
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: July 20, 2018

Subject: NERT – GWETS Operation Monthly Report – June 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 June 2018.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in June 2018. 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 1,037 gpm during June 2018. At the end of the month, the GW-11 Pond volume was at 35.2 million gallons (MG), which would allow 18.9 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 0.5 MG from the end of May 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 0.74 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 133 mg/L for the month, with a maximum concentration of 140 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of May 2018 averaged 116 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.

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 June.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of June starting and maintaining a flow rate of 2.0 gpm throughout the month. This flow rate was necessary to maintain compliance with the reduced ammonia loading effluent limits for April through September specified in the NPDES permit.

There were ten Effluent diversions into GW-11 for the purposes of maintaining the GW-11 elevation level, two Effluent diversions for maintenance purposes, one Effluent diversion for precautionary purposes, two events that required the extraction well fields and associated lift stations to be taken offline, and one event that required maintenance on an individual extraction well. Below is a description of the events that occurred:

Diversions Events

- Effluent Diversion to GW-11 occurred on June 3, 2018 from 12:41pm to 12:47pm and 6:20pm to 6:26pm due to high Final Effluent tank (T-621) levels. Approximately 18,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 4, 2018 at 11:30pm to 5:00am to maintain the GW-11 elevation level. Approximately 377,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 6, 2018 at 11:02pm to 4:07 to maintain the GW-11 elevation level. Approximately 349,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 12 2018 at 11:35pm to 5:31am to maintain the GW-11 elevation level. Approximately 374,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 14, 2018 at 11:16pm to 5:17am to maintain the GW-11 elevation level. Approximately 387,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 15, 2018 at 12:11pm to 12:54pm to conduct maintenance activities at the outfall. Approximately 45,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 17, 2018 at 11:39pm to 5:33am to maintain the GW-11 elevation level. Approximately 374,000 gallons of Effluent were diverted to GW-11.
- Planned Interceptor Well Field (IWF) shutdown occurred on June 19, 2018 at 9:07am to 10:53am due to maintenance activities requiring the degassifier tank to be drained and inspected.
- Planned Lift Station 1 and Seep Well Field shutdown occurred on June 21, 2018 at 6:46am to 10:15am due to an annual high voltage electrical component inspection.
- Planned Lift Station 3 and Athens Well Field shutdown occurred on June 21, 2018 at 8:29am to 9:00am due to an annual high voltage electrical component inspection.
- Planned Lift Station 2 shutdown occurred on June 21, 2018 at 9:18am to 10:05am due to an

annual high voltage electrical component inspection.

- Shutdown of extraction well ART-9 occurred on June 22, 2018 at 8:00pm to 9:43am due to a damaged electrical connection at the pump. The pump was pulled, the connection replaced, and the extraction well was put back into service.
- Effluent Diversion to GW-11 occurred on June 22, 2018 at 9:18am to 10:10am to maintain the GW-11 elevation level. Approximately 56,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 22, 2018 at 11:32pm to 5:29am to maintain the GW-11 elevation level. Approximately 385,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 23, 2018 at 11:30pm to 5:30am to maintain the GW-11 elevation level. Approximately 383,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 24, 2018 at 9:10pm to 10:15pm as a precautionary measure due to detectable levels of perchlorate in the effluent. Adjustments were made, a new sample was tested, and the effluent returned to the outfall. Approx. 67,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 27, 2018 at 11:30pm to 5:30am to maintain the GW-11 elevation level. Approximately 460,000 gallons of Effluent were diverted to GW-11.
- Effluent Diversion to GW-11 occurred on June 29, 2018 at 11:30pm to 5:30am to maintain the GW-11 elevation level. Approximately 460,000 gallons of Effluent were diverted to GW-11

3. Spills

There were no reportable spills for the month of June.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. New drains were installed on the FBR skid.
 - II. Hampton Tedder (high voltage electrical contractor) conducted electrical tests on the high voltage electrical components at the lift stations.
 - III. The ethanol lines that feeds FBR 3 were replaced.
 - IV. An air regulator and air hose on the sludge tank (to regulate the O2) was installed.
 - V. The well pump in extraction well PC-133 was pulled and the roots were removed from the pump and motor.
 - VI. A new GWTP polymer tank was installed.
 - VII. A new motor was installed in extraction well I-K.
 - VIII. A new awning was installed over the flowmeters at Lift Station 1.
 - IX. The media return pump for Separator 3 was replaced due to damaged trunnions.
 - X. The new airlines were installed at the FBR pad, upstairs at the top of the FBR tanks.
 - XI. New pump and motors were installed at the NW and SE corners of the GW-11 Pond.
- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Inspections of the air conditioner units at the Lift Stations.
 - II. Inspections of the sump pits and the equipment. All sumps are in good working order.
 - III. Flushed and calibrated all ORP lines and pH probes.
 - IV. The oil levels were checked and the filters were cleaned on the Air Compressors.
 - V. Inspection of the O2 generator.

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 has completed collecting background data to compare the current Ferric Chloride coagulant usage and is currently testing the ACH coagulant under existing conditions. It is anticipated the ACH pilot will be completed early July.

Geo-tube Pilot Study – At the direction of the Trust, ETI is performing a pilot study to evaluate the use of Geo-tubes to increase the capacity of the Chromium Treatment Plant. The pilot test has been completed in early June. Depending on the receipt of laboratory analysis, the evaluation should be completed in early July.

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) ^{6 7}	Chromium (TR) (mg/L) ^{6 7}	Chromium(VI) (mg/L) ^{6 7}
SWF Total Extraction ¹	736 ⁵	6.5	0.0020	0.0016
AWF Total Extraction ¹	463 ⁵	97	0.16	0.16
IWF Total Extraction ¹	57 ⁵	733	8.2	7.6
AP Area Total Extraction ¹	8.8 ⁵	954	0.058	0.055
GWTP Effluent ²	73	760	0.25	ND
GW-11 Influent ¹	0.18	66	0.071	0.044
FBR Influent ^{2 3}	1,037	133	0.046	0.039
T-205 Effluent (AP-5 Wash Water) ^{3 4}	2.0	13,549	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 Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) ³	Chromium (TR) (lbs/month) ³	Chromium (VI) (lbs/month) ³
SWF Total Extraction	1,717	0.54	0.42
AWF Total Extraction	16,146	26	27
IWF Total Extraction	15,159	171	157
AP Area Total Extraction	3,047	0.19	0.17
GWTP Effluent	19,910	6.6	ND
GW-11 Influent	4.3	0.0046	0.0029
FBR Influent ¹	49,668	17	14
T-205 Effluent (AP-5 Wash Water) ^{1 2}	9,758	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

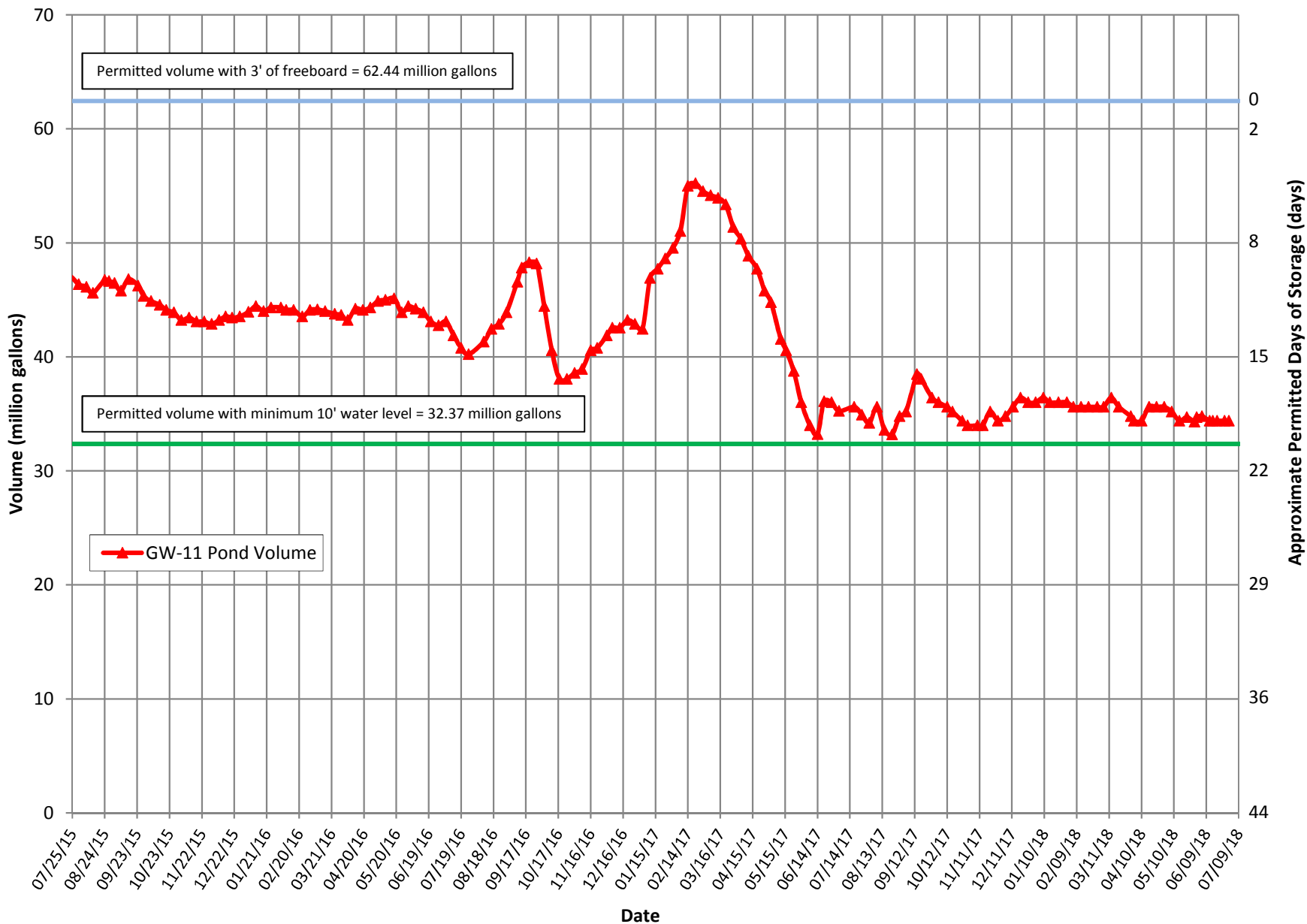
1: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

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).

