
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, 2017

Subject: NERT – GWETS Operation Monthly Report – June 2017

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 2017.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in June 2017. Flow from PC-118, 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 255 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,047 gpm during June 2017. 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 approximately 2.8 MG from the end of May 2017. 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 2.0 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 95 mg/L for the month, with a maximum concentration of 100 mg/L. In comparison, the influent perchlorate concentration for the month of May 2017 averaged 88 mg/l, with a maximum concentration of 96 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. Figure 2 graphically presents historical perchlorate and chromium mass flux information.

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

ETI continued to withdraw water from the GW-11 pond while combining this flow with Lift Station flow in the TK-101 tanks for equalization purposes. The average flow rate for June from the GW-11 pond was approximately 59 gpm.

Electrical issues encountered during the second scheduled GW-11 leakage rate test caused the second pumping event to continue longer than the prescribed three day pumping cycle. The electrical issues were repaired and the second June pumping event was completed on July 5th 2017.

2. Biological Plant

There were no significant plant interruptions. There were three planned diversions into GW-11 for the month of June and two unplanned diversions. Below is a description of the events that occurred:

Planned Diversions:

- Influent Diversion to GW-11 on June 6th from 6:02am to 2:52pm. The plant influent was diverted due to planned maintenance activities on the Aeration tank diffuser system. During this diversion, approximately 168,775 gallons of effluent were returned to GW-11 resulting in an increase of water stored in GW-11. During this diversion all influent from the IWF, AWF, and the portion of the SWF not being treated by the IX was routed to GW-11.
- Influent Diversion to GW-11 on June 8th from 10:08am to 10:27am due to maintenance activities on the “pig launcher” piping. During this diversion, approximately 17,670 gallons of effluent were returned to GW-11. During this diversion all influent from the IWF, AWF, and the portion of the SWF not being treated by the IX was routed to GW-11.
- Effluent Diversion to GW-11 on June 27th from 8:35am to 9:47am due to maintenance activities on an effluent pipeline air release/combo valve. Approximately, 61,023 gallons of effluent was returned to GW-11. During this diversion all influent from the IWF, AWF, and the portion of the SWF not being treated by the IX was routed to GW-11.

Unplanned Diversions:

- Effluent Diversion to GW-11 on June 14th from 5:12pm to 5:57pm due to the upgrade activities at Lift Station1 resulting in an increase in Influent load. The effluent was diverted as a precaution while samples were tested in the onsite lab. Flow returned to the Outfall after confirmation of acceptable effluent water quality.
- Influent Diversion to GW-11 on June 24th from 11:00am to 2:00pm due to an electrical surge in the control room that caused the plant to go into shutdown mode. Effluent was also diverted to GW-11 on June 24th from 6:41pm to 10:00pm as a precaution due to the electrical event earlier that day. Effluent flow was returned to the Outfall after samples were tested in the lab and confirmed acceptable effluent water quality.

3. Spills

There were no spills outside of containment in the month of June.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. Extraction well ART-8A – New electrical connections were installed on the existing Franklin 7.5 hp motor.
 - II. P-3016 – The seal water solenoid valve was replaced as well as the fuse.
 - III. FBR/Effluent Pipeline – The aeration tank was drained and inspected. A vacuum truck was used to remove the small amount of debris from the vessel. The static mixer where the coagulants are injected prior to the DAF's was removed and cleared of any debris. Two new combo valves were installed on the effluent pipeline.
 - IV. P-102B – The pump and motor were taken to an outside contractor to have the motor bearing repaired as well as machining of the drive shaft to ensure a proper seal to the pump.
 - V. Extraction well ART-4 – The discharge check valve was tightened to stop a small leak inside containment.
 - VI. Plant Airlines – The airlines feeding the pumps on the FBRs were clogged. The valve was removed and the piping was cleared of debris and the airline was put back into service.
 - VII. T-401 – A new SLMW filter was installed that feeds the bio-filter.
 - VIII. Extraction well I-Y – The motor was showing an unbalanced voltage to the pump. The pump was pulled and a new .5 hp motor was installed and the fault was cleared. The well was put back into service.
 - IX. FBR-A – All of the nozzles and laterals were installed following tank repairs. A new swing check was installed on the discharge of the P-1401A recycle pump. A new bed height control pump was installed and is ready for service on the FBR.
 - X. Extraction well PC-119 – new Teflon gaskets were installed at the check wafers on the discharge piping to stop a slow drip leak inside containment.

- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. T-1702 Sandfilter – The airlifts were pulled and inspected. The hose connections were inspected and the air regulator was removed and cleaned. The sand washers were all hosed down and cleared out.
 - II. Plant Alarm System – The plant alarms were tested for high levels and low flows. The proper chain of events occurred in the proper order.
 - III. Plant Instrumentation – All ORP and pH meters were calibrated.
 - IV. Sumps – All sump pumps were inspected for proper lubrication and operation. P-1101 was disassembled during the inspection to remove debris from the check valve. The pump was put back into service.
 - V. FBR Recycle Pump Seal Water Meters – The seal water rotameters were taken offline to be removed and cleaned. They were reinstalled and put back into service.
 - VI. IWF wells – All of the IWF well piping was inspected for leaks or any damage to the equipment. No faults were found.

GWETS Upgrades and Facility Projects

The following is a summary of the initiatives in-progress during the reporting period at the direction of the Trust:

1. AP-5 Solids Removal

ETI performed a final checkout of the system and punch list with Tetra Tech. An acceptance of the system was issued in June. The contract amendment regarding AP-5 was issued during the month and it is anticipated that startup of treatment of AP-5 water through the FBRs will begin in late July. As a facility project, preparation of the system for treating AP-5 water was completed in June.

2. Spill containment enhancements

The work authorization for secondary containment modifications has been issued by the Trust. Approximately 75% of the work was completed as of the end of June. It is expected that these modifications will be completed in July.

3. Upgraded above ground well piping and flow meters at the Seep Well field

Work Authorization has been approved by the Trust. The work on this project was completed in June.

4. Addition of the Chromium Treatment Plant, GWTS, to the O&M manual

Work authorization has been issued by the Trust. The draft manual section was completed by ETI and submitted to the Trust in May. The Trust is currently completing its review of the document.

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) ^{5 6}	Chromium (TR) (mg/L) ^{5 6}	Chromium(VI) (mg/L) ^{5 6}
SWF Total Extraction ²	688.0 ¹	10	0.00066	0.00055
AWF Total Extraction ²	431.6 ¹	95	0.17	0.17
IWF Total Extraction ²	64.6 ¹	707	7.4	7.2
AP Area Total Extraction ³	6.0 ¹	810	NA	0.027
GWTP Effluent ⁴	86.2	677	0.58	ND
GW-11 Influent ²	6.6	99	0.26	0.051
GW-11 Effluent/ FBR Influent ⁴	1,046.9	95	0.13	0.049

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 twice weekly, values reported from TestAmerica.

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

5: All concentrations reported are monthly flow weighted averages.

6: 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) ¹	Chromium (TR) (lbs/month) ¹	Chromium (VI) (lbs/month) ¹
SWF Total Extraction	2,524	0.16	0.14
AWF Total Extraction	14,756	26	26
IWF Total Extraction	16,486	172	169
AP Area Total Extraction	1,749	NA	0.06
GWTP Effluent	21,082	18	0.00
GW-11 Influent	236	0.62	0.12
GW-11 Effluent/FBR Influent	36,065	48	19

Notes:

TR = Total Recoverable; NA = Not Analyzed.

