6 July 2023

Mr. Scott Sokolowski
Remedial Project Manager
Naval Facilities Engineering Systems Command, Mid-Atlantic
9324 Virginia Avenue, Building Z-144
Norfolk, VA 23511-3095

Subject: **June 2023 Monthly Operating Report**
Full Scale Liquid-Phase Granular Activated Carbon Treatment System
Liberty New York Water, Seamans Neck Road Water Plant
NWIRP Bethpage, New York
Contract No. N40085-16-D-2288, Task Order N4008518F5125

Dear Mr. Sokolowski,

The Full Scale Liquid-Phase Granulated Activated Carbon (GAC) Treatment System is located at the Liberty New York Water (LNYW) Seamans Neck Road Water Plant in Levittown, NY. The GAC System was installed at the effluent of the potable water plant and consists of six GAC vessels operating in parallel to remove low levels of trichloroethene (TCE) from Well No. 3S and Well No. 4S. After processing through the GAC units, the water is treated with sodium hypochlorite and sodium tripolyphosphate before distribution. Startup of the GAC Treatment System occurred on 8 January 2015 by CH2MHill. KOMAN Government Solutions, LLC (KGS) began operation and maintenance (O&M) activities in March 2015.

In May 2018, production Well No. 3S was decommissioned and has been replaced with a new production well designated as Well No. 3A. Well No. 4S is normally in operation during the entire month, while well No. 3A is operated infrequently, typically during the periods of higher water demand.

On 30 January 2023, the plant was taken off-line by Liberty Utilities to support rehabilitation of the iron filtration plant. The plant remained off-line until 4 May 2023, at which time the plant resumed normal operation.

This report documents the routine operation and maintenance of the GAC System performed during the month of June 2023. **Attachment 1** presents the field logs detailing system operating data as recorded during the month. These readings include flow rate and total flows of the overall GAC System and each GAC unit, pressures across the GAC System, effluent chlorine residual and pH values, chemical usage levels of sodium hypochlorite and sodium tripolyphosphate for each chemical tank, and chemical metering pump settings and pressures.

A summary of the system operating data recorded in June 2023 is presented below in **Table 1**.

