Summary of City of Flint (City) Actions
In Response to the
EPA Emergency Administrative Order
Updated: July 22, 2016

Chapters 52, 57, 59a & 59b: Weekly Conference Call Regarding Flint Water Plant Operations July 14, 2016.

EPA Order Due Date: Weekly

The DEQ and the Flint Water Treatment Plant (WTP) staff held the weekly meeting on July 21st to review and discuss the summary of water quality and corrosion control parameters reported on the City's July operation report completed to date, a summary of water quality parameters collected on July 17th in the distribution system, and some other matters pertaining to operation of the City's water supply.

The following observations were noted:

- The supplemental phosphate dosage was consistent and ranged between 2.14 and 2.27 milligrams per liter (mg/l). The phosphate residuals measured at the plant tap ranged from 3.29 to 3.62 mg/l entering the distribution system.
- None of the weekly distribution system sites reported a residual below 3.1 mg/l. The weekly sites ranged between 3.12 and 3.34 mg/l of phosphate.
- All pH measurements were greater than 7.0 at the Enhanced Water Quality Monitoring (EWQM) sites and the Point of Entry (Control Station #2) to the system. The pH levels ranged from 7.32 to 7.35 in the water received from Great Lakes Water Authority (GLWA) and from 7.28 to 7.35 at the 10 distribution system sites.
- Iron levels at EWQM sites ranged from 0.00 to 0.11 mg/l. Plant tap iron concentrations ranged from 0.01 to 0.03 mg/l in the last week.
- All lead results reported from the EWQM sites on this week's report were not detected.
- The chlorine feed at Control Station #2 was consistently maintained at 0.70/0.80 mg/l. The chlorine residuals at the 10 EWQM sites ranged from 0.30 to 1.68 mg/l.
- A tap and a CL-17 continuous chlorine residual analyzer, located downstream of CS #2 on the WTP service main in the far-east corner of the filter gallery has been installed. The location of the tap will give the city a better location for the continuous monitoring of the residuals leaving CS #2 than what is being seen at the operations and plant labs. The City also plumbed in a continuously flowing tap at this location to shorten detention time in the WTP service main for more representative readings.
- The Flint WTP operators continue to adjusting the hypochlorite feed rate to maintain the same feed rate based on the flow rate from the GLWA. DEQ is working with the WTP staff to maintain a plant tap free chlorine residual of 1.5 to 1.7 mg/l.
- A combined, single spreadsheet is being developed for the inclusion of all chlorination information.
- The City submitted an updated disinfection byproducts monitoring plan on July 12, 2016. The plan was reviewed by DEQ staff, and the City was advised on July 13, 2016 that the plan may be subject to future revision as additional information (such as water age modeling results, distribution system optimization studies, etc.) becomes available.
- The Flint WTP is assessing the laboratory equipment and staff training necessary to initiate additional corrosion control monitoring as recommended by DEQ staff.

- The City worked with HACH Chemical Company this week to review instrumentation for possible installation at the plant and in the distribution system for water quality monitoring. An automatized display tied to one of the new HACH multichannel instruments will be installed in the WTP lab. The various channels will record the free and total chlorine residual, total phosphate, pH temperature, UV254, chloride and Dissolved Oxygen.
- A similar system with fewer channels will be added to at least four locations in the distribution system. All of these HACH instruments will be sending the data to the plant's SCADA system.
- The HACH representative will also check on the possibility of adding a sulfate monitoring system as well.
- The taps for the new chlorine feed points and CL-17 monitoring points are scheduled to be installed next week and all equipment installed next week.
- WTP staff continues to work with DEQ staff to modify bench sheets with the goal of improving data evaluation.

These water quality parameters are demonstrating the City's corrosion control efforts are currently providing acceptable water quality.

In addition to the above comments and observations, DEQ staff are documenting daily operations at the Flint WTP. This includes reservoir filling and chlorine residual analysis, observation and dosage of the orthophosphate feed system, free/total chlorine residual analysis of water received from GLWA and plant tap, target for applied dose range at CS-2, and observation of free chlorine residual at locations where continuous CL2 analyzers are available (i.e. currently upstream of CS-2, downstream of CS-2, West Side reservoir, Cedar Street reservoir).