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

Figures

Operational Metrics

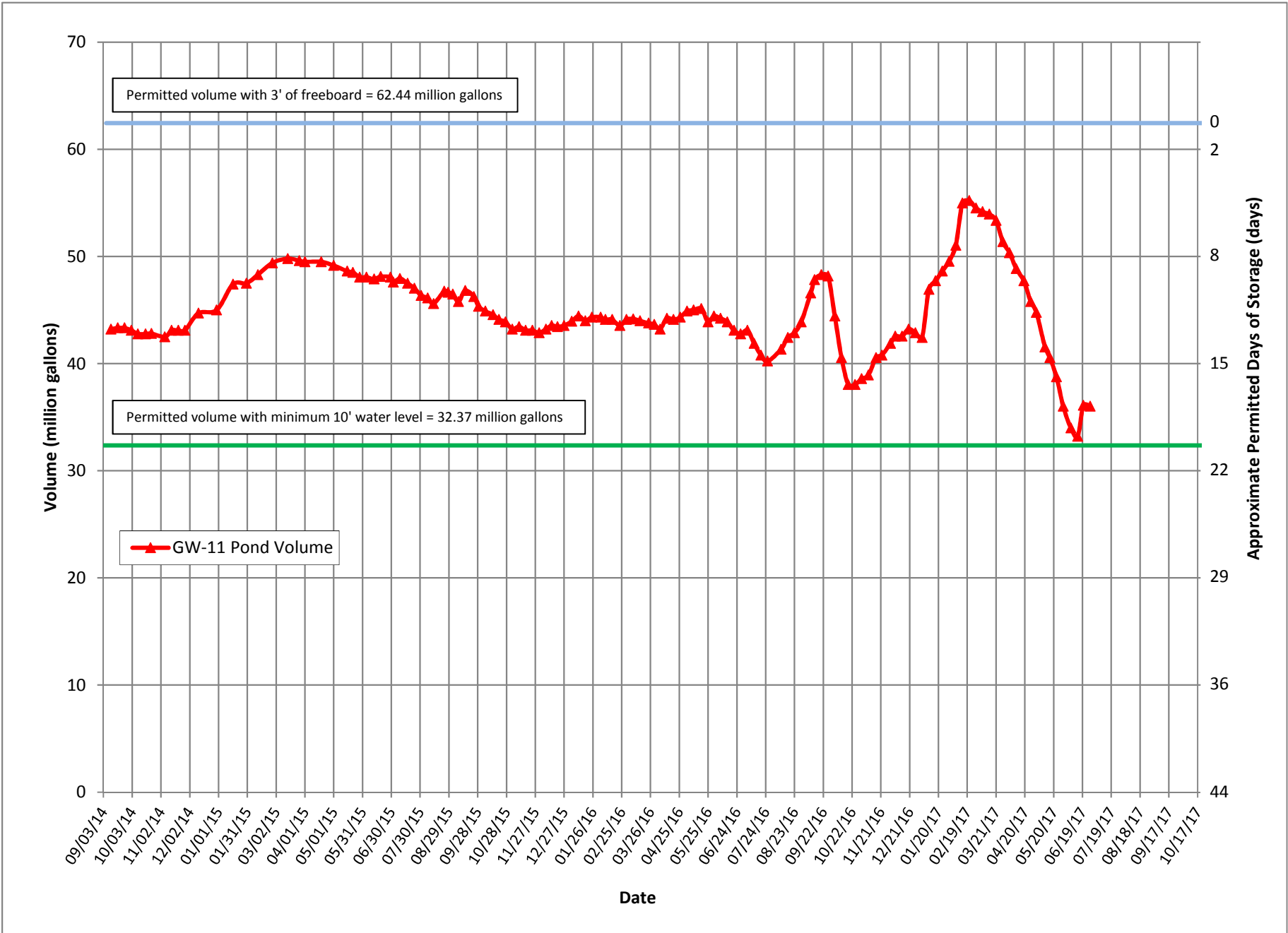
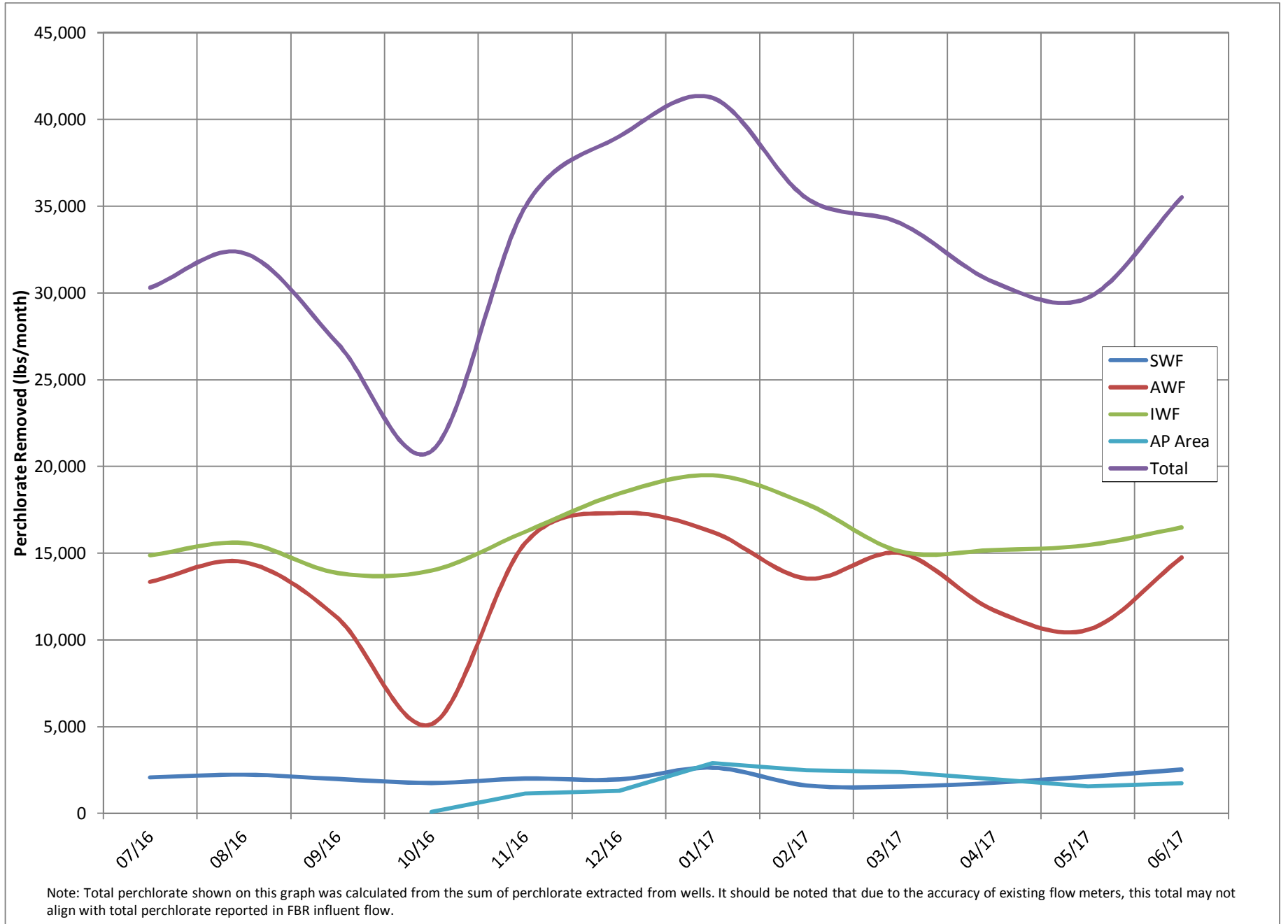


