/kg	< 0.441	2.19	< 0.451	1.41	1.23	2.88	0.706	0.581
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ug/kg	< 0.673	3.98	< 0.688	< 0.687	< 0.668	8.1	< 0.665	< 0.662
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ug/kg	< 0.992	< 1.01	< 1.01	< 1.01	2.15	4.72	2.53	1.46
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ug/kg	< 0.984	4.71 J	< 1.01	2.69 J	1.94 J	30.4	5.51 J	2.56 J
PFDoS	Perfluorododecanesulfonic acid	79780-39-5	--	--	ug/kg	< 0.586	1.74	< 0.599	< 0.598	< 0.580	< 0.575	< 0.578	< 0.576
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ug/kg	< 0.252	1.31	< 0.257	< 0.257	< 0.250	0.298 J	< 0.249	< 0.248

Notes:

-- No Generic RCL established.
PFAS = Per- and Polyfluoroalkyl Substances
ug/kg = micrograms per kilogram

Data Qualifiers:
J = Estimated

Table X

Analytes Detected in Soil Samples - PFAS

Draft

MKE PFAS Investigation, Milwaukee, Wisconsin

					Location:	WP-MW-17	WP-MW-17	WP-MW-17	WP-MW-18	WP-MW-18	WP-MW-19	WP-MW-19
					Depth Range:	1 - 2 ft	1 - 2 ft	6 - 7 ft	1 - 2 ft	6 - 7 ft	1 - 2 ft	7 - 8 ft
					Field Sample ID:	WP-MW-17 1-2'	WP-MW-17 1-2' D	WP-MW-17 6-7'	WP-MW-18 1-2'	WP-MW-18 6-7'	WP-MW-19 1-2'	WP-MW-19 7-8'
					Sample Type:	N	FD	N	N	N	N	N
					Sample Date:	7/13/2020	7/13/2020	7/13/2020	7/13/2020	7/13/2020	7/13/2020	7/13/2020
ABBR.	**Analyte**	**CAS No**	**NonIndustrail**	**Industrail**	**Units**							
PFBA	Perfluorobutanoic acid	375-22-4	--	--	ug/kg	< 0.347	< 0.339	< 0.346	< 0.344	< 0.332	< 0.344	< 0.335
PFBS	Perfluorobutanesulfonic acid	375-73-5	1260000	16400000	ug/kg	< 0.304	< 0.298	< 0.304	< 0.302	< 0.292	< 0.302	< 0.294
4:2 FTS	4:2 Fluorotelomer Sulfonic Acid	757124-72-4	--	--	ug/kg	< 0.361	< 0.353	< 0.360	< 0.358	< 0.346	< 0.358	< 0.348
PFPeA	Perfluoropentanoic acid	2706-90-3	--	--	ug/kg	< 0.399	< 0.390	< 0.398	0.95	1.22	0.504	< 0.385
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4	--	--	ug/kg	< 0.659	< 0.645	< 0.658	< 0.654	< 0.632	< 0.654	< 0.637
PFHxA	Perfluorohexanoic acid	307-24-4	--	--	ug/kg	< 0.216	< 0.212	< 0.216	0.614	1.6	0.509	< 0.209
PFHxS	Perfluorohexanesulfonoic acid	355-46-4	--	--	ug/kg	< 0.391	< 0.382	< 0.390	< 0.388	< 0.374	< 0.388	< 0.377
6:2 FTS	6:2 Fluorotelomer sulfonic acid	27619-97-2	--	--	ug/kg	< 0.655	< 0.641	< 0.654	< 0.650	< 0.628	< 0.650	< 0.633
PFHpA	Perfluoroheptanoic acid	375-85-9	--	--	ug/kg	< 0.479	< 0.469	< 0.478	< 0.475	2.57	< 0.475	< 0.462
PFHpS	Perfluoroheptanesulfonic acid	375-92-8	--	--	ug/kg	< 0.739	< 0.723	< 0.738	< 0.734	< 0.709	< 0.733	< 0.714
PFOA	Perfluorooctanoic acid	335-67-1	1260	16400	ug/kg	< 0.471	< 0.461	< 0.470	< 0.467	2.12	0.597	< 0.455
PFOS	Perfluorooctanesulfonic acid	1763-23-1	**1260**	16400	ug/kg	< 0.431	< 0.421	< 0.430	< 0.427	< 0.413	0.590 J	< 0.416
8:2 FTS	8:2 Fluorotelomer sulfonic acid	39108-34-4	--	--	ug/kg	< 0.723	< 0.708	< 0.722	< 0.718	< 0.693	< 0.718	< 0.698
PFNA	Perfluorononaoic acid	375-95-1	--	--	ug/kg	< 0.312	< 0.306	< 0.312	4.99	32.5	< 0.310	< 0.302
PFNS	Perfluorononanesulfonic acid	68259-12-1	--	--	ug/kg	< 1.15	< 1.13	< 1.15	< 1.14	< 1.10	< 1.14	< 1.11
PFDA	Perfluorodecanoic acid	335-76-2	--	--	ug/kg	< 0.453	< 0.443	< 0.452	< 0.449	< 0.434	< 0.449	< 0.437
PFDS	Perfluorodecanesulfonic acid	335-77-3	--	--	ug/kg	< 0.691	< 0.676	< 0.690	< 0.686	< 0.663	< 0.686	< 0.667
10:2 FTS	10:2 Fluorotelomer Sulfonic Acid	120226-60-0	--	--	ug/kg	< 1.02	< 0.996	< 1.02	< 1.01	< 0.976	< 1.01	< 0.983
PFOSA	Perfluorooctane sulfonamide	754-91-6	--	--	ug/kg	< 1.01	< 0.988	< 1.01	< 1.00	< 0.968	< 1.00	< 0.975
PFDoS	Perfluorododecanesulfonic acid	79780-39-5	--	--	ug/kg	< 0.601	< 0.588	< 0.600	< 0.596	< 0.576	< 0.596	< 0.580
PFUnA	Perfluoroundecanoic acid	2058-94-8	--	--	ug/kg	< 0.258	< 0.253	< 0.258	0.719	0.395 J	< 0.256	< 0.250

Notes:

-- No Generic RCL established.
PFAS = Per- and Polyfluoroalkyl Substances
ug/kg = micrograms per kilogram

Data Qualifiers:
J = Estimated