TETRA TECH

MEMO

To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	David Bohmann, Deena Garland
Date:	December 22, 2015
Subject:	NERT – GWETS Operation Monthly Report – November 2015

At the request of the Nevada Environmental Response Trust (Trust), Tetra Tech, Inc. (Tetra Tech) provides this summary of the groundwater extraction and treatment system (GWETS) operation and oversight tasks performed during November 2015.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) reports that the GWETS mechanically operated normally in November 2015 with the exception of one spill that is described in more detail below. The flow rate to the plant averaged approximately 904 gallons per minute (gpm) during November 2015. At the end of the month, the GW-11 Pond volume was 43.1 million gallons (MG), which would allow 13.4 days of available additional storage in event of an emergency plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased approximately 0.9 MG from the end of October. Figure 1 in this report depicts the actual and projected GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the Fluidized Bed Reactor (FBR) plant averaged 82 mg/L for the month, with a maximum concentration of 88 mg/L.

Analytical data indicate that the permitted effluent discharges at GWETS Outfall 001 were within the NPDES permitted numerical discharge limits (Please see Attachment A, prepared by ENVIRON).

Enhanced Operational Metrics

Tetra Tech continues to move forward with the approved Enhanced Operational Metrics program to add instruments, controls, data acquisition systems, along with various other technical upgrades to improve the efficiency of GWETS data collection and reporting. An implementation schedule is presented in more detail under the GWETS Upgrades and Facility Projects section below.

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Tables 1 and 2 provide a summary of the current GWETS operational metrics that provide data for flow rates, perchlorate and chromium concentrations, and mass removal. Figure 2 presents historical perchlorate and chromium mass flux.

Operational Issues

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

1. GW-11 Pond

    - GW-11 Pond Leak Detection System: Tetra Tech prepared a summary of the camera surveys it performed of the SE and SW sump riser pipes for Trust review. Tetra Tech also prepared a recommended procedure to repair the NE sump riser pipe, and reinforcement of the NW, SE, and SW sump riser pipes. The Trust is reviewing the procedure.

2. Spill

    - A pinhole leak was discovered on the flexible discharge hose attached to the hard discharge line from well PC-99R2/R3 at Lift Station 1 at approximately 11:10 AM PST on November 27, 2015. The volume spilled is estimated to be less than 5 gallons. Well PC-99R2/R3 was offline from 11:37 AM PST to 3:22 PM PST on November 27th to replace the entire length of hose. The incident was reported at approximately 4:05 PM PST on November 27th to the NDEP Spill Notification line. The incident was assigned Spill Incident No. 151127-01.

3. Maintenance

    - Major maintenance that was performed or completed in the month included:
        i. A new VFD and breaker for Effluent Booster Pump P-1302A were received and the replacements and software upgrades were completed on November 30th.
        ii. Old, worn wiring for the IWF wells was discovered underground and replaced.
        iii. A new hose was installed on the PC 99R2/R3 to replace a worn hose in response to a pinhole leak.

    - Preventative Maintenance completed or being performed in the month included:
        i. The combination valve on the effluent line was replaced at the EQ area. ETI also inspected the sump pump and adjusted the level indicator.
        ii. A damaged airline used to control bed height was repaired and piping was replaced on the discharge side of the bed height pump for FBR A.

iii. The discharge line for the Media Return Pump P-2011 was cleared to the top of the FBRs.
iv. The glue fitting on piping at the injection point for FBR 3 was found to be damaged and was subsequently repaired.
v. Bearings were ordered and received for Media Return Pump P-3011. Repairs and replacement work began the week of December 7th.
vi. A replacement seal was received for DAF Pressure Pump P-551 and repair work will begin the week of December 7th.
vii. ETI relocated the polymer system to the north side of the D-1 building to reduce the amount of time polymer is in direct sunlight.
viii. The flow meter for I-Q is out of service and pending replacement under warranty.
ix. A manual bleed valve was installed on the compressed air receiver tank until a new switch is received in December.

- Outstanding or ongoing maintenance and repairs from the previous month are outlined below:
  i. FBRs 7 and 8 are currently in the rehabilitation process and all forward flow is being sent to FBRs 5 and 6.
  ii. The pneumatic cylinder on the East Filter Press needs to be serviced. ETI is currently in the process of replacing the airlines to the plate switch. The press can still operate and the plates can be moved manually while work is being completed.

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
   Tetra Tech is moving forward with the design to remove the AP-5 pond solids, wash the solids to remove perchlorate salts, and relocate the perchlorate containing water to a large storage tank for eventual treatment in the GWETS. Evaluation and coordination between Tetra Tech, ETI, the Trust and NDEP on this project is ongoing. Additional AP5 material sampling for off-site analysis and testing will be conducted the week of December 7. Tank purchase is on hold pending test results.
2. Enhanced Operational Metrics
   Work on site that began in late August remains underway. Metrics data collection commenced as planned in mid-November and final system commissioning is scheduled for mid- to late December. A new flow meter was installed at Lift Station 2 on November 5, 2015 which resulted in a shutdown of the SWF, AWF, and Lift Stations 1, 2, and 3. The Stakeholders were notified during the Quarterly Call on November 4, 2015 and via e-mail on November 6, 2015.

