
To: 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: May 20, 2018

Subject: NERT – GWETS Operation Monthly Report – April 2018

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 April 2018.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in April 2018. Flow from PC-119, 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 136 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,079 gpm during April 2018. At the end of the month, the GW-11 Pond volume was at 35.6 million gallons (MG), which would allow 18.6 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 increased approximately 0.8 MG from the end of March 2018. 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 1.0 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 91 mg/L for the month, with a maximum concentration of 110 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of March 2018 averaged 168 mg/l, with a maximum concentration of 250 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.

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 April.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of April starting at a flow rate of 0.5 gpm and increasing to 2.0 gpm on the 12th of April through the end of the month. This reduction was necessary to maintain compliance with the reduced ammonia loading effluent limits for April through September specified in the NPDES permit.

There were five Effluent diversions into GW-11 in the month of April. Four diversions were for the purposes of maintaining the GW-11 elevation level and one was due to a precautionary measure due to detectable levels of perchlorate. Below is a description of the events that occurred:

Diversion Events

- Effluent Diversion to GW-11 occurred on April 8, 2018 from 9:00am to 12:00pm to maintain the GW-11 elevation level. Approx. 185,400 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on April 8, 2018 from 4:54pm to 7:50pm as a precautionary measure due to the presence of elevated levels of perchlorate in the effluent. Adjustments were made to the process and the flow was returned to the outfall after samples were tested in the onsite lab and confirmed to be within compliance. Approx. 159,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on April 15, 2018 from 12:00pm to 3:00pm to maintain the GW-11 elevation level. Approx. 190,000 gallons were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on April 22, 2018 at 1:26pm to 5:06pm to maintain the GW-11 elevation level. Approx. 237,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on April 29, 2018 at 8:26am to 10: to maintain the GW-11 elevation level. Approx. 167,000 gallons of Effluent were diverted to GW-11.

3. Spills

There was one non-reportable Influent release outside of containment of approximately 8 gallons in the month of April. On April 12th, 2018 at approximately 11:00am it was discovered that high winds had damaged the support bracing that directs the GW-11 Influent flow discharge into the pond. The winds blew a small amount of discharge, as a spray, out of containment and onto the top of the dam.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. A new spool piece was installed on the discharge of P-1302A effluent pump.
 - II. New handrails were installed around the deck of the trailer.
 - III. Effluent pump P-601 was replaced with a spare pump.
 - IV. A new section of the airlines were installed to run piping to the top of the FBR's.
 - V. A new motor, pump, and electrical connections were installed on the NE pond corner.
 - VI. New flowmeters were installed on all the pond corner sump pumps.
 - VII. A new pulley and belts were installed on the South DAF sludge pump.
 - VIII. Contractors removed and replaced the concrete ramp for access to the FBR pad.
 - IX. Additional UV protection was installed at Lift Station 3 for the MCC cabinets.
 - X. A new drawdown column was installed on the hydrogen peroxide line.
 - XI. The media return pump was replaced with the shelf spare for Separator 3.

- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Semi-annual maintenance was performed on the North DAF including replacing the rollers on the skimmers, inspection of the sludge pump, removal of all solids from the vessel and sludge box, application of additional coating where needed, inspection of the air system, and replacement of the auger bearing packing.
 - II. An inspection around GW-11 was conducted and the slopes were cleared of erosion.
 - III. The packing was inspected and replaced on the turbine pumps at Lift Station 1.
 - IV. ORP and pH probes were calibrated.
 - V. The front gate was inspected and greased.
 - VI. Seal water return lines were cleared off debris.
 - VII. The generators were brought down from the pond corners and were drained of fluids and placed into storage.

GWETS Upgrades and Facility Projects

Alumina Chlorohydrate (ACH) Pilot Study – At the direction of the Trust, ETI is performing a pilot study to evaluate alternative coagulants to avoid the growth of iron bacteria within the Effluent pipeline. ETI is currently collecting background data to compare the current Ferric Chloride coagulant usage to the test ACH coagulant under existing conditions. The internal work plan has been completed and test should begin in early May.

Geo-tube Pilot Study – At the direction of the Trust, ETI is performing a pilot study to evaluate the use of Geo-tubes in increase the capacity of the Chromium Treatment Plant. ETI is currently finalizing an internal test plan and ordering required items. The pilot test should begin sometime in May.

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.

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 Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ^{4 5}	Chromium (TR) (mg/L) ^{4 5}	Chromium(VI) (mg/L) ^{4 5}
SWF Total Extraction ²	749 ¹	7.0	0.0016	0.0015
AWF Total Extraction ²	469 ¹	90	0.17	0.17
IWF Total Extraction ²	61 ¹	569	8.3	7.7
AP Area Total Extraction ²	10 ¹	919	0.056	0.054
GWTP Effluent ³	78	675	0.86	ND
GW-11 Influent ²	1.8	31	0.075	0.060
FBR Influent ^{3 6}	1,079	91	0.045	0.041
T-205 Effluent (AP-5 Wash Water) ^{6 7}	1.4	13,555	NA	NA

Notes:

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

1: Sum of daily average flow for individual wells.

2: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.

3: Perchlorate, chromium TR and chromium (VI) sampled weekly, values reported from TestAmerica.

4: All concentrations reported are monthly flow weighted averages.

5: ND analytical values are treated as zero values in the flow weighted average calculations.

6: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

7: Flow weighted average concentration based on mass flow meter readings.

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) ¹	Chromium (TR) (lbs/month) ¹	Chromium (VI) (lbs/month) ¹
SWF Total Extraction	1,881	0.44	0.42
AWF Total Extraction	15,270	28	29
IWF Total Extraction	12,582	184	170
AP Area Total Extraction	3,332	0.20	0.20
GWTP Effluent	18,961	24	ND
GW-11 Influent	20	0.049	0.039
FBR Influent ²	35,615	17	16
T-205 Effluent (AP-5 Wash Water) ^{2 3}	6,975	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

