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:	October 20, 2017
Subject:	NERT – GWETS Operation Monthly Report – September 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 September 2017.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in September 2017. 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 321 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,070 gpm during September 2017. At the end of the month, the GW-11 Pond volume was at 36.4 million gallons (MG), which would allow 18.1 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 1.6 MG from the end of August 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 1.4 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 114 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 August 2017 averaged 124 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

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 September from the GW-11 pond was approximately 48 gpm.

The Trust plans to re-evaluate the use of GW-11 as an equalization pond following completion of the Algae Treatment Pilot Test.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant resumed on August 31st at 8:30am at a flow rate of 0.5 gpm. Flow rate increased incrementally through September with a flow rate on Sept. 30th of 1.5 gpm. ETI maintains plans on gradually increasing the AP-5 feed rate as allowed by permit.

There was one planned diversion into GW-11 for the month of September and two unplanned diversions. Below is a description of the events that occurred:

Unplanned Diversions:

- Effluent Diversion to GW-11 on September 1st at 2:41am to 2:52am am due to high water level in the final effluent tank (T-621). This diversion was initiated to avoid an automated plant shutdown resulting from a high water level alarm. Total amount diverted during this time was 16,250 gallons.
- Influent Diversion to GW-11 on September 16th at 1:45pm to 2:43pm due to a loss of flow from Lift Station 2 due to a VFD fault. The fault was a result of a bad electrical contactor in the control box. The contactor was replaced on the 19th of September.

Planned Diversions

- Effluent Diversion to GW-11 on September 28th at 8:46am to 10:38am due to a maintenance replacement of the “pig launcher” valve. Total amount diverted at this time was 117,892 gallons.

3. Spills

There were no spills in the month of September.

4. Maintenance

- Major maintenance performed by ETI in the month included:

  I. Ladders were installed to better access the sludge boxes on the DAF’s.
  II. The 10hp motor was replaced on the west turbine pump at LS3.
  III. The sand filter was taken offline to install a new seal around the feed pipe through the wall of the sand filter.

IV. The 30 hp motor was replaced on the 601 pump skid.
V. A new swing check valve was installed on the discharge of the FBR recycle pump for FBR 4.
VI. A new seal water solenoid valve was installed on the recycle pump on FBR 4.
VII. A new y-strainer was installed on the sand filter reject tank.
VIII. The static mixer was pulled between the Aeration tank and the DAF to inspect for possible obstructions.
IX. ART-9 was pulled and inspected for any damage and to check the depth of the pump. New wire connectors were installed.
X. New automatic air drains were installed around the plant.
XI. New caustic pumps and stands were fabricated and installed.
XII. The new pig launcher valve was installed.
XIII. Inspected the wiring in the panel at LS2 and replace the contactor.

- Preventative Maintenance completed or being performed by ETI in the month included:

I. All ORP and pH probes were calibrated and standardized.
II. The GW-11 transducer was pulled, inspected and cleaned. No faults were found.
III. The sump pumps were inspected and the containments were cleaned out.
IV. The seal water flowmeters were cleaned out for all the recycle pumps.
V. Gaskets were replaced on the LS2 piping.
VI. The motors were greased around the plant.
VII. Completed the assembly of the spare media return pumps and bed height control pumps.

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. **Ammonia Pretreatment** - The Trust is currently evaluating options to reduce ammonia concentrations in the AP decant.

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 I Groundwater Extraction and Treatment System I 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]	805[1]	8.5	0.00052	0.00062
AWF Total Extraction[2]	457[1]	81	0.18	0.17
IWF Total Extraction[2]	63[1]	612	8.0	7.7
AP Area Total Extraction[3]	12[1]	825	NA	0.032
GWTP Effluent[4]	76	635	1.1	ND
GW-11 Influent[2]	0.05	78	0.091	0.041
FBR Influent[4 7]	1,070	114	0.079	0.036
T-205 Effluent (AP-5 Wash Water)[7 8]	0.9	34,370	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 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.

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

8: Flow weighted average concentration based on internal process control samples analyzed by ETI.

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics			
Location ID	**Perchlorate (lbs/month)[1]**	**Chromium (TR) (lbs/month)[1]**	**Chromium (VI) (lbs/month)[1]**
SWF Total Extraction	2,477	0.15	0.18
AWF Total Extraction	13,418	29	28
IWF Total Extraction	13,940	182	177
AP Area Total Extraction	3,519	NA	0.14
GWTP Effluent	18,875	34	0.00
GW-11 Influent	1.5	0.00	0.00
FBR Influent[2]	44,210	31	14
T-205 Effluent (AP-5 Wash Water)[2] [3]	11,312	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).