Equipment Availability Tracking

ETI operators continue to update the equipment tracking form on a weekly basis at a minimum, or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel continue to verify the entries on the form, including both the operating status and confirming the inventory of required shelf spares. The equipment tracking form submitted by ETI to Tetra Tech on November 30, 2015 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).

GWETS Security

During weekly calls, ETI notifies Tetra Tech of any issues with GWETS security. There were no GWETS security issues reported during the month of November.

Tetra Tech Activities

Tetra Tech conducted calls with ETI to review operation of the GWETS on November 5th, 12th, and 19th. No call was held on Thanksgiving. Kyle Hansen, CEM, performed the GWETS oversight and review activities on November 6th, 13th, 20th, and 30th. Mr. Hansen also reviewed permit and sampling forms for the entire month to ensure each form was correct and up-to-date, checked equipment status, and verified shelf spare inventory.

Summary

Based on our review of available and relevant information, Tetra Tech concurs with ETI's management of the GWETS during the reporting period. No additional involvement from either the Trust or Tetra Tech is recommended at this time.

Tables

Operational Metrics

Tetra Tech, Inc.

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics				
Location ID	**Average Flow Rate (gpm)**	**Perchlorate (mg/L)[2]**	**Chromium TR (mg/L)[2]**	**Chromium(VI) (mg/L)[2,8]**
SWF Total Extraction[5]	444[1]	12	ND	Future Metric
AWF Total Extraction[5]	297[1]	178	0.35	Future Metric
IWF Total Extraction[6]	54[1]	896	8.31	Future Metric
GWTP Effluent[7]	63	799	0.22	ND
GW-11 Influent[4]	51[3]	Future Metric	Future Metric	Future Metric
GW-11 Effluent/ FBR Influent[7]	904	4	0.04	ND

Notes:

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

1: Sum of daily average flow for individual wells.

2: All concentrations reported are monthly flow weighted averages.

3: Flow has historically been a calculated metric, but Tetra Tech transitioned to flow meter measurement beginning on April 27, 2015.

4: Following contractual amendment agreements, ETI will begin collecting analytical samples at the GW-11 influent sample tap.

5: Perchlorate sampled monthly, chromium TR sampled quarterly, values reported from TestAmerica.

6: Perchlorate and chromium TR sampled quarterly, values reported from TestAmerica.

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

8: Hexavalent chromium will be analyzed and reported monthly as part of the Enhanced Operational Metrics project.

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]**
SWF Total Extraction	1,947	0
AWF Total Extraction	19,038	38
IWF Total Extraction	16,095	149
GWTP Effluent	18,166	5
GW-11 Influent[2]	Future Metric	Future Metric
GW-11 Effluent/FBR Influent	82	0.74

Notes:

TR = Total Recoverable.