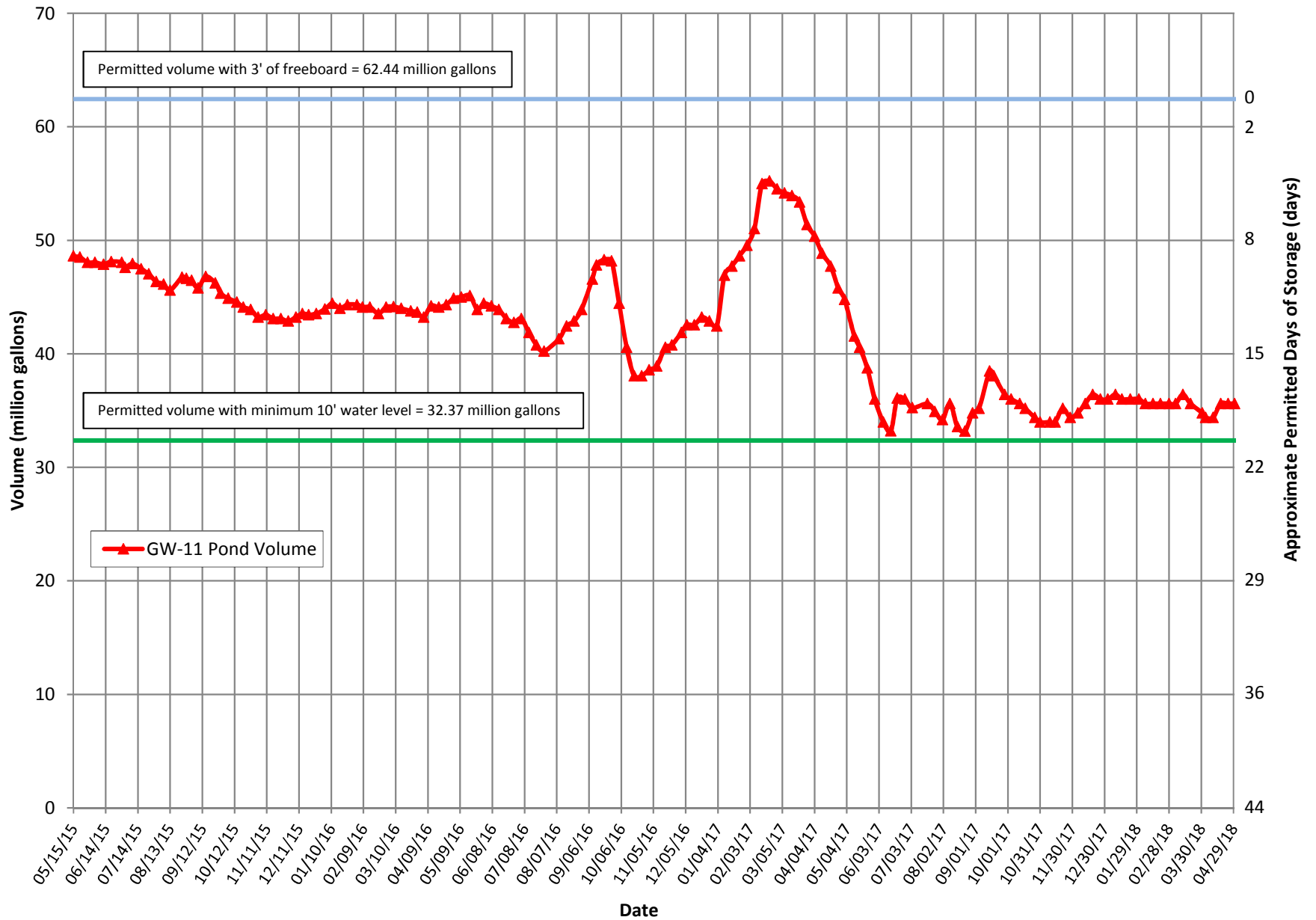
1: Total mass extracted is calculated from flow weighted average concentration and average flow (see Table 1).