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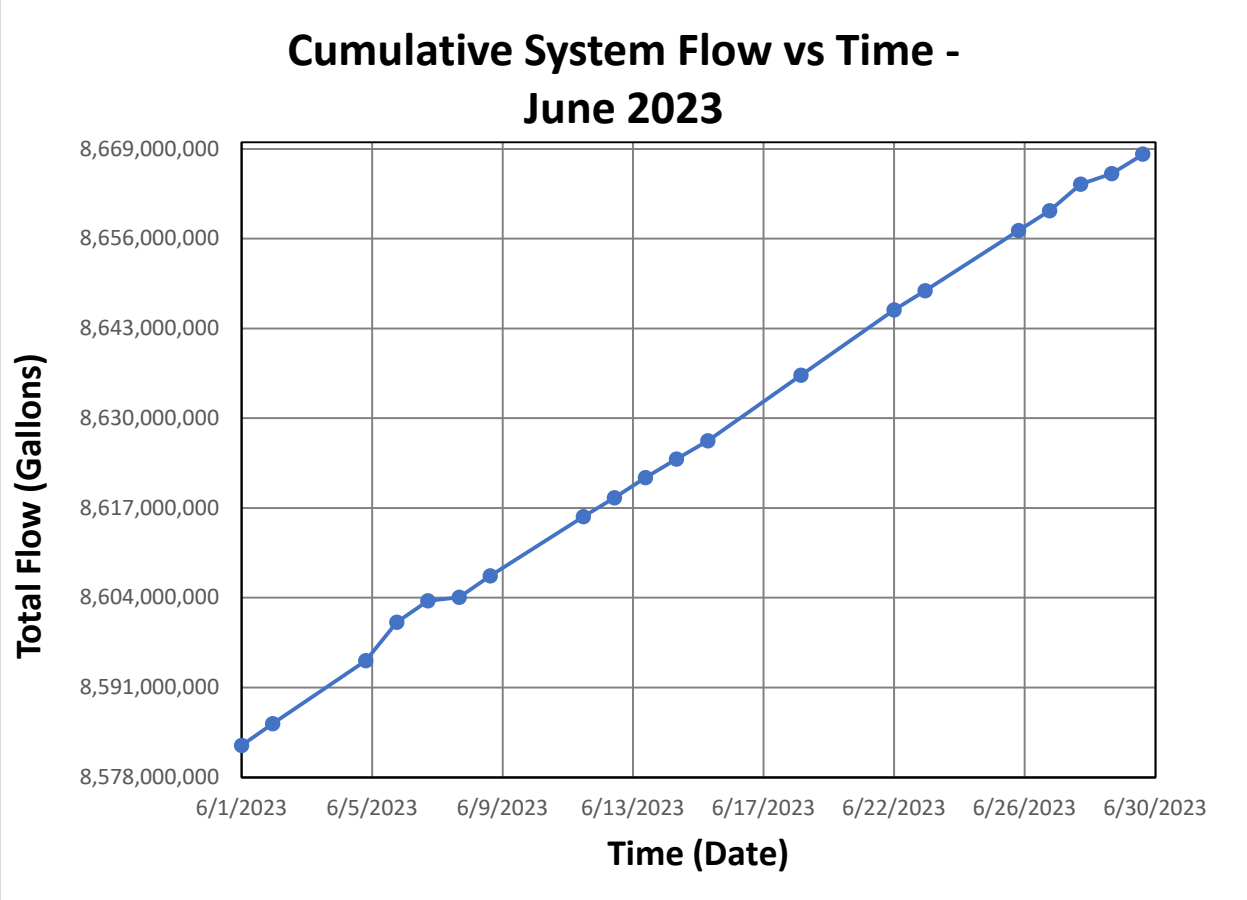
Table 1 - *System Operating Data for June 2023*

Date	Total Flow	Flow Rate	Influent Pressure	Effluent Pressure	Differential Pressure	Effluent Chlorine Residual	Effluent pH
	(Gallons)	(GPM)	(PSI)	(PSI)	(PSI)	(mg/L)[1]	(SU)[1]
6/1/2023	8,582,605,000	1,700	50	47	2.2	1.81 read 1.81 manual	6.29 read
6/2/2023	8,585,756,000	1,700	40	38	2.1	2.21 read 2.20 manual	6.54 read
6/5/2023	8,594,897,000	3,200	79	69	8.3	1.85 read 1.83 manual	6.73 read
6/6/2023	8,600,439,000	3,400	80	62	8.5	1.91 read 1.90 manual	6.69 read
6/7/2023	8,603,559,000	1,606	46	43	3.0	1.93 read 1.92 manual	6.61 read
6/8/2023	8,604,057,000	1,650	60	57	2.8	1.61 read 1.60 manual	6.55 read
6/9/2023	8,607,152,000	1,700	57	55	2.5	1.86 read 1.85 manual	6.57 read
6/12/2023	8,615,738,000	1,650	55	52	2.9	1.65 read 1.64 manual	6.63 read
6/13/2023	8,618,463,000	1,650	61	58	2.7	1.59 read 1.60 manual	6.59 read
6/14/2023	8,621,379,000	1,600	46	45	2.9	1.57 read 1.56 manual	6.55 read
6/15/2023	8,624,069,000	3,300	98	87	8.8	1.82 read 1.80 manual	6.54 read
6/16/2023	8,626,714,000	3,550	81	71	9.8	1.68 read 1.70 manual	6.65 read
6/19/2023	8,636,243,000	3,150	88	79	8.6	1.87 read 1.86 manual	6.49 read
6/22/2023	8,645,687,000	2,850	94	85	9.1	1.63 read 1.65 manual	6.60 read
6/23/2023	8,648,434,000	3,275	82	73	9.2	1.71 read 1.73 manual	6.63 read
6/26/2023	8,657,179,000	1,575	57	54	3.0	1.83 read 1.80 manual	6.71 read
6/27/2023	8,660,050,000	1,750	75	72	3.0	1.47 read 1.50 manual	6.61 read
6/28/2023	8,663,912,000	1,850	79	76	3.3	1.68 read 1.71 manual	6.59 read
6/29/2023	8,665,432,000	3,350	80	71	9.9	1.71 read 1.70 manual	6.88 read
6/30/2023	8,668,238,000	3,400	78	68	10.0	1.74 read 1.72 manual	7.31 read

