Lowell Wastewater Utility
High Flow Management Operational Data
January 01, 2020 - September 23, 2020

Date	Clean Water Discharge			River's Edge Precipitation				Warren Station Precipitation				Treated High Flow			Barasford Street			Beaver Brook			Merrimack Street			Read Street			Tilden Street			Walker Street			Warren Street			West Street			All Diversions		
01/01/20	Flow	Peak Hour	Event Peak	Precip Days	Daily Total	Peak Hour	Event Peak hour	Precip Days	Daily Total	Peak Hour	Event Peak hour	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume	Event	Duration	Volume
09/23/20	(MG)	(MGD)	(MGD)	(No.)	(Inches)	(Inches)	(Inches)	(No.)	(Inches)	(Inches)	(Inches)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)	(No.)	(Hours)	(MG)
1/1/2020	33.91	41.60						1	0.23	0.05																														
1/2/2020	32.60	37.23						1	0.15	0.03																														
1/3/2020	32.25	37.29						1	0.04	0.01																														
1/4/2020	35.47	47.82						1	0.13	0.04																														
1/5/2020	37.07	41.89						1	0.12	0.04																														
1/6/2020	33.21	39.60																																				
1/7/2020	31.54	35.17																																				
1/8/2020	31.70	37.04																																				
1/9/2020	30.21	34.24																																				
1/10/2020	29.89	32.98																																				
1/11/2020	30.95	38.44																																				
1/12/2020	32.40	38.51		1	0.04	0.03		1	0.05	0.04																												
1/13/2020	30.32	34.72																																				
1/14/2020	30.30	34.64																																				
1/15/2020	29.59	33.35																																				
1/16/2020	33.14	44.00		1	0.28	0.11		1	0.28	0.10																												
1/17/2020	28.46	31.46																																				
1/18/2020	28.34	34.14																																				
1/19/2020	28.69	37.28		1	0.44	0.17		1	0.23	0.11																												
1/20/2020	28.43	33.58																																				
1/21/2020	27.43	31.56																																				
1/22/2020	27.26	31.53						1	0.08	0.04																												
1/23/2020	26.94	31.09						1	0.07	0.02																												
1/24/2020	26.79	30.44																																				
1/25/2020	39.88	106.77	106.77	1	0.62	0.22	0.22	1	0.73	0.26	0.26	1	3.65	8.18	1	1.65	0.57				1	1.30	2.01				1	1.10	0.47	1	1.17	1.07	1	0.83	1.13	1	2.87	4.30	1	2.87	9.55
1/26/2020	39.29	84.70		1	0.01	0.01						1	1.75	1.80																								
1/27/2020	31.69	35.07																																				
1/28/2020	30.08	34.16																																				
1/29/2020	29.51	34.82																																				
1/30/2020	29.32	36.20																																				
1/31/2020	28.97	32.86																																				
2/1/2020	29.20	35.36						1	0.01	0.01																												
2/2/2020	29.93	37.60																																				
2/3/2020	28.57	32.78																																				
2/4/2020	27.61	32.50																																				
2/5/2020	27.83	32.08		1	0.07	0.03		1	0.05	0.02																												
2/6/2020	30.36	38.21		1	0.38	0.10		1	0.21	0.07																												
2/7/2020	43.02	81.40		1	0.23	0.06		1	0.67	0.15		1	5.08	6.90																								
2/8/2020	30.32	37.64																																				
2/9/2020	29.71	37.55																																				
2/10/2020	33.31	62.03		1	0.16	0.08		1	0.16	0.07		1	1.13	1.13																								
2/11/2020	30.78	40.60		1	0.06	0.03		1	0.07	0.03																												
2/12/2020	29.83	33.88																																				
2/13/2020	37.51	56.39		1	0.57	0.15		1	0.43	0.09		1	2.05	0.78																								
2/14/2020	30.96	36.17						1	0.01	0.01																												
2/15/2020	30.15	37.58																																				
2/16/2020	29.57	37.36						1	0.06	0.02																												
2/17/2020	29.30	34.48																																				
2/18/2020	39.32	82.79		1	0.44	0.09		1	0.45	0.10		1	4.43	4.55																								
2/19/2020	31.15	46.08		1	0.01	0.01																																
2/20/2020	29.72	33.53																																				
2/21/2020	29.05	32.98																																				
2/22/2020	28.89	34.68																																				