Figure 2 - Historical Perchlorate Mass Flux



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. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Max. (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. (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 2017	1.38	1.42	1.3	0.014	6.75	7.13	0.13	30	510	9,600	0.60	62	370	4.8	1.1	2.4	4.3	28	
February 2017	1.28	1.44	9	0.08	6.72	7.16	0.13	36	530	4,200	0.59	25	230	3.2	0.9	5.7	8.4	59	5,400
March 2017	1.38	1.44	0.5	0.006	6.65	6.80	0.13	9.5	540	4,700	1.6	27	260	6	1.0	2.8	5.4	32	
April 2017	1.45	1.55	0.5	0.006	6.70	6.88	0.13	20	570	4,000	1.3	24	260	2.8	2.8	2.8	4.1	33	
May 2017	1.46	1.53	0.5	0.006	6.68	7.00	0.13	10	580	3,300	2.0	28	250	2.5	1.9	1.7	2.8	21	4,900
June 2017 (month to date)	1.25	1.57	0.5	0.005	6.81	7.10	0.13	21	620	2,200	1.9	31	180	1.7	0.52	0.85	0.97	8.5	
July 2017 (month to date)	NA	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			
1/1 - 1/7	1/7/2017	ND (<2.5)	1.3	0.014	1/3/2017	6.76	ND (<0.25)	8.0	280	3,100	ND (<0.50)	26	300	--	0.35	4.0	--	0.046	0.53	1/4/2017	2.2	25		
1/8 - 1/14	1/14/2017	ND (<2.5)	1.3	0.015	1/11/2017	7.03	ND (<0.25)	30	410	9,600	0.60	62	728	--	0.60	7.0	--	0.13	1.5	1/11/2017	ND (<0.50)	0.25	2.9	
1/15 - 1/21	1/21/2017	ND (<2.5)	1.3	0.015	1/16/2017	7.13	ND (<0.25)	17	510	3,400	ND (<0.50)	27	313	--	0.23	2.7	--	0.078	0.91	1/18/2017	4.3	50		
1/22 - 1/28	1/28/2017	ND (<2.5)	1.3	0.014	1/24/2017	6.89	ND (<0.25)	29	480	3,100	ND (<0.50)	22	247	--	0.37	4.2	--	0.079	0.89	1/25/2017	2.9	33		
1/29 - 2/4	2/4/2017	ND (<2.5)	1.3	0.014	1/30/2017	6.75	ND (<0.25)	16	390	3,100	0.52	23	263	--	0.52	5.9	--	0.13	1.5	2/1/2017	3.9	45		
2/5 - 2/11	2/11/2017	34*	34	0.29	2/6/2017	7.00	ND (<0.25)	21	460	4,200	ND (<0.50)	25	211	ND (<0.10)	0.050	0.42	--	0.13	1.1	2/10/2017	8.4	71		
2/12 - 2/18	2/18/2017	ND (<1.0)	0.5	0.005	2/13/2017	7.16	ND (<0.25)	36	320	340	ND (<0.50)	19	24	206	260	--	0.12	1.3	--	0.11	1.2	2/15/2017	5.2	56
2/19 - 2/25	2/25/2017	ND (<1.0)	0.5	0.006	2/21/2017	6.73	ND (<0.25)	10	480	3,900	0.59	19	224	--	0.59	7.0	--	0.059	0.70	2/22/2017	5.4	64		
2/26 - 3/4	3/4/2017	ND (<1.0)	0.5	0.006	2/27/2017	7.22	ND (<0.25)	8.9	530	3,400	ND (<0.50)	19	224	--	0.36	4.2	--	0.046	0.54	3/1/2017	2.7	32		
3/5 - 3/11	3/11/2017	ND (<1.0)	0.5	0.006	3/6/2017	6.78	ND (<0.25)	7.9	490	1,800	1.6	17	197	--	1.0	12	--	0.11	1.3	3/8/2017	2.3	27		