(1) Effluent pH and chlorine residual readings are recorded by the in-line pH meter and chlorine analyzer. Chlorine is also checked with a manual chlorine residual meter for comparison, while manual pH is only checked occasionally. Both in-line and manual readings are presented, if collected, as noted above.

Figure 1 illustrates the volume of water treated by the GAC System since system startup, with the increment for the month of June 2023. Over 85.6 million gallons of water were treated in June 2023, bringing the total cumulative volume of water treated since startup to over 8.66 billion gallons.

Figure 1 - ***Volume of Water Treated through Full Scale GAC System (June 2023)***



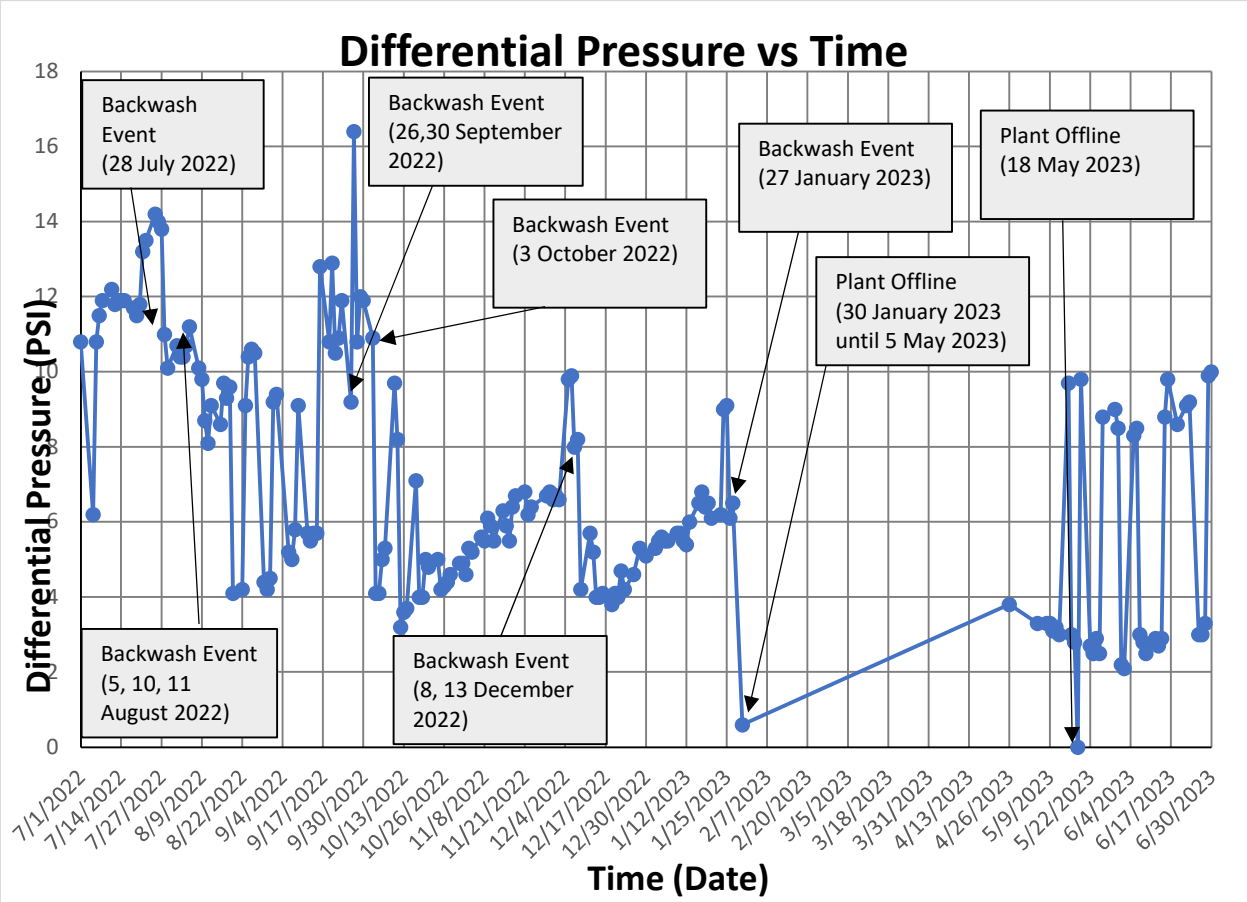
In general, differential pressure increases as the system continues to operate, and decreases after a backwashing event. The increasing trend then continues until the next backwashing event is performed. Also, lower differential pressures are observed during times of low water demand (e.g., typically over the winter months). **Figure 2,** below, depicts the pressure loss across the GAC System and subsequent backwashing dates, from July 2022 through the current reporting period.