2/23/2020	29.82	37.46																																				
2/24/2020	26.88	31.90																																				
2/25/2020	27.46	30.42		1	0.06	0.04		1	0.07	0.04																												
2/26/2020	29.51	34.59																																				
2/27/2020	49.81	96.83	96.83	1	0.81	0.21	0.21	1	0.86	0.24	0.24	1	6.38	14.73	1	0.77	0.07				1	2.02	2.70											1	2.30	3.20	1	2.30	5.97
2/28/2020	30.88	34.34																																				

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01/01/20 09/23/20	Flow (MG)	Peak Hour (MGD)	Event Peak (MGD)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)
2/29/2020	31.01	37.52																																					
3/1/2020	30.13	37.19																																					
3/2/2020	29.60	35.16																																					
3/3/2020	29.91	35.07		1	0.03	0.02		1	0.02	0.02																													
3/4/2020	29.30	33.48		1	0.01	0.01		1	0.01	0.01																													
3/5/2020	28.81	33.87																																					
3/6/2020	28.79	32.36																																					
3/7/2020	29.35	36.64																																					
3/8/2020	28.35	35.52																																					
3/9/2020	28.61	33.19																																					
3/10/2020	27.68	31.63																																					
3/11/2020	27.51	32.18																																					
3/12/2020	27.51	31.77																																					
3/13/2020	33.68	53.85		1	0.36	0.11		1	0.39	0.10		1	1.77	0.80																									
3/14/2020	28.09	34.26																																					
3/15/2020	28.08	34.71																																					
3/16/2020	27.72	32.01																																					
3/17/2020	27.68	32.04		1	0.01	0.01		1	0.01	0.01																													
3/18/2020	27.02	34.28																																					
3/19/2020	38.63	68.68		1	0.57	0.14		1	0.61	0.14		1	6.45	4.80																									
3/20/2020	28.29	32.43		1	0.05	0.02		1	0.05	0.02																													
3/21/2020	27.99	33.71																																					
3/22/2020	27.26	33.94																																					
3/23/2020	28.14	39.27		1	0.07	0.07		1	0.04	0.03																													
3/24/2020	58.14	75.86		1	1.17	0.18		1	1.34	0.30		1	21.00	15.51																									
3/25/2020	32.06	37.43																																					
3/26/2020	34.00	38.05																																					
3/27/2020	31.98	37.04																																					
3/28/2020	30.60	37.08		1	0.04	0.02		1	0.04	0.03																													
3/29/2020	44.91	68.65	68.65	1	0.77	0.15	0.15	1	0.89	0.20	0.20	1	12.27	8.15							1	0.52	0.53													1	0.52	0.53		
3/30/2020	41.41	62.59		1	0.14	0.05		1	0.15	0.05		1	4.70	2.72																									
3/31/2020	37.16	41.47																																					
4/1/2020	35.74	39.78																																					
4/2/2020	35.38	49.60		1	0.18	0.04		1	0.18	0.05		1	0.92	0.27																									
4/3/2020	69.82	92.50		1	1.32	0.12		1	1.20	0.12		1	22.17	25.61																									
4/4/2020	48.27	62.08		1	0.03	0.01		1	0.03	0.01		1	6.22	2.25																									
4/5/2020	42.92	45.67																																					
4/6/2020	41.44	46.74																																					
4/7/2020	39.08	42.76																																					
4/8/2020	39.36	44.19		1	0.06	0.04		1	0.04	0.02																													
4/9/2020	51.14	90.86	90.86	1	0.88	0.21	0.21	1	0.88	0.21	0.21	1	8.53	11.45	1	0.98	0.06	1	11.15	5.27	1	2.82	2.97													1	11.15	8.30		
4/10/2020	44.69	60.16		1	0.02	0.02		1	0.01	0.01		1	5.72	2.61																									
4/11/2020	38.73	43.40																																					
4/12/2020	36.98	42.92																																					
4/13/2020	51.55	82.17		1	0.74	0.09		1	0.70	0.08		1	13.62	11.68																									
4/14/2020	40.63	49.99										1	0.67	0.20																									
4/15/2020	38.78	43.43																																					
4/16/2020	37.93	42.29		1	0.04	0.04		1	0.04	0.04																													
4/17/2020	36.70	41.28																																					
4/18/2020	42.57	47.49		1	0.49	0.17		1	0.42	0.11																													
4/19/2020	37.77	43.25																																					
4/20/2020	35.40	40.31																																					
