

Bay Area WTP

Monthly Operations Report



December, 2018

Water Systems Serial Number: 0465


Ryan Goebel

Interim Water Plant Superintendent
Title

F1
Classification

Bay Area Water Treatment Plant

Monthly Operations Report

Supply Name: Bay Area Water System
 WSSN: 0465

Ryan Goebel
 Operator-in-charge

December, 2018
 Month, Year

F1
 Certification of Operator-in-charge

F1
 Water Plant Classification

Bay
 County

Treatment Rate and Membrane Data

Treatment Rate, Approved Rated Plant Capacity	<u>17.4</u>	Millions of Gallons per Day
Treatment Rate, Maximum	<u>6.8</u>	Millions of Gallons per Day
Maximum Approved Transmembrane Pressure	<u>22</u>	PSI
Maximum Operating Transmembrane Pressure	<u>22</u>	PSI

Chemical Data

Sodium Hypochlorite on hand:	<u>5,833</u>	Gallons	Estimated Supply:	<u>94.4</u>	days
Caustic Soda on hand:	<u>2,175</u>	Gallons	Estimated Supply:	<u>150.0</u>	days
Corrosion Inhibitor on hand:	<u>1,517</u>	Gallons	Estimated Supply:	<u>73.3</u>	days
Hydrofluosilicic Acid on hand:	<u>316</u>	Gallons	Estimated Supply:	<u>17.2</u>	days
Aluminum Chlorohydrate on hand:	<u>893</u>	Gallons	Estimated Supply:	<u>125.0</u>	days
Sulfuric Acid on hand:	<u>799</u>	Gallons	Estimated Supply:	<u>300.0</u>	days
Sodium Bisulfite on hand:	<u>1,130</u>	Gallons	Estimated Supply:	<u>310.0</u>	days
Citric Acid on hand:	<u>1,456</u>	Gallons	Estimated Supply:	<u>180.0</u>	days
Cost of All Chemicals per Million Gallons:	<u>78.43</u>	Dollars			
Estimated Electrical Cost per Million Gallons:	<u>107.98</u>	Dollars			

Remarks

Number of periods of filter confluence turbidity samples > 0.3 NTU 0
 Percent of membrane period confluence samples > 0.3 NTU: 0.00%

Did any individual membrane skid exceed:

1.0 NTU in two consecutive measurements taken 15 minutes apart?
 If yes, attach specific filter(s) information and indicate required follow-up status. No

0.5 NTU in two consecutive measurements taken 15 minutes apart after 4 hours of operation?
 If yes, attach specific filter(s) information and indicate required follow-up status. No

1.0 NTU in two consecutive measurements taken 15 minutes apart for 3 consecutive months?
 If yes, attach specific filter(s) information and indicate required follow-up status. No

2.0 NTU in two consecutive measurements taken 15 minutes apart for 2 consecutive months?
 If yes, attach specific filter(s) information and indicate required follow-up status. No

Was continuous (every 15 minutes) filter monitoring equipment off-line during the month?
 If yes, indicate date(s), duration, and individual filter grab sampling frequency on a separate sheet. No

Did POE disinfectant residual fall below 0.2 ppm during the month?
 If yes, indicate date(s) and duration on a separate sheet. No

Was minimum C*T credit achieved for the entire month?
 If no, indicate on a separate sheet the date(s) not achieved. Yes

Was continuous POE chlorine residual monitoring equipment off-line during the month?
 If yes, date(s) and duration will be indicated on the rule page. No

Notes



Bay Area WTP Monthly Operating Report

Date	Flows									
	Raw Water (MG)			Clarified (MG)	Wasted (MG)	Sludge (MG)	Treated (MG)	Finished Water Pumped (MG)		
	North	South	Total	Total	Total	Total	Total	N. Euclid	Lauria Road	Total
FIT-1000-1	FIT-1000-2	Calculated	FIT-5520-1	FIT-5520-2	FIT-5180	FIT-4000-1	FIT-4040-1	FIT-4040-2	Calculated	
12/1/2018	0.00	6.09	6.09	0.26	0.00	0.05	6.22	3.17	2.94	6.12
12/2/2018	0.00	6.09	6.09	0.25	0.00	0.04	6.39	3.24	3.00	6.24
12/3/2018	0.00	6.78	6.78	0.25	0.00	0.05	6.65	3.23	3.12	6.35
12/4/2018	0.00	6.90	6.90	0.25	0.00	0.05	6.04	2.93	2.85	5.78
12/5/2018	0.00	6.17	6.17	0.23	0.00	0.06	6.39	3.05	2.98	6.04
12/6/2018	0.00	5.57	5.57	0.26	0.00	0.07	6.13	2.99	2.92	5.91
12/7/2018	0.00	6.33	6.33	0.23	0.00	0.06	6.33	3.08	3.03	6.10
12/8/2018	0.00	6.28	6.28	0.23	0.00	0.06	6.48	3.13	3.08	6.21
12/9/2018	0.00	6.14	6.14	0.22	0.00	0.06	6.37	3.26	3.18	6.43
12/10/2018	0.00	6.36	6.36	0.26	0.00	0.07	6.72	3.23	3.19	6.41
12/11/2018	0.00	6.65	6.65	0.26	0.00	0.07	6.57	3.15	3.08	6.22
12/12/2018	0.00	6.84	6.84	0.23	0.00	0.06	6.56	3.10	3.18	6.28
12/13/2018	0.00	7.15	7.15	0.28	0.00	0.04	6.46	3.17	3.08	6.25
12/14/2018	0.00	6.81	6.81	0.24	0.00	0.05	6.31	3.07	2.93	6.00
12/15/2018	0.00	5.24	5.24	0.23	0.00	0.04	6.14	3.05	2.96	6.01
12/16/2018	0.00	5.90	5.90	0.26	0.00	0.04	6.41	3.18	3.05	6.23
12/17/2018	0.00	6.08	6.08	0.26	0.00	0.04	6.62	3.20	3.04	6.25
12/18/2018	0.00	6.25	6.25	0.26	0.00	0.04	6.41	3.16	3.11	6.27
12/19/2018	0.00	6.48	6.48	0.29	0.00	0.03	6.46	3.14	3.09	6.24
12/20/2018	0.00	6.52	6.52	0.29	0.00	0.02	6.52	3.17	3.08	6.24
12/21/2018	0.00	6.52	6.52	0.24	0.00	0.05	6.68	3.25	3.13	6.38
12/22/2018	0.00	6.43	6.43	0.22	0.00	0.06	6.12	3.02	2.97	6.00
12/23/2018	0.00	6.28	6.28	0.27	0.00	0.04	6.41	3.09	3.05	6.14
12/24/2018	0.00	6.85	6.85	0.24	0.00	0.04	6.62	3.25	3.14	6.39
12/25/2018	0.00	7.39	7.39	0.28	0.00	0.04	6.12	2.86	2.79	5.65
12/26/2018	0.00	6.11	6.11	0.26	0.00	0.04	6.08	3.09	3.01	6.11
12/27/2018	0.00	6.01	6.01	0.28	0.00	0.04	6.77	3.31	3.19	6.50
12/28/2018	0.00	6.45	6.45	0.26	0.00	0.03	6.62	3.26	3.10	6.35
12/29/2018	0.00	6.61	6.61	0.25	0.00	0.04	6.26	3.15	3.00	6.15
12/30/2018	0.00	6.57	6.57	0.26	0.00	0.04	6.50	3.14	2.98	6.13
12/31/2018	0.00	6.66	6.66	0.24	0.00	0.04	6.45	3.16	3.01	6.17
Total	0.00	198.51	198.51	7.83	0.00	1.47	198.78	97.28	94.24	191.52
Avg	0.00	6.40	6.40	0.25	0.00	0.05	6.41	3.14	3.04	6.18
Min	0.00	5.24	5.24	0.22	0.00	0.02	6.04	2.86	2.79	5.65
Max	0.00	7.39	7.39	0.29	0.00	0.07	6.77	3.31	3.19	6.50



