

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

SUPPLY NAME:

CITY OF BENTON HARBOR

WSSN:600

Operator-in-Charge **Catherine A. Winn**
F1-S1

Month/Year **March-21**

Catherine A. Winn 4/9/21

Signature of Operator-in-Charge

F1-S2
Water Plant Classification

Berrien
County

Treatment Rate and Filter Data

Maximum Treatment Rate:	1.3041	Million Gallons per Day
Rated Plant Capacity:	12	Million Gallons per Day
Average Filter Run:	174.50	Hours
Average Head Loss:	NA	Feet
Average Filtration Rate:	0.99	Gallons Per Square Feet per Minute
Maximum Filtration Rate:	1.85	Gallons Per Square Feet per Minute
Average Wash Water Use:	0.85%	Percent of Treated Water

Chemical Data

Chlorine on hand:	66266	lb.	Est. supply:	266	days
Primary Coagulant (Alum (Al3+)) on hand:	58778	lb.	Est. supply:	217	days
Cost of All Chemicals per Million Gallons:	\$63.37	dollars			
Total Power Cost per Million Gallons:		dollars			

Remarks

	North Filter	South Filter
Number of filter confluence samples > 0.3 NTU:	0	0
Number of filter confluence samples collected:	91	91
Percent of filter confluence samples > 0.3 NTU:	0%	0%
Number of filter confluence samples > 1 NTU	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	29.302246	Avg	0.9819423	Max	1.365944	Min	0.719086
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Remarks:
 Catherine A. Winn is OIC for final data review only.
 No plant tap ortho-phosphate analysis was recorded on the bench sheet for 3/19/2021.
 No raw water HPC result was recorded for 3/7/2021.