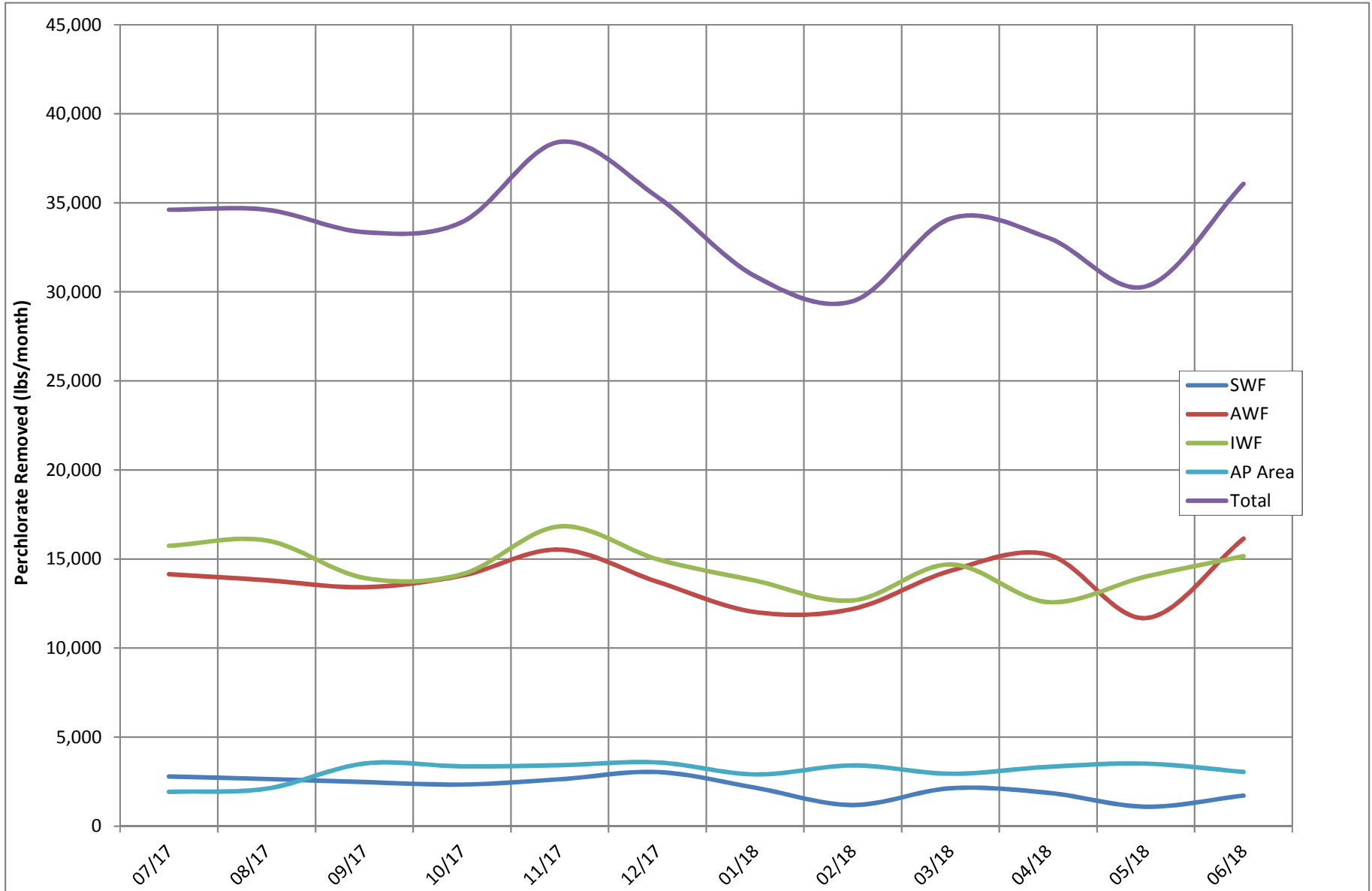
Figures

Operational Metrics



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



Notes:

1. Total perchlorate shown on this graph was calculated from the sum of perchlorate extracted from wells. It should be noted that due to the accuracy of existing flow meters, this total may not align with total perchlorate reported in FBR influent flow.