Raw Water Analysis								
Date	Temp	pH	Turbidity		F	Free Cl	Bacti	
	Average	Average	Average	Maximum	Grab	Average	Positive/Negative	
	°C		NTU		mg/L	mg/L	Total Coliform	E. coli
	TIT-1000	AIT-1000-2	AIT-1000-1		Lab	AIT-1035-2	Lab	
12/1/2018	6.82	7.94	0.36	0.88	0.07	0.46	Negative	Negative
12/2/2018	6.72	7.93	0.43	0.96	0.07	0.50	Negative	Negative
12/3/2018	6.61	7.94	2.06	7.93	0.07	0.41	Negative	Negative
12/4/2018	6.54	7.94	2.84	8.24	0.06	0.37	Negative	Negative
12/5/2018	6.47	7.95	4.29	15.70	0.06	0.24	Negative	Negative
12/6/2018	6.28	7.95	1.64	4.24	0.07	0.37	Negative	Negative
12/7/2018	6.21	7.93	1.08	1.72	0.08	0.45	Negative	Negative
12/8/2018	6.10	7.92	1.12	3.09	0.09	0.51	Negative	Negative
12/9/2018	5.97	7.92	1.18	4.27	0.09	0.50	Negative	Negative
12/10/2018	5.68	7.93	1.00	7.44	0.08	0.45	Negative	Negative
12/11/2018	5.47	7.93	0.48	1.01	0.09	0.42	Negative	Negative
12/12/2018	5.44	7.94	0.43	0.70	0.09	0.38	Negative	Negative
12/13/2018	5.38	7.94	0.38	0.63	0.09	0.40	Negative	Negative
12/14/2018	5.32	7.93	0.38	0.65	0.10	0.44	Negative	Negative
12/15/2018	5.28	7.93	0.45	0.65	0.10	0.44	Negative	Negative
12/16/2018	5.24	7.92	0.50	1.13	0.09	0.45	Negative	Negative
12/17/2018	5.29	7.92	0.36	0.89	0.09	0.47	Negative	Negative
12/18/2018	5.26	7.94	0.34	1.54	0.09	0.37	Negative	Negative
12/19/2018	5.27	7.95	0.29	0.51	0.09	0.36	Negative	Negative
12/20/2018	5.46	7.95	0.28	0.40	0.10	0.38	Negative	Negative
12/21/2018	5.52	7.96	0.30	0.76	0.10	0.34	Negative	Negative
12/22/2018	5.47	7.95	0.32	0.55	0.09	0.34	Negative	Negative
12/23/2018	5.35	7.94	0.91	3.48	0.09	0.36	Negative	Negative
12/24/2018	5.16	7.95	0.56	1.29	0.09	0.36	Negative	Negative
12/25/2018	5.18	7.95	0.39	0.50	0.09	0.36	Negative	Negative
12/26/2018	5.18	7.94	0.32	6.17	0.10	0.37	Negative	Negative
12/27/2018	5.23	7.94	0.27	0.61	0.09	0.37	Negative	Negative
12/28/2018	5.23	7.94	0.26	0.44	0.07	0.38	Negative	Negative
12/29/2018	5.24	7.94	0.41	0.71	0.07	0.36	Negative	Negative
12/30/2018	5.31	7.93	0.51	0.94	0.07	0.38	Negative	Negative
12/31/2018	5.30	7.93	0.56	8.83	0.07	0.39	Negative	Negative
Avg	5.6	7.94	0.80	2.80	0.08	0.40	NA	NA
Min	5.2	7.92	0.26	0.40	0.06	0.24	NA	NA
Max	6.8	7.96	4.29	15.70	0.10	0.51	NA	NA