24 hr Feed Rates of NaOCL

Date: 7/13/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	136	11.0	0.71	57	75	156	876	mw
1:00	136	11.0	0.71	57	75			mw
2:00	136	11.2	0.70	57	75			mw
3:00	137	11.1	0.71	57	75			mw
4:00	137	11.2	0.71	57	75			mw
5:00	137	11.2	0.71	57	75			mw
6:00	137	11.3	0.70	57	75			mw
7:00	120	10.0	0.70	57	75	141	876	mw
8:00	130	10.7	0.70	54	75	140	876	rf
9:00	130	10.7	0.70	54	75			jm
10:00	144	11.9	0.70	60	75			jm
11:00	142	11.7	0.70	59	75			jm
12:00	146	12.0	0.70	60	75			jm
13:00	148	12.1	0.70	61	75			rf
14:00	145	11.8	0.71	60	75			jm
15:00	143	11.8	0.70	59	75	125	876	rf
16:00	143	11.7	0.71	59	75	124	876	et
17:00	150	12.6	0.69	62	75			et
18:00	162	13.4	0.70	67	75			et
19:00	164	13.6	0.70	68	75			et
20:00	155	13.0	0.69	64	75			et
21:00	143	11.8	0.70	59	75			et
22:00	155	13.0	0.69	64	75	105	876	et
23:00								

ml/min average:	142.43		Total gallons NaOCL Used: 51
MGD average:	11.73		
PPM average:	0.70		Days of NaOCL on Hand:
			(Train Shed + CS2)

Notes:

24 hr Feed Rates of NaOCL

7/14/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	155	12.9	0.69	64	75	104	876	MW
1:00	155	13.0	0.68	64	75			MW
2:00	155	12.7	0.70	64	75			MW
3:00	155	12.8	0.70	64	75			MW
4:00	155	12.6	0.71	64	75			MW
5:00	156	12.8	0.70	64	75			MW
6:00	156	12.9	0.69	64	75			MW
7:00	147	12.0	0.70	61	75	88	876	MW
8:00	140	11.5	0.70	59	75	85	880	RF
9:00	137	11.3	0.70	57	75			RF
10:00	136	11.2	0.70	57	75			RF
11:00	137	11.2	0.70	57	75	147		RF
12:00	137	11.2	0.70	57	75			JM
13:00	144	11.2	0.70	60	75			JM
14:00	147	11.4	0.70	61	75		1540	JM
15:00	147	11.4	0.70	61	75	140	1540	JM
16:00	147	11.4	0.70	61	75	137	1540	ET
17:00	147	11.3	0.71	61	75			ET
18:00	145	11.2	0.71	59	75			ET
19:00	137	10.9	0.69	57	75			ET
20:00	147	11.4	0.70	61	75			ET
21:00	154	12.0	0.70	64	75			ET
22:00	173	13.8	0.69	75	75			ET
23:00	194	15.4	0.69	82	75	109	1540	ET

ml/min average:	150.13	Total gallons NaOCL Used:	57
MGD average:	12.06		
PPM average:	0.70	Days of NaOCL on Hand:	28.9
		(Train Shed + CS2)	

24 hr Feed Rates of NaOCL

Date: 7/15/2016						Location of NaOCL		
	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	194	15.3	0.70	82	75	107	1540	ET
1:00	194	15.3	0.70	82	75			ET
2:00	175	13.8	0.70	74	75			ET
3:00	175	13.8	0.70	74	75			ET
4:00	178	14.1	0.70	76	75			ET
5:00	178	14.1	0.70	76	75			ET
6:00	169	13.6	0.69	72	75			ET
7:00	150	11.9	0.69	64	75	100	1540	ET
8:00	156	12.2	0.70	65	75	97	1540	JM
9:00	161	12.5	0.71	68	75			JM
10:00	162	12.4	0.71	68	75			JM
11:00	163	12.6	0.70	68	75			JM
12:00	163	12.6	0.70	68	75			JM
13:00	163	12.7	0.69	68	75			JM
14:00	213	12.8	0.90	87	75			JM
15:00	216	13.0	0.90	88	75	80	2200	JM
16:00	216	13.1	0.90	88	75	76	2200	ET
17:00	210	12.9	0.89	88	75			ET
18:00	196	12.0	0.89	83	75			ET
19:00	196	11.9	0.90	83	75			ET
20:00	214	13.0	0.90	89	75			ET
21:00	230	14.0	0.90	88	85			ET
22:00	245	14.8	0.90	91	85			ET
23:00	250	15.2	0.90	89	90	54	2200	ET