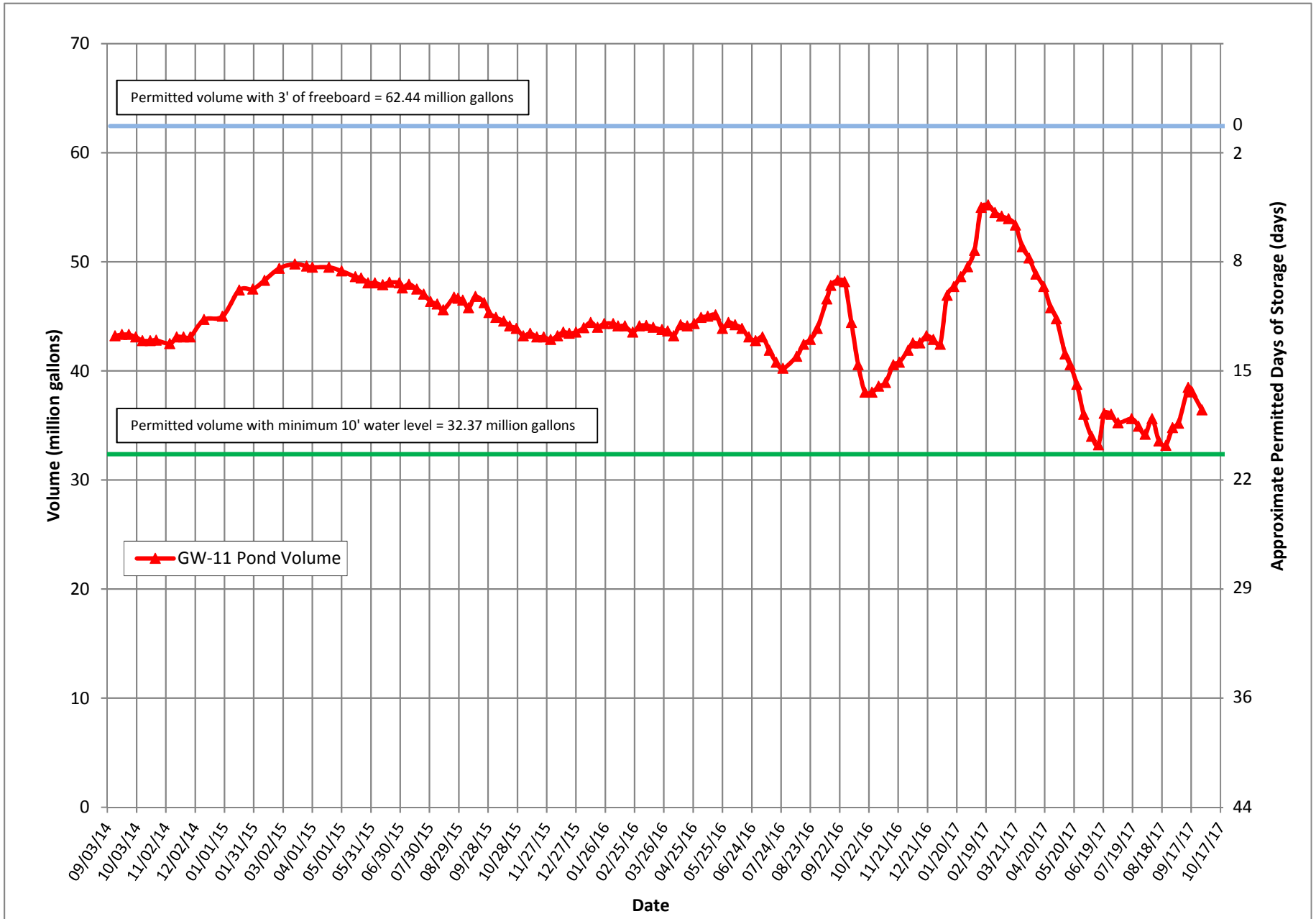
2: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.

3: Flow weighted average concentration based on internal process control samples analyzed by ETI.