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	1.68	1.81	0.5	0.0070		6.60	7.30	ND (<0.25)	8.7	380	1,100	0.89	9	130		3		1.9	2.7	27	
May 2018	1.69	1.85	0.8	0.012		6.89	7.00	ND (<0.25)	9.4	370	2,400	1.6	10	140		3.2		1.4	2.2	19	4,000
June 2018 (month to date)	1.69	1.94	5	0.075		6.61	6.98	ND (<0.25)	9.0	370	230	1.4	8	110		8		3.4	7.9	49	
July 2018 (month to date)	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	NA	NA	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	
1/28 - 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	--	0.0555	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	ND (<1.0)	0.5	0.0070	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	13	
4/29 - 5/5	5/5/2018	2.0	2.0	0.030	4/30/2018	6.97	ND (<0.25)	5.1	300	1,000	ND (<0.50)	5.6	80	--	0.19	2.7	--	0.057	0.82	5/2/2018	2.0	30	
5/6 - 5/12	5/12/2018	ND (<1.0)	0.5	0.0072	5/7/2018	7.00	ND (<0.25)	8.0	360	2,300	1.6	13	157	--	0.53	8.1**	--	0.37	4.5	5/9/2018	2.2	34	
5/13 - 5/19	5/19/2018	ND (<1.0)	0.5	0.0069	5/14/2018	6.89	ND (<0.25)	7.6	280	2,400	ND (<0.50)	13	192	--	0.11	1.6**	--	0.11	1.6	5/16/2018	1.1	13	
5/20 - 5/26	5/26/2018	ND (<1.0)	0.5	0.0069	5/21/2018	6.94	ND (<0.25)	9.4	350	1,700	ND (<0.50)	12	177	ND (<0.10)	0.050	0.74**	--	0.086	1.3	5/23/2018	1.2	15	
5/27 - 6/2	6/2/2018	ND (<1.0)	0.5	0.0071	5/29/2018	6.98	ND (<0.25)	ND (<2.5)	370	100	1.1	2.3	28	--	0.33	4.0**	--	0.13	1.6	5/30/2018	ND (<0.50)	0.25	3.8
6/3 - 6/9	6/9/2018	14**	14	0.21	6/4/2018	6.98	ND (<0.25)	4.6	320	81	ND (<0.50)	6.5	104	ND (<0.10)	0.050	0.80**	--	0.14	2.2	6/6/2018	3.0	48	
6/10 - 6/16	6/16/2018	ND (<1.0)	0.5	0.0069	6/11/2018	6.89	ND (<0.25)	5.4	370	96	0.85	7.2	105	--	0.11	1.6**	--	0.16	2.3	6/13/2018	1.9	22	
6/17 - 6/23	6/23/2018	ND (<1.0)	0.5	0.0068	6/18/2018	6.61	ND (<0.25)	9.0	360	230	1.4	14	162	--	1.4	16**	--	0.17	2.0	6/20/2018	0.83	11	
6/24 - 6/30	6/30/2018	NA	NA	NA	6/25/2018	6.76	ND (<0.25)	4.6	310	NA	ND (<0.50)	4.0	58	ND (<0.10)	0.050	0.73**	--	0.13	1.9	6/27/2018	7.9	116	
7/1 - 7/7	7/7/2018	NA	NA	NA	7/2/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7/5/2018	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)
 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.
 ** Following an initial detection of 27 µg/L of perchlorate in the 7-day composite sample, a second 7-day composite sample for this period was analyzed for perchlorate, as well as all 7 individual daily samples. The second 7-day composite sample, as well as all individual daily samples, were ND (<2.5 µg/L) for perchlorate. The listed concentration is the average of the two 7-day composite samples (27 µg/L and half the detection limit [1.25 µg/L]).
 Last Updated: July 6, 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		2	PC-133 was pulled to remove the roots that have grown all over the pump and motor. The pump and motor are in good working order.
1.02		Lift Station 1 Lift Pump A	Running			
1.03		Lift Station 1 Lift Pump B	Standby			
1.04		Area in and around Lift Station 1	Running		4	Installed an awning over the flowmeters. The LS was taken down to conduct an electrical inspection on all the breaker cabinets.
2		Athens Road Wells and Lift Station 3				
2.01		Athens Road Well Field, 9 wells	Running		2	Art-9 was pulled to have the electrical connection repaired. New piping was installed where the flowmeter was installed as well.
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		1	The lift station was taken offline to conduct testing on all the electrical equipment.
4		Interceptor Wells and Cr Treatment Plant				
4.01		IWF Well Field, 30 wells	Running		2	A new motor was installed on I-K
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running		3	A new polymer tank was installed.
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		1	The plant was taken offline to inspect the de-gasifier vessel.
5		Equalization Area and GW-11 Pond				

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
5.01	PID10A	Pond GW-11	In operation		3	New motors and pumps were installed on the SE and NW corners.
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				
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				
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401			2	The pump was taken offline to replace the shaft. The rebuilt pump was put back online.
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			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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		2	The pH probe was relocated to be inline with the ORP line.
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			
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	The tubing was replaced at the injection point for the ethanol.
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 trunnions were replaced on the spare pump
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			

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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				
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			
10.10	PID05	DAF Pressure Tanks	In operation		4	New mufflers were installed on the blowdowns
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Running			
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	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running			
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				

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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			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation		3	The tank was flushed and the O2 generator was turned back on to supply the tank. The flowmeter was replaced as well.
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	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			

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26.02	PID08	East Compressor	Running			
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			
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			New motors were received.
		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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