COAGULATION PARAMETERS

D	MIL.	Dry as Al3+	ALUM mg/l	TURBIDITY UNITS											
	GAL.			RAW	Applied	#	FILTERED NORTH		#	FILTERED SOUTH		2 Hour Compliance Periods			
A	TREAT.	Al2(SO3)4		Avg.	Max.	Avg.	Samples	Avg.	Max.	Samples	Avg.	Max.	# of	# of	# of
T		Pounds											Periods	Periods	Periods
E		Add												>.30 NTU	>.30 NTU
														North	South
1	1.0558	348.00	1.73	3.30	4.90	1.20	3	0.09	0.09	3	0.14	0.16	6	0	0
2	1.0841	346.00	1.68	3.90	9.00	1.00	3	0.09	0.10	3	0.13	0.15	6	0	0
3	1.0825	346.00	1.68	2.10	2.80	0.83	3	0.08	0.10	3	0.13	0.13	6	0	0
4	0.9225	292.00	1.67	2.00	3.50	0.96	3	0.08	0.10	3	0.11	0.13	6	0	0
5	1.0225	302.00	1.55	1.70	2.60	0.81	3	0.09	0.10	3	0.08	0.09	6	0	0
6	0.8300	267.00	1.91	1.60	1.60	1.10	3	0.09	0.10	2	0.08	0.08	4	0	0
7	0.9825	287.00	1.54	1.50	2.10	1.10	3	0.07	0.08	3	0.07	0.08	6	0	0
8	1.0700	327.00	1.61	1.60	2.80	0.90	3	0.09	0.10	3	0.09	0.10	6	0	0
9	1.0100	311.00	1.62	2.20	4.30	0.74	3	0.08	0.08	3	0.08	0.09	6	0	0
10	0.9150	263.00	1.51	1.60	2.20	1.00	3	0.09	0.10	3	0.08	0.08	6	0	0
11	0.9250	276.00	1.57	2.00	2.90	0.71	3	0.08	0.10	3	0.08	0.09	6	0	0
12	0.9450	285.00	1.59	2.90	4.90	0.69	3	0.07	0.08	3	0.09	0.10	6	0	0
13	0.9200	276.00	1.58	1.80	2.90	0.70	3	0.09	0.09	3	0.09	0.10	6	0	0
14	0.9200	276.00	1.58	1.70	2.90	0.60	3	0.08	0.08	3	0.09	0.10	6	0	0
15	0.8000	221.00	1.45	1.90	2.40	0.54	3	0.08	0.08	2	0.08	0.08	4	0	0
16	1.0775	306.00	1.49	1.10	1.50	0.54	3	0.07	0.08	3	0.08	0.09	6	0	0
17	0.9025	274.00	1.60	2.60	4.10	0.50	3	0.08	0.08	3	0.08	0.09	6	0	0
18	1.0925	329.00	1.58	1.60	2.30	0.68	3	0.08	0.09	3	0.09	0.10	6	0	0
19	0.9350	283.00	1.59	1.30	1.60	0.65	3	0.08	0.10	3	0.08	0.09	6	0	0
20	0.8975	272.00	1.59	2.70	3.80	0.67	3	0.08	0.09	3	0.07	0.07	6	0	0
21	0.7725	234.00	1.59	4.10	6.10	1.20	3	0.08	0.10	3	0.08	0.10	6	0	0
22	1.0650	307.00	1.52	2.10	2.70	0.83	3	0.08	0.09	3	0.09	0.10	6	0	0
23	0.8575	258.00	1.58	1.60	2.50	0.69	3	0.07	0.07	3	0.07	0.08	6	0	0
24	0.9900	289.00	1.54	1.80	2.30	0.67	3	0.08	0.09	3	0.08	0.09	6	0	0
25	1.1375	336.00	1.55	2.30	2.90	0.72	3	0.08	0.08	3	0.07	0.08	6	0	0
26	1.1000	320.00	1.55	2.40	3.00	0.59	3	0.08	0.10	3	0.08	0.09	6	0	0
27	1.0525	305.00	1.52	4.40	5.00	0.83	3	0.09	0.10	3	0.09	0.10	6	0	0
28	1.0400	312.00	1.58	5.60	7.00	1.20	3	0.08	0.09	3	0.09	0.10	6	0	0
29	1.0950	331.00	1.59	4.00	7.10	1.10	3	0.07	0.08	3	0.08	0.09	6	0	0
30	1.3041	416.00	1.68	10.20	14.10	1.80	3	0.07	0.08	3	0.15	0.18	6	0	0
31	1.0700	475.00	2.34	5.20	5.90	0.67	3	0.07	0.08	3	0.12	0.14	6	0	0
Total	30.8740	9470.00					93			91			182	0	0
Avg.	0.9959	305.48	1.62	2.74	3.99	0.85		0.08	0.09		0.09		Total	Total	Total
Max	1.3041	475.00	2.34	10.20	14.10	1.80		0.09	0.10		0.15	0.18	6	0	0
Min.	0.7725	221.00	1.45	1.10	1.50	0.50		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	8.1	8.0	186	182	129	120	57	62	43	42	19	18		
2	8.1	7.9	168	162	126	118	42	44	40	42	17	14	22.0	26.5
3	8.1	7.8	204	176	142	118	62	58	55	44	17	16	22.5	26.5
4	8.1	7.8	192	182	131	126	61	56	46	43	18	18		
5	8.1	8.0	156	160	132	126	24	34	47	49	9	9		
6	8.1	7.9	164	154	138	124	26	30	52	46	8	9		
7	8.1	8.1	164	162	138	127	26	35	54	51	7	9	24.0	26.0
8	8.1	8.0	188	184	122	116	66	68	43	44	19	18		
9	8.1	8.0	168	164	127	127	41	37	55	53	8	8		
10	8.2	7.8	206	188	154	129	52	59	50	47	20	17		
11	8.1	7.8	202	184	152	131	50	53	47	46	20	17	22.5	27.0
12	8.1	7.8	218	196	152	133	66	63	51	50	22	17		
13	8.1	8.0	206	188	151	137	55	51	51	49	19	16		
14	8.0	7.9	178	196	131	138	47	58	42	51	17	17	19.0	24.5
15	8.2	8.1	152	168	124	136	28	32	46	51	9	10		
16	8.2	8.1	146	152	123	129	23	23	44	45	9	10		
17	8.2	7.9	178	172	123	120	55	52	46	45	15	15		
18	8.1	7.8	178	172	127	120	51	52	42	41	17	17		
19	8.1	7.8	166	178	120	129	46	49	39	42	17	17		
20	8.0	7.9	174	164	120	117	54	47	47	43	14	14	21.5	25.0
21	8.1	7.8	196	166	146	118	50	48	46	42	19	15		
22	8.1	8.0	156	150	131	126	25	24	46	48	10	7	22.0	24.5
23	8.2	8.1	154	152	128	126	26	26	51	51	6	6		
24	8.2	8.2	164	152	141	124	23	28	51	51	9	6		
25	8.2	8.1	166	152	141	124	25	28	51	47	10	8		
26	8.3	8.1	150	152	130	128	20	24	45	46	9	9		
27	8.2	7.9	202	188	147	122	55	66	51	49	18	16	21.0	25.0
28	8.3	7.9	210	188	154	128	56	60	51	46	20	17		
29	8.3	7.9	206	192	151	134	55	58	52	47	18	18		
30	8.1	8.1	214	196	154	138	60	58	55	50	18	17		
31	8.4	8.4	164	166	143	144	21	22	54	55	7	7	24.5	25.5
Avg.	8.1	8.0	180.4	172.4	136.2	126.3	44.2	46.1	48.0	46.7	14.6	13.5	21.8	25.6
Max	8.3	8.2	218.0	196.0	154.0	138.0	66.0	68.0	55.0	53.0	22.0	18.0	24.0	27.0
Min.	8.0	7.8	146.0	150.0	120.0	116.0	20.0	23.0	39.0	41.0	6.0	6.0	19.0	24.5

MONTH/YEAR

March-21

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	0.58	0.45	0.89		0	0.00	191	2.70	27	0.38	218	2.86	0.83	1.87	2.03
2	0.49	0.34	0.77		0	0.00	200	2.75	36	0.50	236	3.38	1.26	1.96	2.12
3	0.60	0.43	0.82	0.66	0	0.00	203	2.80	33	0.46	236	3.67	1.39	2.12	2.28
4	0.49	0.30	0.81		0	0.00	182	2.95	42	0.68	224	3.73	1.48	2.09	2.25
5	0.56	0.34	0.81		0	0.00	191	2.79	43	0.63	234	3.39	1.06	2.10	2.33
6	0.57	0.34	0.77		0	0.00	154	2.77	24	0.43	178	3.35	1.19	1.91	2.16
7	0.56	0.42	0.79		0	0.00	180	2.73	27	0.41	207	3.09	1.36	1.55	1.73
8	0.49	0.32	0.72		0	0.00	207	2.89	34	0.47	241	3.29	1.37	1.77	1.92
9	0.57	0.37	0.67		0	0.00	188	2.78	24	0.35	212	3.16	1.45	1.44	1.71
10	0.56	0.34	0.75	0.67	0	0.00	184	3.00	38	0.62	222	3.87	1.94	1.78	1.93
11	0.71	0.41	0.73		0	0.00	177	2.86	27	0.44	204	2.90	0.84	1.89	2.06
12	0.53	0.34	0.78		0	0.00	191	3.02	33	0.52	224	3.67	1.93	1.59	1.74
13	0.52	0.35	0.70		0	0.00	180	2.92	31	0.50	211	2.98	0.90	1.92	2.08
14	0.70	0.27	0.72		0	0.00	190	3.08	58	0.94	248	4.15	2.47	1.53	1.68
15	0.57	0.33	0.80		0	0.00	156	2.91	23	0.43	179	3.04	1.47	1.40	1.57
16	0.61	0.33	0.70		0	0.00	204	2.83	37	0.51	241	3.46	1.10	2.09	2.36
17	0.59	0.31	0.69	0.73	0	0.00	178	2.94	38	0.63	216	4.10	1.99	1.95	2.11
18	0.61	0.34	0.72		0	0.00	194	2.65	32	0.44	226	3.22	1.01	2.04	2.21
19	0.57	0.29	0.67		0	0.00	162	2.59	72	1.15	234	4.37	1.75	2.45	2.62
20	0.70	0.29	0.73		0	0.00	153	2.54	29	0.48	182	3.12	0.71	2.24	2.41
21	0.59	0.26	0.79		0	0.00	140	2.71	30	0.58	170	3.53	1.37	1.99	2.16
22	0.78	0.40	0.90		0	0.00	196	2.75	40	0.56	236	3.20	0.94	2.06	2.26
23	0.57	0.34	0.88		0	0.00	161	2.80	37	0.64	198	3.49	1.46	1.78	2.03
24	0.58	0.33	0.84		0	0.00	184	2.77	39	0.59	223	3.61	1.36	2.00	2.25
25	0.51	0.40	0.86	0.81	0	0.00	209	2.74	39	0.51	248	3.15	1.15	1.79	2.00
26	0.52	0.37	0.90		0	0.00	204	2.77	32	0.43	236	3.49	1.52	1.75	1.97
27	0.58	0.23	0.76		0	0.00	209	2.96	44	0.62	253	3.35	1.33	1.87	2.02
28	0.46	0.24	0.79		0	0.00	208	2.99	27	0.39	235	3.82	1.88	1.79	1.94
29	0.35	0.29	0.80		0	0.00	227	3.09	39	0.53	266	3.52	1.42	1.95	2.10
30	0.48	0.23	0.72		0	0.00	268	3.07	38	0.43	306	3.34	1.47	1.72	1.87
31	0.46	0.29	0.76	0.80	0	0.00	289	4.03	46	0.64	335	5.11	3.18	1.65	1.93
Avg.	0.57	0.33	0.78	0.72	0.00	0.00	189.03	2.84	35.77	0.54	224.80	3.44	1.38	1.88	2.06
Max	0.78	0.45	0.90	0.81	0.00	0.00	268.00	3.09	72.00	1.15	306.00	4.37	2.47	2.45	2.62
Min.	0.35	0.23	0.67	0.66	0.00	0.00	140.00	2.54	23.00	0.35	170.00	2.86	0.71	1.40	1.57

MONTH/YEAR

March-21

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	49	0	2	3.0
2	1	A	86	0	2	2.5
3	1	A	86	0	2	2.5
4	1	A	88	0	2	3.0
5	1	A	85	0	3	3.5
6	1	A	46	0	2	4.0
7	1	A		0	3	4.0
8	1	A	42	0	3	3.0
9	1	A	39	0	5	5.0
10	1	A	67	0	4	3.5
11	1	A	80	1	6	3.5
12	1	A	57	1	6	5.0
13	1	A	55	0	6	5.5
14	1	A	23	4	5	6.0
15	1	A	102	1	6	7.0
16	1	A	26	5	5	6.5
17	1	A	28	0	4	5.5
18	1	A	37	1	4	5.0
19	1	A	66	0	4	5.0
20	1	A	70	0	4	4.5
21	1	A	70	9	5	5.0
22	1	A	45	2	5	6.0
23	1	A	21	1	5	7.0
24	1	A	21	0	6	6.0
25	1	A	46	1	6	6.0
26	1	A	23	0	6	8.0
27	1	A	37	0	6.5	6.0
28	1	A	92	1	7.2	6.5
29	1	A	51	0	6.7	7.0
30	1	A	45	0	7.7	7.5
31	1	A	61	0	8.5	8.0
AVG.	1	A	55	1	5	5
Max			102	9	9	8
Min			21	0	2	3

MONTH/YEAR

March-21

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
	mg/L	mg/L	mg/L	mg/L	mg/L				
1						1.1380	88	3.07	2.87
2						1.0410	67	2.54	2.83
3	2.85	2.62	2.74	2.78	2.81	0.9600	75	3.08	2.70
4						0.8956	75	3.31	2.91
5						1.0311	74	2.84	2.65
6						0.7941	76	3.76	2.88
7						1.0008	88	3.48	2.78
8						1.0936	78	2.81	2.99
9						1.0009	78	3.10	3.19
10	3.12	3.05	2.86	2.96	2.70	0.8574	79	3.65	3.28
11						1.0483	81	3.06	2.95
12						0.9107	74	3.22	3.28
13						1.0567	75	2.81	2.96
14						0.8911	73	3.24	3.11
15						0.8792	65	2.93	3.15
16						1.0410	82	3.12	3.24
17	2.74	2.86	2.55	1.51	3.03	0.7873	101	5.08	2.98
18						1.0483	102	3.85	3.25
19						0.8003	82	4.05	
20						0.8707	89	4.04	3.01
21						0.7191	91	5.01	3.12
22						1.1024	101	3.63	3.22
23						0.8475	87	4.06	3.00
24						0.9225	121	5.19	3.22
25	3.14	3.05	3.15	2.98	2.96	1.1741	126	4.25	3.22
26						1.0084	109	4.28	3.12
27						1.1280	104	3.65	2.91
28						0.9175	42	1.81	2.98
29						1.1294	125	4.38	2.93
30						1.3659	103	2.98	3.16
31	2.85	3.05	2.93	2.55	2.53	0.9794	117	4.73	3.21
Totals						30.4402	2727.4		
AVG.	2.94	2.93	2.85	2.56	2.81	0.9819	88.0	3.60	3.04
Max	3.14	3.05	3.15	2.98	3.03	1.3659	126.0	5.19	3.28
Min	2.74	2.62	2.55	1.51	2.53	0.7191	42.0	1.81	2.65

DISTRIBUTION SYSTEM MONITORING

WSSN 0600

March-21

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	1.15		1.06	0.92	0.93		1.04
4							
5							
6							
7							
8							
9							
10	1.33		1.32		1.18		1.19
11							
12							
13							
14							
15							
16							
17	1.20		1.30		1.09		0.86
18							
19							
20							
21							
22							
23							
24							
25	1.26		1.17				1.05
26							
27							
28							
29							
30							
31	1.06		1.03		0.61		0.85

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.
1.08	1.33	0.61
20		
0		
10		
0		
0		