Backwashing events during the summer and fall are performed more often because of the higher demand during that time of year. The exchange of carbon in each of the six GAC vessels with virgin coconut shell carbon was most recently completed in August 2020 and the Seamans Neck Road facility is able to operate at full capacity. In support of the 2020 Fourth Quarter microbiological (MIC) sampling conducted in December 2020, it was identified that each vessel required additional backwashing and/or flushing prior to returning to service to address a colored

water issue attributable to the remobilization of iron-impacted materials released when flow through the vessels was stopped for a mandatory 12-hour period prior to bacteria sampling, per Nassau County Department of Health (NCDH) requirements. The additional backwashing and flushing events were incorporated into the standard process for bacteria sampling. However, with the recently completed rehabilitation of the Liberty Utilities iron filtration plant, it is anticipated that additional backwashing will be limited or no longer required.

The facility is operating at full design capacity and pressure loss across the overall GAC System is monitored regularly, and it is expected that backwashing events will occur on a periodic basis as needed. In addition, it is expected that backwashing of each vessel will be conducted following each quarterly bacteria sampling event to address potential colored water issues and to ensure the timely return to service for each vessel.

Figure 2 - S*ystem Differential Pressure vs. Time*



System Maintenance

Routine maintenance of the GAC System during this reporting period consisted of:

- General monitoring of the system flow rates, totalized flows, influent and effluent pressures, differential pressure, chlorine residual, and pH readings.

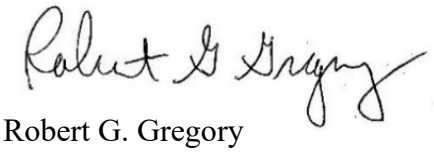
- Changing paper for the chlorine/pH chart recorder and flow/differential pressure chart recorder on a weekly basis.
- Calibration of the pH meter on a weekly basis.
- Periodic operation of Well 3A in place of or concurrently with Well 4S occurs on an irregular schedule; Well 3A operated concurrently with Well 4S on 5-6 June, 15-23 June, and 29-30 June.

No non-routine activities or operation issues occurred during the June 2023 reporting period.

Please contact me at 610-400-0636 or rgregory@komangs.com with any questions or concerns regarding this report.