3/12 - 3/18	3/18/2017	ND (<1.0)	0.5	0.006	3/13/2017	6.75	ND (<0.25)	6.7	540	2,300	1.2	21	244	--	0.50	5.8	--	0.058	0.67	3/15/2017	1.9	22		
3/19 - 3/25	3/25/2017	ND (<1.0)	0.5	0.006	3/20/2017	6.65	ND (<0.25)	9.5	490	4,700	ND (<0.50)	27	315	--	0.32	3.7	--	0.073	0.85	3/22/2017	1.8	21		
3/26 - 4/1	3/31/2017	ND (<1.0)	0.5	0.006	3/27/2017	6.80	ND (<0.25)	7.1	540	2,900	1.2	27	302	--	0.26	2.9	--	0.10	1.1	3/29/2017	5.4	60		
4/2 - 4/8	4/8/2017	ND (<1.0)	0.5	0.006	4/3/2017	6.72	ND (<0.25)	17	570	3,500	0.87	20	233	ND (<0.10)	0.050	0.58	--	0.066	0.77	4/5/2017	2.3	27		
4/9 - 4/15	4/15/2017	ND (<1.0)	0.5	0.006	4/10/2017	6.70	ND (<0.25)	12	570	3,900	1.2	24	278	--	0.16	1.9	--	0.16	1.9	4/12/2017	1.9	22		
4/16 - 4/22	4/22/2017	ND (<1.0)	0.5	0.006	4/17/2017	6.88	ND (<0.25)	20	530	4,000	ND (<0.50)	23	285	--	0.25	3.1	--	0.62	7.7	4/19/2017	4.1	51		
4/23 - 4/29	4/29/2017	ND (<1.0)	0.5	0.006	4/24/2017	6.82	ND (<0.25)	11	520	2,900	1.3	21	263	--	0.31	3.9	--	0.084	1.1	4/26/2017	2.7	34		
4/30 - 5/6	5/6/2017	ND (<1.0)	0.5	0.006	5/1/2017	6.76	ND (<0.25)	7.6	490	1,800	ND (<0.50)	19	236	--	0.11	1.4	--	0.55	6.8	5/3/2017	1.2	15		
5/7 - 5/13	5/13/2017	ND (<1.0)	0.5	0.006	5/8/2017	6.68	ND (<0.25)	8.5	450	3,000	0.64	19	236	--	0.17	2.1	--	0.033	0.41	5/10/2017	1.5	19		
5/14 - 5/20	5/20/2017	ND (<1.0)	0.5	0.006	5/15/2017	6.69	ND (<0.25)	9.0	540	3,300	1.0	16	183	--	0.31	3.5	--	0.081	0.93	5/17/2017	0.94	11		
5/21 - 5/27	5/27/2017	ND (<1.0)	0.5	0.006	5/22/2017	6.93	ND (<0.25)	6.1	580	2,400	ND (<0.50)	18	222	--	0.15	1.8	--	0.074	0.91	5/24/2017	2.8	34		
5/28 - 6/3	6/3/2017	ND (<1.0)	0.5	0.006	5/29/2017	7.00	ND (<0.25)	10	500	2,700	2.0	28	355	--	0.29	3.7	--	0.046	0.58	5/31/2017	2.0	25		
6/4 - 6/10	6/10/2017	ND (<1.0)	0.5	0.006	6/5/2017	6.81	ND (<0.25)	5.8	540	2,200	ND (<0.50)	20	236	--	0.15	1.8	--	0.048	0.57	6/7/2017	0.68	8.0		
6/11 - 6/17	6/17/2017	ND (<1.0)	0.5	0.005	6/12/2017	6.93	ND (<0.25)	21	560	2,200	1.9	31	298	--	0.26	2.5	--	0.056	0.54	6/14/2017	0.97	9.3		
6/18 - 6/24	6/24/2017	ND (<1.0)	0.5	0.005	6/19/2017	6.89	ND (<0.25)	6.3	620	770	ND (<0.50)	9.0	85	--	0.22	2.1	--	0.059	0.56	6/21/2017	0.85	8.0		
6/25 - 7/1	7/1/2017	NA	NA	NA	6/26/2017	7.10	ND (<0.25)	7.9	560	1,400	0.88	12	120	ND (<0.10)	0.050	0.50	--	0.044	0.44	6/28/2017	0.88	8.8		
					7/3/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7/5/2017	NA	NA		