4/21/2020	41.35	86.26		1	0.32	0.15		1	0.32	0.17		1	3.98	6.27																									
4/22/2020	34.29	38.59																																					
4/23/2020	32.90	37.62																																					
4/24/2020	32.39	37.72		1	0.04	0.02		1	0.04	0.01																													
4/25/2020	31.76	38.40																																					
4/26/2020	33.14	49.18		1	0.15	0.06		1	0.15	0.05																													
4/27/2020	47.03	61.75		1	0.74	0.07		1	0.64	0.06		1	6.80	2.95																									
4/28/2020	36.53	53.44										1	0.68	1.20																									
4/29/2020	33.90	39.07																																					
4/30/2020	33.83	40.85		1	0.07	0.02		1	0.08	0.03																													
5/1/2020	50.98	89.54		1	0.64	0.13		1	0.60	0.12		1	8.85	9.61																									
5/2/2020	36.94	42.69		1	0.02	0.01		1	0.01	0.01																													
5/3/2020	36.30	43.11																																					
5/4/2020	34.74	39.32																																					
5/5/2020	33.25	37.72																																					
5/6/2020	32.47	37.38																																					
5/7/2020	31.67	36.66		1	0.01	0.01		1	0.01	0.01																													
5/8/2020	31.46	41.36		1	0.11	0.04		1	0.12	0.06																													
5/9/2020	35.01	42.65		1	0.22	0.05		1	0.22	0.04																													
5/10/2020	30.70	37.53																																					
5/11/2020	34.59	61.31		1	0.12	0.09		1	0.21	0.12		1	1.78	0.86																									

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01/01/20 09/23/20	Flow (MG)	Peak Hour (MGD)	Event Peak (MGD)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)
5/12/2020	30.25	34.09																																						
5/13/2020	29.64	34.31																																						
5/14/2020	29.02	33.25																																						
5/15/2020	34.11	82.74		1	0.39	0.17		1	0.36	0.15		1	2.57	2.95																										
5/16/2020	31.59	58.21		1	0.05	0.03		1	0.05	0.02		1	0.85	0.33																										
5/17/2020	29.42	34.60																																						
5/18/2020	29.17	33.77																																						
5/19/2020	27.22	32.48																																						
5/20/2020	29.06	32.25																																						
5/21/2020	28.27	31.63																																						
5/22/2020	27.07	31.49																																						
5/23/2020	26.99	32.73																																						
5/24/2020	26.37	32.75																																						
5/25/2020	26.55	32.78																																						
5/26/2020	26.40	31.00																																						
5/27/2020	26.26	30.61																																						
5/28/2020	25.84	30.06																																						
5/29/2020	25.66	29.84																																						
5/30/2020	27.51	47.57		1	0.09	0.09		1	0.13	0.13																														
5/31/2020	25.11	30.60																																						
6/1/2020	26.38	32.39																																						
6/2/2020	26.68	35.06		1	0.03	0.03		1	0.03	0.03																														
6/3/2020	26.70	40.41		1	0.23	0.22		1	0.06	0.06																														
6/4/2020	25.23	36.49		1	0.01	0.01																																		
6/5/2020	24.50	29.13																																						
6/6/2020	24.38	31.31		1	0.07	0.06		1	0.08	0.04																														
6/7/2020	24.16	30.15																																						
6/8/2020	23.87	28.03																																						
6/9/2020	23.94	28.24																																						
6/10/2020	24.09	28.47																																						
6/11/2020	24.60	35.64	35.64	1	0.09	0.08	0.08	1	0.05	0.04	0.04				* See validation note 1																										
6/12/2020	23.75	27.89																																						
6/13/2020	23.27	28.37																																						
6/14/2020	23.22	28.99																																						
6/15/2020	23.70	28.78																																						
6/16/2020	23.40	27.72																																						
6/17/2020	23.25	27.08																																						
6/18/2020	23.07	27.17																																						
6/19/2020	22.63	26.80																																						
6/20/2020	22.09	27.21																																						
6/21/2020	26.90	58.98	58.98	1	0.54	0.49	0.49	1	0.84	0.20	0.20	1	0.42	0.41	1	0.82	1.21				1	1.85	3.36				1	0.17	0.10				1	0.35	1.06				1	1.85	5.73
6/22/2020	25.18	32.03																																						
6/23/2020	22.75	28.79																																						
6/24/2020	25.83	50.23		1	0.71	0.39		1	0.13	0.07																														
6/25/2020	24.19	28.14																																						
6/26/2020	23.74	27.27																																						
6/27/2020	22.67	26.42																																						
6/28/2020	24.19	50.26		1	0.31	0.12		1	0.24	0.09																														
6/29/2020	24.72	45.66		1	0.13	0.07		1	0.12	0.04																														
6/30/2020	23.00	35.86		1	0.04	0.04		1	0.08	0.06																														
7/1/2020	25.82	43.09		1	0.06	0.03		1	0.06	0.03																														
7/2/2020	25.22	49.99						1	0.01	0.01																														
7/3/2020	22.38	30.66																																						
7/4/2020	21.10	27.48																																						
7/5/2020	22.52	52.42		1	0.24	0.22		1	0.11	0.06																														
7/6/2020	24.15	51.82						1	0.05	0.03																														
7/7/2020	21.35	27.97																																						
7/8/2020	22.47	33.37		1	0.03	0.02		1	0.06	0.03																														
7/9/2020	21.79	25.46																																						
7/10/2020	21.32	25.14						1	0.01	0.01																														
7/11/2020	21.53	27.72		1	0.13	0.12		1	0.06	0.02																														
7/12/2020	21.00	26.03																																						
7/13/2020	22.37	33.36		1	0.13	0.12		1	0.05	0.02																														
7/14/2020	21.04	24.94		1	0.01	0.01		1	0.01	0.01																														
7/15/2020	20.86	25.00		1	0.01	0.01		1	0.01	0.01																														
7/16/2020	20.69	24.59																																						
7/17/2020	30.15	97.13	97.13	1	0.44	0.36	0.36	* See validation note 2				1	2.65	4.43													1	0.47	0.26				1	0.25	0.24				1	0.47	0.50
7/18/2020	20.23	25.26																																						
7/19/2020	20.06	25.19																																						
7/20/2020	20.24	24.03																																						
7/21/2020	19.86	23.83																																						
7/22/2020	22.45	64.97	64.97	1	1.06	0.73	0.73					1	0.17	0.72	1	0.65	0.93	1	0.37	0.16	1	0.38	1.56	1	0.12	0.04	1	0.57	1.14	1	0.57	2.73	1	0.65	6.47	1	0.33	1.50	1	0.65	14.53
7/23/2020	41.53	67.95	67.95	1	0.76	0.72	0.72					1	9.50	5.18	1	0.27	0.37	1	0.92	0.56	1	2.13	5.76	1	0.07	0.01	1	0.75	1.06				1	0.90	1.96	1	1.23	3.40	1	2.13	13.12
7/24/2020	23.63	28.15		1	0.01	0.01																																		
7/25/2020	23.33	28.33																																						
7/26/2020	23.07	28.10																																						
7/27/2020	23.35	27.47																																						
7/28/2020	22.94	27.23																																						

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01/01/20 09/23/20	Flow (MG)	Peak Hour (MGD)	Event Peak (MGD)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)
7/29/2020	23.20	27.41																																						
7/30/2020	22.94	28.87		1	0.19	0.08		1	0.03	0.01																														
7/31/2020	22.11	26.03																																						
8/1/2020	21.67	27.07																																						
8/2/2020	22.50	27.66		1	0.09	0.05		1	0.03	0.02																														
8/3/2020	22.41	27.40																																						
8/4/2020	26.66	63.78		1	0.26	0.21						1	2.03	1.35																										
8/5/2020	22.01	26.02																																						
8/6/2020	21.71	25.91																																						
8/7/2020	21.94	26.19																																						
8/8/2020	22.00	27.40																																						
8/9/2020	22.21	27.71																																						
8/10/2020	22.16	26.77																																						
8/11/2020	22.07	26.52																																						
8/12/2020	22.54	27.59																																						
8/13/2020	22.21	25.96																																						
8/14/2020	21.78	26.32																																						
8/15/2020	21.76	27.20																																						
8/16/2020	21.34	26.86		1	0.05	0.03		1	0.04	0.02																														
