

**MONTHLY OPERATION REPORT OF
THE CITY OF BENTON HARBOR WATER TREATMENT PLANT**

SUPPLY NAME:

CITY OF BENTON HARBOR

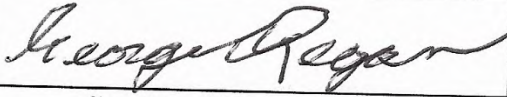
WSSN:600

Operator-in-Charge

George Regan
F1-S2

Month/Year

January 2021



Signature of Operator-in-Charge

F1-S2

Water Plant Classification

Berrien

County

Treatment Rate and Filter Data

Maximum Treatment Rate:	1.0925	Million Gallons per Day
Rated Plant Capacity:	12	Million Gallons per Day
Average Filter Run:	180.25	Hours
Average Head Loss:	NA	Feet
Average Filtration Rate:	0.85	Gallons Per Square Feet per Minute
Maximum Filtration Rate:	1.89	Gallons Per Square Feet per Minute
Average Wash Water Use:	0.71%	Percent of Treated Water

Chemical Data

Chlorine on hand:	74740	lb.	Est. supply:	308	days
Primary Coagulant (Alum (Al3+)) on hand:	59573	lb.	Est. supply:	279	days
Cost of All Chemicals per Million Gallons:	\$64.51	dollars			
Total Power Cost per Million Gallons:		dollars			

Remarks

Number of filter confluence samples > 0.3 NTU:
 Number of filter confluence samples collected:
 Percent of filter confluence samples > 0.3 NTU:
 Number of filter confluence samples > 1 NTU

	North Filter	South Filter
	0	0
	85	85
	0%	0%
	0	0

Did any individual filter exceed:

- 1.0 NTU in two consecutive measurements taken 15 minutes apart? NO
 If yes, attach specific filter(s) information and indicate required follow-up status.
- 0.5 NTU in two consecutive measurements taken 15 minutes apart after 4 hours of operation? NO
 If yes, attach specific filter(s) information and indicate required follow-up status.
- 1.0 NTU in two consecutive measurements taken 15 minutes apart for 3 consecutive months? NO
 If yes, attach specific filter(s) information and indicate required follow-up status.
- 2.0 NTU in two consecutive measurements taken 15 minutes apart for 2 consecutive months? NO
 If yes, attach specific filter(s) information and indicate required follow-up status.
- Was continuous (every 15 minutes) filter monitoring equipment off-line during the month? NO
 If yes, indicate date(s), duration, and individual filter grab sampling frequency on a separate sheet.
- Did POE disinfectant residual fall below 0.2 ppm during the month? NO
 If yes, indicate date(s) and duration on a separate sheet.
- Was minimum C*T credit achieved for the entire month? YES
 If no, indicate on a separate sheet the date(s) not achieved.
- Was continuous POE chlorine residual monitoring equipment off-line during the month? NO
 If yes, indicate date(s) and duration on a separate sheet.

Distribution	Total	24.531959	Avg	0.8158492	Max	1.243107	Min	0.673007
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George Regan is OIC for final data review only.
 Fluoride chemical feed system was off-line from December 18, 2020 to January 24, 2021 due to issues with the transfer pump.
 No Plant Tap ortho-phosphorus value was recorded on the bench sheet for January 17, 2021.

COAGULATION PARAMETERS

D	MIL.	Dry	ALUM as Al3+	TURBIDITY UNITS			#	FILTERED NORTH		#	FILTERED SOUTH		2 Hour Compliance Periods		
	GAL.			RAW	Avg.	Max.		Applied	Avg.		Max.	Avg.	Max.	Avg.	Max.
A	TREAT.	Al2(SO3)4	mg/l	Avg.	Max.	Avg.	ample	Avg.	Max.	Samples	Avg.	Max.	Periods	Periods	Periods
T		Pounds													
E		Add												>.30NTU	>.30NTU
														North	South
1	0.8300	262.00	1.66	4.20	4.70	1.30	3	0.08	0.09	2	0.08	0.09	4	0	0
2	0.9125	262.00	1.51	6.10	9.50	0.87	3	0.07	0.10	3	0.07	0.08	6	0	0
3	0.8125	249.00	1.61	5.90	8.80	1.00	3	0.08	0.08	3	0.07	0.08	6	0	0
4	0.9025	278.00	1.62	4.10	6.30	1.54	3	0.08	0.10	3	0.10	0.11	6	0	0
5	0.8525	274.00	1.69	4.50	7.70	1.10	3	0.09	0.10	3	0.09	0.09	6	0	0
6	0.7750	225.00	1.86	2.70	3.40	0.99	3	0.08	0.09	3	0.09	0.10	6	0	0
7	0.9550	314.00	1.73	3.40	6.00	0.85	3	0.07	0.08	3	0.08	0.08	6	0	0
8	0.7475	245.00	1.72	3.00	5.00	1.00	3	0.08	0.09	3	0.08	0.09	6	0	0
9	1.0150	323.00	1.67	3.30	3.60	1.20	3	0.07	0.07	3	0.07	0.07	6	0	0
10	0.7400	243.00	1.73	3.50	4.40	1.10	3	0.08	0.08	2	0.09	0.09	4	0	0
11	1.0800	338.00	1.65	4.00	6.60	1.20	3	0.08	0.09	3	0.07	0.08	6	0	0
12	1.0850	349.00	1.69	4.00	6.30	0.97	3	0.08	0.08	3	0.08	0.08	6	0	0
13	1.0925	347.00	1.67	4.20	7.90	1.20	3	0.08	0.08	3	0.08	0.09	6	0	0
14	0.9300	302.00	1.71	2.30	3.30	1.00	3	0.07	0.08	3	0.09	0.10	6	0	0
15	0.7275	240.00	1.74	2.90	5.60	1.10	3	0.08	0.11	3	0.09	0.11	6	0	0
16	0.7700	231.00	1.58	2.40	2.80	0.85	3	0.08	0.08	2	0.08	0.08	4	0	0
17	0.9050	284.00	1.65	2.90	3.40	0.95	3	0.08	0.08	3	0.09	0.11	6	0	0
18	0.8675	291.00	1.76	2.80	5.30	0.82	3	0.08	0.08	3	0.08	0.09	6	0	0
19	0.7700	256.00	1.75	2.50	2.90	0.76	3	0.08	0.09	2	0.08	0.09	4	0	0
20	0.8400	262.00	1.64	3.70	5.00	0.76	3	0.09	0.10	2	0.11	0.12	4	0	0
21	0.8175	249.00	1.60	4.00	4.00	1.00	3	0.08	0.08	2	0.08	0.09	4	0	0
22	0.7900	234.00	1.56	4.90	6.70	1.10	3	0.07	0.07	2	0.08	0.08	4	0	0
23	0.7350	216.00	1.55	6.00	6.20	1.10	3	0.08	0.10	3	0.09	0.11	6	0	0
24	0.7900	246.00	1.64	3.40	5.20	1.40	3	0.08	0.09	3	0.09	0.10	6	0	0
25	0.8850	275.00	1.63	3.60	7.20	0.88	3	0.09	0.10	3	0.08	0.09	6	0	0
26	0.7200	210.00	1.63	4.30	5.60	0.96	3	0.09	0.10	3	0.09	0.12	6	0	0
27	0.8300	273.00	1.73	4.90	9.10	1.00	3	0.08	0.08	3	0.07	0.08	6	0	0
28	0.7800	235.00	1.59	4.90	5.90	0.99	3	0.09	0.09	2	0.07	0.07	4	0	0
29	0.7850	252.00	1.69	5.10	5.90	1.80	3	0.09	0.10	3	0.10	0.12	6	0	0
30	0.7825	228.00	1.53	4.00	5.90	1.30	3	0.08	0.09	3	0.09	0.12	6	0	0
31	0.9300	297.00	1.68	3.30	4.50	1.30	3	0.08	0.09	3	0.08	0.09	6	0	0
Total	26.4550	8290.00					93			85			170	0	0
Avg.	0.8534	267.42	1.66	3.90	5.64	1.08		0.08	0.09		0.08	0.09	Total	Total	Total
Max	1.0925	349.00	1.86	6.10	9.50	1.80		0.09	0.11		0.11	0.12	6	0	0
Min.	0.7200	210.00	1.51	2.30	2.80	0.76		0.07	0.07		0.07	0.07			

CHEMICAL ANALYSES

D	pH		Total Hardness as CaCO3 mg/l		Total Alkalinity as CaCO3 mg/l		Non-Carb. Hardness as CaCO3 mg/l		Calcium as Ca++ mg/l		Magnesium as Mg++ mg/l		Chloride as Cl- mg/l	
	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap	Raw	Tap
A	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.
1	8.0	7.9	184	170	153	134	31	36	59	51	9	10		
2	8.1	7.9	178	170	130	126	48	44	43	42	17	16		
3	8.1	8.1	196	178	127	129	69	49	51	45	17	16	21.5	26.5
4	8.0	8.0	218	179	165	132	53	47	52	43	21	17	19.5	24.0
5	8.1	7.9	194	188	143	135	51	53	49	46	17	17	20.5	25.0
6	8.0	8.0	196	192	137	132	59	60	46	47	19	18	20.0	24.5
7	8.1	7.9	196	182	145	129	51	53	46	43	19	18	22.5	25.5
8	8.2	7.9	194	186	137	132	57	54	46	45	19	18		
9	8.1	7.8	152	156	123	136	29	20	45	49	10	8	21.0	25.5
10	8.1	7.9	172	166	143	133	29	33	50	49	12	11		
11	8.2	8.0	198	176	152	126	46	50	41	45	23	16		
12	8.0	7.8	178	192	121	130	57	62	41	46	18	18	19.0	23.5
13	8.0	7.8	192	178	132	122	60	56	46	43	19	17		
14	8.0	8.0	184	174	131	123	53	51	44	42	18	17		
15	8.1	7.9	182	188	127	125	55	63	41	44	19	19	18.0	22.5
16	8.1	8.0	164	156	134	132	30	24	53	48	8	8		
17	8.0	7.9	152	150	131	123	21	27	47	49	8	7	21.5	23.0
18	8.0	7.9	152	150	132	116	20	34	48	51	8	5		
19	8.1	8.0	148	152	119	122	29	30	46	47	8	8		
20	8.2	7.8	142	146	115	117	27	29	47	49	6	6		
21	8.0	8.0	146	144	111	109	35	35	42	42	10	9		
22	8.0	7.8	146	142	105	103	41	39	43	42	9	9		
23	8.1	7.9	168	156	119	98	49	58	43	39	15	15		
24	8.1	8.1	182	178	127	121	55	57	43	40	18	19		
25	8.0	8.0	154	152	86	84	68	68	46	45	10	10	23.0	26.0
26	8.0	7.9	182	172	132	122	50	50	46	45	17	15	19.0	24.0
27	8.0	7.8	176	172	123	120	53	52	42	41	17	17	19.0	24.0
28	8.2	8.2	156	152	125	118	31	34	43	46	12	9		
29	8.1	8.1	150	148	127	122	23	26	43	42	10	10		
30	8.0	8.0	186	176	131	119	55	57	43	42	19	17		
31	8.0	7.9	178	176	128	119	50	57	41	40	18	18	18.5	23.5
Avg.	8.1	7.9	173.9	167.4	129.4	122.3	44.5	45.0	45.8	44.9	14.4	13.3	20.4	24.5
Max	8.2	8.2	218.0	192.0	165.0	136.0	69.0	68.0	59.0	51.0	23.0	19.0	23.0	26.5
Min.	8.0	7.8	142.0	142.0	86.0	84.0	20.0	20.0	41.0	39.0	6.0	5.0	18.0	22.5