ml/min average:	190.29	Total gallons NaOCL Used:	53 Gal
MGD average:	13.32		
PPM average:	0.78	Days of NaOCL on Hand:	31
		(Train Shed + CS2)	

Notes:2pm 3-220gal totes added to train shed total. 2pm doseage increased to .90ppm

24 hr Feed Rates of NaOCL

Date: 7/16/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	274	16.6	0.90	92	95	52	2200	BE
1:00	266	16.0	0.90	88	95			BE
2:00	268	16.1	0.90	88	95			BE
3:00	266	16.0	0.90	88	95			BE
4:00	270	16.3	0.90	89	95			BE
5:00	270	16.3	0.90	89	95			BE
6:00	258	15.5	0.90	90	90			BE
7:00	208	12.5	0.90	82	80	18	2200	BE
8:00	208	12.5	0.90	82	80	17	2200	BE
9:00	210	12.6	0.90	83	80			BE
10:00	202	12.1	0.90	81	80			BE
11:00	202	12.1	0.90	81	80	220	1980	BE
12:00	190	12.0	0.90	78	80			BE
13:00	188	11.9	0.90	77	80			BE
14:00	184	11.7	0.90	75	80			BE
15:00	190	12.0	0.90	78	80	200	1980	BE
16:00	191	12.2	0.89	78	80		1980	DE
17:00	190	12.2	0.89	78	80			DE
18:00	190	12.1	0.90	78	80			DE
19:00	199	12.7	0.90	81	80			DE
20:00	202	12.9	0.89	82	80			DE
21:00	206	13.2	0.89	78	85			DE
22:00	232	14.8	0.90	84	90			DE
23:00	240	15.3	0.90	86	90		1980	DE

ml/min average:	221.00		Total gallons NaOCL Used:
MGD average:	13.65		
PPM average:	0.90		Days of NaOCL on Hand:
			(Train Shed + CS2)

Notes:Changed tote and purity at 10:40am (12.35%). Could not read tote level at 3pm

24 hr Feed Rates of NaOCL

Date: 7/17/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	240	15.4	0.88	86	90	170	1980	MW
1:00	241	15.1	0.91	86	90			MW
2:00	241	15.2	0.90	86	90			MW
3:00	240	15.2	0.90	86	90			MW
4:00	241	15.2	0.90	86	90			MW
5:00	243	15.1	0.91	86	90			MW
6:00	243	15.1	0.91	86	90			MW
7:00	199	12.7	0.89	73	90	144	1980	MW
8:00	192	12.1	0.90	77	80	142	1980	BE
9:00	184	11.7	0.90	75	80			BE
10:00	192	12.2	0.90	77	80			BE
11:00	198	12.5	0.90	81	80			BE
12:00	200	12.7	0.90	81	80			BE
13:00	198	12.6	0.90	80	80			BE
14:00	222	14.1	0.90	81	90			BE
15:00	224	14.2	0.90	81	90	117	1980	BE
16:00	225	14.2	0.90	81	90	115	1980	SB
17:00	207	13.1	0.90	76	90			SB
18:00	202	12.6	0.91	72	90			SB
19:00	240	12.4	1.10	82	95			SB
20:00	234	12.2	1.09	81	95			SB
21:00	238	12.4	1.09	82	95			SB
22:00	242	12.6	1.09	84	95			SB
23:00	250	13.1	1.09	86	95	85	1980	SB

ml/min average:	222.33		Total gallons NaOCL Used: 85 Gal
MGD average:	13.49		
PPM average:	0.94		Days of NaOCL on Hand:
			(Train Shed + CS2)