2: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

3: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

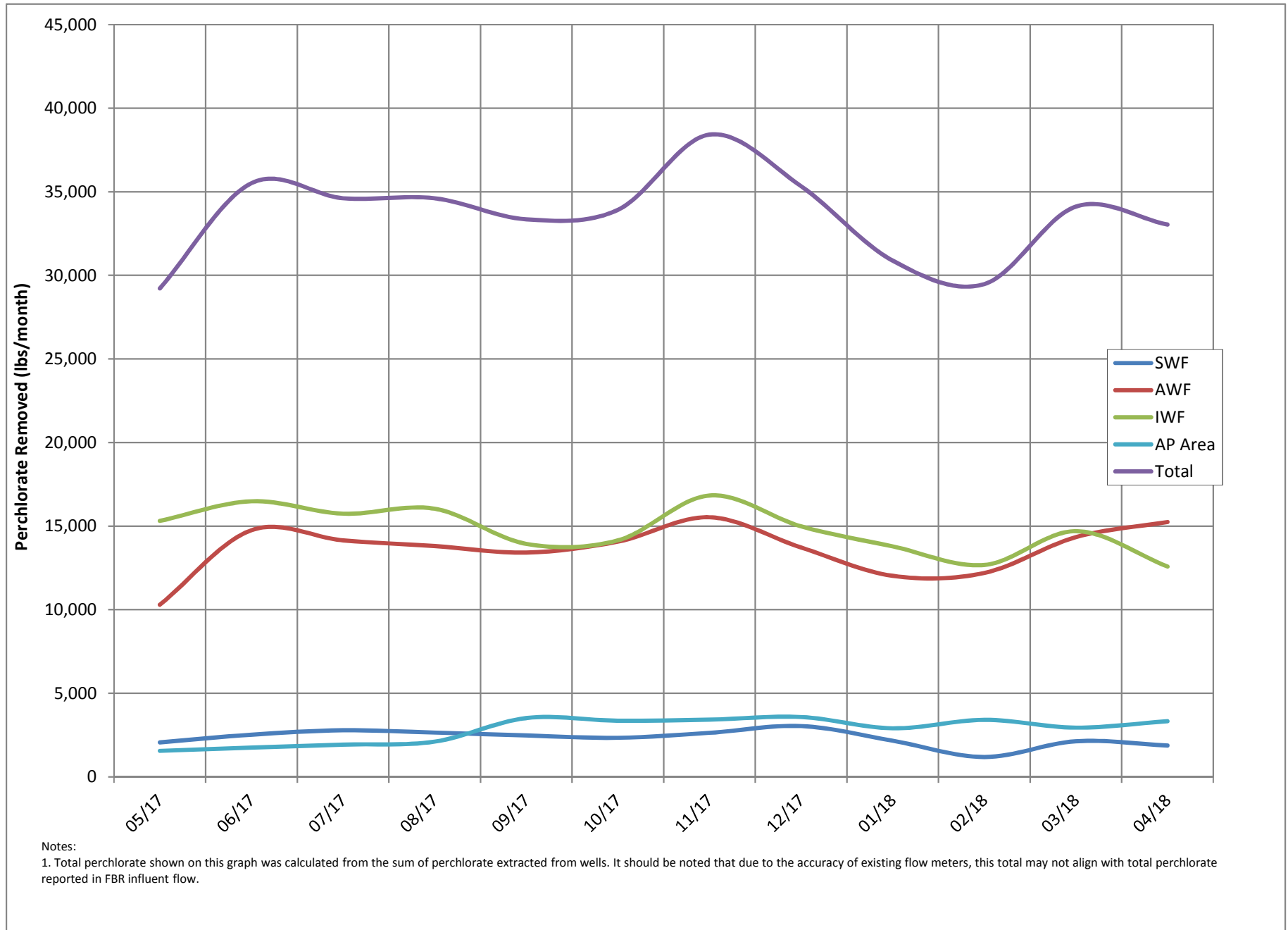
Figures

Operational Metrics



Note: Measurements switched from manual to transducer on 06/20/17. The pond volume fluctuations between 05/30 and 06/20 reflect the decreasing manual measurement accuracy at lower pond levels.

Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Treated Effluent at Outfall 001																						
Continuous		Daily Samples, composited weekly				Weekly Grab Samples										Weekly, collected separately			Quarterly			
Flow Rate		Perchlorate				pH	Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Suspended Solids (TSS)		Total Ammonia as N		Total Phosphorus as P		BOD ₅ (inhibited)			Total Dissolved Solids (TDS)	
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)			Daily Min. (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. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	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	
January 2018	1.80	1.88	0.5	0.0075		6.70	7.02	0.49	18	600	3,900	14	17	260		170		2.9	3.9	45		
February 2018	1.83	1.88	1.5	0.022		6.81	6.87	ND (<0.25)	8.2	590	2,300	12	16	230		150		2.9	4.0	43	4,600	
March 2018	1.79	1.89	0.5	0.0075		6.76	7.19	ND (<0.25)	15	430	2,600	10	13	200		50		2.8	4.1	43		
April 2018 (month to date)	1.66	1.81	0.5	0.0070		6.60	7.30	ND (<0.25)	8.7	380	1,100	0.89	9	140		3		1.9	2.7	31	NA	