Figures

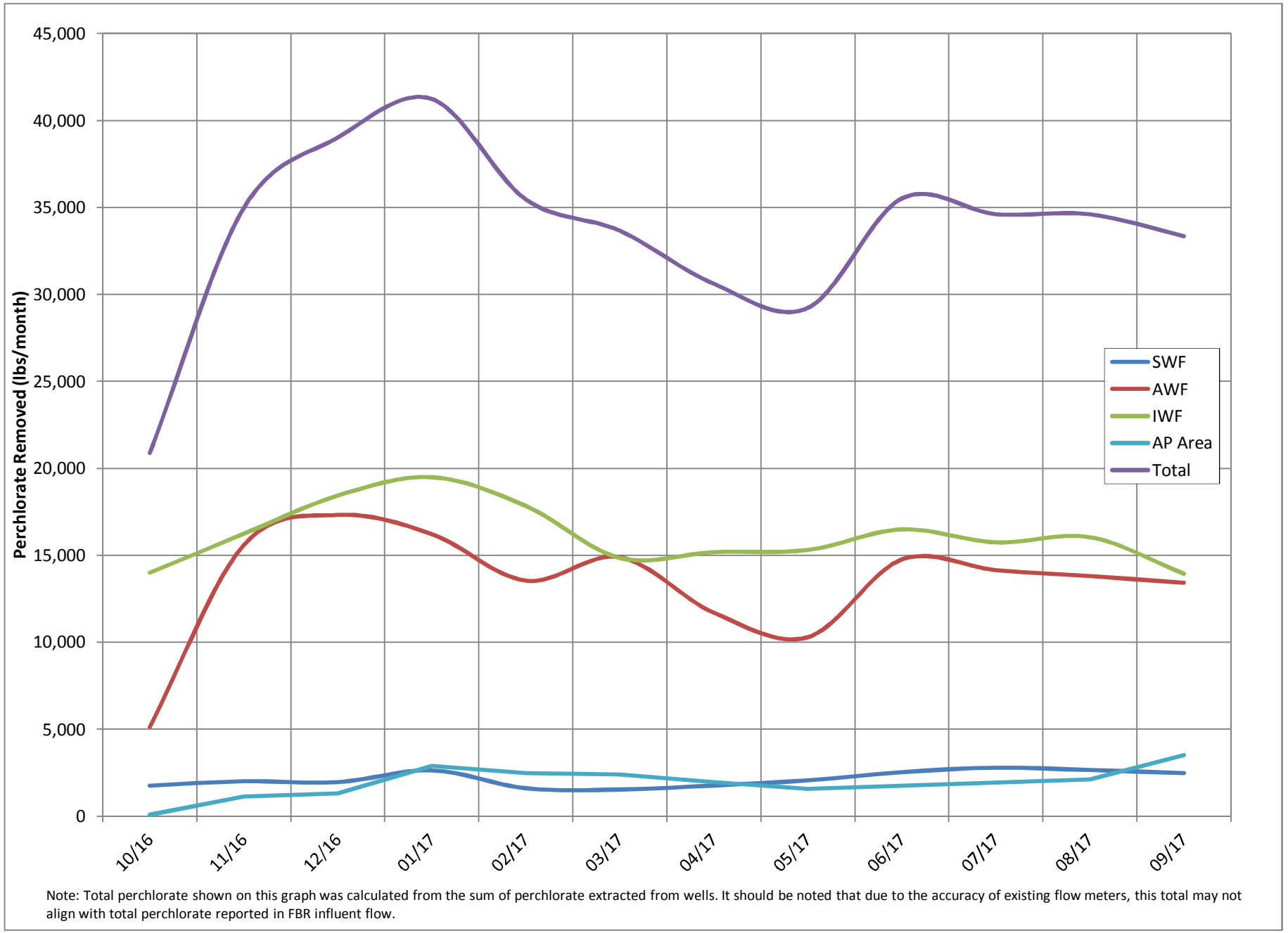
Operational Metrics

Nevada Environmental Response Trust
GW-11 Pond Volume
Update 9/28/2017



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 Flux



Note: 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.