Notes:

24 hr Feed Rates of NaOCL

Date: 7/18/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	256	13.4	1.09	87	95	85	1980	MW
1:00	256	13.6	1.07	87	95			MW
2:00	257	13.1	1.12	87	95			MW
3:00	258	13.1	1.12	87	95			MW
4:00	258	13.4	1.10	87	95			MW
5:00	258	13.1	1.12	87	95			MW
6:00	261	13.0	1.13	87	95			MW
7:00	261	12.8	1.16	87	95	57	1980	MW
8:00	261	13.3	1.12	87	95	50	1980	JM
9:00	264	13.3	1.10	87	95			JM
10:00	265	13.1	1.12	87	95			JM
11:00	262	13.3	1.09	87	95			JM
12:00	264	13.0	1.12	87	95			JM
13:00	261	13.1	1.10	87	95			DE
14:00	262	13.2	1.10	87	95			JM
15:00	266	13.4	1.10	88	95	20	1980	JM
16:00	273	13.6	1.12	90	95	18	1980	ET
17:00	245	11.6	1.17	*66	*75			ET
18:00	261	13.0	1.12	87	95			ET
19:00	255	12.7	1.12	85	95			ET
20:00	252	12.5	1.12	86	95	**220	1760	ET
21:00	252	12.5	1.12	86	95			ET
22:00	255	13.0	1.10	83	85			ET
23:00	330	16.2	1.14	86	85	***	1760	ET

ml/min average:	262.21		Total gallons NaOCL Used:
MGD average:	13.18		
PPM average:	1.12		Days of NaOCL on Hand:
			(Train Shed + CS2)

Notes:*Using 2 pumps **Changed tote ***Could not read tote level

24 hr Feed Rates of NaOCL

Date: 7/19/2016						Location of NaOCL		
% effective chlorine:	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	320	16.2	1.09	86	85		1760	MW
1:00	325	16.5	1.09	88	85			MW
2:00	323	16.4	1.09	88	85			MW
3:00	326	16.2	1.11	88	85			MW
4:00	326	16.2	1.11	88	85			MW
5:00	328	16.1	1.13	88	85			MW
6:00	328	16.1	1.13	88	85			MW
7:00	266	13.1	1.12	75	85	173	1760	MW
8:00	270	13.1	1.14	74	85	168	1760	JM
9:00	258	12.8	1.11	71	85			JM
10:00	258	12.9	1.11	71	85			JM
11:00	258	12.9	1.11	71	85			JM
12:00	260	12.8	1.12	71	85			JM
13:00	270	13.5	1.11	73	85			JM
14:00	264	13.2	1.11	71	85			JM
15:00	264	13.1	1.12	71	85	136	1760	JM
16:00	264	13.3	1.10	70	85	132	1760	BE
17:00	286	13.7	1.16	71	85			BE
18:00	268	13.6	1.16	71	85			BE
19:00	268	13.6	1.16	70	85			BE
20:00	266	13.5	1.09	70	85			BE
21:00	268	13.6	1.16	70	85			BE
22:00	266	13.5	1.09	70	85			BE
23:00	336	17.0	1.10	81	90	102	1760	BE

ml/min average:	286.08		Total gallons NaOCL Used: 108
MGD average:	14.29		
PPM average:	1.12		Days of NaOCL on Hand: 16
			(Train Shed + CS2)

Notes: 12am Tote too full to tell level of NaOCL.