Finished Water Analysis																		
Date	Temp	pH	Phosphate	Fluoride		Free Cl ₂	Alkalinity (as CaCO ₃)		Chloride	Sulfate	Calcium (as CaCO ₃)	Dissolved Oxygen	Conductivity	Langelier Saturation Index	Chloride: Sulfate Mass Ratio	Larson-Skold Index	Bacti	
	Average	Average	Average	Tap	Dist	Average	Carbonate	Bicarbonate	Grab	Grab	Grab	Grab	Grab				Positive/Negative	
	°C		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	uS/cm				Total Coliform	E. coli
	AIT-4040-1	AIT-4050-2	AIT-4040-5	Lab		AIT-4050-1	Lab		Lab	Lab	Lab	Lab	Lab	Calculated		Lab		
12/1/2018	6.9	7.56	3.38	0.75		1.01	0	79	11	13	64	12.6	220	-1.01	0.85	0.45	Negative	Negative
12/2/2018	6.9	7.56	3.36	0.77		1.01	0	75	11	15	68	11.4	224	-1.01	0.73	0.51	Negative	Negative
12/3/2018	6.8	7.55	3.37	0.78	0.74	1.02	0	77	11	11	68	13.1	218	-1.00	1.00	0.43	Negative	Negative
12/4/2018	6.7	7.55	3.38	0.76		1.00	0	76	10	16	70	11.8	226	-1.01	0.63	0.50	Negative	Negative
12/5/2018	6.6	7.54	3.52	0.75		1.00	0	76	10	12	68	11.6	226	-1.02	0.83	0.43	Negative	Negative
12/6/2018	6.5	7.56	3.48	0.82		1.00	0	77	10	13	68	12.0	226	-1.01	0.77	0.44	Negative	Negative
12/7/2018	6.3	7.57	3.44	0.81		1.03	0	77	10	11	68	12.5	224	-1.00	0.91	0.41	Negative	Negative
12/8/2018	6.2	7.56	3.44	0.77		1.02	0	77	10	10	68	11.9	226	-1.01	1.00	0.39	Negative	Negative
12/9/2018	6.2	7.57	3.43	0.76		1.03	0	77	10	10	68	11.7	227	-1.01	1.00	0.39	Negative	Negative
12/10/2018	6.0	7.56	3.43	0.79	0.80	1.01	0	78	10	10	68	11.4	226	-1.01	1.00	0.39	Negative	Negative
12/11/2018	5.9	7.57	3.43	0.77		1.00	0	74	8	14	76	12.1	227	-0.99	0.57	0.43	Negative	Negative
12/12/2018	5.8	7.55	3.42	0.78		1.01	0	76	8	13	74	12.0	228	-1.00	0.62	0.40	Negative	Negative
12/13/2018	5.8	7.55	3.42	0.75		1.01	0	80	8	13	72	11.7	227	-1.00	0.62	0.38	Negative	Negative
12/14/2018	5.8	7.54	3.43	0.75		1.03	0	78	8	12	78	12.0	229	-0.98	0.67	0.37	Negative	Negative
12/15/2018	5.8	7.55	3.42	0.76		1.00	0	78	8	11	78	12.2	226	-0.97	0.73	0.36	Negative	Negative
12/16/2018	5.8	7.55	3.43	0.73		1.01	0	80	8	12	74	12.0	228	-0.99	0.67	0.36	Negative	Negative
12/17/2018	5.8	7.55	3.44	0.71	0.71	1.01	0	79	8	13	74	11.8	227	-0.98	0.62	0.39	Negative	Negative
12/18/2018	5.9	7.54	3.43	0.77		0.99	0	77	8	10	70	12.4	226	-1.03	0.80	0.35	Negative	Negative
12/19/2018	6.0	7.55	3.43	0.78		1.01	0	75	9	11	64	11.9	223	-1.07	0.82	0.40	Negative	Negative
12/20/2018	6.5	7.55	3.43	0.78		1.02	0	77	9	12	66	12.0	216	-1.03	0.75	0.40	Negative	Negative
12/21/2018	6.6	7.55	3.38	0.81		1.01	0	72	9	11	60	12.3	226	-1.10	0.82	0.41	Negative	Negative
12/22/2018	6.5	7.57	3.43	0.78		1.01	0	78	10	12	64	12.7	226	-1.02	0.83	0.42	Negative	Negative
12/23/2018	6.3	7.55	3.43	0.78		1.01	0	77	10	11	62	12.3	225	-1.06	0.91	0.41	Negative	Negative
12/24/2018	6.2	7.57	3.42	0.78		1.01	0	75	10	12	66	12.6	226	-1.03	0.83	0.44	Negative	Negative
12/25/2018	6.1	7.56	3.43	0.77		1.01	0	77	10	10	68	12.6	229	-1.02	1.00	0.39	Negative	Negative
12/26/2018	5.9	7.55	3.43	0.78	0.77	1.02	0	77	10	10	66	13.9	220	-1.04	1.00	0.39	Negative	Negative
12/27/2018	6.0	7.55	3.43	0.80		1.01	0	77	11	11	62	12.5	223	-1.07	1.00	0.43	Negative	Negative
12/28/2018	6.1	7.55	3.44	0.74		1.01	0	80	10	12	64	11.3	220	-1.03	0.83	0.41	Negative	Negative
12/29/2018	6.2	7.55	3.44	0.74		1.01	0	77	10	11	66	12.3	218	-1.03	0.91	0.41	Negative	Negative
12/30/2018	6.2	7.55	3.43	0.76		1.00	0	74	10	13	66	13.3	215	-1.05	0.77	0.46	Negative	Negative
12/31/2018	6.1	7.54	3.43	0.78		1.02	0	73	11	7	68	11.0	215	-1.06	1.57	0.38	Negative	Negative
Avg	6.2	7.55	3.43	0.77	0.76	1.01	0	77	10	12	68	12.2	224	-1.02	0.84	0.41	NA	NA
Min	5.8	7.54	3.36	0.71	0.71	0.99	0	72	8	7	60	11.0	215	-1.10	0.57	0.35	NA	NA
Max	6.9	7.57	3.52	0.82	0.80	1.03	0	80	11	16	78	13.9	229	-0.97	1.57	0.51	NA	NA