Updated: 10/18/2017

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. (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. (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	1.50	1.80	9	0.09	6.72	7.16	0.13	36	530	4,200	0.59	25	280	4.0	1.1	5.7	8.4	68	5,400
March 2017	1.76	1.86	0.5	0.0073	6.65	6.80	0.13	9.5	540	4,700	1.6	27	340	8	1.2	2.8	5.4	41	
April 2017	1.82	1.93	0.5	0.0076	6.70	6.88	0.13	20	570	4,000	1.3	24	330	3.0	3.6	2.8	4.1	42	
May 2017	1.84	1.91	0.5	0.0077	6.68	7.00	0.13	10	580	3,300	2.0	28	310	3.2	2.4	1.7	2.8	26	4,900
June 2017	1.62	1.94	0.5	0.0066	6.81	7.10	0.13	21	620	2,200	1.9	31	240	2.2	0.68	1.20	2.30	16	
July 2017	1.75	2.14	10	0.14	6.58	7.16	0.13	7.2	620	2,100	8.1	21	170	16	0.8	1.5	2.0	23	
August 2017	1.72	1.97	0.5	0.0073	6.64	7.15	0.13	14	620	5,200	1.2	62	500	9	4	1.4	2.1	22	4,400
September 2017 (month to date)	1.92	2.01	0.5	0.0080	6.50	6.86	0.13	6.6	600	3,500	2.1	42	310	4.4	1.4	2.3	3.6	36	
October 2017 (month to date)	1.91	1.94	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	1/10/2017	5,400
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	0.32	2/6/2017	7.00	ND (<0.25)	21	460	4,200	ND (<0.50)	25	234	ND (<0.10)	0.050	0.47	--	0.13	1.2	2/10/2017	8.4		79		
2/12 - 2/18	2/18/2017	ND (<1.0)	0.5	0.0068	2/13/2017	7.16	ND (<0.25)	36	320	340	ND (<0.50)	19 24	260 329	--	0.12	1.6	--	0.11	1.5	2/15/2017	5.2		71		
2/19 - 2/25	2/25/2017	ND (<1.0)	0.5	0.0072	2/21/2017	6.73	ND (<0.25)	10	480	3,900	0.59	19	273	--	0.59	8.5	--	0.059	0.85	2/22/2017	5.4		78		
2/26 - 3/4	3/4/2017	ND (<1.0)	0.5	0.0074	2/27/2017	6.72	ND (<0.25)	8.9	530	3,400	ND (<0.50)	19	282	--	0.36	5.3	--	0.046	0.68	3/1/2017	2.7		40		
2/5 - 3/11	3/11/2017	ND (<1.0)	0.5	0.0074	3/6/2017	6.78	ND (<0.25)	7.9	490	1,800	1.6	17	253	--	1.0	15	--	0.11	1.6	3/8/2017	2.3		34		
3/12 - 3/18	3/18/2017	ND (<1.0)	0.5	0.0074	3/13/2017	6.75	ND (<0.25)	6.7	540	2,300	1.2	21	309	--	0.50	7.4	--	0.058	0.85	3/15/2017	1.9		28		
3/19 - 3/25	3/25/2017	ND (<1.0)	0.5	0.0074	3/20/2017	6.65	ND (<0.25)	9.5	490	4,700	ND (<0.50)	27	398	--	0.32	4.7	--	0.073	1.08	3/22/2017	1.8		27		
3/26 - 4/1	3/31/2017	ND (<1.0)	0.5	0.0071	3/27/2017	6.80	ND (<0.25)	7.1	540	2,900	1.2	27	384	--	0.26	3.7	--	0.10	1.4	3/29/2017	5.4		77		
4/2 - 4/8	4/8/2017	ND (<1.0)	0.5	0.0074	4/3/2017	6.72	ND (<0.25)	17	570	3,500	0.87	20	296	ND (<0.10)	0.05	0.74	--	0.066	0.98	4/5/2017	2.3		34		
4/9 - 4/15	4/15/2017	ND (<1.0)	0.5	0.0074	4/10/2017	6.70	ND (<0.25)	12	570	3,900	1.2	24	354	--	0.16	2.4	--	0.16	2.4	4/12/2017	1.9		28		
4/16 - 4/22	4/22/2017	ND (<1.0)	0.5	0.0078	4/17/2017	6.88	ND (<0.25)	20	530	4,000	ND (<0.50)	23	358	--	0.25	3.9	--	0.62	9.6	4/19/2017	4.1		64		
4/23 - 4/29	4/29/2017	ND (<1.0)	0.5	0.0078	4/24/2017	6.82	ND (<0.25)	11	520	2,900	1.3	21	330	--	0.31	4.9	--	0.084	1.3	4/26/2017	2.7		42		
4/30 - 5/6	5/6/2017	ND (<1.0)	0.5	0.0078	5/1/2017	6.76	ND (<0.25)	7.6	490	1,800	ND (<0.50)	19	296	--	0.11	1.7	--	0.55	8.6	5/3/2017	1.2		19	5/1/2017	4,900
5/7 - 5/13	5/13/2017	ND (<1.0)	0.5	0.0078	5/8/2017	6.68	ND (<0.25)	8.5	450	3,000	0.64	19	296	--	0.17	2.6	--	0.033	0.51	5/10/2017	1.5		23		
5/14 - 5/20	5/20/2017	ND (<1.0)	0.5	0.0073	5/15/2017	6.69	ND (<0.25)	9.0	540	3,300	1.0	16	234	--	0.31	4.5	--	0.081	1.18	5/17/2017	0.94		14		
5/21 - 5/27	5/27/2017	ND (<1.0)	0.5	0.0077	5/22/2017	6.93	ND (<0.25)	6.1	580	2,400	ND (<0.50)	18	278	--	0.15	2.3	--	0.074	1.14	5/24/2017	2.8		43		
5/28 - 6/3	6/3/2017	ND (<1.0)	0.5	0.0079	5/29/2017	7.00	ND (<0.25)	10	500	2,700	2.0	28	444	--	0.29	4.6	--	0.046	0.73	5/31/2017	2.0		32		
6/4 - 6/10	6/10/2017	ND (<1.0)	0.5	0.0075	6/5/2017	6.81	ND (<0.25)	5.8	540	2,200	ND (<0.50)	20	299	--	0.15	2.2	--	0.048	0.72	6/7/2017	0.68		10.2		
6/11 - 6/17	6/17/2017	ND (<1.0)	0.5	0.0063	6/12/2017	6.93	ND (<0.25)	21	560	2,200	1.9	31	389	--	0.26	3.3	--	0.056	0.70	6/14/2017	0.97		12.2		
6/18 - 6/24	6/24/2017	ND (<1.0)	0.5	0.0062	6/19/2017	6.89	ND (<0.25)	6.3	620	770	ND (<0.50)	9.0	112	--	0.22	2.7	--	0.059	0.74	6/21/2017	0.85		10.6		
6/25 - 7/1	7/1/2017	ND (<1.0)	0.5	0.0066	6/26/2017	7.10	ND (<0.25)	7.9	560	1,400	0.88	12	157	ND (<0.10)	0.05	0.66	--	0.044	0.58	6/30/2017	2.3		30		
7/2 - 7/8	7/8/2017	16^^	16	0.21	7/3/2017	7.16	ND (<0.25)	2.6	520	680	1.6	9.3	125	ND (<0.10)	0.05	0.67	--	0.042	0.56	7/5/2017	2.0		25		
7/9 - 7/15	7/15/2017	15^^	15	0.22	7/10/2017	6.77	ND (<0.25)	7.2	590	2,100	ND (<0.50)	21	293	--	0.20	2.8++	--	0.099	1.4	7/12/2017	1.2		18		
7/16 - 7/22	7/22/2017	8.8^^	8.8	0.13	7/17/2017	6.80	ND (<0.25)	4.1	530	1,100	ND (<0.50)	11	165	--	0.13	2.0++	--	0.043	0.65	7/19/2017	1.2		21		
7/23 - 7/29	7/29/2017	ND (<1.0)	0.5	0.0077	7/24/2017	6.80	ND (<0.25)	2.9	540	710	1.5	3.2	49	--	0.59	9.0++	--	0.050	0.76	7/26/2017	1.7		27		
7/30 - 8/5	8/5/2017	ND (<1.0)	0.5	0.0066	7/31/2017	6.58	ND (<0.25)	2.6	620	670	8.1	16	238	--	7.0	104++	--	0.042	0.62	8/2/2017	1.6		24	8/1/2017	4,400
8/6 - 8/12	8/12/2017	ND (<1.0)	0.5	0.0074	8/7/2017	6.84	ND (<0.25)	ND (<2.5)	410	580	1.2	2.8	41	--	0.13	1.9++	--	0.032	0.47	8/9/2017	1.3		20		
8/13 - 8/19	8/19/2017	ND (<1.0)	0.5	0.0076	8/14/2017	6.64	ND (<0.25)	13	470	4,300	ND (<0.50)	52	800	--	0.12	1.8++	--	0.76	12	8/16/2017	1.8		27		
8/20 - 8/26	8/26/2017	ND (<1.0)	0.5	0.0067	8/21/2017	7.05	ND (<0.25)	14	580	5,200	0.90	62	872	ND (<0.10)	0.05	0.70++	--	0.18	2.5	8/23/2017	ND (<0.50)	0.25	2.2		
8/27 - 9/2	9/2/2017	ND (<1.0)	0.5	0.0081	8/28/2017	7.15	ND (<0.25)	7.7	620	2,300	1.2	18	276	ND (<0.10)	0.05	0.77++	--	0.18	2.8	8/30/2017	2.1		35		
9/3 - 9/9	9/9/2017	ND (<1.0)	0.5	0.0081	9/5/2017	6.65	ND (<0.25)	6.6	580	3,500	ND (<0.50)	42	681	--	0.23	3.5	--	0.14	2.3	9/6/2017	0.75		12		
9/10 - 9/16	9/16/2017	ND (<1.0)	0.5	0.0079	9/11/2017	6.72	ND (<0.25)	3.5	580	960	2.1	14	224	--	0.19	3.0	--	0.053	0.85	9/13/2017	3.6		58		
9/17 - 9/23	9/23/2017	ND (<1.0)	0.5	0.0078	9/18/2017	6.50	ND (<0.25)	5.1	590	1,600	1.4	9.7	151	--	0.59	9.2	--	0.088	1.4	9/20/2017	2.5		40		
9/24 - 9/30	9/30/2017	NA	NA	NA	9/25/2017	6.86	ND (<0.25)	4.4	600	2,300	ND (<0.50)	12	201	--	0.12	2.0	--	0.057	1.0	9/27/2017	2.3		36		
					10/2/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10/2/2017	NA		NA		