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/13/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	55	11.0	2.24	7.7 23	80	180	266	mw
1:00	55	11.0	2.24	7.7 23	80			mw
2:00	55	11.2	2.20	7.8 23	80			mw
3:00	54	11.1	2.18	7.8 23	80			mw
4:00	55	11.2	2.20	7.8 24	80			mw
5:00	55	11.2	2.20	7.7 23	80			mw
6:00	55	11.3	2.19	7.8 24	80			mw
7:00	50	10.0	2.25	7.4 21	80	175	266	mw
8:00	52	10.7	2.18	7.6 23	80	174	266	rf
9:00	52	10.7	2.18	7.6 23	80			jm
10:00	60	11.9	2.26	8.0 25	80			jm
11:00	60	11.7	2.30	7.9 24	80			jm
12:00	61	12.0	2.28	8.1 26	80			jm
13:00	64	12.1	2.37	8.1 26	80			rf
14:00	60	11.8	2.28	8.0 26	80			jm
15:00	57	11.8	2.17	7.9 24	80	167	266	rf
16:00	57	11.7	2.19	7.8 24	80	166	266	et
17:00	64	12.6	2.28	8.4 28	80			et
18:00	67	13.4	2.25	8.5 28	80			et
19:00	67	13.6	2.22	8.5 29	80			et
20:00	64	13.0	2.22	8.7 27	80			et
21:00	58	11.8	2.20	7.9 24	80			et
22:00	64	13.0	2.22	8.8 27	80			et
23:00	64	13.0	2.22	8.8 28	80	159	266	et

ml/min average:	58.54	Total gallons PO4 Used:	21
MGD average:	11.78		
PPM average:	2.23	Days of PO4 on Hand:	20
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/14/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	65	12.9	2.26	8.3 / 27	80	158	266	MW
1:00	65	13.0	2.25	8.3 / 27	80			MW
2:00	65	12.7	2.30	8.3 / 27	80			MW
3:00	65	12.8	2.28	8.2 / 27	80			MW
4:00	63	12.6	2.25	8.3 / 26	80			MW
5:00	68	12.8	2.39	8.3 / 27	80			MW
6:00	64	12.9	2.22	8.4 / 27	80			MW
7:00	60	12.0	2.24	8.0 / 25	80	152	266	MW
8:00	58	11.5	2.26	7.8 / 24	80	150	266	JM
9:00	56	11.3	2.22	7.8 / 24	80			JM
10:00	55	11.2	2.20	7.8 / 24	80			JM
11:00	54	11.2	2.16	7.7 / 23	80			JM
12:00	56	11.2	2.24	7.7 / 23	80			JM
13:00	58	11.2	2.20	7.7 / 23	80			JM
14:00	58	11.4	2.28	7.9 / 24	80			JM
15:00	58	11.4	2.28	7.9 / 24	80	144	266	JM
16:00	57	11.4	2.24	7.5 / 24	80	143	266	ET
17:00	55	11.3	2.20	7.8 / 24	80			ET
18:00	55	11.2	2.20	7.8 / 24	80			ET
19:00	54	10.9	2.23	7.7 / 23	80			ET
20:00	57	11.4	2.24	7.5 / 24	80			ET
21:00	60	12.0	2.24	8.0 / 25	80			ET
22:00	70	13.8	2.28	8.5 / 28	80			ET
23:00	75	15.4	2.19	9.2 / 33	80	136	266	ET

ml/min average:	60.46	Total gallons PO4 Used:	22 Gal
MGD average:	12.06		
PPM average:	2.24	Days of PO4 on Hand:	18 Days
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/15/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	75	15.3	2.21	9.2 / 32	80	135	266	ET
1:00	75	15.3	2.21	9.3 / 32	80			ET
2:00	68	13.8	2.21	8.6 / 29	80			ET
3:00	68	13.8	2.21	8.5 / 29	80			ET
4:00	68	14.1	2.17	8.6 / 28	80			ET
5:00	68	14.1	2.17	8.7 / 29	80			ET
6:00	68	13.6	2.27	8.6 / 29	80			ET
7:00	58	11.9	2.19	8.0 / 25	80	129	266	ET
8:00	62	12.2	2.28	8.2 / 27	80	128	266	JM
9:00	62	12.5	2.23	8.2 / 26	80			JM
10:00	60	12.4	2.18	8.2 / 26	80			JM
11:00	61	12.6	2.17	8.3 / 27	80			JM
12:00	60	12.6	2.14	8.2 / 26	80			JM
13:00	62	12.7	2.19	8.2 / 26	80			JM
14:00	62	12.8	2.17	8.3 / 27	80			JM
15:00	65	13.0	2.24	8.3 / 27	80	121	266	JM
16:00	65	13.1	2.23	8.4 / 28	80	120	266	ET
17:00	65	12.9	2.26	8.3 / 27	80			ET
18:00	60	12.0	2.24	8.0 / 25	80			ET
19:00	60	11.9	2.26	8.0 / 25	80			ET
20:00	66	13.0	2.29	8.4 / 28	80			ET
21:00	70	14.0	2.25	8.7 / 29	80			ET
22:00	75	14.8	2.27	8.9 / 31	80			ET
23:00	77	15.2	2.27	9.1 / 32	80	115	266	ET