Daily Grab Sample Dates	Composite Sample Date	µg/L	lbs/day	Sample Date	S.U.	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	Sample Date	mg/L	
12/31 - 1/6	1/6/2018	ND (<1.0)	0.5	0.0077	1/2/2018	7.02	ND (<0.25)	6.6	600	1,600	14	12	185	--	12	183**	--	0.082	1.3	1/3/2018	2.2	33
1/7 - 1/13	1/13/2018	ND (<1.0)	0.5	0.0072	1/8/2018	6.86	ND (<0.25)	4.8	600	2,800	11	18	263	--	11	160	--	0.13	1.9	1/10/2018	3.2	48
1/14 - 1/20	1/20/2018	ND (<1.0)	0.5	0.0076	1/15/2018	6.70	0.25	5.7	550	1,100	11	7.9	122	--	10	142**	--	0.11	1.7	1/17/2018	3.9	58
1/21 - 1/27	1/27/2018	ND (<1.0)	0.5	0.0076	1/22/2018	6.83	0.49	18	530	3,900	12	26	401	--	11	170**	--	0.18	2.8	1/24/2018	2.3	36
1/29 - 2/3	2/3/2018	ND (<1.0)	0.5	0.0077	1/29/2018	6.72	ND (<0.25)	11	580	3,800	9.8	21	316	--	8.9	134	--	0.11	1.7	1/31/2018	3.1	47
2/4 - 2/10	2/10/2018	ND (<1.0)	0.5	0.0076	2/5/2018	6.87	ND (<0.25)	5.4	580	960	12	6.9	104	--	9.9	150**	--	0.047	0.71	2/7/2018	2.6	40
2/11 - 2/17	2/17/2018	3.1	3.1	0.048	2/12/2018	6.81	ND (<0.25)	6.8	590	1,300	12	7.0	106	--	10	151	--	0.055	0.840	2/14/2018	2.3	35
2/18 - 2/24	2/24/2018	ND (<1.0)	0.5	0.0077	2/19/2018	6.86	ND (<0.25)	7.0	550	2,300	12	16	240	--	10	150	--	0.11	1.7	2/21/2018	2.8	43
2/25 - 3/3	3/3/2018	1.7	1.7	0.024	2/26/2018	6.84	ND (<0.25)	8.2	550	1,700	12	33	481	--	6.9	101	--	0.19	2.8	2/28/2018	4.0	55
3/4 - 3/10	3/10/2018	ND (<1.0)	0.5	0.0073	3/5/2018	6.96	ND (<0.25)	11	430	2,600	9.8	18	269	--	8.3	124	--	0.24	3.6	3/7/2018	4.1	60
3/11 - 3/17	3/17/2018	ND (<1.0)	0.5	0.0076	3/12/2018	6.76	ND (<0.25)	7.1	360	2,100	10	17	258	--	8.6	130**	--	0.22	3.3	3/14/2018	3.7	58
3/18 - 3/24	3/24/2018	ND (<1.0)	0.5	0.0075	3/19/2018	7.14	ND (<0.25)	15	290	2,300	ND (<0.50)	12	175	--	0.39	5.7	--	0.11	1.6	3/21/2018	2.5	38
3/25 - 3/31	3/31/2018	ND (<1.0)	0.5	0.0076	3/26/2018	7.19	ND (<0.25)	3.6	340	890	ND (<0.50)	5.9	90	--	0.45	6.0	--	0.13	2.0	3/28/2018	0.95	14
4/1 - 4/7	4/7/2018	ND (<1.0)	0.5	0.0073	4/2/2018	7.30	ND (<0.25)	5.2	150	1,100	0.75	21	313	--	0.75	11	--	0.29	4.3	4/4/2018	1.7	25
4/8 - 4/14	4/14/2018	ND (<1.0)	0.5	0.0066	4/9/2018	6.74	ND (<0.25)	4.1	300	1,100	0.89	7.4	100	--	0.14	1.9**	--	0.17	2.3	4/11/2018	2.2	31
4/15 - 4/21	4/21/2018	ND (<1.0)	0.5	0.0070	4/16/2018	6.60	ND (<0.25)	8.7	380	560	ND (<0.50)	3.3	44	--	0.18	2.4	--	0.14	1.9	4/18/2018	2.7	37
4/22 - 4/28	4/28/2018	NA	NA	NA	4/23/2018	6.91	ND (<0.25)	5.3	290	480	ND (<0.50)	6.1	89	ND (<0.10)	0.050	0.73**	--	0.16	2.3	4/25/2018	0.90	NA
					4/30/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