Sincerely,

KOMAN Government Solutions, LLC



Robert G. Gregory
Project Manager

Cc: C. Shukis - NAVFAC
V. Varricchio - NWIRP Bethpage Facilities Management
R. Kern - LNYW
N. Niola – LNYW
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R. Hoffmaster – KGS
D. Brayack - Tetra Tech
R. Moore - Tetra Tech
J. Pelton – NYSDEC
K. Granzen – NYSDEC
M. Travis – NYSDEC

ATTACHMENT 1

O&M LOGS – JUNE 2023

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	5.31.2023	6.1.2023	6.2.2023	6.5.2023	6.6.2023	6.7.2023
System Flow Rate	GPM	3350	1700	1706	3200	3400	1606
Total System Flow	Gallons	8663141	8666477	8669628	8678769	8684311	8687431
Well 3 Status	ON OR OFF	ON	OFF	OFF	ON	ON	OFF
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	550	250	250	500	500	250
Tank 200 Flow Rate	GPM	500	225	200	500	550	250
Tank 300 Flow Rate	GPM	650	250	250	550	550	250
Tank 400 Flow Rate	GPM	500	250	250	500	606	250
Tank 500 Flow Rate	GPM	650	300	250	600	650	250
Tank 600 Flow Rate	GPM	550	200	200	450	500	200
Tank 100 Total Flow	Gallons	80,943,000	81,420,000	81,855,000	83,235,000	83,663,000	84,014,000
Tank 200 Total Flow	Gallons	35,197,000	35,679,000	36,135,000	37,461,000	37,843,000	38,295,000
Tank 300 Total Flow	Gallons	35,070,000	35,625,000	36,168,000	37,708,000	38,197,000	38,714,000
Tank 400 Total Flow	Gallons	34,565,000	34,987,000	35,543,000	36,850,000	37,244,000	37,621,000
Tank 500 Total Flow	Gallons	63,480,000	64,077,000	64,643,000	66,285,000	66,723,000	67,311,000
Tank 600 Total Flow	Gallons	97,245,000	97,709,000	98,159,000	99,444,000	00,368,000	00,511,000
System Influent Pressure	PSI	77	50	40	79	80	46
System Effluent Pressure	PSI	69	47	38	69	62	43
System Differential Pressure	PSI	8.5	2.2	2.1	8.3	8.5	3.0
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.82	1.81	2.21	1.85	1.91	1.93
Effluent Water pH - Inline	Units	6.26	6.29	6.54	6.73	6.69	6.61
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.80	1.81	2.20	1.83	1.90	1.92
Manual pH check (ex: Hanna)	Units						

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	5.31.2023	6.1.2023	6.2.2023	6.5.2023	6.6.2023	6.7.2023
Tank [illegible]A Hypochlorite Level	Gallons	121	153	107	80	56	76
Tank [illegible]B Hypochlorite Level	Gallons	135	154	148	113	107	100
Tank [illegible]C Hypochlorite Level	Gallons	153	154	154	64	64	20
Tank [illegible]A Polyphosphate Level	Gallons	161	161	160	160	160	160
Tank [illegible]B Polyphosphate Level	Gallons	158	120	108	81	59	37
Metering Pump [illegible]A: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]B: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]A: Phosphate Output Pressure	PSI						
Metering Pump [illegible]B: Phosphate Output Pressure	PSI						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Generator Operating Hours	Hours	o/c	o/c	o/c	o/c	o/c	o/c
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)		Phos Delv.	ck Dele	Monthly sampling POC's 1,4 Dioxane			