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

^ Following reciept of the 34 ug/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.

^^ Following reciept of the sample result, a re-composite sample was submitted for perchlorate analysis. All re-composited effluent samples were non-detect for perchlorate.

++ 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: October 6, 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			
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			
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running		2	Art-9 was pulled and inspected. The pigtail was also replaced.
2.02		*Lift Station 3 Lift Pump A*	Standby		2	The motor was replaced on the turbine.
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	New seal water tubing was installed on the pump. A new gasket was also installed on the discharge of the pump.
3.05		*Area in and around Lift Station 2*	Running		1	The LS was taken down to inspect all the wiring in the electrical panel. The discharge pipiing was also corrected. A new flow tube was also installed.
4		**Interceptor Wells and Cr Treatment Plant**				
4.01		*IWF Well Field, 30 wells*	Running			
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			
5.05	PID10A	*Area in and Around EQ*	In operation		2	A new SS 8" ball valve was installed on the pig launcher.

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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*			3	A new positioner was installed on the feed valve.
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		2	A new positioner was installed on the feed valve. A new solenoid was installed on the seall water line.
7.03	PID02B	*First Stage Separator Tank - T2012*	Running			
7.04	PID01B	*Media Return Pump - P2012*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
7.05	PID01B	*First Stage FBR Pump - P1013*	Running			
7.06	PID01B	*First Stage FRB Pump - P1014*	Running		2	A new swing check valve was installed on the discharge of the recycle pump.
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			
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		3	The airlines were cleared of debris.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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			
10.11	PID05	*DAF Vessel - D501*	Running			
10.12	PID05	*DAF Pressure Pump - P501*	Running		3	New air blowdown valves were installed.
10.13	PID05	*DAF Float Pump - P502*	Running		3	The pump was rebuilt.
10.14	PID05	*DAF Vessel - D551*	Running			
10.15	PID05	*DAF Pressure Pump - P551*	Running		3	New air blowdown valves were installed.
10.16	PID05	*DAF Float Pump - P552*	Running		3	The pump was rebuilt.
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		2	A new motor was installed and a new motor was ordered to have as a spare.
11.02	PID06	*Effluent Pump - P601*	Running			
11.03	PID06	*Effluent Pump - P602*	Standby			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*			1	The unit was drained and new expansion links were installed arounf the main header to stop and possible leaks.
12.02	PID17	*Filter Reject Tank*	In operation		3	A new y-strainer was installed on the reject tank to remove sand before entering the reject tank.
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			

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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		1	The system was taken offline to inspect for solid build up inside the vessel. The tank was flushed and the system was put back online.
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		1	New pumps were installed to better control the pH system.
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**				

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
26.01	PID08	*West Compressor*	Running		1	*The air end went down. A new air end was ordered and will be installed by Air Center.*
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			
		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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