

6 November 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: October 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. 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 October 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 October 2023 is presented below in **Table 1**.

# Table 1 - System Operating Data for October 2023

Date	Total Flow	Flow Rate	Influent Pressure	Effluent Pressure	Differential Pressure	Effluent Chlorine Residual	Effluent pH
	(Gallons)	(GPM)	(PSI)	(PSI)	(PSI)	(mg/L) <sup>(1)</sup>	(SU) <sup>(1)</sup>
10/2/2023	8,936,188,000	1,500	47	45	2.5	1.93 read 1.91 manual	6.78 read
10/3/2023	8,938,974,000	1,500	52	50	2.3	1.91 read 1.89 manual	6.76 read
10/4/2023	8,941,923,000	1,650	59	56	2.4	1.74 read 1.72 manual	6.77 read
10/5/2023	8,944,905,000	1,650	63	60	2.5	1.71 read 1.69 manual	6.78 read
10/6/2023	8,948,245,000	1,700	59	56	3.0	1.74 read 1.75 manual	6.79 read
10/9/2023	8,955,119,000	1,700	55	52	2.4	1.84 read 1.86 manual	6.83 read
10/10/2023	8,958,107,000	1,750	70	68	2.5	1.61 read 1.63 manual	6.76 read
10/11/2023	8,960,832,000	1,500	50	48	2.2	1.71 read 1.70 manual	7.03 read
10/12/2023	8,963,809,000	1,750	63	60	2.6	1.64 read 1.66 manual	7.01 read
10/13/2023	8,965,873,000	1,650	55	52	2.9	1.68 read 1.69 manual	7.04 read
10/16/2023	8,973,178,000	1,600	64	61	2.6	1.69 read 1.71 manual	7.09 read
10/17/2023	8,975,656,000	1,800	62	59	3.2	1.67 read 1.69 manual	1.69 read
10/18/2023	8,978,444,000	1,900	60	57	3.3	1.66 read 1.68 manual	7.20 read
10/19/2023	8,980,922,000	1,850	85	82	3.5	1.73 read 1.75 manual	7.14 read
10/20/2023	8,983,322,000	1,650	59	56	3.0	1.81 read 1.83 manual	7.18 read
10/23/2023	8,990,584,000	1,700	64	61	2.8	1.71 read 1.73 manual	7.10 read
10/24/2023	8,993,233,000	1,700	81	78	2.9	1.76 read 1.75 manual	7.10 read
10/25/2023	8,995,389,000	1,850	80	77	3.3	1.81 read 1.83 manual	7.28 read
10/26/2023	8,998,099,000	1,850	63	60	3.4	1.87 read 1.85 manual	7.26 read
10/27/2023	9,000,441,000	1,800	77	73	3.3	1.88 read 1.86 manual	7.25 read
10/30/2023	9,005,261,000					read manual	7.18 read
10/31/2023	9,006,060,000					read manual	7.45 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 October 2023. Over 72.2 million gallons of water were treated in October 2023, bringing the total cumulative volume of water treated since startup to over 9.00 billion gallons.

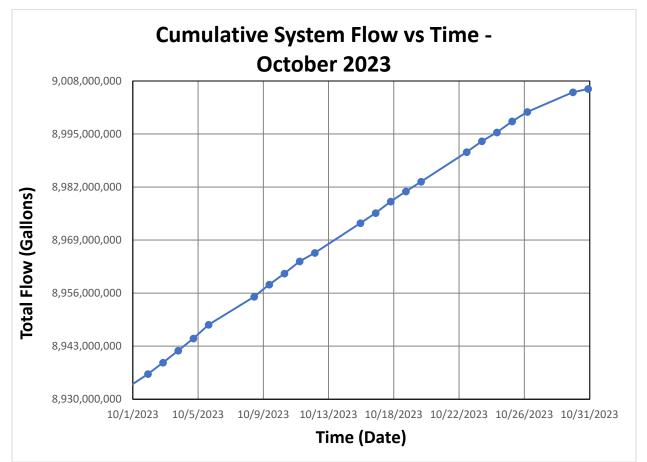


Figure 1 - Volume of Water Treated through Full Scale GAC System (October 2023)

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 November 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 plant is able to operate at full capacity.

Previously identified high iron loading in the GAC vessels has been alleviated by the completed (May 2023) rehabilitation of the Liberty Utilities iron filtration plant at the Seamans Neck Road plant.

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.

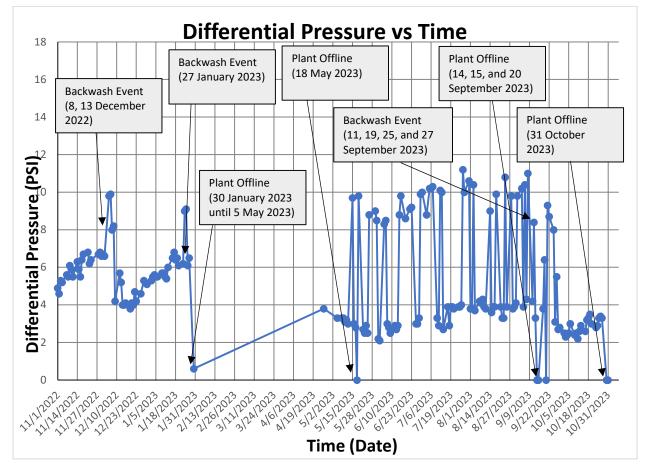


Figure 2 - System Differential Pressure vs. Time

#### 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 did not operate during the reporting period.

In addition, the following non-routine activities or operation issues occurred during the October 2023 reporting period:

• On 28 October, Liberty Utilities placed the plant in offline status to facilitate testing and integration of the AOP unit. Flow through the plant will occur periodically as part of the testing program; all resultant effluent will go to waste.

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

Sincerely,

### KOMAN Government Solutions, LLC

alut & Srigny

Robert G. Gregory Project Manager

Cc: C. Shukis - NAVFAC
V. Varricchio - NWIRP Bethpage Facilities Management
R. Kern - LNYW
N. Niola – LNYW
J. Palmer - LNYW
P. Schauble - KGS
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 – OCTOBER 2023

		Granu	Dally R lar Activeted Ce	leedings rbon Treatment	System		
Description	Date	9292023	1022023	1032023	10.4.2023	10-5-2023	10.6.202
System Plow Rate	(078)	1650	1500	1500	1650	1650	1700
Total Bysian Place	Cellono	9012630	9020060	9022846	and president and an and a start president and an instruction	9028777	9032117
Wall 3 Cinius	ON OR ONE	OFF	OFF	OFF	OFF	OFF	OFF
Well 4 Ginture	ONOR	ON	ON	0.0	ON	ON	ON
Tealt 160 Plan Plats	QPM	250	250	250	250	250	250
Tank 280 Flow Rate	<b>GP</b> E	250	250	250	250	250	250
Tank 300 Flow Rate	GFM	250	250	250	250	250	250
Tank 499 Plow Rote	OPM	250	250	250	250	250	250
Tank 099 Flow Rate	67769	250	250.	225	· 250	250	250
Tenk 600 Fiow Role	<b>COP101</b>	250	200	. 225	. 125	225	250
Tank 100 Total Place	Calicas	35465.000	36490 000	36 885 000	37.308 000	37734000	38114000
Tank 200 Takal Flour	Gallone	\$7,285,000	88.364.000		89,214,000	)	90018.000
Tank 309 Total Plans	Onliens	93098,000	T	94 783 000		1	96 111, 000
Tenk 400 Tetal Plann	Gallona	29.931,000	31,150,000	31600.000	32 095 000	J. S.	32 937,000
Tenix 800 Total Plan	Gellone	22,594 000	23 802,000	24,268,000			25,616 000
Tank 669 Total Plan	Gallons	44 492,000	45521000		46.340.000		47004.000
Bystem kelkent Pressure	P-39	63	417	52	59	63	59
Bystem Ellicent Prezeure	Pal	61	45	50	56	60 :	56
Byotem Differential Pressure	Pe	2.%	2.5	23.		2.5	.3.0
Chinalano Analyzera Pres Chinarino Haoldani - Initao	PPM	1.66	1.93	1.0,1	1.74	171	1.74
(2Mbsent Water pM - Isline	Unite	682	6.78	6.76	6.77	6.78.	6.79
Manuel Chiertne Reading (as: Hack Kit)	PPSO	1.68	1.91	1.89	1.72	1.69	and a second second Second second
illenual pH abook (or: Honne)	Unite	-			-tult	1.61	1.25

.

a a

• •

ę. •

35° - - - -

.

Charactipition Youth AlighA Unangahingthe Local Youth Oblig Bhraggelightip Local Hunde Units Characticities Characticities Point PADA Pointegenerging Local Thurk Wills	Date Callano	9392023				1	
Nameshindin Loval Tank Bills Hansahindin Loval Tank Bills Hansahindin Loval		Survey and the survey of the s	and an and a state of the state	103202	10.4.2023	10.5.2023	10.62022
Tenk High <u>Honodijetie Lovel</u> Taak High Honodidesile Lovel		121	137	150	130	155	1.73
Tank where Homosiderity Lovel Tank SUMA	Outemo	150	73	152	103	153	140
A Second Restand	Calleno	156	102	155	155	155	155
Fabra and a fabra and	Osteas	136	88	71	149	126	96
Private Land	Collens	141	140	140	140	140	140
Motoring Posep (MA): edderlin Colout Prosence Rotering Posep (MB):				an a			
Retaring Peop 2008: white Outsid Preasure Retaring Peop 2004;	Pel			and a second division of the second			lastardatistatistatisten ander an et en avere en
Bataring Pump SUA: patiete Cateral Pressure Estaring Paurp SUB:	M						<u>2017-07-07-07-07-07-07-07-07-07-07-07-07-07</u>
Beloring Point 9868: anthone Codent Pressure	POI						
Subpring Pump (SDA: Symbolization	Unito						alatina da Arada ana da ana ana ana ana ana ana ana a
Statesting Paramp (1882): Stratesting Paramet	Unite	11 Mar.	· ·				
Antoning Poung (Anton Antoning Poung (Minist Antoning Poung (Minist Antoning Poung (Minist	Units		· · · · · · · · · · · · · · · · · · ·				
Binda Garred Scholing Parap (KCC): Etrabalismed	Watte		·				an Charles and a state of the Charles of the Charle
iorator Operating Houro	Havenne	OIL	olc	ok	olc	OK	oll
In Facility Montols Mater Res	ginte						
	ł	Shang-d	3	1 Doly	Phos. Delu.	Month	
· · · · · · · · · · · · · · · · · · ·		flow / PH					
A States of the second		TIOW / I'I'				Limping	
Continuents Issuit tasks performed, maint		Charts			C	2 Delvi	
oeded, activations on elia, a	m)		and a second	and the second second			
			and the second second second		a an		
	<u> </u>	contraction of the second s	· dece			<u> </u>	

.

••••••

1

.

		Granul	Daily R lar Activated Car	-	System		
Description	Date	10.9.2023	10-102023	10.11.2023	T	10 13 202 3	10 16 2023
System How Rate	<u>GPM</u>	1700	1750	1500	1750	1650	1600
Total System Flow	Gallona	9038991	9041979	9044700	190417681	9049745	9057050
Well 3 Status	on or Off	OFF	OFF	OFF	OFF	OFF	OFT
Well 4 Status	ON OR OFF	an	ON	ON	ON	ON	ON
Tank 100 Flow Rate	QPM	250	250	200	250	250	250
Tank 200 Flow Rate	GPM	250	250	225	250	250	250
Tank 300 Flow Rate	<u>G</u> PHI	250	250	250	250	250	250
Tank 400 Flow Rate	GPM	250	256	250	250	250	250
Tank 500 Flow Rate	<u>opm</u>	250	300	250	· 300	250	250
Tank 600 Flow Rate	<u>GPM</u>	250	250	200	-225 ·	200	200
Tank 100 Total Flow	Gallons	39,178,000	39 605 000	40,002 000	40 425,000	40,707.000	41,702,000
Tank 200 Total Flow	Gallons	95,114,000	91546,000	91943 000	92,319 000	92.671.000	93 730,000
Tank 300 Total Flow	Gallons	97471,000	97979,000	98.428.000	7		00 451,000
Tenk 400 Total Flow	Galions	34 230,000	34715,000	35157,000	35640,000	35 976,000	37173,000
Tank 599 Total Flow	Gallons	26 945,000	27495000	27 901 0000	28 396,000	1	29 903 000
Tank 600 Total Flow	Gallons	48,174,000	48,595,000	48,978,000	2		50 69500
System Influent Pressure	PSI	55	70	50	63	55	64
System Effluent Preasure	PSI	52	65	48	60	53	61
System Differential Pressure	PSI	2.4	25	2.2	2.6.	2.9	.2.6
Chlorine Ansiyzer: Free Chlorine Residuel - Inline	PPM	1.84	1.61	1.71	1.64	1.68	7.69
Effluent Wator pH - Inline	Units	6.83	6.76	.7.03	7.01	7.04	7.09
Manuel Chlorine Reading (ex: Hach KR)	PPM	1.86	1.63	1.70	1.66	1.69	1.71
Manuel pH abock (ex: Henna)	Units .					·	

- --

......

:

	Daily Readings Granular Activated Carbon Treatment System											
Description	Date	10.9.2023	10.10.2023	10-11-2023	10.122023	10.132023	10.16.20					
Tank 598A Hypochlorite Level	Gallona	121	153	140	153	133	155					
Tenk 8908 Hypochilorite Level	Gallena	118	153	120	152	12)	155					
Tank 899C Hypochlorito Level	Callons	61	155	155	155	155	155					
Tank 998A Polyphosphete Lovel	Geillons	64	4141	30	156	136	86					
Tank 6008 Polyphosphate Lovel	Gallons	131	129	125	121	121	121					
Metering Pump 998A: wpochlarite Output Pressure	PSI				- 							
Metering Pump (1048):	PSI											
ypochiarite Output Pressure Biotoring Pump 000A: "hoophate Output Pressure	psi											
Metering Pump 90019: Phoephate Output Pressure	P81						مریک دور و در این					
Historing Pusnp 800A: Strake/Based	Units			9499493324444997949349794749747474747499747499747497475								
Motoring Pump 6008: Stroko/Speed	Units		·									
Motoring Pump BEBA: Stroke/Speed	Units											
Motoring Pump 9668: Stroke/Speed	Unite	-										
Generator Operating Hours	Houra		_	-	~							
Main Facility Electric Motor Re	sding											
					CL Della	Contractor	CL Delu					
					Phas. Delu	on Sitz.	19 19 19 19 19 19 19 19 19 19 19 19 19 1					
						(Carbon )						
Comments dditional taoka performed, mais needed, contrastors on ello, d	tionanco etc.)					(Carbon Change Out) NICHEM						
	,					(Lu)						

		Granula	Daily Re r Activated Carl	-	System		
Description	Date	10.172023	10.182023	10.19.2073	10,20,2023	10232023	1024202
System Flow Rate	QPM .	1800	1900	1850	1650	1700	1700
Total System Flow	Galions	9059528	9062316	9064794	9067194	9074456	9077105
Wall 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	OFF
Woll 4 Status	ON OR OFF	ON	0.0	ON	ON	ON	00
Tank 100 Flow Rate	GPM	300	300	250	250	250	250
Tank 200 Flow Rate	GPM	300	300	250	225	250	250
Tank 300 Flow Rate	<b>GP</b> M	300	350	300	250	250	250
Tank 400 Flow Rate	<u>G</u> PM	,700	300	350	225	250	250
Tank 500 Flow Rate	QP16	300	250	350	.250	300	300
Tank 600 Flow Rate	GPM	225	250	250	225	250	250
Tank 100 Total Flow	Gallons	4204200	42437,000	42,773 cm	43,103,000	44,073,000	44,421,000
Tank 200 Total Flow	Gallons	94.090,000	94, 49500	94855000	95,203,000	96,261,000	96,647,000
Tank 300 Total Flow	Gations	00861000	01,325,000	01,731,000	02, 125,000	03,314,000	03,745,000
Tank 400 Total Flow	Gallons	37.582.000	35,044,000	38,451,000	38847,000	40,035,000	40,463,000
Tank 598 Total Flow	Gellons	30310,000	30 775,000	31,171,000	31,560,000	32,123,000	33,148,000
Tank 600 Total Flow	Gallons	51045,000	51,437,000	57,785,000	52,118,000	53128,000	53 456 000
System Influent Pressure	PSI	62	60	85	59	64	81
System Effluent Preasure	P81.	59	57	82	52	61	78
System Differential Preceure	<b>PS</b> !	3.2	.3.3	35	3.0.	2.8	.2.9
Chiorine Ansiyzer: Free Chiorine Residuel - Inline	PPM	1.67	1.66	1.73	1.81	1.71	1.76
Effluent Water pH - Inline	Unite	7.15	7.20	7.14	7.18	710	710
Manual Chlorine Reading (ex: Hach KR)	PPM	1.69	168	1.75	1.83	1.73	1.2.5
Manuel pH check (ex: Hanna)	Units					-	, 

.....

		Granula	Daily Re r Activated Carl	-	lystem		
Description	Date		10.18.2023		10-20-2023	10.23.2023	1024:20
Tank 898A Hypochicity Level	Gallone	150	89	153	153	153	150
Tenk 890B Hypochlerite Level	Gallono	144)	140	154	119	155	114
Tank 890C Hypochlorito Level	Callono	152	152	156	156	156	156
Tank 909A Rehenhospheta Loual	Geñons	82	82	68	52	50	1.37
Tank 9098 Polyphosphoto Lovel	Gallons	116	102	102	102	86	149
Motoring Pump 800A: socializate Output Pressure	PSI						
Metering Pump 1868: cochlarite Output Pressure	PSI						
Betering Pump D00A: cophete Clubbyt Pressure	P®I						
Matering Pump 9005: nasphate Output Processe	PSI				Lite		
Historing Pump 808A: Stroke/Bused	Unite						
Metering Pump 8098: Stroke/Speed	Unite						
Metering Pump 888A: Biroko/Sipped	Units						e en reneral
Metering Pump 9808: Stroke/Speed	Units					5	
enerator Operating Hours	Hours	OK	OK	OK.	O/C	ok	olu
isin Facility Électric Meter R	l	<u> </u>					
	<u>,                                    </u>	Philp	Philp	Philo			Phos. D
		Ross		Ross		· · · · · · · · · · · · · · · · · · ·	
		1055	Ross	analas za			
Commonts Atlensi taska parformad, mai	Renance	employ=== Doing Bact.	employiz	employz= Sampliz			
needed, contrastors on site,	sts.)	Noing	Dampin	Scimping	· · · · ·		
		Sampling	GAC-	GACS			
		onGACS					Sec. 1

22

		Granul	Daily R ar Activated Car	eadings rhon Treatment	Sweham		
Description	Date	0.25-202				10 31 202	3
System Flow Rate	QPM	1850	1850	1800	ok	OK	
Total System Flow	Gallons	9079261	9081971	9084313	9089133	9089832	
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	
Well 4 Status	ON OR OFF	ON	0.0	OW	OFF	OFT	
Tank 100 Flow Rate	GPM	250	300	300		-	
Tank 200 Flow Rate	GPM	250	300	300	1	-	
Tank 300 Flow Rate	<u>ġ</u> phi	300	.306	300		_	
Tank 400 Flow Rate	GPM	300	.300	250			1
Tank 500 Flow Rate	<b>GPM</b>	350	.300	300	•.	_	Sector Contraction
Tank 609 Flow Rate	GPM	250	225	225		-	
Tank 100 Total Flow	Gallons	44718,000	45 100 000	45 435,000	46,067,000	46 072.000	
Tank 200 Total Flow	Gallons	96 960,000	97 358,000	97.704.000		98.347.000	
Tank 300 Total Flow	Gallons	64 095,000	04 543000	, , , , , , , , , , , , , , , , , , , ,	)	05,649,000	
Tank 400 Total Flow	Galions	40 815,000	41 264 000	/ /		42,361,000	
Tank 500 Total Flow	Gellons	33.493,000	33 938 000	/ /	341987,000	<ul> <li>Tractic and a facility strategy and second strategy and s Second strategy and second strategy</li></ul>	
Tank 699 Total Flow	Gallons	53,795,000	11		1 1	55, 122,000	
System influent Pressure	PSI	80	63	77			
System Effluent Pressure	PSI	77	60	23	-	š. — .	######################################
System Differential Pressure	PS!	33	3.4	33	~ .		
Chlorine Ansiyzer: Free Chlorine Residual - Inline	PPM	1,91	1.87	1.88	_	-	
Effluent Water pH - Inline	Units	7.28	7.26	.7.25	718	7.45	and a second
Manual Chlorine Reading (ex: Hach KN)	ppm	1.8.3	1.85	1.86			988)/1009-000-000-000-000-000-000-000-000-000
Manuel pH check (ex: Henne)	Units	~					

--

.....

	Daily Readings           Granular Activated Carbon Treatment System           Description         Daily Readings           Granular Activated Carbon Treatment System           Description         Daily Readings           Granular Activated Carbon Treatment System           Description         Daily Readings           Daily Readings           Granular Activated Carbon Treatment System												
Description	Dete	10.25.2023	10262023	10-27-2023	10.30 2023	18312023							
Tank 800A	Gallona	120	80	150	150	153							
Hypochionite Lovel Tenk 860B Hypochionite Lovel	Galleno	115	109	153	111	15-3	a a caracterization and a second second						
Tank 880C Hypochlorite Level	Gallono	156	156	156	108	155							
Tank 900A Polyphosphete Lovel	Gellons	1.3.3	130	121	117	137							
Tank 9998 Polyphosphate Level	Gallons	140	119	115	100	99							
Metering Pump 300A: mechanite Output Pressure	PSI												
Netering Pump 3668: pochlarite Output Pressure	PSI												
Bistering Pump BODA: heaphate Clubout Processo	PSI												
Metering Pump 2008: hesehote Output Pressure	PBI			and the second									
Motoring Pump 698A: Stroke/Spood	Units						an a						
Motoring Pump 8568: Stroke/Spred	Units		•										
Notoring Pump 988A:	Units						a de ser						
Metering Pump 9668: Stroke/Speed	Unite												
tenerator Operating Hours	Hours	OL	OIL	<u> Ol</u> C	ola	OK							
Hain Facility Electric Meter R	oeding				·								
Comments Mitional tooks performed, mai needed, contractors on site,			Contrator on Site Potting new firz sensor in/light bulb.	Flow / PH	01-F About 10,28:2023	System Off Ranfor 1 hr. Overniti phos. Delv.							

20