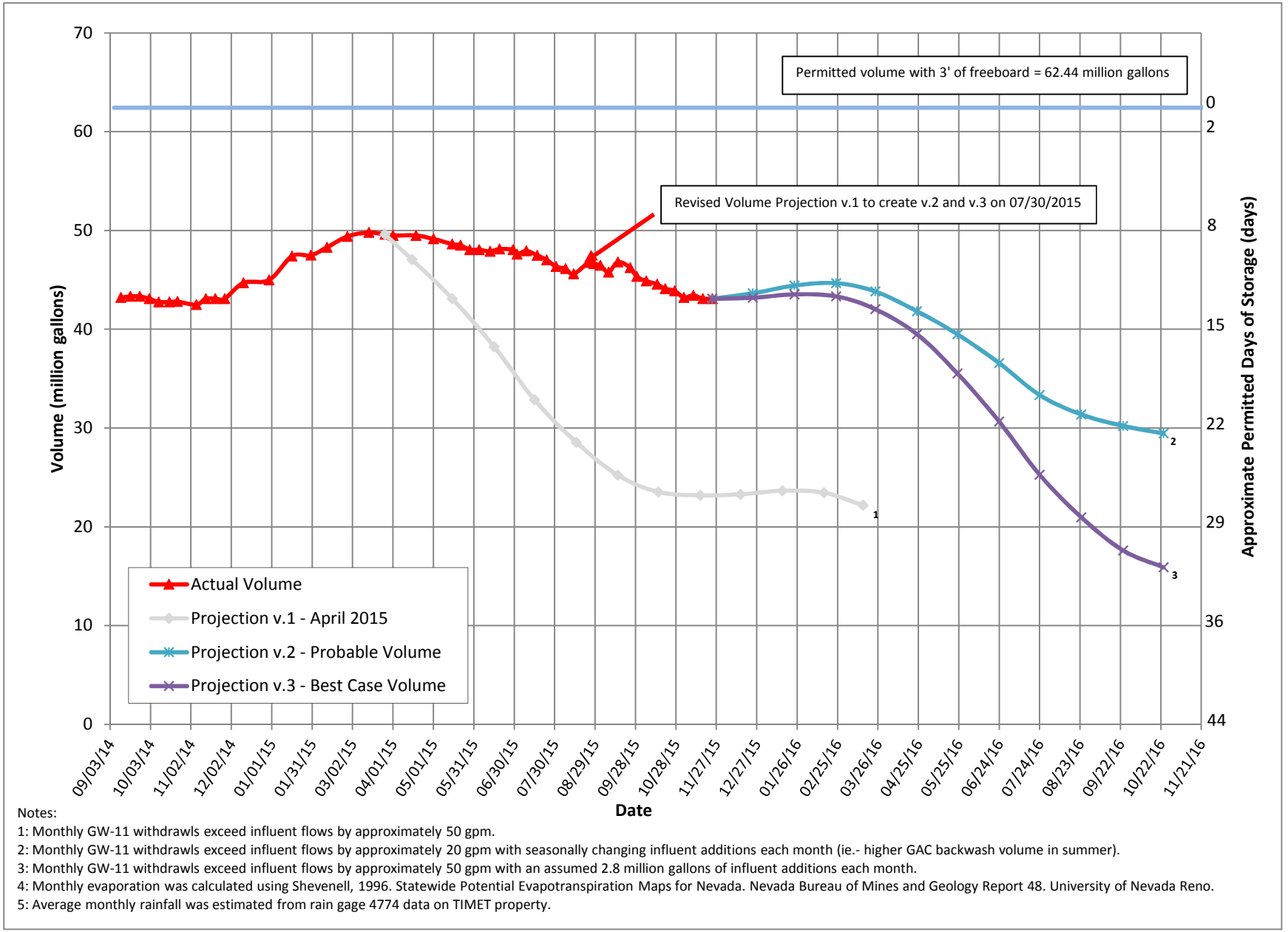
1: Total lbs extracted is calculated from flow weighted average concentration and average flow (see Table 1).

2: Following contractual amendment agreements, ETI will begin collecting analytical samples at the GW-11 influent sample tap.

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Projection



Notes:

1: Monthly GW-11 withdrawls exceed influent flows by approximately 50 gpm.

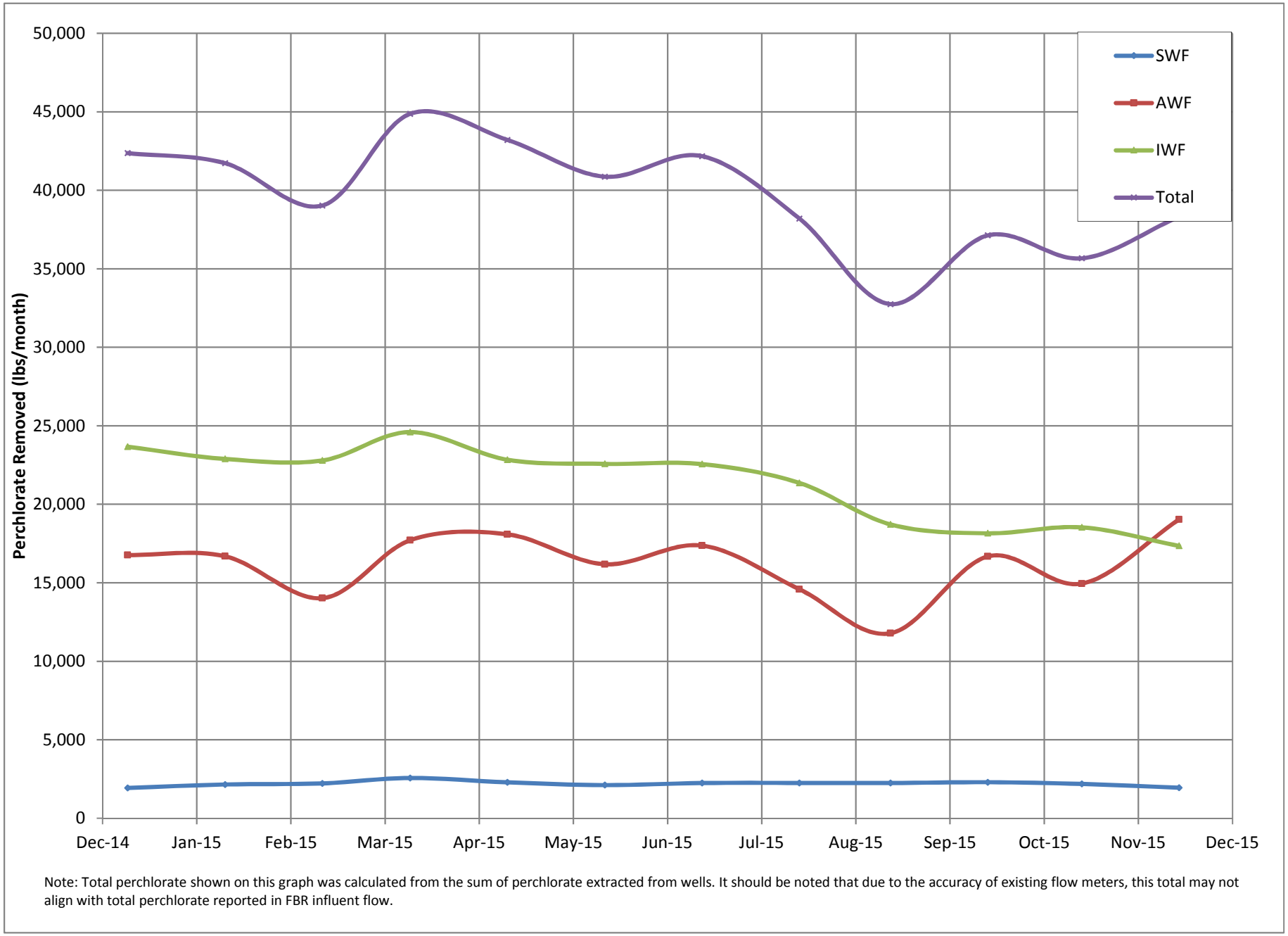
2: Monthly GW-11 withdrawls exceed influent flows by approximately 20 gpm with seasonally changing influent additions each month (ie.- higher GAC backwash volume in summer).