ml/min average:	**65.83**	**Total gallons PO4 Used:**	**20 Gal**
MGD average:	**13.32**		
PPM average:	**2.22**	**Days of PO4 on Hand:**	**15 Days**
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/16/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	80	16.6	2.17	9.6 35	80	114	266	BE
1:00	75	16.0	2.10	9.5 34	80			BE
2:00	75	16.1	2.09	9.3 33	80			BE
3:00	78	16.0	2.19	9.4 34	80			BE
4:00	80	16.3	2.20	9.4 34	80			BE
5:00	82	16.3	2.26	9.4 34	80			BE
6:00	70	15.5	2.03	9.0 31	80			BE
7:00	60	12.5	2.15	8.2 26	80	105	226	BE
8:00	60	12.5	2.15	8.1 26	80	104	226	BE
9:00	60	12.6	2.14	8.3 27	80			BE
10:00	60	12.1	2.23	8.0 26	80			BE
11:00	60	12.1	2.23	8.0 25	80			BE
12:00	60	12.0	2.24	8.1 26	80	95	226	BE
13:00	58	11.9	2.19	8.0 26	80	275	90	BE
14:00	58	11.7	2.23	7.9 25	80			BE
15:00	60	12.0	2.24	8.0 25	80	*274	90	BE
16:00	61	12.2	2.25	8.0 25	80	274	90	DE
17:00	61	12.2	2.25	8.0 25	80			DE
18:00	60	12.1	2.23	8.1 26	80			DE
19:00	63	12.7	2.23	8.3 28	80			DE
20:00	65	12.9	2.23	8.3 29	80			DE
21:00	68	13.2	2.31	8.4 28	80			DE
22:00	74	14.8	2.25	8.9 31	80			DE
23:00	76	15.3	2.23	9.1 32	80	**	90	DE

ml/min average:	66.83		Total gallons PO_4 Used:
MGD average:	13.65		
PPM average:	2.20		Days of PO_4 on Hand:
			(Train Shed + CS2)

Notes:*Transferred to tote **Level in tote difficult to see

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/17/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	80	15.4	2.33	9.2 32	80	264	90	MW
1:00	71	15.1	2.11	9.0 31	80			MW
2:00	75	15.2	2.21	9.1 32	80			MW
3:00	75	15.2	2.21	9.1 32	80			MW
4:00	75	15.2	2.21	9.2 32	80			MW
5:00	72	15.1	2.14	9.0 31	80			MW
6:00	71	15.1	2.11	9.0 31	80			MW
7:00	61	12.7	2.15	8.2 27	80	255	90	MW
8:00	58	12.1	2.15	8.0 25	80	254	90	BE
9:00	55	11.7	2.11	8.0 25	80			BE
10:00	58	12.2	2.14	8.0 25	80			BE
11:00	60	12.5	2.15	8.1 26	80			BE
12:00	60	12.7	2.12	8.2 27	80			BE
13:00	62	12.6	2.21	8.3 26	80			BE
14:00	72	14.1	2.30	8.8 30	80			BE
15:00	70	14.2	2.21	8.8 30	80	247	90	BE
16:00	70	14.2	2.21	8.8 30	80	246	90	SB
17:00	62	13.1	2.13	8.3 27	80			SB
18:00	62	12.6	2.21	8.2 26	80			SB
19:00	61	12.4	2.21	8.2 26	80			SB
20:00	61	12.2	2.25	8.2 26	80			SB
21:00	62	12.4	2.25	8.1 26	80			SB
22:00	62	12.6	2.21	8.2 26	80			SB
23:00	64	13.1	2.19	8.3 27	80	230	90	SB