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

NA = Not Available To Date

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

-- = 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: May 4, 2018

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	Running		3	New packing was installed on the turbine
1.03		Lift Station 1 Lift Pump B	Standby			
1.04		Area in and around Lift Station 1	Running			
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		4	Installed added UV protection over the MCC cabinets
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	A new discharge spool piece was installed on the turbine
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		3	Connections were tightened on I-Y
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running			
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running			
5 Equalization Area and GW-11 Pond						
5.01	PID10A	Pond GW-11	In operation		3	A new motor, pump and electrical connection was installed on the NE 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		4	The regulator was rebuilt and installed on the SLW line.
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				

Status Codes

Running - Unit is in operation
 Standby - Spare or duplicate, not currently in operation
 Maintenance - Out of service for maintenance
 Off - Not currently needed for use, but can be placed in service

Criticality Codes

1 = Critical - Cannot continue with operation until repairs made
 2 = Important - Can still operate safely and in compliance with permits, but risks are increased
 3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place
 4 = Low - Minor repairs that in no way alter the performance of the plant

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	The bed height pump was rebuilt and the pump was put online
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401				
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	Running			
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			
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			
7.06	PID01B	First Stage FRB Pump - P1014	Running			
7.07	PID01B	First Stage FBR Pump - P102A	Running			

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Criticality Codes

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 3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place
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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
7.08	PID07A	FBR 3 pH Feed Pump - P713	Running			
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		2	A new ethanol pump was installed
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		3	The pulley and pump was replaced with the shelf spare
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	Standby			
8.07	PID03A	Second Stage FBR Pump - P301A	Running			
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	FBR 6 Electron Donor Assembly Pump - P736	Running			
9		Second Stage FBRs 7 & 8				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
9.04	PID03B	Media Return Pump - P3012	Running			
9.05	PID03B	Second Stage FBR Pump - P3017	Running			
9.06	PID03B	Second Stage FBR Pump - P3018	Running			
9.07	PID03B	Second Stage FBR Pump - P302A	Running			
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			
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				

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
10.01	PID04	Aeration Tank	In operation			
10.02	PID04	Aeration Blower - B401	Running			
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump				
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running		3	Belt was replaced on the blower pulley
10.10	PID05	DAF Pressure Tanks	In operation		3	Welded a patch on the vessel
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running		3	The belts were replaced on the pump
10.14	PID05	DAF Vessel - D551	Running		2	DAF taken offline for the semi-annual inspection. The vessel was pressure washed and inspected. Additional coating was installed on select spots
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		2	New rollers and blocks were installed
11		Pumping System (Old Effluent)				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running		2	The pump shaft failed. A spare pump was installed as a temporary until the new pump arrives
11.03	PID06	Effluent Pump - P602	Standby			
12		Sand Filter System				
12.01	PID17	Sand Filter				
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running			
13		Effluent Tank and Pumping				
13.01	PID10C	UV Effluent Tank	Running			
13.02	PID10C	Effluent Booster Pump - P1302A	Running			
13.03	PID10C	Effluent Booster Pump - P1302B	Standby			
13.04	PID10C	Area Around Effluent and North D-1	Running		4	A new valve was replaced for the sludge sample port
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			

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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	Nutrient (Phosphoric Acid) System (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	Ferric Chloride System	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			
Utility Systems						
26	Compressed Air System					
26.01	PID08	West Compressor	Running		2	New thermostat was installed on the unit
26.02	PID08	East Compressor	Running		2	New thermostat was installed on the unit
26.03	PID08	O2 Compressor	Running			
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			

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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	In operation			
35		Security Systems	In operation			
Shelf Spares						
		Media Return Pump Rebuild Kit	In stock			
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock			
		Phosphoric Acid Feed Pump	In stock			Spares are on the shelf
		Interceptor Well Pumps (4 each)	In stock			More motors are on order
		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			Spares are on the shelf.

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