3: Monthly GW-11 withdrawls exceed influent flows by approximately 50 gpm with an assumed 2.8 million gallons of influent additions each month.

4: Monthly evaporation was calculated using Shevenell, 1996. Statewide Potential Evapotranspiration Maps for Nevada. Nevada Bureau of Mines and Geology Report 48. University of Nevada Reno.

5: Average monthly rainfall was estimated from rain gage 4774 data on TIMET property.

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.

Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Analytes with Numerical Discharge Limits - NPDES Permit NV0023060

WORKING TRACKING SPREADSHEET
DRAFT - NOT TO BE SUBMITTED TO AGENCY

	Continuous		Daily samples, composited weekly		Weekly samples									Weekly samples, collected separately			Quarterly sample	
	Flow Rate		Perchlorate		pH	Hexavalent Chromium	Total Chromium	Total Suspended Solids (TSS)		Total Iron		Total Ammonia as N	Total Phosphorus as P	BOD_5 (inhibited)			Manganese	
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (ug/L)	30-Day Avg. (lbs/day)	30-Day Avg. (S.U.)	Daily Max. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (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)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)
	1.45	1.75	**18**	**0.22**	**6.5 to 9.0**	**0.01**	**0.1**	**135**	**1,634**	**10**	**121.03**	**40**	**20**	**25**	**40**	**254**	**5**	**60.52**
January 2015	1.20	1.39	1.3	0.013	6.59	0.00013	0.021	25	250	4.1	40	2.6	1.5	3.7	6.0	37	0.20	2.1
February 2015	1.34	1.42	1.3	0.014	6.85	0.00013	0.029	21	230	3.3	37	2.5	1.6	6	13	69		
March 2015	1.32	1.38	1.3	0.014	6.71	0.00013	0.043	26	280	4.9	54	7.4	2.0	4.6	9.2	49		
April 2015	1.30	1.34	1.3	0.014	6.83	0.00013	0.0080	13	140	3.4	36	3.4	1.4	1.9	2.9	21	0.090	0.93
May 2015	1.23	1.29	1.3	0.013	6.52	0.00034	0.0060	13	130	3.6	37	2.4	0.7	0.6	1.1	6.4		
June 2015	1.21	1.32	1.3	0.012	6.84	0.00013	0.013	17	170	4.1	41	4.0	2.0	2.3	2.6	23		
July 2015	1.24	1.37	1.3	0.013	6.88	0.00013	0.0049	13	130	3.2	32	2.1	1.0	1.4	1.8	14	0.14	1.5
August 2015	1.31	1.38	1.3	0.014	6.94	0.00013	0.011	18	200	3.6	40	1.6	1.8	3.7	5.9	40		
September 2015	1.35	1.51	1.3	0.014	6.98	0.00013	0.098	7	84	1.5	17	2.1	1.7	2.2	3.2	24		
October 2015	1.37	1.54	1.3	0.014	7.08	0.00029	0.0059	13	150	2.6	30	2.7	0.7	1.4	1.7	16	0.23	2.8
November 2015 (month to date)	1.32	1.44	1.3	0.014	7.16	0.00013	0.0013	8.9	97	1.8	20	1.7	0.6	2.8	5.9	31		