Daily Readings
Granular Activated Carbon Treatment System

Description	Data	6.8.2023	6.9.2023	6.12.2023	6.13.2023	6.14.2023	6.15.2023
System Flow Rate	GPM	1650	1700	1650	1650	1600	3300
Total System Flow	Gallons	8687929	8691024	8699610	8702335	8705257	8707911
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	ON
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	250	250	225	225	225	500
Tank 200 Flow Rate	GPM	250	250	250	250	250	500
Tank 300 Flow Rate	GPM	250	250	250	250	250	550
Tank 400 Flow Rate	GPM	250	250	250	250	250	500
Tank 500 Flow Rate	GPM	250	225	250	250	250	550
Tank 600 Flow Rate	GPM	200	225	225	200	225	500
Tank 100 Total Flow	Gallons	84,578,000	85,039,000	86,300,000	86,203,000	87,122,000	87,525,000
Tank 200 Total Flow	Gallons	38,785,000	39,231,000	40,470,000	40,871,000	41,288,000	41,676,000
Tank 300 Total Flow	Gallons	39,247,000	39,768,000	41,211,000	41,670,000	42,138,000	42,603,000
Tank 400 Total Flow	Gallons	38,160,000	38,601,000	39,384,000	39,715,000	39,992,000	40,440,000
Tank 500 Total Flow	Gallons	67,925,000	68,483,000	70,014,000	70,505,000	70,947,000	71,493,000
Tank 600 Total Flow	Gallons	00729,000	01,168,000	02,363,000	02,748,000	03,145,000	03,523,000
System Influent Pressure	PSI	60	57	55	61	46	98
System Effluent Pressure	PSI	57	55	52	58	43	87
System Differential Pressure	PSI	2.8	2.5	2.9	2.7	2.9	8.8
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.61	1.86	1.65	1.59	1.57	1.82
Effluent Water pH - Inline	Units	6.55	6.57	6.63	6.59	6.55	6.54
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.60	1.85	1.64	1.60	1.56	1.80
Manual pH check (ex: Hanna)	Units	—					

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	6.8.2023	6.9.2023	6.12.2023	6.13.2022	6.14.2023	6.15.23
Tank [illegible]A Hypochlorite Level	Gallons	153	126	84	150	94	150
Tank [illegible]B Hypochlorite Level	Gallons	162	147	112	152	141	153
Tank [illegible]C Hypochlorite Level	Gallons	163	163	128	153	153	153
Tank [illegible]A Polyphosphate Level	Gallons	135	115	70	135	116	98
Tank [illegible]B Polyphosphate Level	Gallons	33	33	33	89	85	85
Metering Pump [illegible]A: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]B: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]A: Phosphate Output Pressure	PSI						
Metering Pump [illegible]B: Phosphate Output Pressure	PSI						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Generator Operating Hours	Hours						
Main Facility Electric Meter Reading		ok	ok	ok	ok	ok	ok
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)					Cl & Phos. Del.		Changed Flow/PH Charts

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	6.16.2023	6.19.2023	6.22.2023	6.23.23	6.26.23	6.27.2023
System Flow Rate	GPM	3550	3150	2850	3275	1575	1750
Total System Flow	Gallons	8710586	8720115	8729559	8732306	8741051	8743922
Well 3 Status	ON OR OFF	ON	ON	ON	ON	OFF	OFF
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	550	500	500	500	250	250
Tank 200 Flow Rate	GPM	600	450	400	500	250	250
Tank 300 Flow Rate	GPM	550	550	500	550	250	250
Tank 400 Flow Rate	GPM	550	450	400	450	225	250
Tank 500 Flow Rate	GPM	700	600	550	650	250	300
Tank 600 Flow Rate	GPM	500	450	400	500	200	225
Tank 100 Total Flow	Gallons	87,905,000	89,321,000	90,762,000	91,667,000	92,455,000	93,875,000
Tank 200 Total Flow	Gallons	42,058,000	43,447,000	44,813,000	45,211,000	46,475,000	46,891,000
Tank 300 Total Flow	Gallons	43,039,000	44,650,000	46,257,000	46,765,000	48,175,000	48,651,000
Tank 400 Total Flow	Gallons	40,811,000	41,715,000	43,075,000	43,423,000	44,638,000	45,634,000
Tank 500 Total Flow	Gallons	71,964,000	73,695,000	75,372,000	75,858,000	77,401,000	77,904,000
Tank 600 Total Flow	Gallons	03,892,000	05,225,000	06,555,000	06,981,000	08,143,000	08,538,000
System Influent Pressure	PSI	81	88	94	82	57	75
System Effluent Pressure	PSI	71	79	85	73	54	72
System Differential Pressure	PSI	9.8	8.6	9.1	9.2	3.0	3.0
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.68	1.87	1.63	1.71	1.83	1.47
Effluent Water pH - Inline	Units	6.65	6.49	6.60	6.63	6.71	6.61
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.70	1.86	1.65	1.73	1.80	1.50
Manual pH check (ex: Hanna)	Units	—					