Turbidity										
Date	Raw Water		Clarified Water	Membrane Feed Water	Combined Membrane Filtrate					Finished Average
	Avg	Max	Avg	Avg	Avg	Max	# Samples	# > 0.3	% Exceeded	Avg
	NTU									
	AIT-1000-1		AIT-5030-1	AIT-1035-3	AIT-4000-1				Calculated	
12/1/2018	0.36	0.88	0.82	0.43	0.014	0.015	96	0	0.0	0.014
12/2/2018	0.43	0.96	0.81	0.43	0.014	0.015	96	0	0.0	0.014
12/3/2018	2.06	7.93	1.16	0.80	0.014	0.015	96	0	0.0	0.014
12/4/2018	2.84	8.24	1.15	1.57	0.014	0.015	96	0	0.0	0.014
12/5/2018	4.29	15.70	1.38	2.54	0.014	0.015	96	0	0.0	0.014
12/6/2018	1.64	4.24	1.06	2.23	0.014	0.015	96	0	0.0	0.014
12/7/2018	1.08	1.72	1.39	1.65	0.014	0.015	96	0	0.0	0.014
12/8/2018	1.12	3.09	1.48	1.32	0.014	0.015	96	0	0.0	0.014
12/9/2018	1.18	4.27	1.44	1.25	0.015	0.015	96	0	0.0	0.014
12/10/2018	1.00	7.44	1.41	1.09	0.015	0.015	96	0	0.0	0.014
12/11/2018	0.48	1.01	1.26	0.78	0.015	0.015	96	0	0.0	0.014
12/12/2018	0.43	0.70	1.00	0.56	0.015	0.015	96	0	0.0	0.014
12/13/2018	0.38	0.63	1.10	0.50	0.015	0.015	96	0	0.0	0.014
12/14/2018	0.38	0.65	1.10	0.43	0.015	0.015	96	0	0.0	0.014
12/15/2018	0.45	0.65	0.92	0.43	0.015	0.015	96	0	0.0	0.014
12/16/2018	0.50	1.13	1.20	0.51	0.015	0.015	96	0	0.0	0.014
12/17/2018	0.36	0.89	1.22	0.46	0.015	0.016	96	0	0.0	0.014
12/18/2018	0.34	1.54	1.03	0.39	0.015	0.015	96	0	0.0	0.014
12/19/2018	0.29	0.51	0.97	0.36	0.015	0.015	96	0	0.0	0.014
12/20/2018	0.28	0.40	1.11	0.35	0.015	0.015	96	0	0.0	0.014
12/21/2018	0.30	0.76	1.38	0.33	0.015	0.015	96	0	0.0	0.014
12/22/2018	0.32	0.55	1.80	0.32	0.015	0.015	96	0	0.0	0.014
12/23/2018	0.91	3.48	1.00	0.51	0.015	0.015	96	0	0.0	0.014
12/24/2018	0.56	1.29	1.32	0.64	0.015	0.015	96	0	0.0	0.014
12/25/2018	0.39	0.50	1.14	0.53	0.015	0.015	96	0	0.0	0.014
12/26/2018	0.32	6.17	1.33	0.46	0.015	0.015	96	0	0.0	0.014
12/27/2018	0.27	0.61	2.20	0.50	0.015	0.015	96	0	0.0	0.014
12/28/2018	0.26	0.44	0.90	0.34	0.015	0.015	96	0	0.0	0.014
12/29/2018	0.41	0.71	0.80	0.38	0.015	0.015	96	0	0.0	0.014
12/30/2018	0.51	0.94	0.96	0.46	0.015	0.015	96	0	0.0	0.014
12/31/2018	0.56	8.83	1.24	0.50	0.015	0.015	96	0	0.0	0.014
Avg	0.80	2.80	1.20	0.74	0.015	0.015	96	0	0.0	0.014
Min	0.26	0.40	0.80	0.32	0.014	0.015	96	0	0.0	0.014
Max	4.29	15.70	2.20	2.54	0.015	0.016	96	0	0.0	0.014



Note: % Exceeded are 4 hr compliance periods where 50% of the samples are greater than 0.3 NTU

Membrane Integrity																								
Date	Membrane 1			Membrane 2			Membrane 3			Membrane 4			Membrane 5			Membrane 6			Membrane 7			Membrane 8		
	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail	Air Hold Start Pressure (PSI)	Air Hold Stop Pressure (PSI)	Pass / Fail
12/1/2018	15.1	14.6	PASS	14.3	13.7	PASS	15.0	14.4	PASS	14.4	13.9	PASS	15.0	14.5	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.4	13.9	PASS
12/2/2018	15.0	14.6	PASS	14.3	13.7	PASS	15.0	14.6	PASS	14.4	14.0	PASS	14.6	14.0	PASS	14.3	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/3/2018	15.0	14.6	PASS	14.3	13.8	PASS	14.7	14.2	PASS	14.3	14.0	PASS	14.6	14.0	PASS	14.3	14.0	PASS	15.2	14.9	PASS	14.4	13.9	PASS
12/4/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.6	14.1	PASS	14.3	14.0	PASS	14.6	14.0	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.3	13.8	PASS
12/5/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.9	14.4	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/6/2018	15.1	14.6	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.3	14.0	PASS	14.9	14.4	PASS	14.3	14.0	PASS	15.0	14.7	PASS	14.3	13.8	PASS
12/7/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.7	14.2	PASS	14.3	14.0	PASS	15.0	14.5	PASS	14.3	13.9	PASS	14.9	14.5	PASS	14.4	13.9	PASS
12/8/2018	15.1	14.6	PASS	14.3	13.7	PASS	15.3	15.0	PASS	14.3	13.9	PASS	14.6	14.1	PASS	14.3	13.9	PASS	15.3	15.0	PASS	14.3	13.8	PASS
12/9/2018	15.2	14.9	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	14.0	PASS	14.6	14.0	PASS	14.3	13.9	PASS	15.2	15.0	PASS	14.3	13.8	PASS
12/10/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	14.0	PASS	14.6	14.0	PASS	14.3	14.0	PASS	14.9	14.5	PASS	14.4	13.9	PASS
12/11/2018	15.0	14.6	PASS	14.3	13.7	PASS	14.7	14.1	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	14.0	PASS	14.8	14.4	PASS	14.4	13.9	PASS
12/12/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.9	14.5	PASS	14.3	13.8	PASS
12/13/2018	15.0	14.5	PASS	14.4	13.9	PASS	14.8	14.3	PASS	14.3	14.0	PASS	15.0	14.6	PASS	14.3	13.9	PASS	14.8	14.5	PASS	14.4	13.9	PASS
12/14/2018	15.1	14.6	PASS	14.4	13.9	PASS	14.7	14.2	PASS	14.5	14.1	PASS	15.2	14.8	PASS	14.3	13.9	PASS	14.9	14.5	PASS	14.4	13.9	PASS
12/15/2018	15.1	14.6	PASS	14.2	13.6	PASS	14.8	14.2	PASS	14.3	13.9	PASS	14.7	14.2	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/16/2018	15.0	14.5	PASS	14.2	13.7	PASS	14.9	14.4	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.4	13.9	PASS
12/17/2018	15.0	14.5	PASS	14.2	13.6	PASS	14.8	14.3	PASS	14.3	13.8	PASS	14.7	14.1	PASS	14.2	13.8	PASS	14.9	14.5	PASS	14.4	13.9	PASS
12/18/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.7	14.1	PASS	14.3	13.9	PASS	14.9	14.4	PASS	14.3	13.8	PASS	14.9	14.5	PASS	14.4	13.9	PASS
12/19/2018	14.9	14.4	PASS	14.4	13.8	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	13.9	PASS	15.2	14.9	PASS	14.4	13.9	PASS
12/20/2018	15.1	14.6	PASS	14.3	13.8	PASS	14.8	14.2	PASS	14.3	13.9	PASS	14.7	14.2	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/21/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.6	14.0	PASS	14.5	14.1	PASS	15.1	14.7	PASS	14.4	13.9	PASS
12/22/2018	15.2	14.8	PASS	14.4	13.9	PASS	14.8	14.3	PASS	14.3	13.8	PASS	14.6	14.0	PASS	14.3	13.9	PASS	15.2	14.9	PASS	14.3	13.9	PASS
12/23/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.9	14.4	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/24/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.6	14.0	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.4	13.9	PASS
12/25/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.8	14.2	PASS	14.3	13.9	PASS	14.6	14.0	PASS	14.3	13.9	PASS	14.8	14.3	PASS	14.3	13.8	PASS
12/26/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.7	14.1	PASS	14.3	13.9	PASS	14.6	14.0	PASS	14.4	14.0	PASS	15.2	14.9	PASS	14.4	13.8	PASS
12/27/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.9	14.4	PASS	14.3	13.8	PASS	14.8	14.3	PASS	14.3	13.9	PASS	14.9	14.5	PASS	14.3	13.9	PASS
12/28/2018	14.9	14.5	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.3	13.9	PASS	14.9	14.4	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.4	13.9	PASS
12/29/2018	15.0	14.6	PASS	14.2	13.6	PASS	15.0	14.5	PASS	14.3	13.9	PASS	14.8	14.2	PASS	14.3	13.9	PASS	14.7	14.3	PASS	14.3	13.9	PASS
12/30/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.9	14.3	PASS	14.3	13.8	PASS	14.6	13.9	PASS	14.3	13.8	PASS	14.8	14.4	PASS	14.3	13.8	PASS
12/31/2018	15.0	14.5	PASS	14.4	13.8	PASS	14.9	14.4	PASS	14.3	13.8	PASS	14.7	14.2	PASS	14.3	13.9	PASS	14.8	14.4	PASS	14.3	13.8	PASS

Integrity test performed every 24-hours



Chlorination								
Date	Treated Water	Raw Water	RW Tank	Membrane Feed Water	Added pre-FW Tanks	Treated Water	Post FW Tanks	Added Post FW Tank
	Volume	Free Cl ₂	OCL	Free Cl ₂	OCL	Free Cl ₂	Free Cl ₂	OCL
	MG	mg/l	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Daily	Average	Average	Average	Average	Average	Average	Average
	FIT-4000-1	AIT-1035-2	Added	AIT-1035-4	Added	AIT-4030-1	AIT-4050-1	Added
12/1/2018	6.2	0.46	0.00	0.32	0.63	1.10	1.01	0.00
12/2/2018	6.4	0.50	0.00	0.37	0.59	1.09	1.01	0.00
12/3/2018	6.7	0.41	0.00	0.37	0.60	1.09	1.02	0.00
12/4/2018	6.0	0.37	0.00	0.33	0.65	1.08	1.00	0.00
12/5/2018	6.4	0.24	0.00	0.27	0.71	1.09	1.00	0.00
12/6/2018	6.1	0.37	0.00	0.24	0.74	1.10	1.00	0.00
12/7/2018	6.3	0.45	0.00	0.31	0.69	1.11	1.03	0.00
12/8/2018	6.5	0.51	0.00	0.35	0.66	1.10	1.02	0.00
12/9/2018	6.4	0.50	0.00	0.40	0.58	1.11	1.03	0.00
12/10/2018	6.7	0.45	0.00	0.39	0.58	1.08	1.01	0.00
12/11/2018	6.6	0.42	0.00	0.38	0.65	1.08	1.00	0.00
12/12/2018	6.6	0.38	0.00	0.35	0.68	1.09	1.01	0.00
12/13/2018	6.5	0.40	0.00	0.34	0.68	1.10	1.01	0.00
12/14/2018	6.3	0.44	0.00	0.34	0.67	1.10	1.03	0.00
12/15/2018	6.1	0.44	0.00	0.36	0.67	1.09	1.00	0.00
12/16/2018	6.4	0.45	0.00	0.36	0.65	1.11	1.01	0.00
12/17/2018	6.6	0.47	0.00	0.38	0.65	1.08	1.01	0.00
12/18/2018	6.4	0.37	0.00	0.37	0.68	1.07	0.99	0.00
12/19/2018	6.5	0.36	0.00	0.32	0.68	1.11	1.01	0.00
12/20/2018	6.5	0.38	0.00	0.32	0.66	1.09	1.02	0.00
12/21/2018	6.7	0.34	0.00	0.31	0.68	1.09	1.01	0.00
12/22/2018	6.1	0.34	0.00	0.29	0.68	1.09	1.01	0.00
12/23/2018	6.4	0.36	0.00	0.30	0.68	1.09	1.01	0.00
12/24/2018	6.6	0.36	0.00	0.30	0.69	1.10	1.01	0.00
12/25/2018	6.1	0.36	0.00	0.31	0.69	1.10	1.01	0.00
12/26/2018	6.1	0.37	0.00	0.31	0.69	1.11	1.02	0.00
12/27/2018	6.8	0.37	0.00	0.31	0.67	1.08	1.01	0.00
12/28/2018	6.6	0.38	0.00	0.32	0.67	1.09	1.01	0.00
12/29/2018	6.3	0.36	0.00	0.32	0.67	1.09	1.01	0.00
12/30/2018	6.5	0.38	0.00	0.31	0.70	1.10	1.00	0.00
12/31/2018	6.4	0.39	0.00	0.32	0.66	1.03	1.02	0.00
Avg	6.4	0.40	0.00	0.33	0.66	1.09	1.01	0.00
Min	6.0	0.24	0.00	0.24	0.58	1.03	0.99	0.00
Max	6.8	0.51	0.00	0.40	0.74	1.11	1.03	0.00



Disinfection CT														
Date	Pipeline CT				FW Tank CT						Compliance			
	Whitestone	Travel Time	Residual	CT	FW Tank 1	FW Tank 2	Plant	Contact Time	Free Cl ₂	CT	Total CT	Temp	CT	CT
	Flow	Min	RW	Achieved	Min Level	Min Level	Flow	Min	Min	Achieved	Achieved	Avg	Required	Met
	MGD	Minutes	mg/L	mg-min/L	ft	ft	MGD	Minutes	mg/L	mg-min/L	mg-min/L	°C	mg-min/L	Y/N
Entry	Calculated	AIT-1035-2	Calculated	LIT-4005-1	LIT-4005-2	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	TIT-1000	Calculated	Calculated
12/1/2018	48.6	2,573	0.46	1184	28.7	23.0	6.1	579	1.00	580.76	1,764.84	6.8	8.00	Y
12/2/2018	48.6	2,575	0.50	1292	28.6	21.3	6.2	548	1.00	549.17	1,840.93	6.7	8.00	Y
12/3/2018	45.2	2,770	0.41	1128	28.7	21.3	6.3	540	1.01	544.96	1,673.11	6.6	8.00	Y
12/4/2018	42.3	2,958	0.37	1105	28.7	23.0	5.8	612	0.99	605.54	1,710.23	6.5	8.00	Y
12/5/2018	41.5	3,016	0.24	718	28.7	23.5	6.0	592	1.00	589.19	1,306.75	6.5	8.00	Y
12/6/2018	36.3	3,448	0.37	1287	28.7	22.5	5.9	593	0.99	586.80	1,873.50	6.3	8.00	Y
12/7/2018	40.4	3,100	0.45	1382	28.7	20.7	6.1	555	1.02	563.65	1,945.99	6.2	8.00	Y
12/8/2018	51.8	2,416	0.51	1224	28.7	24.5	6.2	588	1.00	585.56	1,809.68	6.1	8.00	Y
12/9/2018	52.9	2,364	0.50	1189	28.7	21.1	6.4	530	1.01	535.54	1,724.47	6.0	8.00	Y
12/10/2018	43.7	2,861	0.45	1301	28.7	20.8	6.4	529	1.00	527.21	1,828.53	5.7	8.00	Y
12/11/2018	37.3	3,356	0.42	1414	28.7	22.5	6.2	564	0.98	553.74	1,967.80	5.5	8.00	Y
12/12/2018	34.3	3,642	0.38	1396	28.7	23.9	6.3	574	1.00	575.28	1,971.39	5.4	8.00	Y
12/13/2018	38.0	3,292	0.40	1304	28.7	23.4	6.2	572	1.00	569.16	1,873.15	5.4	8.00	Y
12/14/2018	44.6	2,807	0.44	1235	28.6	23.1	6.0	591	1.00	592.58	1,827.12	5.3	8.00	Y
12/15/2018	54.1	2,312	0.44	1017	28.6	22.3	6.0	581	0.99	574.23	1,591.32	5.3	8.00	Y
12/16/2018	51.8	2,413	0.45	1078	28.7	22.2	6.2	560	1.01	565.15	1,642.91	5.2	8.00	Y
12/17/2018	39.9	3,132	0.47	1483	28.7	22.4	6.2	561	1.00	558.33	2,041.22	5.3	8.00	Y
12/18/2018	35.0	3,570	0.37	1336	28.7	22.8	6.3	563	0.98	549.28	1,885.55	5.3	8.00	Y
12/19/2018	37.9	3,302	0.36	1183	28.7	23.7	6.2	576	0.99	569.53	1,752.21	5.3	8.00	Y
12/20/2018	40.6	3,084	0.38	1166	28.6	22.4	6.2	560	1.00	561.59	1,727.44	5.5	8.00	Y
12/21/2018	40.7	3,073	0.34	1047	28.7	24.6	6.4	573	1.00	570.20	1,617.48	5.5	8.00	Y
12/22/2018	48.9	2,559	0.34	881	28.2	20.6	6.0	558	0.98	547.67	1,428.53	5.5	8.00	Y
12/23/2018	47.6	2,626	0.36	953	28.7	22.5	6.1	571	1.00	572.70	1,525.22	5.3	8.00	Y
12/24/2018	42.7	2,930	0.36	1069	28.6	20.5	6.4	526	1.00	527.04	1,596.27	5.2	8.00	Y
12/25/2018	38.1	3,279	0.36	1190	28.7	23.5	5.6	633	1.00	634.59	1,825.09	5.2	8.00	Y
12/26/2018	33.4	3,741	0.37	1395	28.7	22.4	6.1	573	1.01	578.55	1,973.99	5.2	8.00	Y
12/27/2018	33.9	3,693	0.37	1375	28.7	22.5	6.5	540	1.00	541.43	1,916.81	5.2	8.00	Y
12/28/2018	38.1	3,280	0.38	1231	28.6	23.2	6.4	558	1.00	559.99	1,790.81	5.2	8.00	Y
12/29/2018	47.0	2,661	0.36	948	28.7	21.1	6.2	554	1.00	555.86	1,504.24	5.2	8.00	Y
12/30/2018	52.3	2,390	0.38	905	28.6	21.1	6.1	555	1.00	552.65	1,457.44	5.3	8.00	Y
12/31/2018	42.9	2,916	0.39	1,129	28.6	23.5	6.2	578	1.00	579.61	1,708.96	5.3	8.00	Y
Avg	42.9	2,972	0.40	1,179	28.6	22.4	6.2	567	1.00	566.37	1,745.26	5.6	8.00	NA
Min	33.4	2,312	0.24	718	28.2	20.5	5.6	526	0.98	527.04	1,306.75	5.2	8.00	NA
Max	54.1	3,741	0.51	1,483	28.7	24.6	6.5	633	1.02	634.59	2,041.22	6.8	8.00	NA



Notes:

Pipeline volume factor in SMMWSC to RW tank: 125,090 MG-min/day

Distribution System Monitoring

Chlorine Residual at Bacteriological Monitoring Stations (mg/L Free Cl₂)

WSSN: Date	0072 Akron		0390 Bangor Twp.			0400 Bangor Monitor Dist.			0470 Bay City							0485 Bay County				0517 Beaver Rd	0518 Beaver Twp		2180 Essexville			
	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	29	30	32		
	12/1/2018																									
12/2/2018																										
12/3/2018																										
12/4/2018	0.16	0.55	0.36	0.60	0.96																				0.88	
12/5/2018									0.67	0.28	0.53	0.73	0.24	0.85	0.29											
12/6/2018							0.88	0.86																		
12/7/2018																										
12/8/2018																										
12/9/2018																										
12/10/2018																										
12/11/2018				0.56	0.95																					
12/12/2018																										
12/13/2018									0.92	0.61	0.19	0.60	0.56	0.31	0.81	0.70					0.91				1.04	
12/14/2018																										
12/15/2018																										
12/16/2018																										
12/17/2018										0.64	0.20	0.63	0.78	0.24	0.79	0.59										
12/18/2018		0.35	0.34	0.59	0.94																				0.99	
12/19/2018																										
12/20/2018										0.66	0.21	0.47		0.33	0.58	0.41										
12/21/2018																										
12/22/2018																										
12/23/2018																										
12/24/2018																										
12/25/2018																										
12/26/2018										0.69	0.21	0.58	0.43	0.32	0.62	0.67									1.05	
12/27/2018																										
12/28/2018																										
12/29/2018																										
12/30/2018																										
12/31/2018																										
Average	0.16			0.62				0.89					0.51					0.68			0.91		0.38		0.99	
Min	0.16			0.34				0.86					0.19					0.49			0.91		0.27		0.88	
Max	0.16			0.96				0.92					0.87					0.78			0.91		0.49		1.05	



MONITORING STATION ADDRESSES

- | | | |
|----------------------------------------------|---------------------------------------------------|-------------------------------------------------|
| 1. Sample station at corner of 5758 M-25 & F | 11. Number 1 Fire Station, 1401 Center Ave | 19. Dore's M-84 Party Store, 6183 WS Saginaw Rd |
| 3. Bangor Fire Station, 3921 Wheeler | 12. Number 2 Fire Station, 1000 Fremont Ave | 20. Pump Station #13, 6000 WS Saginaw Rd |
| 4. BCDWS Admin. Bldg. 3933 Patterson Rd. | 13. Skizak's Sport Shop, 807 Salzburg Ave | 22. Duce's Char House, 432 N. Tuscola Rd |
| 5. 7-11, 3543 S. Old Kawkawlin Rd. | 14. Number 4 Fire Station, 212 S. Dean St | 24. Little Learners Daycare, 1694 Cass Ave. |
| 6. Admiral Petroleum, 314 S Euclid Ave. | 15. Number 5 Fire Station, 1209 Smith St | 26. Wieland Contracting, 2443 S Mackinaw Rd |
| 7. Sequin Lumber, 3881 Euclid Ave | 16. Bay City Hall, 301 Washington Ave | 29. Sample Station, 2515 S. 11 Mile Rd |
| 9. B's Boutique, 2981 Midland Rd | 17. Skipper Buds Marina, 1809 S Water St | 30. Sample Station, 340 W. Beaver Rd |
| 10. Little Caesars, 3475 E North Union Rd | 18. Bay Valley Animal Hospital 6015 WS Saginaw Rd | 32. Essexville City Hall, 1107 Woodside Ave |

Distribution System Monitoring																								
Chlorine Residual at Bacteriological Monitoring Stations (mg/L Free Cl ₂)																								
WSSN:	2465		2960			3565			3570		4280		4440			5330		5335		5540	7125			7134
Date	Fraser Twp.		Hampton Twp.			Kawkawlin Twp.			Kawkawlin Met.		Merritt Twp.		Monitor Twp.			City Pinconning		Pinconning Twp.		Portsmouth	Williams Twp.			Wisner
	34	35	37	38	39	40	41	42	43	45	46	48	49	52	55	58	59	61	63	65	68	69	70	72
12/1/2018																								
12/2/2018																								
12/3/2018			0.66	0.51	0.70																			
12/4/2018											0.12									0.45	0.63	0.70	0.51	0.42
12/5/2018																								
12/6/2018	0.66	0.81				0.93	0.74		0.57				0.85	0.75	0.63	0.64		0.68	0.61					
12/7/2018																								
12/8/2018																								
12/9/2018																								
12/10/2018			0.62	0.40	0.64																			
12/11/2018											0.36										0.59	0.70	0.58	
12/12/2018																								
12/13/2018								0.89	0.59				0.82	0.73	0.63	0.68								
12/14/2018																								
12/15/2018																								
12/16/2018																								
12/17/2018			0.71	0.50	0.67																			
12/18/2018																								
12/19/2018																								
12/20/2018																								
12/21/2018																								
12/22/2018																								
12/23/2018																								
12/24/2018																								
12/25/2018																								
12/26/2018			0.67																					
12/27/2018																								
12/28/2018																								
12/29/2018																								
12/30/2018																								
12/31/2018																								
Average	0.74		0.61			0.85			0.58		0.24		0.74			0.66		0.65		0.45		0.62		0.42
Min	0.66		0.40			0.74			0.57		0.12		0.63			0.64		0.61		0.45		0.51		0.42
Max	0.81		0.71			0.93			0.59		0.36		0.85			0.68		0.68		0.45		0.70		0.42



MONITORING STATION ADDRESSES

- 34. Fraser Elevated Tank, 2949 1/2 N. Huron Rd
- 35. Lloyd's Cabinet, 1947 N Huron Rd
- 37. Hampton DPW, 950 Wagner Rd.
- 38. Bay County Golf Course, 584 W Hampton Rd.
- 39. Sewer Lift Station, 902 Nebobish Rd.
- 40. Bay Co. Road Commisison, 2600 E Beaver Rd
- 41. Parish Rd. Elevated Tank, 1770 E. Parish Rd
- 42. Linwood Tile, 205 S Huron Rd

- 43. Kawkawlin Party Store, 105 Grove St
- 45. Kawkawlin Restaurant, 103 S Huron Rd
- 46. John's Bar, 1476 S Tuscola Rd
- 48. Tool Shed Bar, 12 W Munger Rd
- 49. Wilder Rd Party Store, 2951 E Wilder Rd
- 52. Monitor Twp. Elevated Tank, 1611 E. Midland Rd
- 55. Auburn Fertilizer, 4640 S 7 Mile Rd
- 58. Pinconning City Hall, 208 S Manitou St

- 59. Marathon Gas Station, 511 S Mabel St
- 61. Pinconning Meter Pit, 3005 N Huron Rd
- 63. Master Meter Pit, 2865 Pinconning Rd
- 65. Ike's Welding, 50 N Finn Rd
- 68. Williams Township Hall, 1080 W Midland Rd
- 69. Pump Station, 490 W. Salzburg & 9 Mile Rd
- 70. 11 Mile Elevated Tank, 5003 S. 11 Mile Rd
- 72. Lindy's Sales, 9051 M-25

Distribution System Bacteriological							
Water Supplier Bacteriological Analysis Report							
MICHIGAN DEPARTMENT OF PUBLIC HEALTH Bureau of Environmental Health Water Supplier Bacteriological Analysis Report				Name of Water Supply			
				Bay Area Water Treatment Plant			
				December, 2018			
COUNTY	COMMUNITY	WSSN NUMBER	DISTRIBUTION SYSTEM SAMPLES				
			avg free cl2 mg/L	NUMBER REQUIRED	NUMBER COLLECTED	NUMBER POSITIVE	NUMBER REPEAT SAMPLES
Tuscola	Akron	0072	0.16	1	1	0	0
BAY	Bangor Township	0390	0.62	10	10	0	0
BAY	Bangor-Monitor Dist.	0400	0.89	3	3	0	0
BAY	Bay City	0470	0.51	40	41	0	0
BAY	Bay County (Frankl./Monitor/Portsm.)	0485	0.68	10	10	0	0
BAY	Beaver Road Area	0517	0.91	1	1	0	0
BAY	Beaver Township	0518	0.38	2	2	0	0
BAY	Essexville	2180	0.99	4	4	0	0
BAY	Fraser Township	2465	0.74	2	2	0	0
BAY	Hampton Township	2960	0.61	10	10	0	0
BAY	Kawkawlin Township	3565	0.85	3	3	0	0
BAY	Kawkawlin Metro Dist.	3570	0.58	2	2	0	0
BAY	Merritt Township	4280	0.24	2	2	0	0
BAY	Monitor Township	4440	0.74	6	6	0	0
BAY	City of Pinconning	5330	0.66	2	2	0	0
BAY	Pinconning Township	5335	0.65	2	2	0	0
BAY	Portsmouth Township	5540	0.45	1	1	0	0
BAY	Williams Township	7125	0.62	6	6	0	0
Tuscola	Wisner	7134	0.42	1	1	0	0
Average Free Cl2 Residual of All Distribution Sites			0.61	mg/L			
1. Total distribution samples			109				
2. Total distribution samples with detectable free cl2 residual			109				
3. Total distribution samples with no detectable free cl2 residual			0				
4. Total distribution samples with no detectable free cl2 residual and HPC was <500			NA				
5. Total distribution samples with no detectable free cl2 residual and HPC was >500			NA				
6. Percent of distribution samples with no detectable free cl2 residual			0.00%				
7. Percent shown line #6 in previous monthly report			0.00%				

