

То:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Ryan Sullivan, Vice President Service and O&M
Date:	September 20, 2019
Subject:	NERT – GWETS Operation Monthly Report – August 2019

At the request of the Nevada Environmental Response Trust (Trust), Envirogen Technologies, Inc. (ETI) is providing this summary of the groundwater extraction and treatment system (GWETS) operation and performance during August 2019.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in August 2019. Flow from PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 180 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,005 gpm during August 2019. At the end of the month, the GW-11 Pond volume was at 36.0 million gallons (MG), which would allow 18.4 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased by 0.8 MG from the end of July 2019. Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the IX system averaged 0.25 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 118 mg/L for the month, with a maximum concentration of 120 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of July 2019 averaged 102 mg/l, with a maximum concentration of 120 mg/l. Fluctuations in the influent perchlorate concentrations are due to the changes in the AP-5 treatment feed rate and not a result of groundwater changes.

The August 2019 perchlorate sample result for ART-9 was 1,200 mg/L which is an order of magnitude higher than the historical concentration range for this well. The laboratory reanalyzed the sample and obtained the same result. The perchlorate sample results for ART-9 from July and September 2019 were in line with historic results; therefore, an average of the July and September 2019 results was used for calculation purposes for this report. The result for July 2019 sampling of ART-9 was 180 mg/L, and the result for September was 200 mg/L.

Enhanced Operational Metrics

Tables 1 and 2 provide a summary of the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. These tables also include data associated with the AP-5 decant liquids. Figure 2 graphically presents historical perchlorate and chromium mass flux information. Attachment A provides a summary of the NPDES permit analytes with numerical discharge limits.

Operational Issues

All routine plant repairs conducted by ETI were performed in accordance with the NERT Perchlorate Treatment System Operations Manual. The following is a list of operational issues and major repairs and/or equipment replaced during this reporting period.

1. GW-11

There were no operational issues with GW-11 in the month of August.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of August beginning with a flow rate of 2.0 gpm and increasing in flow to 2.5 gpm thru the end of August 2019. Changes in flow were made to balance the load from processing AP-5 material with seasonal restrictions in NERT's NPDES permit during the summer months.

There were influent / effluent diversions during the reporting period generally associated with maintenance activities as well as a few extraction well short-term shutdowns. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Well Shutdown of I-Z occurred on August 5, 2019 from 9:32pm to 7:52am due to a motor saver failure. The well was pulled for inspection and the motor was replaced.
- Influent diversion to GW-11 on August 6, 2019 from 12:11pm to 12:37pm due to maintenance activities on the P-102 pump Approximately 28,000 gallons of water were diverted to GW-11.
- Well Shutdown of the entire Seep Well Field occurred on August 9, 2019 from 1:38pm to 5:30pm due to a loss of electrical power supply from NV Energy to Lift Station 1. Supplemental flow was drawn from the GW-11 pond to maintain feed flow to the FBR plant by means of the P-101 pump.
- Effluent diversion to GW-11 occurred on August 11, 2019 from 8:11am to 10:12am as a precautionary measure due to concerns about the effluent quality. Approximately 126,000 gallons of effluent were diverted to GW-11.
- Well Shutdown of the Interceptor Well field (western leg) occurred on August 13, 2019 from 10:53am to 11:36am due to maintenance activities on the electrical components.
- Influent diversion to GW-11 occurred on August 31, 2019 from 5:20am to 5:45am due to a communication module error. The I/O communication card was replaced. Approximately 27,000 gallons of water were diverted to GW-11.

3. Spills

There were no reportable spills in the month of August.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. Rebuilt the media return pump for FBR A.
 - II. Installed a new ½ hp motor on the pump for well I-Z.
 - III. Replaced the I/O communication card for the ethanol feed pumps.
 - IV. Assembled and installed the 602 pump with a new impeller and seal.
 - V. Replaced the pneumatic transducer (I/P) on the FBR feed valve positioners.
 - VI. Replaced the pumping head on the Phosphoric acid feed pump for FBR 1.
 - VII. Installed new backing rings on the caustic tank bulkhead.
 - VIII. Install airlines in the D-1 building.
 - IX. Rebuilt the 3" DAF sludge pump.
- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Installed new airline fittings on the pressure tank, new coating in the sludge box, new packing on the auger, and replaced the sludge pump on the South DAF.
 - II. Opened and inspected the lines on the GWTP effluent discharge for sufficient flow.
 - III. Inspected the power supply for the Lift Stations in the event of a failure.
 - IV. Installed temperature sensors on the Lift Stations MCC's.
 - V. Flushed the ORP and pH sensors.
 - VI. Removed solids from the FBR pad sumps.
 - VII. Tested and flushed the eyewash stations.
 - VIII. Replace the batteries and charging cable on the golf cart.
 - IX. Cleared debris from the sand filter reject tank and piping.