ml/min average:	65.79	Total gallons PO4 Used:	34 Gal
MGD average:	13.49		
PPM average:	2.19	Days of PO4 on Hand:	9 Days
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/18/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	65	13.4	2.18	8.5 / 28	80	243	90	MW
1:00	70	13.6	2.31	8.6 / 29	80			MW
2:00	68	13.1	2.33	8.5 / 28	80			MW
3:00	65	13.1	2.23	8.3 / 27	80			MW
4:00	65	13.4	2.18	8.3 / 27	80			MW
5:00	65	13.1	2.23	8.3 / 28	80			MW
6:00	67	13.0	2.31	8.4 / 28	80			MW
7:00	63	12.8	2.21	8.2 / 27	80	232	90	MW
8:00	70	13.3	2.36	8.6 / 29	80	229	90	JM
9:00	68	13.3	2.29	8.4 / 28	80			JM
10:00	70	13.1	2.36	8.5 / 28	80			JM
11:00	70	13.3	2.36	8.5 / 28	80			JM
12:00	66	13.0	2.28	8.2 / 26	80			JM
13:00	68	13.1	2.33	8.3 / 27	80			DE
14:00	68	13.2	2.31	8.4 / 28	80			JM
15:00	70	13.4	2.28	8.5 / 28	80	223	90	JM
16:00	68	13.6	2.25	8.5 / 28	80	222	90	ET
17:00	58	11.6	2.25	8.2 / 24	80			ET
18:00	65	13.0	2.25	8.2 / 26	80			ET
19:00	60	12.7	2.12	8.2 / 26	80			ET
20:00	66	12.5	2.37	8.4 / 28	80			ET
21:00	66	12.5	2.37	8.4 / 28	80			ET
22:00	65	13.0	2.25	8.6 / 29	80			ET
23:00	80	16.2	2.23	9.4 / 34	80	214	90	ET

ml/min average:	66.92	Total gallons PO4 Used:	29 Gal
MGD average:	13.18		
PPM average:	2.28	Days of PO4 on Hand:	10 Days
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/19/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	80	16.2	2.22	9.4 34	80	213	90	MW
1:00	82	16.5	2.23	9.5 35	80			MW
2:00	81	16.4	2.22	9.5 34	80			MW
3:00	81	16.2	2.25	9.5 34	80			MW
4:00	80	16.2	2.22	9.5 34	80			MW
5:00	81	16.1	2.26	9.3 34	80			MW
6:00	81	16.1	2.26	9.4 31	80			MW
7:00	65	13.1	2.23	8.4 28	80	204	90	MW
8:00	65	13.1	2.23	8.3 27	80	203	90	JM
9:00	65	12.8	2.28	8.3 27	80			JM
10:00	65	12.9	2.26	8.3 27	80			JM
11:00	65	12.9	2.26	8.3 27	80			JM
12:00	62	12.8	2.17	8.3 27	80			JM
13:00	68	13.5	2.26	8.4 28	80			JM
14:00	68	13.2	2.31	8.4 28	80			JM
15:00	70	13.1	2.40	8.3 27	80	196	90	JM
16:00	68	13.3	2.29	8.4 28	80	195	90	BE
17:00	70	13.7	2.29	8.6 29	80			BE
18:00	70	13.6	2.31	8.6 29	80			BE
19:00	70	13.6	2.31	8.6 29	80			BE
20:00	70	13.5	2.33	8.6 29	80			BE
21:00	70	13.6	2.31	8.6 28	80			BE
22:00	68	13.5	2.26	8.6 29	80			BE
23:00	85	17.0	2.25	9.7 36	80	187	90	BE

ml/min average:	72.08	Total gallons PO4 Used:	26
MGD average:	14.29		
PPM average:	2.27	Days of PO4 on Hand:	10
		(Train Shed + CS2)	

Notes: