

# Bay Area WTP

## Monthly Operations Report



November, 2018

Water Systems Serial Number:

0465

*Ryan Goebel*

Ryan Goebel

Operations Supervisor

Title

F1

Classification

Absent

Mark Moers

Water Superintendent

Title

F1

Classification

# Bay Area Water Treatment Plant

## Monthly Operations Report

Supply Name: Bay Area Water System  
 WSSN: 0465

Mark Moers  
 Operator-in-charge

November, 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>6.9</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>2,923</u>	Gallons	Estimated Supply:	<u>52.0</u>	days
Caustic Soda on hand:	<u>2,422</u>	Gallons	Estimated Supply:	<u>145.7</u>	days
Corrosion Inhibitor on hand:	<u>473</u>	Gallons	Estimated Supply:	<u>23.0</u>	days
Hydrofluosilicic Acid on hand:	<u>550</u>	Gallons	Estimated Supply:	<u>29.9</u>	days
Aluminum Chlorohydrate on hand:	<u>1,048</u>	Gallons	Estimated Supply:	<u>92.7</u>	days
Sulfuric Acid on hand:	<u>874</u>	Gallons	Estimated Supply:	<u>301.9</u>	days
Sodium Bisulfite on hand:	<u>1,237</u>	Gallons	Estimated Supply:	<u>145.1</u>	days
Citric Acid on hand:	<u>1,688</u>	Gallons	Estimated Supply:	<u>152.8</u>	days
Cost of All Chemicals per Million Gallons:	<u>84.68</u>	Dollars			
Estimated Electrical Cost per Million Gallons:	<u>110.87</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	
11/1/2018	1.33	5.63	6.96	0.26	0.00	0.06	6.32	3.21	3.07	6.27
11/2/2018	0.00	6.67	6.67	0.24	0.00	0.05	6.48	3.14	2.94	6.08
11/3/2018	0.00	5.20	5.20	0.23	0.00	0.07	6.04	3.07	2.90	5.97
11/4/2018	0.00	5.03	5.03	0.25	0.00	0.07	6.17	2.97	2.87	5.84
11/5/2018	0.00	5.91	5.91	0.23	0.00	0.08	6.38	3.17	2.98	6.15
11/6/2018	0.00	6.55	6.55	0.23	0.00	0.08	6.31	3.20	2.99	6.19
11/7/2018	0.00	6.48	6.48	0.23	0.00	0.08	6.10	3.02	2.81	5.83
11/8/2018	0.00	6.17	6.17	0.23	0.00	0.09	5.90	2.87	2.67	5.54
11/9/2018	0.00	5.95	5.95	0.19	0.00	0.07	5.90	2.93	2.72	5.66
11/10/2018	0.00	5.86	5.86	0.26	0.00	0.05	5.77	2.88	2.77	5.66
11/11/2018	0.00	5.78	5.78	0.25	0.00	0.06	5.91	3.02	2.87	5.89
11/12/2018	0.00	6.18	6.18	0.20	0.00	0.07	6.27	2.96	2.83	5.79
11/13/2018	0.00	6.47	6.47	0.24	0.00	0.07	5.95	3.11	3.00	6.10
11/14/2018	0.00	6.66	6.66	0.24	0.00	0.06	6.61	3.14	3.04	6.18
11/15/2018	0.00	6.77	6.77	0.23	0.00	0.05	5.72	2.79	2.68	5.47
11/16/2018	0.00	5.90	5.90	0.26	0.00	0.02	5.85	2.90	2.78	5.68
11/17/2018	0.00	5.33	5.33	0.25	0.00	0.02	6.86	3.40	3.21	6.61
11/18/2018	0.00	5.82	5.82	0.29	0.00	0.02	6.45	3.20	3.08	6.28
11/19/2018	0.00	6.71	6.71	0.24	0.00	0.03	6.43	3.23	3.05	6.28
11/20/2018	0.00	6.59	6.59	0.23	0.00	0.02	5.38	2.65	2.55	5.20
11/21/2018	0.00	6.25	6.25	0.29	0.00	0.04	6.46	3.13	3.01	6.14
11/22/2018	0.00	6.18	6.18	0.23	0.00	0.06	6.13	3.10	2.89	5.99
11/23/2018	0.00	6.18	6.18	0.24	0.00	0.06	6.19	3.03	2.95	5.98
11/24/2018	0.00	5.92	5.92	0.28	0.00	0.02	6.03	2.91	2.84	5.75
11/25/2018	0.00	5.83	5.83	0.27	0.00	0.03	5.97	2.93	2.82	5.75
11/26/2018	0.00	6.17	6.17	0.23	0.00	0.05	6.02	2.98	2.83	5.82
11/27/2018	0.00	6.28	6.28	0.26	0.00	0.05	5.96	3.00	2.80	5.81
11/28/2018	0.00	6.23	6.23	0.25	0.00	0.05	6.13	3.03	2.90	5.93
11/29/2018	0.00	6.21	6.21	0.26	0.00	0.05	6.15	3.01	2.78	5.79
11/30/2018	0.00	6.05	6.05	0.24	0.00	0.04	5.99	2.98	2.80	5.78
<b>Total</b>	1.33	182.96	184.29	7.32	0.00	1.56	183.82	90.99	86.42	177.41
<b>Avg</b>	0.04	6.10	6.14	0.24	0.00	0.05	6.13	3.03	2.88	5.91
<b>Min</b>	0.00	5.03	5.03	0.19	0.00	0.02	5.38	2.65	2.55	5.20
<b>Max</b>	1.33	6.77	6.96	0.29	0.00	0.09	6.86	3.40	3.21	6.61



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	
11/1/2018	11.45	7.96	1.07	3.52	0.07	0.57	Negative	Negative
11/2/2018	11.44	8.08	1.50	4.01	0.08	0.35	Negative	Negative
11/3/2018	11.46	8.06	4.16	9.65	0.08	0.32	Negative	Negative
11/4/2018	11.13	7.97	6.96	79.09	0.08	0.32	Negative	Negative
11/5/2018	10.91	7.97	1.83	4.79	0.08	0.47	Negative	Negative
11/6/2018	10.70	7.98	2.00	12.58	0.07	0.41	Negative	Negative
11/7/2018	10.55	7.97	2.18	5.26	0.08	0.32	Negative	Negative
11/8/2018	10.41	7.98	1.65	3.20	0.06	0.34	Negative	Negative
11/9/2018	10.35	7.95	0.95	1.87	0.09	0.51	Negative	Negative
11/10/2018	10.14	7.92	0.84	2.16	0.09	0.58	Negative	Negative
11/11/2018	9.94	7.93	1.11	6.69	0.10	0.60	Negative	Negative
11/12/2018	9.64	7.93	0.67	3.78	0.09	0.56	Negative	Negative
11/13/2018	9.31	7.93	0.46	1.08	0.09	0.54	Negative	Negative
11/14/2018	9.20	7.93	0.33	0.69	0.09	0.55	Negative	Negative
11/15/2018	9.06	7.94	0.33	0.46	0.09	0.55	Negative	Negative
11/16/2018	8.87	7.93	0.32	0.85	0.10	0.51	Negative	Negative
11/17/2018	8.66	7.94	0.27	0.43	0.10	0.46	Negative	Negative
11/18/2018	8.52	7.95	0.28	0.45	0.10	0.45	Negative	Negative
11/19/2018	8.40	7.95	0.31	0.52	0.10	0.44	Negative	Negative
11/20/2018	8.33	7.96	0.27	0.62	0.10	0.41	Negative	Negative
11/21/2018	8.15	7.95	0.30	1.93	0.10	0.41	Negative	Negative
11/22/2018	7.83	7.96	0.64	1.41	0.09	0.41	Negative	Negative
11/23/2018	7.64	7.95	0.66	1.27	0.08	0.46	Negative	Negative
11/24/2018	7.23	7.96	0.78	1.49	0.08	0.40	Negative	Negative
11/25/2018	7.12	7.95	0.46	0.79	0.07	0.43	Negative	Negative
11/26/2018	7.10	7.95	0.33	0.68	0.08	0.46	Negative	Negative
11/27/2018	7.16	7.96	0.32	0.48	0.08	0.43	Negative	Negative
11/28/2018	7.22	7.97	1.33	4.33	0.08	0.32	Negative	Negative
11/29/2018	7.04	7.96	0.52	2.43	0.08	0.38	Negative	Negative
11/30/2018	6.98	7.95	0.36	1.63	0.07	0.41	Negative	Negative
Avg	9.1	7.96	1.11	5.27	0.09	0.45	NA	NA
Min	7.0	7.92	0.27	0.43	0.06	0.32	NA	NA
Max	11.5	8.08	6.96	79.09	0.10	0.60	NA	NA





Finished Water Analysis																		
Date	Temp	pH	Phosphate	Fluoride		Free Cl <sub>2</sub>	Alkalinity (as CaCO <sub>3</sub> )		Chloride	Sulfate	Calcium (as CaCO <sub>3</sub> )	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	Total Coliform
	°C		mg/L	mg/L		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	uS/cm					
	AIT-4040-1	AIT-4050-2	AIT-4040-5	Lab		AIT-4050-1	Lab		Lab	Lab	Lab	Lab	Lab	Calculated			Lab	
11/1/2018	11.0	7.51	3.23	0.78		1.04	0	78	10	13	68	10.4	223	-0.93	0.77	0.44	Negative	Negative
11/2/2018	10.9	7.50	3.39	0.77		1.03	0	79	10	13	68	10.0	223	-0.95	0.77	0.43	Negative	Negative
11/3/2018	10.8	7.53	3.41	0.80		1.02	0	78	9	15	74	9.2	227	-0.89	0.60	0.45	Negative	Negative
11/4/2018	10.7	7.53	3.41	0.81		1.02	0	79	10	13	72	9.1	225	-0.89	0.77	0.43	Negative	Negative
11/5/2018	10.5	7.53	3.41	0.82	0.80	1.02	0	80	10	14	74	9.0	222	-0.88	0.71	0.44	Negative	Negative
11/6/2018	10.4	7.52	3.41	0.78		1.03	0	77	10	12	70	10.3	230	-0.93	0.83	0.42	Negative	Negative
11/7/2018	10.2	7.53	3.40	0.76		1.01	0	77	12	12	72	10.4	234	-0.92	1.00	0.47	Negative	Negative
11/8/2018	9.9	7.53	3.37	0.76		1.01	0	80	11	11	72	10.3	238	-0.91	1.00	0.41	Negative	Negative
11/9/2018	9.8	7.52	3.37	0.78		1.02	0	79	11	13	72	10.4	237	-0.93	0.85	0.45	Negative	Negative
11/10/2018	9.6	7.52	3.36	0.80		1.04	0	77	10	12	72	11.0	230	-0.94	0.83	0.42	Negative	Negative
11/11/2018	9.5	7.50	3.36	0.82		1.05	0	76	11	12	68	11.3	226	-0.99	0.92	0.45	Negative	Negative
11/12/2018	9.4	7.50	3.36	0.78	0.76	1.03	0	77	10	12	68	10.9	224	-0.99	0.83	0.42	Negative	Negative
11/13/2018	9.3	7.49	3.37	0.78		1.02	0	80	9	13	78	11.6	224	-0.92	0.69	0.40	Negative	Negative
11/14/2018	9.1	7.50	3.36	0.78		1.04	0	78	9	13	68	11.2	223	-0.99	0.69	0.41	Negative	Negative
11/15/2018	9.0	7.48	3.36	0.74		1.02	0	78	8	12	76	10.9	223	-0.97	0.67	0.37	Negative	Negative
11/16/2018	8.8	7.50	3.37	0.76		1.02	0	77	9	12	76	11.1	223	-0.96	0.75	0.40	Negative	Negative
11/17/2018	8.7	7.49	3.39	0.73		1.02	0	78	9	12	76	10.8	223	-0.96	0.75	0.40	Negative	Negative
11/18/2018	8.6	7.48	3.39	0.77		1.01	0	78	9	13	74	10.9	224	-0.99	0.69	0.41	Negative	Negative
11/19/2018	8.5	7.49	3.39	0.76		1.03	0	78	8	13	74	11.4	224	-0.98	0.62	0.39	Negative	Negative
11/20/2018	8.6	7.50	3.39	0.76	0.72	1.00	0	76	8	13	66	10.8	224	-1.03	0.62	0.40	Negative	Negative
11/21/2018	8.4	7.51	3.39	0.75		1.01	0	76	9	13	66	11.3	224	-1.02	0.69	0.42	Negative	Negative
11/22/2018	8.3	7.51	3.39	0.78		1.00	0	76	9	14	66	11.2	225	-1.03	0.64	0.44	Negative	Negative
11/23/2018	8.1	7.58	3.38	0.75		1.02	0	76	9	13	64	12.2	224	-0.97	0.69	0.42	Negative	Negative
11/24/2018	7.8	7.57	3.37	0.77		1.01	0	76	9	14	64	11.1	225	-1.00	0.64	0.44	Negative	Negative
11/25/2018	7.5	7.57	3.36	0.74		1.00	0	78	10	13	64	12.1	230	-0.99	0.77	0.44	Negative	Negative
11/26/2018	7.3	7.57	3.36	0.77	0.72	1.02	0	76	10	14	66	12.2	226	-0.99	0.71	0.46	Negative	Negative
11/27/2018	7.3	7.57	3.38	0.75		1.01	0	74	10	15	64	12.8	219	-1.01	0.67	0.49	Negative	Negative
11/28/2018	7.3	7.57	3.39	0.77		1.01	0	78	10	15	64	11.5	224	-0.99	0.67	0.47	Negative	Negative
11/29/2018	7.1	7.57	3.37	0.74		1.00	0	79	10	12	68	13.1	221	-0.97	0.83	0.41	Negative	Negative
11/30/2018	7.0	7.56	3.38	0.77		1.02	0	76	10	12	64	13.0	221	-1.02	0.83	0.43	Negative	Negative
Avg	9.0	7.52	3.38	0.77	0.75	1.02	0	78	10	13	70	11.1	226	-0.97	0.75	0.43	NA	NA
Min	7.0	7.48	3.23	0.73	0.72	1.00	0	74	8	11	64	9.0	219	-1.03	0.60	0.37	NA	NA
Max	11.0	7.58	3.41	0.82	0.80	1.05	0	80	12	15	78	13.1	238	-0.88	1.00	0.49	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	
11/1/2018	1.07	3.52	1.47	1.29	0.014	0.018	96	0	0.0	0.015
11/2/2018	1.50	4.01	1.17	1.15	0.014	0.014	96	0	0.0	0.015
11/3/2018	4.16	9.65	1.24	1.72	0.014	0.014	96	0	0.0	0.015
11/4/2018	6.96	79.09	1.11	3.80	0.014	0.014	96	0	0.0	0.015
11/5/2018	1.83	4.79	1.10	2.82	0.014	0.016	96	0	0.0	0.016
11/6/2018	2.00	12.58	1.07	2.05	0.014	0.015	96	0	0.0	0.016
11/7/2018	2.18	5.26	2.19	2.17	0.014	0.015	96	0	0.0	0.015
11/8/2018	1.65	3.20	2.13	1.77	0.014	0.014	96	0	0.0	0.015
11/9/2018	0.95	1.87	1.27	1.42	0.014	0.015	96	0	0.0	0.014
11/10/2018	0.84	2.16	0.70	1.04	0.014	0.014	96	0	0.0	0.014
11/11/2018	1.11	6.69	1.05	1.04	0.014	0.014	96	0	0.0	0.014
11/12/2018	0.67	3.78	1.15	0.83	0.014	0.015	96	0	0.0	0.014
11/13/2018	0.46	1.08	1.09	0.63	0.014	0.014	96	0	0.0	0.014
11/14/2018	0.33	0.69	1.02	0.49	0.014	0.014	96	0	0.0	0.014
11/15/2018	0.33	0.46	0.97	0.42	0.014	0.014	96	0	0.0	0.014
11/16/2018	0.32	0.85	1.17	0.42	0.014	0.015	96	0	0.0	0.014
11/17/2018	0.27	0.43	1.21	0.39	0.014	0.015	96	0	0.0	0.014
11/18/2018	0.28	0.45	1.24	0.38	0.014	0.015	96	0	0.0	0.014
11/19/2018	0.31	0.52	1.48	0.38	0.014	0.015	96	0	0.0	0.014
11/20/2018	0.27	0.62	1.17	0.39	0.014	0.015	96	0	0.0	0.014
11/21/2018	0.30	1.93	1.53	0.39	0.015	0.019	96	0	0.0	0.014
11/22/2018	0.64	1.41	1.05	0.42	0.014	0.015	96	0	0.0	0.014
11/23/2018	0.66	1.27	0.98	0.56	0.014	0.015	96	0	0.0	0.014
11/24/2018	0.78	1.49	1.30	0.62	0.014	0.015	96	0	0.0	0.014
11/25/2018	0.46	0.79	1.48	0.64	0.014	0.015	96	0	0.0	0.014
11/26/2018	0.33	0.68	1.68	0.49	0.014	0.014	96	0	0.0	0.014
11/27/2018	0.32	0.48	1.25	0.41	0.014	0.014	96	0	0.0	0.014
11/28/2018	1.33	4.33	1.41	0.62	0.014	0.015	96	0	0.0	0.014
11/29/2018	0.52	2.43	1.53	0.78	0.014	0.015	96	0	0.0	0.014
11/30/2018	0.36	1.63	1.19	0.55	0.014	0.015	96	0	0.0	0.014
Avg	1.11	5.27	1.28	1.00	0.014	0.015	96	0	0.0	0.014
Min	0.27	0.43	0.70	0.38	0.014	0.014	96	0	0.0	0.014
Max	6.96	79.09	2.19	3.80	0.015	0.019	96	0	0.0	0.016



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

Date	Membrane Integrity																							
	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
11/1/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.4	14.1	PASS	14.4	13.8	PASS	14.4	14.0	PASS	14.7	14.4	PASS	14.4	14.0	PASS
11/2/2018	15.1	14.7	PASS	14.3	13.8	PASS	14.7	14.2	PASS	14.4	14.1	PASS	14.7	14.1	PASS	14.4	14.1	PASS	14.7	14.4	PASS	14.5	14.1	PASS
11/3/2018	15.1	14.7	PASS	14.2	13.7	PASS	14.7	14.2	PASS	14.4	14.1	PASS	14.4	13.9	PASS	14.4	14.1	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/4/2018	14.9	14.4	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.4	14.2	PASS	15.1	14.6	PASS	14.5	14.1	PASS	14.8	14.5	PASS	14.3	13.9	PASS
11/5/2018	14.9	14.4	PASS	14.5	14.0	PASS	14.9	14.5	PASS	14.4	14.2	PASS	14.8	14.3	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.4	13.9	PASS
11/6/2018	14.8	14.4	PASS	14.5	14.0	PASS	14.8	14.3	PASS	14.4	14.1	PASS	15.5	15.2	PASS	14.4	14.1	PASS	14.7	14.4	PASS	14.3	13.8	PASS
11/7/2018	15.0	14.6	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.4	14.1	PASS	14.5	13.9	PASS	14.4	14.0	PASS	14.7	14.4	PASS	14.3	13.8	PASS
11/8/2018	15.3	14.9	PASS	14.3	13.7	PASS	14.5	14.0	PASS	14.4	14.1	PASS	15.3	15.0	PASS	14.4	14.1	PASS	14.9	14.5	PASS	14.3	13.8	PASS
11/9/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.4	14.1	PASS	14.6	14.1	PASS	14.4	14.1	PASS	14.8	14.5	PASS	14.4	13.9	PASS
11/10/2018	15.0	14.6	PASS	14.4	14.0	PASS	15.0	14.5	PASS	14.4	14.1	PASS	15.1	14.7	PASS	14.4	14.0	PASS	15.2	14.9	PASS	14.3	13.8	PASS
11/11/2018	15.0	14.6	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.4	14.1	PASS	14.7	14.2	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.3	13.9	PASS
11/12/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.9	14.4	PASS	14.4	14.1	PASS	15.2	14.8	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/13/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.9	14.4	PASS	14.5	14.2	PASS	14.5	14.0	PASS	14.4	14.0	PASS	14.7	14.4	PASS	14.3	14.1	PASS
11/14/2018	15.2	14.9	PASS	14.3	13.7	PASS	14.9	14.5	PASS	14.3	14.0	PASS	14.8	14.2	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/15/2018	15.0	14.6	PASS	14.3	13.8	PASS	14.8	14.3	PASS	14.4	14.1	PASS	15.1	14.7	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/16/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.9	14.4	PASS	14.4	14.1	PASS	14.6	14.1	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.4	13.9	PASS
11/17/2018	15.0	14.5	PASS	14.3	13.7	PASS	15.0	14.5	PASS	14.4	14.0	PASS	15.0	14.6	PASS	14.4	14.1	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/18/2018	15.1	14.7	PASS	14.3	13.8	PASS	15.0	14.5	PASS	14.5	14.1	PASS	14.6	14.1	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.4	13.9	PASS
11/19/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.7	14.2	PASS	14.4	14.0	PASS	14.6	14.1	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/20/2018	15.2	14.9	PASS	14.3	13.8	PASS	14.6	14.1	PASS	14.3	14.0	PASS	14.6	14.1	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/21/2018	15.2	14.8	PASS	14.2	13.6	PASS	14.6	14.1	PASS	14.4	14.1	PASS	15.0	14.6	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.4	13.9	PASS
11/22/2018	15.4	15.1	PASS	14.3	13.7	PASS	14.8	14.3	PASS	14.4	14.0	PASS	14.7	14.2	PASS	14.4	14.1	PASS	15.0	14.7	PASS	14.3	13.8	PASS
11/23/2018	15.0	14.5	PASS	14.3	13.8	PASS	14.8	14.4	PASS	14.5	14.1	PASS	15.1	14.7	PASS	14.4	14.0	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/24/2018	15.3	15.1	PASS	14.3	13.8	PASS	14.8	14.3	PASS	14.5	14.1	PASS	14.5	14.0	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/25/2018	15.0	14.6	PASS	14.3	13.8	PASS	15.0	14.5	PASS	14.4	14.0	PASS	14.6	14.1	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.4	13.9	PASS
11/26/2018	15.0	14.6	PASS	14.2	13.7	PASS	14.7	14.2	PASS	14.4	14.0	PASS	14.6	14.0	PASS	14.5	14.1	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/27/2018	15.1	14.7	PASS	14.3	13.7	PASS	14.9	14.4	PASS	14.5	14.1	PASS	14.9	14.4	PASS	14.4	14.1	PASS	14.8	14.4	PASS	14.4	13.9	PASS
11/28/2018	15.0	14.5	PASS	14.3	13.7	PASS	14.6	14.1	PASS	14.5	14.2	PASS	15.0	14.5	PASS	14.4	14.0	PASS	14.8	14.4	PASS	14.3	13.8	PASS
11/29/2018	15.0	14.6	PASS	14.3	13.7	PASS	15.0	14.5	PASS	14.4	14.0	PASS	15.0	14.5	PASS	14.3	14.0	PASS	14.8	14.5	PASS	14.3	13.8	PASS
11/30/2018	15.0	14.6	PASS	14.3	13.8	PASS	15.1	14.7	PASS	14.4	14.0	PASS	14.9	14.4	PASS	14.3	13.9	PASS	14.6	14.2	PASS	14.4	13.9	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 <sub>2</sub>	OCL	Free Cl <sub>2</sub>	OCL	Free Cl <sub>2</sub>	Free Cl <sub>2</sub>	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
11/1/2018	6.3	0.57	0.00	0.43	0.60	1.15	1.04	0.00
11/2/2018	6.5	0.35	0.00	0.38	0.70	1.10	1.03	0.00
11/3/2018	6.0	0.32	0.00	0.26	0.77	1.13	1.02	0.00
11/4/2018	6.2	0.32	0.00	0.21	0.80	1.13	1.02	0.00
11/5/2018	6.4	0.47	0.00	0.24	0.75	1.13	1.02	0.00
11/6/2018	6.3	0.41	0.00	0.29	0.73	1.12	1.03	0.00
11/7/2018	6.1	0.32	0.00	0.26	0.80	1.12	1.01	0.00
11/8/2018	5.9	0.34	0.00	0.23	0.84	1.13	1.01	0.00
11/9/2018	5.9	0.51	0.00	0.27	0.78	1.13	1.02	0.00
11/10/2018	5.8	0.58	0.00	0.35	0.70	1.14	1.04	0.00
11/11/2018	5.9	0.60	0.00	0.41	0.66	1.14	1.05	0.00
11/12/2018	6.3	0.56	0.00	0.43	0.64	1.11	1.03	0.00
11/13/2018	5.9	0.54	0.00	0.42	0.65	1.11	1.02	0.00
11/14/2018	6.6	0.55	0.00	0.43	0.61	1.12	1.04	0.00
11/15/2018	5.7	0.55	0.00	0.43	0.61	1.09	1.02	0.00
11/16/2018	5.9	0.51	0.00	0.43	0.63	1.11	1.02	0.00
11/17/2018	6.9	0.46	0.00	0.39	0.63	1.09	1.02	0.00
11/18/2018	6.5	0.45	0.00	0.37	0.67	1.09	1.01	0.00
11/19/2018	6.4	0.44	0.00	0.36	0.68	1.09	1.03	0.00
11/20/2018	5.4	0.41	0.00	0.34	0.69	1.09	1.00	0.00
11/21/2018	6.5	0.41	0.00	0.32	0.68	1.09	1.01	0.00
11/22/2018	6.1	0.41	0.00	0.32	0.70	1.08	1.00	0.00
11/23/2018	6.2	0.46	0.00	0.33	0.68	1.10	1.02	0.00
11/24/2018	6.0	0.40	0.00	0.34	0.70	1.08	1.01	0.00
11/25/2018	6.0	0.43	0.00	0.32	0.72	1.09	1.00	0.00
11/26/2018	6.0	0.46	0.00	0.33	0.64	1.10	1.02	0.00
11/27/2018	6.0	0.43	0.00	0.34	0.62	1.09	1.01	0.00
11/28/2018	6.1	0.32	0.00	0.31	0.67	1.08	1.01	0.00
11/29/2018	6.1	0.38	0.00	0.28	0.69	1.10	1.00	0.00
11/30/2018	6.0	0.41	0.00	0.30	0.65	1.09	1.02	0.00
Avg	6.1	0.45	0.00	0.34	0.69	1.11	1.02	0.00
Min	5.4	0.32	0.00	0.21	0.60	1.08	1.00	0.00
Max	6.9	0.60	0.00	0.43	0.84	1.15	1.05	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 <sub>2</sub>	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
11/1/2018	41.6	3,005	0.57	1702	28.7	18.7	6.3	517	1.03	533.06	2,234.87	11.4	6.00	Y
11/2/2018	41.8	2,990	0.35	1033	28.7	22.5	6.1	577	1.00	574.31	1,606.84	11.4	6.00	Y
11/3/2018	47.9	2,614	0.32	830	28.7	22.6	6.0	588	1.00	586.02	1,415.77	11.5	6.00	Y
11/4/2018	48.1	2,599	0.32	843	28.7	23.3	5.8	609	1.00	606.96	1,449.80	11.1	6.00	Y
11/5/2018	45.7	2,738	0.47	1278	28.6	23.8	6.2	584	1.01	589.61	1,867.19	10.9	6.00	Y
11/6/2018	39.7	3,153	0.41	1285	28.6	23.2	6.2	575	1.01	580.13	1,865.60	10.7	6.00	Y
11/7/2018	38.4	3,254	0.32	1037	28.7	22.7	5.8	603	1.00	600.88	1,638.26	10.5	6.00	Y
11/8/2018	37.6	3,328	0.34	1146	28.7	23.0	5.5	639	1.00	640.41	1,786.67	10.4	6.00	Y
11/9/2018	40.4	3,093	0.51	1582	28.7	24.9	5.7	650	1.01	656.18	2,237.93	10.3	6.00	Y
11/10/2018	63.3	1,976	0.58	1149	28.7	23.4	5.7	631	1.02	645.66	1,794.51	10.1	6.00	Y
11/11/2018	63.6	1,968	0.60	1179	28.7	21.1	5.9	579	1.04	604.22	1,783.59	9.9	8.00	Y
11/12/2018	50.2	2,490	0.56	1388	28.7	20.6	5.8	584	1.02	593.60	1,981.72	9.6	8.00	Y
11/13/2018	46.8	2,672	0.54	1447	28.7	19.2	6.1	537	1.01	542.33	1,988.96	9.3	8.00	Y
11/14/2018	45.5	2,751	0.55	1524	28.7	19.1	6.2	530	1.03	546.51	2,070.25	9.2	8.00	Y
11/15/2018	43.6	2,870	0.55	1580	28.6	23.7	5.5	656	1.00	653.00	2,232.68	9.1	8.00	Y
11/16/2018	42.2	2,964	0.51	1503	28.6	23.4	5.7	627	1.00	624.64	2,127.85	8.9	8.00	Y
11/17/2018	40.4	3,100	0.46	1424	28.7	21.8	6.6	524	1.02	532.29	1,956.29	8.7	8.00	Y
11/18/2018	39.7	3,149	0.45	1407	28.7	21.9	6.3	553	1.00	550.45	1,957.78	8.5	8.00	Y
11/19/2018	37.8	3,306	0.44	1446	28.6	21.6	6.3	548	1.00	549.35	1,995.81	8.4	8.00	Y
11/20/2018	36.4	3,434	0.41	1403	28.6	22.1	5.2	668	1.00	665.14	2,068.21	8.3	8.00	Y
11/21/2018	37.5	3,334	0.41	1360	28.7	20.8	6.1	552	1.00	554.00	1,914.26	8.1	8.00	Y
11/22/2018	49.2	2,544	0.41	1038	28.7	21.0	6.0	569	1.00	566.41	1,604.40	7.8	8.00	Y
11/23/2018	50.3	2,484	0.46	1151	28.7	19.8	6.0	555	1.00	556.61	1,707.38	7.6	8.00	Y
11/24/2018	50.6	2,473	0.40	991	28.6	22.3	5.8	607	1.00	604.38	1,595.18	7.2	8.00	Y
11/25/2018	48.0	2,607	0.43	1125	28.6	22.3	5.8	606	1.00	603.56	1,728.13	7.1	8.00	Y
11/26/2018	48.0	2,607	0.46	1192	28.7	22.8	5.8	607	1.01	612.62	1,804.89	7.1	8.00	Y
11/27/2018	43.4	2,880	0.43	1236	28.7	23.9	5.8	620	1.00	621.86	1,857.43	7.2	8.00	Y
11/28/2018	38.9	3,218	0.32	1038	28.7	22.8	5.9	595	1.00	592.42	1,630.48	7.2	8.00	Y
11/29/2018	39.7	3,151	0.38	1191	28.7	22.8	5.8	609	0.99	602.57	1,793.23	7.0	8.00	Y
11/30/2018	39.9	3,138	0.41	1279	28.7	22.6	5.8	607	1.00	609.18	1,888.52	7.0	8.00	Y
Avg	44.5	2,863	0.45	1,260	28.7	22.1	5.9	590	1.01	593.28	1,852.82	9.1	7.33	NA
Min	36.4	1,968	0.32	830	28.6	18.7	5.2	517	0.99	532.29	1,415.77	7.0	6.00	NA
Max	63.6	3,434	0.60	1,702	28.7	24.9	6.6	668	1.04	665.14	2,237.93	11.5	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 Cl<sub>2</sub>)**

WSSN:	0072		0390				0400			0470							0485					0517	0518		2180
	Akron		Bangor Twp.				Bangor Monitor Dist.			Bay City							Bay County					Beaver Rd	Beaver Twp		Essexville
Date	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	29	30	32	
11/1/2018																									
11/2/2018																									
11/3/2018																									
11/4/2018																									
11/5/2018									0.35	0.13	0.35	0.51	0.16	0.80	0.44										
11/6/2018		0.38	0.25	0.47	0.92											0.80	0.74	0.84	0.55	0.43				0.88	
11/7/2018																									
11/8/2018						0.85	0.90		0.53	0.13	0.30	0.58	0.10	0.44	0.25										
11/9/2018																									
11/10/2018																									
11/11/2018																									
11/12/2018																									
11/13/2018		0.31	0.29													0.86	0.74	0.92	0.62	0.33			0.16		
11/14/2018									0.57	0.15	0.36	0.66	0.13	0.83	0.35									0.85	
11/15/2018																					0.87				
11/16/2018																									
11/17/2018																									
11/18/2018																									
11/19/2018																									
11/20/2018		0.69	0.44	0.48	0.97			0.86														0.11			
11/21/2018									0.64	0.13	0.48	0.70	0.20	0.62	0.20									0.89	
11/22/2018																									
11/23/2018																									
11/24/2018																									
11/25/2018																									
11/26/2018									0.59	0.25	0.44	0.46	0.23	0.80	0.47										
11/27/2018																								0.85	
11/28/2018	0.11																								
11/29/2018									0.49	0.10	0.57	0.46	0.16	0.79	0.41										
11/30/2018																									
Average	0.11		0.52				0.87			0.41							0.68					0.87	0.14		0.87
Min	0.11		0.25				0.85			0.10							0.33					0.87	0.11		0.85
Max	0.11		0.97				0.90			0.83							0.92					0.87	0.16		0.89



**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 <sub>2</sub> )																								
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.		
	34	35	37	38	39	40	41	42	43	45	46	48	49	52	55	58	59	61	63	65	68	69	70	72
11/1/2018																								
11/2/2018																								
11/3/2018																								
11/4/2018																								
11/5/2018			0.36	0.60	0.22																			
11/6/2018										0.43									0.44		0.59	0.65	0.43	0.36
11/7/2018																								
11/8/2018	0.64	0.75				0.93	0.70		0.49				0.87	0.66	0.61	0.54		0.61	0.59					
11/9/2018																								
11/10/2018																								
11/11/2018																								
11/12/2018			0.43	0.32	0.50																			
11/13/2018																					0.31	0.55	0.27	
11/14/2018																								
11/15/2018								0.94	0.54								0.61							
11/16/2018																								
11/17/2018																								
11/18/2018																								
11/19/2018			0.56	0.76	0.59																			
11/20/2018										0.41			0.80	0.61	0.67									
11/21/2018																								
11/22/2018																								
11/23/2018																								
11/24/2018																								
11/25/2018																								
11/26/2018																								
11/27/2018																								
11/28/2018			0.52																					
11/29/2018																								
11/30/2018																								
Average		0.70			0.49			0.86		0.52		0.42			0.70		0.58		0.60		0.44		0.47	0.36
Min		0.64			0.22			0.70		0.49		0.41			0.61		0.54		0.59		0.44		0.27	0.36
Max		0.75			0.76			0.94		0.54		0.43			0.87		0.61		0.61		0.44		0.65	0.36



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**

Name of Water Supply

**Bay Area Water Treatment Plant**

MICHIGAN DEPARTMENT OF PUBLIC HEALTH

Bureau of Environmental Health

Water Supplier Bacteriological Analysis Report

November, 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	0.11	1	1	0	0
BAY	Bangor Township	0390	0.52	10	10	0	0
BAY	Bangor-Monitor Dist.	0400	0.87	3	3	0	0
BAY	Bay City	0470	0.41	40	42	0	0
BAY	Bay County (Frankl./Monitor/Portsm.)	0485	0.68	10	10	0	0
BAY	Beaver Road Area	0517	0.87	1	1	0	0
BAY	Beaver Township	0518	0.14	2	2	0	0
BAY	Essexville	2180	0.87	4	4	0	0
BAY	Fraser Township	2465	0.70	2	2	0	0
BAY	Hampton Township	2960	0.49	10	10	0	0
BAY	Kawkawlin Township	3565	0.86	3	3	0	0
BAY	Kawkawlin Metro Dist.	3570	0.52	2	2	0	0
BAY	Merritt Township	4280	0.42	2	2	0	0
BAY	Monitor Township	4440	0.70	6	6	0	0
BAY	City of Pinconning	5330	0.58	2	2	0	0
BAY	Pinconning Township	5335	0.60	2	2	0	0
BAY	Portsmouth Township	5540	0.44	1	1	0	0
BAY	Williams Township	7125	0.47	6	6	0	0
Tuscola	Wisner	7134	0.36	1	1	0	0

Average Free Cl2 Residual of All Distribution Sites 0.56 mg/L

- |   |       |
|---|-------|
| 1. Total distribution samples   | 110   |
| 2. Total distribution samples with detectable free cl2 residual                     | 110   |
| 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% |