GWETS Upgrades and Facility Projects

Unit 4 Chromium Water Treatment Plant – Envirogen submitted proposals to the Trust in August for upgrading the current system to include additional chromium treatment capacity per the engineering plans, and for operating the system upon completion of construction. We are currently waiting for comments, approval, and Work Authorizations to proceed with the work.

GWETS Extension – Envirogen is awaiting Trust feedback on draft documentation submitted related to the construction and O&M of the GWETS Extension.

Equipment Availability Tracking

ETI operators continue to update the equipment tracking form on a weekly basis or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel verify the entries on the form, including both the operating status and confirmation of the inventory of required shelf spares. The equipment tracking form is included as Attachment B.

Nevada Division of Environmental Protection Nevada Environmental Response Trust

GWETS Staffing

ETI continues with 24-hour staffing of the GWETS at the direction of the Trust and continues to follow the security procedures in the Standard Operating Procedures (SOP).

Tables

Operational Metrics

Nevada Environmental Re	Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics											
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ^{6 7}	Chromium (TR) (mg/L) ^{6 7}	Chromium(VI) (mg/L) ^{6 7}								
SWF Total Extraction ¹	735 ⁵	7.8	0.0006	0.0012								
AWF Total Extraction ¹	461 ⁵	79	0.15	0.15								
IWF Total Extraction ¹	59 ⁵	545	6.3	6.2								
AP Area Total Extraction ¹	12.5 ⁵	724	0.076	0.079								
GWTP Effluent ²	62	537	0.54	ND								
GW-11 Influent ¹	1.19	52	0.07	0.020								
FBR Influent ^{2 3}	1,005	123	0.011	0.009								
T-205 Effluent (AP-5 Wash Water) ^{3 4}	2.4	9,816	NA	NA								

Notes:

TR = Total Recoverable; NA = Not Analyzed; ND = Not detectable above laboratory method detection limit (Chromium (VI) = 0.25 ug/L).

- 1: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.
- 2: Perchlorate, chromium TR, and chromium (VI) sampled weekly, values reported from TestAmerica.
- 3: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.
- 4: Flow weighted average concentration based on mass flow meter readings.
- 5: Sum of daily average flow for individual wells.
- 6: All concentrations reported are monthly flow weighted averages.
- 7: ND analytical values are treated as zero values in the flow weighted average calculations.

Nevada Environmental Res	sponse Trust Groundwater Extracti	on and Treatment System I Monthly	Stakeholder Metrics
Location ID	Perchlorate (lbs/month) ³	Chromium (TR) (lbs/month) ³	Chromium (VI) (lbs/month) ³
SWF Total Extraction	2,126	0.16	0.34
AWF Total Extraction	13,628	26	26
IWF Total Extraction	11,903	138	135
AP Area Total Extraction	3,375	0.35	0.37
GWTP Effluent	12,324	12	ND
GW-11 Influent	23.2	0.033	0.0089
FBR Influent ¹	46,172	4.1	3.5
T-205 Effluent (AP-5 Wash Water) ¹²	8,729	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

- 1: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.
- 2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.
- 3: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 8/31/2019

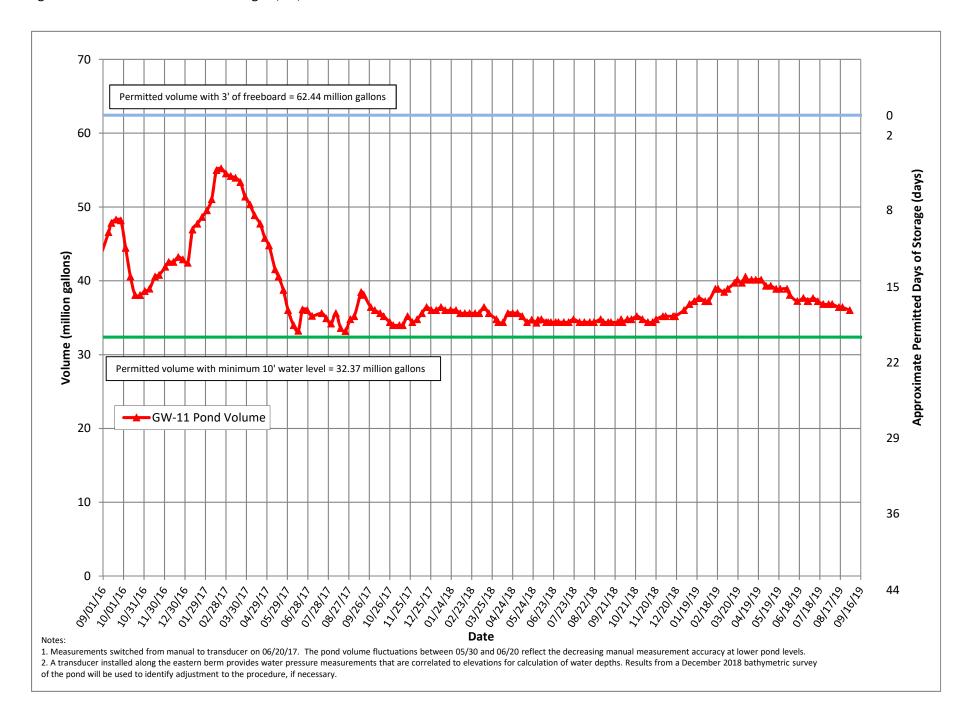
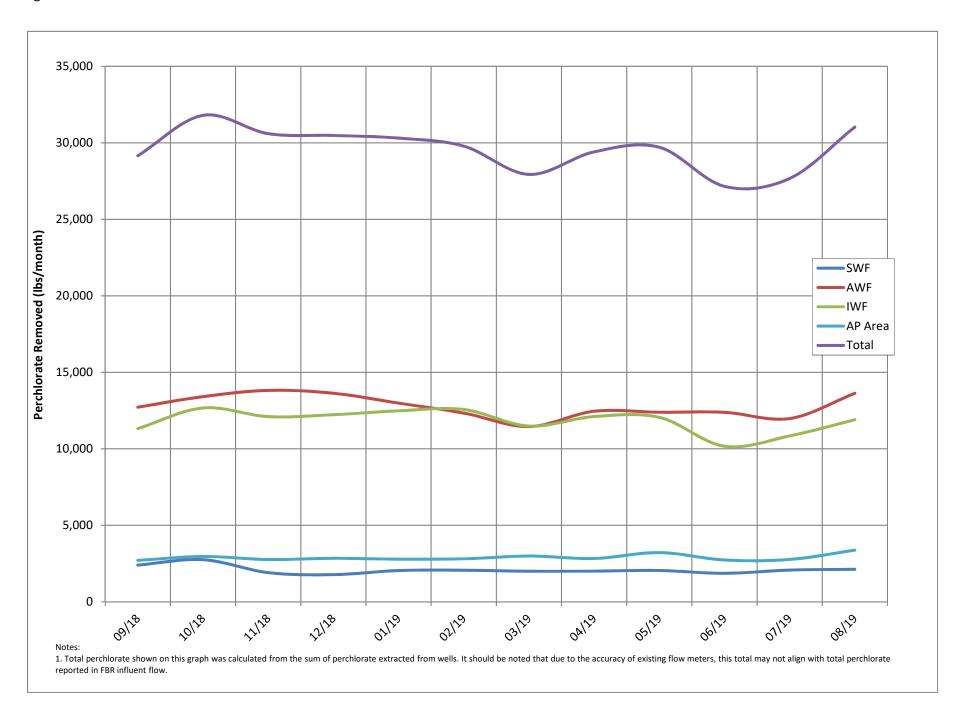


Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

WORKING TRACKING SPREADSHEET
DRAFT - NOT TO BE SUBMITTED TO AGENCY

											Treate	d Effluent at Outfal	II 001																							
	Con	tinuous	Daily Samples, con	nposited weekly								Weekly Grab Sa	mples				Wee	kly, collecte	d separately	Quarterly																
	Flo	Flow Rate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		Perchlorate		рН		Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Su Sol (TS		Total Ammonia as N	Total Phosphorus as P		BOD ₅ (inhi	bited)	Total Dissolved Solids (TDS)
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (μg/L)	30-Day Avg. (Ibs/day)		Daily Min.	aily Max. (S.U.)	Daily Max. (μg/L)	Daily Max. (μg/L)	Daily Max. (μg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (Ibs/day)	30-Day / (mg/l	Avg. Daily N) (mg/	Ανσ	Daily Max. (mg/L)																
	2.52	2.88	18	0.38		6.5	9.0	10	100	5,000	10,000	20	135	2,839	20*	10*	25	40	525	8,000																
uary 2019	1.80	1.87	0.5	0.0075		6.77	7.33	ND (<0.25)	31	250	330	15	7	110	170	1.5	1.8	2.7	27																	
ruary 2019	1.79	1.87	4.7	0.070		6.58	6.91	ND (<0.25)	16	220	390	14	10	150	190	1.6	0.9	1.2	13	4,500																
rch 2019	1.67	1.86	0.5	0.0069		6.57	6.82	ND (<0.25)	14	290	160	19	7	100	120	2.1	0.7	2.2	11	- '																
il 2019	1.73	1.85	0.5	0.0072		6.50	6.88	ND (<0.25)	11	310	410	1.2	9	130	5	1.6	0.5	1.4	7																	
y 2019	1.78	1.83	0.5	0.0074		6.50	7.05	ND (<0.25)	5.9	340	130	1.5	6	90	10	2.0	0.7	1.4	10	4,300																
e 2019	1.73	1.83	0.5	0.0072		6.63	6.65	3.5	2.8	360	150	2.5	4.9	70	18	2.2	0.7	1.9	9	- '																
/ 2019	1.72	1.81	5.2	0.07		6.59	7.00	ND (<0.25)	4.0	360	77	2.9	3.8	50	8	2.4	0.37	0.83	3 5	_ 4,200																
gust 2019	1.72	1.82	1.7	0.025		6.55	6.60	ND (<0.25)	3.8	330	150	1.1	4.1	60	12	1.8	0.6	1.5	10	- 4,200																

Daily Grab	Composite		μg/L	lbs/day	Sample Date	S.U.	μg/L	μg/L	μg/L	μg/L	mg/L	mg/L	lbs/day	mg/l	L	lbs/day		mg/L	lbs/day	Sample Date	mg/L	lbs	/day Sa	nple	mg/L
Sample Dates	Sample Date		P6/ -	.20, 44,	Sample Bate		µ6/ ⊑	P6/ -	P6/ -	r6/ -	6/ -		.20, 44,			.20, 44,		6/ =	100, 00,	Sample Bate			, D	ate	6/ =
12/30 - 1/5	1/5/2019	ND (<1.0)	0.5	0.0074	1/2/2019	7.33	ND (<0.25)	31	200	170	11	15	231		11	185**		0.20	3.1	1/2/2019	2.7		12		
1/6 - 1/12	1/12/2019	ND (<1.0)	0.5	0.0074	1/7/2019	7.21	ND (<0.25)	7.2	250	99	15	4.4	63		15	117**		0.13	1.9	1/9/2019	1.5		22		
1/13 - 1/19	1/19/2019	ND (<1.0)	0.5	0.0075	1/14/2019	6.77	ND (<0.25)	3.7	150	330	14	4.4	67		13	197		0.061	0.93	1/16/2019	2.6		10		
1/20 - 1/26	1/26/2019	ND (<1.0)	0.5	0.0077	1/21/2019	7.26	ND (<0.25)	7.6	190	170	12	5.4	84		11	172	ND (<0.025)	0.013	0.20	1/23/2019	1.5		!3		
1/27 - 2/2	2/2/2019	ND (<1.0)	0.5	0.0074	1/28/2019	6.98	ND (<0.25)	4.0	200	170	9.5	6.1	95		9.5	148		0.10	1.6	1/30/2019	0.78		.1		
2/3 - 2/9	2/9/2019	ND (<1.0)	0.5	0.0071	2/4/2019	6.58	ND (<0.25)	8.6	200	390	14	12	176		14	205		0.12	1.8	2/6/2019	1.2		.6		
2/10 - 2/16	2/16/2019	9.1	9.1	0.14	2/11/2019	6.88	ND (<0.25)	6.3	180	100	13	4.8	72		13	194		0.11	1.6	2/13/2019	1.1		.6 2/1:	/2019	4,500
2/17 - 2/23	2/23/2019	8.6	8.6	0.13	2/18/2019	6.91	ND (<0.25)	5.3	210	82	13	9.3	139		12	179		0.094	1.4	2/20/2019	0.75		.1		
2/24 - 3/2	3/2/2019	ND (<1.0)	0.5	0.0075	2/25/2019	6.74	ND (<0.25)	16	220	170	11	13	202		11	171		0.11	1.7	2/27/2019	0.55		.3		
3/3 - 3/9	3/9/2019	ND (<1.0)	0.5	0.0068	3/4/2019	6.64	ND (<0.25)	14	220	160	15	15	199		15	199		0.11	1.5	3/6/2019	ND (<0.50)		.4		
3/10 - 3/16	3/16/2019	ND (<1.0)	0.5	0.0068	3/11/2019	6.57	ND (<0.25)	3.5	250	72	19	4.8	65		19	257		0.16	2.2	3/13/2019	ND (<0.50)		.3		
3/17 - 3/23	3/23/2019	ND (<1.0)	0.5	0.0073	3/18/2019	6.82	ND (<0.25)	3.4	290	81	13	4.9	67		13	178**		0.24	3.3	3/20/2019	2.2		13		
3/24 - 3/30	3/30/2019	ND (<1.0)	0.5	0.0068	3/25/2019	6.69	ND (<0.25)	5.0	280	78	0.97	5.1	71		0.97	14**		0.12	1.7	3/27/2019	ND (<0.50)	0.25	.2		
3/30 - 4/6	4/6/2019	ND (<1.0)	0.5	0.0070	4/1/2019	6.64	ND (<0.25)	ND (<2.5)	250	ND (<50)	ND (<0.50)	3.3	46		0.13	1.8**		0.081	1.1	4/3/2019	ND (<0.50)	0.25	.6		
4/7 - 4/13	4/13/2019	ND (<1.0)	0.5	0.0075	4/8/2019	6.50	ND (<0.25)	3.8	300	92	ND (<0.50)	9.6	136	ND (<0.10)	0.05	1.2**		0.13	1.8	4/10/2019	ND (<0.50)	0.25	.8		
4/14 - 4/20	4/20/2019	ND (<1.0)	0.5	0.0071	4/15/2019	6.60	ND (<0.25)	3.2	300	72	ND (<0.50)	4.3	65		0.21	2.9**		0.075	1.1	4/17/2019	ND (<0.50)	0.25	.3		
4/21 - 4/27	4/27/2019	ND (<1.0)	0.5	0.0074	4/22/2019	6.88	ND (<0.25)	11	310	410	0.60	23	335		0.60	8.7**		0.13	1.9	4/24/2019	1.4		1		
4/28 - 5/4	5/4/2019	ND (<1.0)	0.5	0.0073	4/29/2019	6.50	ND (<0.25)	ND (<2.5)	310	130	1.2	5.1	76		0.63	9.4		0.14	2.1	5/1/2019	ND (<0.50)	0.25	.7 5/1	2019	4,300
5/5 - 5/11	5/11/2019	ND (<1.0)	0.5	0.0074	5/6/2019	6.50	ND (<0.25)	2.5	310	58	1.2	3.5	51		0.64	9.4**		0.14	2.1	5/8/2019	0.63	9	.0		
5/12 - 5/18	5/18/2019	ND (<1.0)	0.5	0.0074	5/13/2019	6.78	ND (<0.25)	5.9	340	130	0.57	13	193		0.57	8.4**		0.22	3.3	5/15/2019	ND (<0.50)	0.25	.7		
5/19 - 5/25	5/25/2019	ND (<1.0)	0.5	0.0074	5/20/2019	6.57	ND (<0.25)	2.7	290	70	ND (<0.50)	3.4	51		0.47	7.1**		0.10	1.5	5/22/2019	1.4		1		
5/26 - 6/1	6/1/2019	ND (<1.0)	0.5	0.0073	5/28/2019	7.05	ND (<0.25)	4.4	250	99	1.5	4.6	67		0.79	11**		0.078	1.1	5/29/2019	0.88		.3		
6/2 - 6/8	6/8/2019	ND (<1.0)	0.5	0.0076	6/3/2019	6.63	ND (<0.25)	ND (<2.5)	340	58	0.82	3.5	53		0.82	12		0.14	2.1	6/5/2019	ND (<0.50)		.8		
6/9 - 6/15	6/15/2019	ND (<1.0)	0.5	0.0072	6/10/2019	6.63	3.5	2.8	360	73	1.6	7.5	105		1.0	14**		0.16	2.2	6/12/2019	ND (<0.50)	0.25	.5		
6/16 - 6/22	6/22/2019	ND (<1.0)	0.5	0.0070	6/17/2019	6.65	ND (<0.25)	ND (<2.5)	310	150	2.5	5.7	81		2.5	35**		0.18	2.5	6/19/2019	1.9		27		
6/23 - 6/29	6/29/2019	ND (<1.0)	0.5	0.0071	6/24/2019	6.65	ND (<0.25)	ND (<2.5)	330	59	1.8	2.9	38		1.8	24**		0.15	2.0		ND (<0.50)		.7		
6/30 - 7/6	7/6/2019	5.7	5.7	0.080	7/1/2019	7.00	ND (<0.25)	ND (<2.5)	340	ND (<50)	ND (<0.50)	3.6	51	ND (<0.10)	0.05	0.7		0.13	1.8	7/3/2019	ND (<0.50)		.6		
7/7 - 7/13	7/13/2019	11	11	0.16	7/8/2019	6.59	ND (<0.25)	ND (<2.5)	310	ND (<50)	2.9	1.7	25		1.4	21		0.13	1.9	7/10/2019	0.83		.2		
7/14/ - 7/20	7/20/2019	3.5	3.5	0.051	7/15/2019	6.77	ND (<0.25)	2.6	280	77	0.83	6.7	97		0.26	3.8		0.25	3.6	7/17/2019	ND (<0.50)		.6		
7/21 - 7/27	7/27/2019	ND (<1.0)	0.5	0.0070	7/22/2019	6.62	ND (<0.25)	4.0	330	ND (<50)	ND (<0.50)	4.4	63		0.11	1.6		0.19	2.7	7/24/2019	ND (<0.50)		.6		
7/28 - 8/3	8/3/2019	4.4	4.4	0.063	7/29/2019	6.77	ND (<0.25)	ND (<2.5)	360	72	ND (<0.50)	2.4	35		0.16	2.3		0.12	1.8	7/31/2019	ND (<0.50)	0.25	.7		
8/4 - 8/10	8/10/2019	4.1	4.1	0.060	8/5/2019	6.60	ND (<0.25)	ND (<2.5)	330	60	ND (<0.50)	4.7	70		0.22	3.3		0.10	1.5	8/7/2019	1.5		2 8/1	2019	4,200
8/11 - 8/17	8/17/2019	ND (<1.0)	0.5	0.0070	8/12/2019	6.59	ND (<0.25)	3.1	260	120	1.0	2.1	30		1.0	14		0.046	0.65	8/14/2019	ND (<0.50)	0.25	.5		
8/18 - 8/24	8/24/2019	ND (<1.0)	0.5	0.0070	8/19/2019	6.59	ND (<0.25)	3.8	260	150	0.97	6.3	90		0.97	14**		0.21	3.0	8/21/2019	ND (<0.50)	0.25	.4		
8/25 - 8/31	8/31/2019	NA	NA	NA	8/26/2019	6.55	ND (<0.25)	2.7	330	85	1.1	3.4	50		1.1	16		0.14	2.1	8/28/2019	ND (<0.50)	0.25	IA		
	· · · · · · · · · · · · · · · · · · ·	·			9/3/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9/4/2019	NA		IA		. <u></u>

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.

NA = Not Available To Date

^{**} Additional samples were collected and analyzed for ammonia during this week and results were included in the 30-day average loading calculation.

ND = Not Detected above laboratory reporting limit; concentration in adjacent cell to right is one-half the reporting limit (per Permit condition)

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value.

^{-- =} Analyte detected; see column adjacent to right

^{*} Total phosphorus discharge limitation of 10 lbs/day applies between March 1 and October 31; Ammonia discharge limitation of 20 lbs/day applies between April 1 and September 30; no limits apply the rest of the year. Last Updated: September 6, 2019

Attachment B

Equipment Tracking Form

Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
		Main Plant Equipment				
1		Seep Wells and Lift Station 1				
1.01		Seep Well Field, 9 wells	Running			
1.02		Lift Station 1 Lift Pump A			3	Inspected and serviced the turbine.
1.03		Lift Station 1 Lift Pump B				·
1.04		Area in and around Lift Station 1	Running		2	Replaced the VFD for the IX feed pump.
2		Athens Road Wells and Lift Station 3				
2.01		Athens Road Well Field, 9 wells	Running			
2.02		Lift Station 3 Lift Pump A	Standby			
2.03		Lift Station 3 Lift Pump B	Running			
2.04		Area in and around Lift Station 3	Running			
3		Lift Station 2 and Transmission Pipelines				
3.01		Influent Pipeline	In operation			
3.02		Effluent Pipeline	Running			
3.03		Lift Station 2 Lift Pump A	Running			
3.04		Lift Station 2 Lift Pump B	Standby			
3.05		Area in and around Lift Station 2	Running			
4		Interceptor Wells and Cr Treatment Plant				
4.01		IWF Well Field, 30 wells	Running		2	Replaced the motor on I-Z
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running		4	
4.04			In operation			
4.05		Filter Press	Running			
4.06		GWTP Effluent Tank	In operation		2	Opened and inspected the 1001 pump and piping for deficiencies
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B				
4.09		Area In And Around GWTP	Running			
5		Equalization Area and GW-11 Pond				
5.01	PID10A	Pond GW-11	In operation		2	Installed a new flowmeter on the NW corner
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation			
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				

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Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
5.08	PID10A	F-101 Filters	Running			
5.09	PID10B	Carbon Absorber - LGAC 201A	Running			
5.10	PID10B	Carbon Absorber - LGAC 201B	Running			
5.11	PID10B	Carbon Absorber - LGAC 201C	Running			
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A			3	Rebuilt the bed height control pump
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401			3	Replaced and rebuilt the pump
6.04	PID14	P1401A				
6.05	PID01A	P1401B				
6.06	PID01A	FBR 1	Running			
6.07	PID02A	FBR 2	Running			
6.08	PID01A	First Stage Separator Tank - T2011	Running			
6.09	PID01A	Media Return Pump - P2011	Running			
6.10	PID01A	First Stage FBR Pump - P1011	Standby			
6.11	PID01A	First Stage FBR Pump - P1012				
6.12	PID01A	First Stage FRB Pump - P101A	Running			
6.13	PID07A	FBR A pH Feed Pump - P71A	Off			
6.14	PID07A	FBR 1 pH Feed Pump - P711	Off			
6.15	PID07A	FBR 2 pH Feed Pump - P712	Off			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off			
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off			
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off			
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running		3	Replaced the head on the pump and the check ball at the injection point.
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running			
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running			
7		First Stage FBRs 3 & 4				
7.01	PID01B	FBR 3	Running			
7.02	PID01B	FBR 4	Running			
7.03	PID02B	First Stage Separator Tank - T2012	Running			
7.04	PID01B	Media Return Pump - P2012	Running			
7.05	PID01B	First Stage FBR Pump - P1013	Running			

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Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
7.06	PID01B	First Stage FRB Pump - P1014	Running			
7.07	PID01B	First Stage FBR Pump - P102A	Running			
7.08	PID07A	FBR 3 pH Feed Pump - P713	•			
7.09	PID07A	FBR 4 pH Feed Pump - P714	Running			
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723				
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Off			
7.12	PID15	FBR 3 Nutrient (Phos Acid) Feed Pump - P1523	Running			
7.13	PID15	FBR 4 Nutrient (Phos Acid) Feed Pump - P1524	Running			
7.14	PID07B	FBR 3 Electron Donor Assembly Pump - P733	Running			
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Running			
8		Second Stage FBRs 5 & 6				
8.01	PID03A	FBR 5	Running			
8.02	PID03A	FBR 6	Running			
8.03	PID03C	Second Stage Separator Tank - T3011	Running			
8.04	PID03A	Media Return Pump - P3011	Running			
8.05	PID03A	Second Stage FBR Pump - P3015	Running			
8.06	PID03A	Second Stage FBR Pump - P3016	•			
8.07	PID03A	Second Stage FBR Pump - P301A				
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07B	, ,	Running			
9		Second Stage FBRs 7 & 8				
9.01	PID03B	FBR 7	Running			
9.02	PID03B		Running			
9.03	PID03D	Second Stage Separator Tank - T3012				
9.04	PID03B	Media Return Pump - P3012				-
9.05	PID03B	Second Stage FBR Pump - P3017				
9.06	PID03B	Second Stage FBR Pump - P3018				-
9.07	PID03B	Second Stage FBR Pump - P302A				-
9.08	PID07A	FBR 7 pH Feed Pump - P717	Off			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Off			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off			

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9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04					
10.02	PID04					
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution				
10.05	PID04	, , , , , , , , , , , , , , , , , , , ,				
10.06	PID04		Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation		1	New airline fittings were installed on the air supply to the pressure tank.
10.11	PID05	DAF Vessel - D501	Running		1	The vessel was taken offline to perform semiannual maintenance including pressure washing the vessel and applying coating to the sludge box vessel.
10.12	PID05	DAF Pressure Pump - P501	Running		1	The guard was removed and the flex coupling was inspected as well as the vibration and temperature reading on the motor.
10.13	PID05	DAF Float Pump - P502	Running		1	The pump was replaced for damaged discs.
10.14	PID05					
10.15	PID05	DAF Pressure Pump - P551	Running			
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			
11		Pumping System (Old Effluent)				
11.01	PID06					
11.02	PID06	,				
11.03	PID06	, , , , , , , , , , , , , , , , , , ,	Standby		2	The pump was replaced with a spare Goulds pump
12		Sand Filter System				
12.01	PID17					
12.02	PID17				2	Solids were removed from the reject tank.
12.03	PID17					
12.04	PID17	· ····································	Running			
13		Effluent Tank and Pumping				
13.01	PID10C		. 3			
13.02	PID10C	Effluent Booster Pump - P1302A	Running			

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Sub- System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
13.03	PID10C	Effluent Booster Pump - P1302B	Standby			
13.04	PID10C	Area Around Effluent and North D-1	Running			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	In operation			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902				
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running			
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			
		Chemical Systems				
15		Electron Donor System				
15.01	PID07B	Electron Donor Tank	In operation			
15.02	PID07B	Booster Pump P739A	Running			
15.03	PID07B	Booster Pump P739B	Standby			
17	PID07C	Micro Nutrient System	In operation			
18	PID07C	Hydrogen Peroxide System	In operation			
19	PID07C	De-Foam System	In operation			
20	PID15	(Tank only - pumps included in FBRs)	In operation			
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation			
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
23	PID07C	Aluminum Chlorohydrate	In operation			
24	PID07B	Polymer Systems - DAF	In operation			
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation		3	A new flowmeter and transfer pump was installed.
		Utility Systems				
26		Compressed Air System				
26.01	PID08	West Compressor	Running			
26.02	PID08	East Compressor				
26.03	PID08	O2 Compressor	Running			

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26.04	PID08	Compressed Air Receiver Tank	In operation			
26.05	PID08	Air Dryer	Running			
26.06	PID08	Oil Removal Filter	In operation			
26.07	PID08	Particulate Filter	In operation			
27	PID16	Oxygen System	In operation			
28		GWETS Plant Controls/ Siemens Controls	In operation			
29		Well Control System/ Allen Bradley Controls	In operation			
30		MCC FBR Pad	In operation			
31		MCC in D-1	In operation			
32		MCC in EQ area	In operation			
		Miscellaneous Systems				
33		Operations Office/Network	In operation			
34		Laboratory Analyzers				
35		Security Systems	In operation			
		Shelf Spares				
		Media Return Pump Rebuild Kit				
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock			
		Phosphoric Acid Feed Pump				
		Interceptor Well Pumps (4 each)				
		Seep Well Pump (1 each, same as Athens so total of 2)	In stock			
		Athens Road Well Pump (1 each, same as Seep so total of 2)	In stock			

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