Daily Grab Sample Dates	Composite Sample Date		ug/L	lbs/day	Sample Date	S.U.	mg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day		mg/L	lbs/day		mg/L	lbs/day	Sample Date	mg/L		lbs/day	mg/L	lbs/day
1/4 - 1/10	1/10/2015	ND (<2.5)	1.3	0.010	1/5/2015	6.53	ND (<0.00025)	0.021	24	201	4.8	40	--	0.94	7.9	--	0.083	0.69	1/7/2015	3.1		26	0.20	2.1
1/11 - 1/17	1/17/2015	ND (<2.5)	1.3	0.013	1/12/2015	6.64	ND (<0.00025)	0.019	19	192	3.9	39	ND (<0.10)	0.05	0.51	--	0.16	1.6	1/14/2015	3.9		39		
1/18 - 1/24	1/24/2015	ND (<2.5)	1.3	0.014	1/19/2015	6.65	ND (<0.00025)	0.018	25	276	3.4	38	--	0.13	1.4	--	0.16	1.8	1/21/2015	1.8		20		
1/25 - 1/31	1/31/2015	ND (<2.5)	1.3	0.013	1/26/2015	6.54	ND (<0.00025)	0.019	30	316	4.1	43	ND (<0.10)	0.05	0.53	--	0.17	1.8	1/28/2015	6.0		63		
2/1 - 2/7	2/7/2015	ND (<2.5)	1.3	0.014	2/2/2015	6.90	ND (<0.00025)	0.010	11	121	1.6	18	--	0.20	2.2	--	0.12	1.3	2/4/2015	4.5		49		
2/8 - 2/14	2/14/2015	ND (<2.5)	1.3	0.014	2/9/2015	6.67	ND (<0.00025)	0.024	17	196	0.66	7.6	--	0.33	3.8	--	0.27	3.1	2/11/2015	5.7		66		
2/15 -2/21	2/21/2015	ND (<2.5)	1.3	0.014	2/17/2015	6.97	ND (<0.00025)	0.0064	19	212	3.9	44	--	0.21	2.3	--	0.067	0.75	2/18/2015	1.5		17		
2/22 - 2/28	2/28/2015	ND (<2.5)	1.3	0.014	2/23/2015	6.85	ND (<0.00025)	0.029	36	401	7.1	79	--	0.16	1.8	--	0.12	1.3	2/25/2015	13		145		
3/1 - 3/7	3/7/2015	ND (<2.5)	1.3	0.013	3/2/2015	6.82	ND (<0.00025)	0.043	42	441	4.9	51	--	0.22	2.3	--	0.25	2.6	3/5/2015	9.2		97		
3/8 - 3/14	3/14/2015	ND (<2.5)	1.3	0.014	3/9/2015	6.89	ND (<0.00025)	0.011	26	296	4.8	55	--	0.44	5.0	--	0.46	5.2	3/11/2015	2.6		30		
3/15 - 3/21	3/21/2015	ND (<2.5)	1.3	0.014	3/16/2015	6.64	ND (<0.00025)	0.0071	23	257	5.0	56	--	0.69	7.7	--	0.066	0.74	3/18/2015	2.2		25		
3/22 - 3/28	3/28/2015	ND (<2.5)	1.3	0.014	3/23/2015	6.64	ND (<0.00025)	0.013	19	211	4.8	53	--	0.71	7.9	--	0.11	1.2	3/25/2015	4.2		47		
3/29 - 4/4	4/4/2015	ND (<2.5)	1.3	0.014	3/30/2015	6.55	ND (<0.00025)	0.0074	20	219	4.9	54	--	1.3	14	ND (<0.025)	0.013	0.14	4/1/2015	2.7		30		
4/5 - 4/11	4/11/2015	ND (<2.5)	1.3	0.013	4/6/2015	6.96	ND (<0.00025)	0.0057	18	193	4.7	50	--	0.27	2.9	--	0.13	1.4	4/8/2015	2.9		31		
4/12 - 4/18	4/18/2015	ND (<2.5)	1.3	0.014	4/13/2015	7.04	ND (<0.00025)	0.0080	4.7	52	0.38	4.2	--	0.37	4.1	--	0.28	3.1	4/15/2015	1.9		21	0.090	0.93
4/19 - 4/25	4/25/2015	ND (<2.5)	1.3	0.013	4/20/2015	6.62	ND (<0.00025)	0.0046	17	183	4.2	45	--	0.55	5.9	--	0.064	0.69	4/22/2015	0.85		9.1		
4/26 - 5/2	5/2/2015	ND (<2.5)	1.3	0.013	4/27/2015	6.69	ND (<0.00025)	0.0040	14	149	4.3	46	ND (<0.10)	0.05	0.53	--	0.044	0.47	4/29/2015	1.2		13		
5/3 - 5/9	5/9/2015	ND (<2.5)	1.3	0.012	5/4/2015	6.61	ND (<0.00025)	0.0046	8.0	77	3.7	36	--	0.22	2.1	--	0.041	0.39	5/6/2015	ND (<0.50)	0.25	2.4		
5/10 - 5/16	5/16/2015	ND (<2.5)	1.3	0.013	5/12/12015	6.62	ND (<0.00025)	0.0046	12	127	3.9	41	--	0.39	4.1	--	0.098	1.0	5/13/2015	0.57		6.0		
5/17 - 5/23	5/23/2015	ND (<2.5)	1.3	0.013	5/18/2015	6.42	0.00034	0.0060	13	138	3.7	39	--	0.11	1.2	--	0.030	0.32	5/20/2015	1.1		12		
5/24 - 5/30	5/30/2015	ND (<2.5)	1.3	0.013	5/26/2015	6.44	ND (<0.00025)	0.0046	18	187	3.0	31	--	0.23	2.4	--	0.088	0.92	5/27/2015	0.52		5.4		
5/31 - 6/6	6/6/2015	ND (<2.5)	1.3	0.012	6/1/2015	6.57	ND (<0.00025)	ND (<0.013)	10	95	3.8	36	--	0.24	2.3	--	0.070	0.66	6/3/2015	2.6		25		
6/7 - 6/13	6/13/2015	ND (<2.5)	1.3	0.013	6/8/2015	6.74	ND (<0.00025)	0.013	21	211	6.9	69	--	0.91	9.1	--	0.26	2.6	6/10/2015	1.6		16		