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	6.16.23	6.19.2023	6.22.2023	6.23.2023	6.26.2023	6.27.2023
Tank [illegible]A Hypochlorite Level	Gallons	338	80	153	120	81	149
Tank [illegible]B Hypochlorite Level	Gallons	147	104	155	141	117	153
Tank [illegible]C Hypochlorite Level	Gallons	150	121	153	153	111	154
Tank [illegible]A Polyphosphate Level	Gallons	81	77	18	40	26	160
Tank [illegible]B Polyphosphate Level	Gallons	86	40	39	42	40	161
Metering Pump [illegible]A: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]B: Hypochlorite Output Pressure	PSI						
Metering Pump [illegible]A: Phosphate Output Pressure	PSI						
Metering Pump [illegible]B: Phosphate Output Pressure	PSI						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Metering Pump [illegible]A: Stroke/Speed	Units						
Metering Pump [illegible]B: Stroke/Speed	Units						
Generator Operating Hours	Hours	o/c	o/c	o/c	o/c	o/c	o/c
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)				changed charts PH / Flow CL Delv.	Contractor on Site (Elect.)		CL Delv. Phos. Delv.

Daily Readings
Granular Activated Carbon Treatment System

Description	Data	6.28.2023	6.29.2023	6-30-2023			
System Flow Rate	GPM	1850	3350	3400			
Total System Flow	Gallons	8747784	8749304	8752110			
Well 3 Status	ON OR OFF	OFF	ON	ON			
Well 4 Status	ON OR OFF	ON	ON	ON			
Tank 100 Flow Rate	GPM	250	450	550			
Tank 200 Flow Rate	GPM	250	450	500			
Tank 300 Flow Rate	GPM	250	550	600			
Tank 400 Flow Rate	GPM	250	500	550			
Tank 500 Flow Rate	GPM	300	550	600			
Tank 600 Flow Rate	GPM	250	350	450			
Tank 100 Total Flow	Gallons	93,411,000	93,711,000	94,112,000			
Tank 200 Total Flow	Gallons	47,381,000	47,728,000	48,080,000			
Tank 300 Total Flow	Gallons	49,007,000	49,557,000	50,019,000			
Tank 400 Total Flow	Gallons	45,987,000	46,418,000	46,947,000			
Tank 500 Total Flow	Gallons	78,442,000	78,863,000	79,355,000			
Tank 600 Total Flow	Gallons	06,893,000	07,411,000	08,753,000			
System Influent Pressure	PSI	79	80	78			
System Effluent Pressure	PSI	76	71	68			
System Differential Pressure	PSI	3.3	9.9	10.0			
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.68	1.71	1.74			
Effluent Water pH - Inline	Units	6.59	6.85	7.31			
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.71	1.70	1.72			
Manual pH check (ex: Hanna)	Units						

Daily Readings
Granular Activated Carbon Treatment System

Description	Units	6.28.2023	6.29.2023	6.30.2023			
Tank [illegible] Hexadecanoic Level	Gallons	84	154	121			
Tank [illegible] Hexadecanoic Level	Gallons	145	155	141			
Tank [illegible] Hexadecanoic Level	Gallons	154	154	154			
Tank [illegible] Pentadecanoic Level	Gallons	143	120	105			
Tank [illegible] Pentadecanoic Level	Gallons	161	161	161			
Metering Pump [illegible] Hexadecanoic Output Pressure	PSI						
Metering Pump [illegible] Hexadecanoic Output Pressure	PSI						
Metering Pump [illegible] Pentadecanoic Output Pressure	PSI						
Metering Pump [illegible] Pentadecanoic Output Pressure	PSI						
Metering Pump [illegible] Stroke/Speed	Units						
Metering Pump [illegible] Stroke/Speed	Units						
Metering Pump [illegible] Stroke/Speed	Units						
Metering Pump [illegible] Stroke/Speed	Units						
Generator Operating Hours	Hours	O/L	O/L	O/L			
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)							