8/17/2020	21.79	26.33		1	0.01	0.01		1	0.02	0.01																														
8/18/2020	25.63	44.37		1	0.20	0.10		1	0.21	0.09																														
8/19/2020	22.24	37.60		1	0.46	0.46		1	0.02	0.01																														
8/20/2020	21.25	25.05																																						
8/21/2020	21.13	26.04																																						
8/22/2020	22.66	36.70		1	0.11	0.11		1	0.09	0.05																														
8/23/2020	21.94	34.29		1	0.01	0.01		1	0.06	0.06																														
8/24/2020	21.13	25.90																																						
8/25/2020	21.18	25.37																																						
8/26/2020	20.59	24.83																																						
8/27/2020	21.89	40.94		1	0.15	0.09		1	0.12	0.08																														
8/28/2020	20.50	24.63																																						
8/29/2020	28.12	62.07		1	0.60	0.31		1	0.46	0.18		1	1.35	2.95																										
8/30/2020	20.82	26.38																																						
8/31/2020	20.75	25.42																																						
9/1/2020	20.83	25.29																																						
9/2/2020	22.92	46.06		1	0.22	0.12		1	0.19	0.09																														
9/3/2020	20.74	24.75		1	0.01	0.01																																		
9/4/2020	20.69	24.84																																						
9/5/2020	19.93	25.17																																						
9/6/2020	19.59	24.93																																						
9/7/2020	20.40	26.13																																						
9/8/2020	20.73	25.84																																						
9/9/2020	20.26	24.65																																						
9/10/2020	30.41	89.04	89.04	1	1.07	0.71	0.71	1	1.68	0.92	0.92	1	6.03	4.21	1	1.78	3.24	1	0.97	1.44	1	1.73	9.02	1	0.43	0.10	1	1.65	3.02	1	1.38	5.31	1	1.58	16.38	1	1.93	8.50	1	1.93	47.01
9/11/2020	23.42	56.61										1	0.80	0.12																										
9/12/2020	20.47	25.90																																						
9/13/2020	20.75	26.56						1	0.01	0.01																														
9/14/2020	20.87	25.47		1	0.02	0.01																																		
9/15/2020	21.06	25.97																																						
9/16/2020	26.82	39.84																																						
9/17/2020	20.63	24.86																																						
9/18/2020	20.30	23.80																																						
9/19/2020	20.19	25.73																																						
9/20/2020	20.72	26.66																																						
9/21/2020	20.86	25.76																																						
9/22/2020	20.42	25.42																																						
9/23/2020	20.45	24.86																																						

Date	Plant Effluent			River's Edge Precipitation				Warren Precipitation				Stormwater Treated			Barasford Street			Beaver Brook			Merrimack Street			Read Street			Tilden Street			Walker Street			Warren Street			West Street			All Diversions		
No. Days 267	Flow (MG)	Peak Hour (MGD)	Event Peak (MGD)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Precip Days (No.)	Daily Total (Inches)	Peak Hour (Inches)	Event Peak hour (Inches)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)	Event (No.)	Duration (Hours)	Volume (MG)
Total/Max	**7,629.93**	**106.77**	**106.77**	**85**	**22.62**	**0.73**	**0.73**	**89**	**20**	**0.92**	**0.92**	**34**	**176.97**	**167.66**	**7**	**6.92**	**6.45**	**4**	**13.40**	**7.43**	**8**	**12.75**	**27.91**	**3**	**0.62**	**0.15**	**6**	**4.70**	**6.05**	**3**	**3.12**	**9.11**	**6**	**4.57**	**27.24**	**5**	**8.67**	**20.90**	**9**	**23.87**	**105.24**
Avg/Percent	**28.58**	**38.28**	**77.68**	**32%**	**0.27**	**0.12**	**0.43**	**33%**	**0.23**	**0.07**	**0.23**	**38%**	**5.20**	**4.93**	**8%**	**0.93**	**0.81**	**4%**	**3.35**	**1.86**	**9%**	**1.59**	**3.49**	**3%**	**0.21**	**0.05**	**7%**	**0.78**	**1.01**	**3%**	**1.04**	**3.04**	**7%**	**0.76**	**4.54**	**6%**	**1.73**	**4.18**	**10%**	**2.65**	**11.69**

Validation Notes:

1. A CSO discharge was originally reported on June 11, 2020 from Barasford Station. This report was an erroneous result of a recording error. No CSO discharges occurred from any station in Lowell on June 11, 2020.

2. The Warren Station rain gauge was not operating properly during the period July 17-July 24, 2020. The gauge was re-calibrated following this period.