MONTH/YEAR

January 2021

FLUORIDATION AND CHLORINATION

D A T E	Fluoride Applied as Fmg/l	Fluoride Analysis mg/l			Chlorine Application And Chlorine Residual in mg/L										
		Raw	Tap	Dist.	INTAKE		Pre Treat Raw Line		FILTERED		Total NaOCl Use		TAP		
					PPD	Free mg/l	PPD	Free mg/l	PPD	Free mg/l	PPD	Free mg/l	Demand mg/L	Free mg/l	Total mg/l
1		0.31	0.48		0	0.00	180	3.24	30	0.54	210	4.13	1.69	2.30	2.44
2		0.29	0.45		0	0.00	197	3.22	32	0.52	229	3.68	1.83	1.69	1.85
3		0.36	0.44		0	0.00	164	3.01	23	0.42	187	3.76	1.77	1.84	1.99
4		0.34	0.38		0	0.00	182	3.01	47	0.78	229	3.75	0.64	2.94	3.11
5		0.29	0.41		0	0.00	167	2.92	17	0.30	184	3.45	1.41	1.88	2.04
6		0.28	0.39		0	0.00	161	3.10	33	0.64	194	3.69	1.66	1.88	2.03
7		0.34	0.49		0	0.00	186	2.91	28	0.44	214	3.25	1.33	1.76	1.92
8		0.34	0.44		0	0.00	146	2.92	73	1.46	219	4.70	2.37	2.18	2.33
9		0.36	0.52		0	0.00	195	2.87	26	0.38	221	4.41	2.46	1.74	1.95
10		0.39	0.51		0	0.00	150	3.03	25	0.50	175	3.76	1.72	1.81	2.04
11		0.26	0.46		0	0.00	214	2.96	32	0.44	246	2.95	1.14	1.68	1.81
12		0.29	0.38	0.44	0	0.00	205	2.82	68	0.94	273	4.05	1.61	2.27	2.44
13		0.22	0.42		0	0.00	215	2.94	37	0.51	252	3.50	1.51	1.84	1.99
14		0.30	0.44		0	0.00	177	2.84	29	0.47	206	3.67	1.54	1.97	2.13
15		0.33	0.42		0	0.00	138	2.83	21	0.43	159	3.39	1.48	1.76	1.91
16		0.31	0.42		0	0.00	149	2.89	19	0.37	168	3.73	2.10	1.43	1.63
17		0.33	0.55		0	0.00	180	2.97	16	0.26	196	3.35	1.64	1.44	1.71
18		0.25	0.45		0	0.00	177	3.05	9	0.15	186	3.88	2.15	1.50	1.73
19		0.33	0.49		0	0.00	154	2.99	7	0.14	161	3.10	1.49	1.46	1.61
20		0.38	0.49		0	0.00	167	2.97	20	0.36	187	3.55	1.71	1.70	1.84
21		0.41	0.46		0	0.00	163	2.98	33	0.60	196	3.92	1.74	1.98	2.18
22		0.37	0.52		0	0.00	155	2.93	28	0.53	183	3.79	1.62	2.00	2.17
23		0.27	0.39		0	0.00	155	3.15	32	0.65	187	4.14	2.09	1.90	2.05
24	0.78	0.32	0.48		0	0.00	158	2.99	26	0.49	184	3.21	1.17	1.88	2.04
25	0.68	0.24	0.55		0	0.00	181	3.05	34	0.57	215	3.91	1.59	2.09	2.32
26	0.56	0.30	0.48		0	0.00	146	3.03	89	1.85	235	5.21	1.84	3.20	3.37
27	0.53	0.28	0.50		0	0.00	156	2.81	23	0.41	179	2.91	0.71	2.04	2.20
28	0.62	0.40	0.63	0.43	0	0.00	148	2.83	22	0.42	170	3.20	1.42	1.57	1.78
29	0.60	0.40	0.63		0	0.00	148	2.81	12	0.23	160	2.98	1.31	1.55	1.67
30	0.81	0.28	0.50		0	0.00	153	2.92	29	0.55	182	3.89	2.01	1.73	1.88
31	0.59	0.31	0.54		0	0.00	181	2.91	37	0.59	218	3.80	1.89	1.76	1.91
Avg.	0.65	0.32	0.47	0.44	0.00	0.00	168.90	2.97	30.67	0.54	199.57	3.70	1.62	1.90	2.07
Max	0.81	0.41	0.63	0.44	0.00	0.00	215.00	3.24	89.00	1.85	273.00	5.21	2.46	3.20	3.37
Min.	0.00	0.22	0.38	0.43	0.00	0.00	138.00	2.81	7.00	0.14	159.00	2.91	0.64	1.43	1.61

MONTH/YEAR

January 2021

BACTERIOLOGICAL AND PHYSICAL PARAMETERS

D A T E	PLANT TAP		Standard Plate Count		Raw	Tap
	No. of Samples	Colilert P/A	Raw	Tap	TEMP. 'C	TEMP. 'C
1	1	A	71	0	4.0	6.0
2	1	A	25	0	3.8	4.5
3	1	A	72	0	3.7	4.5
4	1	A	27	0	3.5	4.5
5	1	A	33	0	3.7	4.5
6	1	A	41	0	3.7	4.5
7	1	A	23	0	3.7	4.5
8	1	A	38	0	3.7	4.5
9	1	A	19	0	5.0	6.0
10	1	A	41	0	4.0	5.0
11	1	A	27	0	3.8	4.5
12	1	A	32	0	3.7	4.5
13	1	A	34	0	3.2	4.5
14	1	A	19	0	3.7	4.5
15	1	A	49	0	3.7	4.5
16	1	A	21	0	4.0	5.0
17	1	A	19	0	4.0	5.0
18	1	A	50	0	4.0	5.5
19	1	A	19	0	4.0	5.0
20	1	A	36	0	4.0	5.5
21	1	A	49	1	3.0	5.0
22	1	A	21	0	3.0	5.0
23	1	A	28	0	2.8	4.0
24	1	A	47	0	3.0	4.0
25	1	A	16	2	3.0	5.0
26	1	A	29	0	2.5	4.0
27	1	A	27	0	2.8	3.5
28	1	A	26	1	2.5	4.0
29	1	A	30	0	3.0	4.0
30	1	A	23	0	2.3	3.5
31	1	A	27	0	2.2	3.0
AVG.	1	A	32	0	3.4	4.5
Max			72	2	5.0	6.0
Min			16	0	2.2	3.0

MONTH/YEAR

January 2021

Distrubution Flow and Corrosion Treatment

D A T E	Ortho P System					Distrubution flow and Corrosion Treatment			
	City Hall	Wolfs	Bait Shed	Sunny Spot	B&Z	High Lift		PO4	Ortho P
	Ortho P	Ortho P	Ortho P	Ortho P	Ortho P	To	Lbs PO4	Treatment	Residual
	Residual	Residual	Residual	Residual	Residual	Distribution		mg/L	mg/L
E	mg/L	mg/L	mg/L	mg/L	mg/L				
1						0.7594	78	4.06	3.08
2						0.9294	67	2.85	3.13
3						0.7429	79	4.23	3.12
4						0.9116	79	3.43	3.00
5						0.7955	83	4.13	3.04
6	3.14	3.18	2.71	2.81	2.36	0.7846	86	4.34	3.25
7						0.9844	77	3.08	3.14
8						0.6954	74	4.22	3.03
9						0.7474	84	4.45	3.09
10						0.6940	118	6.75	3.03
11						1.2431	109	3.46	3.28
12	2.96	2.87	2.92	2.41	2.59	1.0063	135	5.33	3.25
13						1.0759	82	3.02	3.19
14						0.8387	89	4.21	2.94
15						0.7010	76	4.25	2.88
16						0.6731	83	4.88	3.16
17						0.8726	77	3.48	
18						0.7159	87	4.82	3.22
19						0.7758	94	4.79	3.24
20	3.20	3.14	3.26	2.89	2.55	0.7861	89	4.45	3.21
21						0.7466	88	4.54	3.24
22						0.7204	83	4.56	3.24
23						0.6743	90	5.30	3.17
24						0.8558	71	3.29	3.11
25						0.8206	68	3.29	3.25
26						0.6730	89	5.26	3.08
27						0.9186	86	3.69	3.09
28	3.29	2.75	3.14	2.85	2.87	0.7928	89	4.43	3.14
29						0.8014	86	4.22	3.27
30						0.6981	89	5.06	3.11
31						0.8565	78	3.61	3.01
Totals						23.1535	2663.3		
AVG.	3.15	2.99	3.01	2.74	2.59	0.7469	85.9	4.25	3.13
Max	3.29	3.18	3.26	2.89	2.87	2.6026	135.4	6.75	3.28
Min	2.96	2.75	2.71	2.41	2.36	0.6730	67.1	2.85	2.88

DISTRIBUTION SYSTEM MONITORING

WSSN 0600

January 2021

Chlorine Residual at Bacteriological Monitoring Stations mg/l

	City Hall		Wolf Marine	470 W. Main	Sunny Spot		B&Z
DATE	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6	1.21		1.65	1.67	1.73		2.20
7							
8							
9							
10							
11							
12	1.56		1.71	1.13	2.20		1.36
13							
14							
15							
16							
17							
18							
19							
20	1.30		1.26	1.22	1.02		1.10
21							
22							
23							
24							
25							
26							
27							
28	1.58		1.76	1.65	2.20		1.35
29							
30							
31							

DISTRIBUTION SAMPLES -- BACTERIOLOGICAL SUMMARY

Chlorine Residuals, mg/L

Total number of routine distribution samples analyzed

Total number of positive routine distribution samples

Total number of routine distribution samples required

Total number of check samples

Total number of positive check samples

Avg.	Max.	Min.
1.54	2.20	1.02
20		
0		
10		
0		
0		