6/14 - 6/20	6/20/2015	ND (<2.5)	1.3	0.013	6/15/2015	7.21	ND (<0.00025)	0.0088	9.5	98	2.0	21	--	0.27	2.8	--	0.26	2.7	6/17/2015	2.6		27		
6/21 - 6/27	6/27/2015	ND (<2.5)	1.3	0.013	6/22/2015	6.98	ND (<0.00025)	0.0068	22	224	4.2	43	--	0.18	1.8	--	0.17	1.7	6/24/2015	2.3		23		
6/28 - 7/4	7/4/2015	ND (<2.5)	1.3	0.013	6/29/2015	6.70	ND (<0.00025)	0.0061	23	240	3.6	38	--	0.39	4.1	--	0.22	2.3	7/1/2015	1.5		16		
7/5 - 7/11	7/11/2015	ND (<2.5)	1.3	0.011	7/6/2015	6.79	ND (<0.00025)	0.0049	14	126	3.5	32	--	0.20	1.8	--	0.11	1.0	7/9/2015	0.93		8.4	0.14	1.5
7/12 - 7/18	7/18/2015	ND (<2.5)	1.3	0.014	7/14/2015	7.55	ND (<0.00025)	ND (<0.0025)	13	143	2.5	27	--	0.19	2.1	--	0.066	0.73	7/15/2015	1.5		16		
7/19 - 7/25	7/25/2015	ND (<2.5)	1.3	0.014	7/20/2015	6.48	ND (<0.00025)	ND (<0.0025)	9.4	105	2.7	30	--	0.27	3.0	--	0.063	0.70	7/22/2015	1.2		13		
7/26 - 8/1	8/1/2015	ND (<2.5)	1.3	0.013	7/27/2015	6.68	ND (<0.00025)	0.0046	15	154	3.9	40	--	0.13	1.3	--	0.16	1.6	7/29/2015	1.8		19		
8/2 - 8/8	8/8/2015	ND (<2.5)	1.3	0.014	8/3/2015	7.65	ND (<0.00025)	0.0048	18	202	3.7	42	--	0.21	2.4	--	0.13	1.5	8/5/2015	2.7		30		
8/9 - 8/15	8/15/2015	ND (<2.5)	1.3	0.013	8/11/2015	6.83	ND (<0.00025)	0.011	26	276	5.0	53	--	0.25	2.7	--	0.17	1.8	8/12/2015	5.9		63		
8/16 - 8/22	8/22/2015	ND (<2.5)	1.3	0.013	8/17/2015	6.66	ND (<0.00025)	0.0062	15	159	3.2	34	--	0.20	2.1	--	0.33	3.5	8/19/2015	3.1		33		
8/23 - 8/29	8/29/2015	ND (<2.5)	1.3	0.014	8/24/2015	6.84	ND (<0.00025)	ND (<0.0025)	14	156	3.4	38	ND (<0.10)	0.05	0.56	--	0.11	1.2	8/26/2015	2.9		32		
8/30 - 9/5	9/5/2015	ND (<2.5)	1.3	0.014	8/31/2015	6.73	ND (<0.00025)	ND (<0.0025)	18	195	2.9	31	ND (<0.10)	0.05	0.54	--	0.11	1.2	9/2/2015	2.2		24		
9/6 - 9/12	9/12/2015	ND (<2.5)	1.3	0.013	9/8/2015	6.89	ND (<0.00025)	0.0070	2.9	31	2.6	28	--	0.29	3.1	--	0.28	3.0	9/9/2015	1.7		18		
9/13 - 9/19	9/19/2015	ND (<2.5)	1.3	0.014	9/14/2015	6.93	ND (<0.00025)	0.098	15	169	0.27	3.0	ND (<0.10)	0.05	0.56	ND (<0.025)	0.013	0.14	9/16/2015	3.2		36		
9/20 - 9/26	9/26/2015	ND (<2.5)	1.3	0.015	9/21/2015	7.34	ND (<0.00025)	0.0038	3.7	44	1.9	22	--	0.26	3.1	--	0.092	1.1	9/23/2015	1.9		22		
9/27 - 10/3	10/3/2015	ND (<2.5)	1.3	0.015	9/28/2015	6.75	ND (<0.00025)	0.0030	8.0	93	1.4	16	--	0.13	1.5	--	0.21	2.5	9/30/2015	1.8		21		
10/4 - 10/10	10/10/2015	ND (<2.5)	1.3	0.014	10/5/2015	6.95	ND (<0.00025)	0.0059	14	158	3.4	38	--	0.17	1.9	--	0.10	1.1	10/7/2015	1.3		15		
10/11 - 10/17	10/17/2015	ND (<2.5)	1.3	0.015	10/12/2015	7.18	0.00029	0.0041	15	183	2.4	29	--	0.26	3.2	--	0.057	0.69	10/14/2015	1.3		16	0.23	2.8
10/18 - 10/24	10/24/2015	ND (<2.5)	1.3	0.014	10/19/2015	7.01	ND (<0.00025)	ND (<0.0025)	9.0	98	2.3	25	--	0.34	3.7	--	0.064	0.70	10/21/2015	1.4		15		
10/25 - 10/31	10/31/2015	ND (<2.5)	1.3	0.014	10/26/2015	7.19	ND (<0.00025)	0.0029	14	158	2.3	26	--	0.18	2.0	--	0.032	0.36	10/28/2015	1.7		19		
11/1 - 11/7	11/7/2015	ND (<2.5)	1.3	0.014	11/2/2015	7.21	ND (<0.00025)	ND (<0.0025)	9.7	105	0.87	9.4	--	0.18	2.0	--	0.097	1.1	11/4/2015	1.3		14		
11/8 - 11/14	11/14/2015	ND (<2.5)	1.3	0.013	11/9/2015	7.13	ND (<0.00025)	ND (<0.0025)	7.3	79	2.2	24	ND (<0.10)	0.05	0.54	--	0.025	0.27	11/11/2015	1.2		13		
11/15 - 11/21	11/21/2015	NA	NA	NA	11/16/2015	7.15	ND (<0.00025)	ND (<0.0025)	9.6	108	2.3	26	--	0.23	2.6	--	0.053	0.60	11/18/2015	5.9		67		
11/22 - 11/28	11/28/2015	NA	NA	NA	11/23/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11/23/2015	NA		NA		
					11/30/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12/2/2015	NA		NA		

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

NA = Not Available To Date
NS = No Sample
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
Last Updated: December 4, 2015

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*	Standby			
1.03		*Lift Station 1 Lift Pump B*	Running			
1.04		*Area in and around Lift Station 1*	Running		2	ETI installed a new hose on center well discharge to replace worn hose.
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*	Running			
2.03		*Lift Station 3 Lift Pump B*	Standby			
2.04		*Area in and around Lift Station 3*	Running			
3		**Lift Station *2* and Transmission Piplines**				
3.01		*Influent Pipline*	In operation			
3.02		*Effluent Pipeline*	Running			
3.03		*Lift Station 2 Lift Pump A*	Running			
3.04		*Lift Station 2 Lift Pump B*	Standby			
3.05		*Area in and around Lift Station 2*	Running			
4		**Interceptor Wells and Cr Treatment Plant**				
4.01		*IWF Well Field, 30 wells*	Running		1	IWF breakers burnt up. Discovered old worn wiring underground. Repaired wiring and put well field back online.
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*	Standby			
4.08		*Interceptor Booster Pump B*	Running			
4.09		*Area In And Around GWTP*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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*	Running			
5.04	PID10A	*Equalization Tanks*	In operation			
5.05	PID10A	*Area in and Around EQ*	In operation		3	ETI repaired the combo valve on the effluent line. ETI inspected the sump pump and adjusted level indicator for more efficient use.
5.06	PID10A	*Raw Water Feed Pump - P102A*	Standby			
5.07	PID10A	*Raw Water Feed Pump - P102B*	Running			
5.08	PID10A	*F-101 Filters*	Running		3	ETI repaired a small leak (inside containment) at the auto flush system.
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*	Running		3	ETI reconnected damaged air line for bed height control and replaced piping on the discharge side of the bed height pump.
6.02	PID14	*Separator Tank - 1401*	Running			
6.03	PID14	*Media Return Pump - P 1401*	Running			
6.04	PID14	*P1401A*	Running			
6.05	PID01A	*P1401B*	Standby			
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*	Maintenance		3	ETI cleared discharge line to the top of the FBR's.
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			

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

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
7		**First Stage FBRs 3** & *4*				
7.01	PID01B	*FBR 3*	Off		2	ETI repaired worn glue fitting at injection point.
7.02	PID01B	*FBR 4*	Off			
7.03	PID02B	*First Stage Separator Tank - T2012*	Off			
7.04	PID01B	*Media Return Pump - P2012*	Off			
7.05	PID01B	*First Stage FBR Pump - P1013*	Off			
7.06	PID01B	*First Stage FRB Pump - P1014*	Off			
7.07	PID01B	*First Stage FBR Pump - P102A*	Off			
7.08	PID07A	*FBR 3 pH Feed Pump - P713*	Off			
7.09	PID07A	*FBR 4 pH Feed Pump - P714*	Off			
7.10	PID07A	*FBR 3 Nutrient (Urea) Feed Pump - P723*	Off			
7.11	PID07A	*FBR 4 Nutrient (Urea) Feed Pump - P 724*	Off			
7.12	PID15	*FBR 3 Nutrient (Phos Acid) Feed Pump - P1523*	Off			
7.13	PID15	*FBR 4 Nutrient (Phos Acid) Feed Pump - P1524*	Off			
7.14	PID07B	*FBR 3 Electron Donor Assembly Pump - P733*	Off			
7.15	PID07B	*FBR 4 Electron Donor Assembly Pump - P734*	Off			
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*	Maintenance		3	Bearings were ordered and received. Replacement work starting 12/7.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
9		**Second Stage FBRs 7** & 8				
9.01	PID03B	*FBR 7*	Running		4	ETI is transferring carbon from FBR 8 into 7
9.02	PID03B	*FBR 8*	Running		4	ETI is transferring carbon from FBR 8 into 7. Began draining FBR
9.03	PID03D	*Second Stage Separator Tank - T3012*	Running			
9.04	PID03B	*Media Return Pump - P3012*	Standby			
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*	Standby			
9.08	PID07A	*FBR 7 pH Feed Pump - P717*	Standby			
9.09	PID07A	*FBR 8 pH Feed Pump - P718*	Standby			
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*	Standby			
9.13	PID07B	*FBR 8 Electron Donor Assembly Pump - P738*	Standby			
10		**Aeration and DAF System**				
10.01	PID04	*Aeration Tank*	In operation			
10.02	PID04	*Aeration Blower - B401*	Running			
10.03	PID04	*Biofilter*	In operation			
10.04	PID04	*Nutrient Solution*	Running			
10.05	PID04	*Biofilter Sump*	Running			
10.06	PID04	*Nutrient Pump - P401*	Running			
10.07	PID04	*Biofilter Sump Pump - P402A*	Standby			
10.09	PID04	*Biofilter 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		3	ETI is replacing the seal and repairing pump beginning 12/7.
10.16	PID05	*DAF Float Pump - P552*	Running			
10.17	PID05	*Screw Conveyer Drive*	Standby			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
10.18	PID05	*Skimmer Drive*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
11		**Pumping System (Old Effluent)**				
11.01	PID06	*Effluent Tank 601*	In operation			
11.02	PID06	*Effluent Pump - P601*	Standby			
11.03	PID06	*Effluent Pump - P602*	Running			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*	Running		4	New water line run to the top of the 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*	Maintenance		2	The pump, motor, and software programming completed.
13.03	PID10C	*Effluent Booster Pump - P1302B*	Running			
13.04	PID10C	*Area Around Effluent and North D-1*	Running			
14		**Solids Collection and Pressing System**				
14.01	PID16	*Sludge Storage Tank*	In operation			
14.02	PID16	*Solids Storage Effluent Pump - P1601*	Running			
14.03	PID16	*Solids Cond. Tank*	In operation			
14.04	PID09	*Sludge Mixer*	Running			
14.05	PID09	*Filter Press Pump - P901*	Running			
14.06	PID09	*Filter Press Pump - P902*	Running			
14.07	PID09	*West Press*	Standby			
14.08	PID09	*East Press*	Running		3	ETI is replacing the air lines to the plate shifter.
14.09	PID09	*Filtrate Tank*	In operation			
14.10	PID09	*Filtrate Tank Effluent (recycle) Pump - P903*	Running			

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Maintenance - Out of service for maintenance
Off - Not currently needed for use, but can be placed in service

Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
		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		4	Polymer system relocated to north side of the D-1 building to reduce the amount of time polymer is in direct sunlight.
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		3	ETI installed manual bleed valve until new switch is received.
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
31		MCC in D-1	In operation			
32		MCC in EQ area	In operation			

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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

Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
		Miscellanous Systems				
33		**Operations Office/Network**	In operation			
34		**Laboratory Analyzers**	In operation			
35		**Security Systems**	In operation			
		Shelf Spares				
		Media Return Pump Rebuid 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			

[1] Status Codes

Equipment

Running	Unit is in operation
Standby	Duplicate or installed spare, not currently operating
Maintenance	Out for repairs or maintenance
Off	Not currently needed, but available

Tanks, Pipelines, Ponds

In operation

Out of service

Spares

In stock

[1] 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	- Tasks performed to either improve the existing equipment (i.e., testing new options) - Minor repairs that in no way alter the performance of the plant

[1] 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