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in Irvine, California, unless otherwise indicated.
 * Following receipt of the 34 µg/L sample result, the individual daily effluent samples collected between 2/5 and 2/11 were submitted for perchlorate analysis. The individual effluent samples were also composited by the laboratory to create a new effluent composite sample. All re-analyzed effluent samples were non-detect for perchlorate.
 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: July 7, 2017

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-119 had a gasket replaced at the discharge wafer check. A new 150s75-4 and a new 7.5 hp motor. This was the original motor and pump in the well.
1.02		Lift Station 1 Lift Pump A	Running			
1.03		Lift Station 1 Lift Pump B	Standby		3	The packing was replaced on the turbine shaft.
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	A new pigtail was installed on the ART-8A motor. Parameters were changed ensure proper operation of the wells on all the VFD's.
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			New combo valves were installed on the pipeline.
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	The motor was replaced on I-Y due to an unbalanced voltage from the motor.
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			
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			

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
5.05	PID10A	Area in and Around EQ	In operation		3	The spill containment was completed by outside contractors.
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				The pump and motor was pulled and sent to an outside contractor for repairs on the bearings.
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	All nozzles and laterals have been installed as well as a new swing check valve on the discharge of the recycle pump.
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			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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 - P724	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	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			

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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		4	A new SLW filter was installed to feed the bio filter make up tank.
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			
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			3	Replaced a damaged airlift with a new glue joint at the bottom of the air chamber
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			

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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		3	The final fiberglass repairs have been made of the drip trays
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		3	Drawdown tests were completed to check the efficiency of the pumps.
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			
26.02	PID08	East Compressor	Running			
26.03	PID08	O2 Compressor	Running			
26.04	PID08	Compressed Air Receiver Tank	In operation			

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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		3	The touch screen needs to be calibrated to access all points of the screen. The ability to flip through screens is still present.
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			
		Interceptor Well Pumps (4 each)	In stock			
		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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