TETRA TECH

MEMO

To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	David Bohmann/Tt
Date:	October 22, 2015
Subject:	NERT – GWETS Operation Monthly Report – September 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 September 2015.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) reports that the GWETS mechanically operated normally in September 2015 with the exception of three diversion events that are described in more detail below. The flow rate to the plant averaged approximately 785 gallons per minute (gpm) during September 2015. At the end of the month, the GW-11 Pond volume was 45.3 million gallons (MG), which would allow 11.8 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 1.5 MG from the end of August. 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 103 mg/L for the month, with a maximum concentration of 110 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.

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 continues to evaluate the data from the camera survey of the NE and NW sumps and to prepare options for managing the sumps in GW-11. A camera survey of the SE and SW sumps is scheduled for October 2015. Upon completion of the camera survey, recommendations will be made for managing the GW-11 sump wells.

    - Diversions:
        i. On September 11, 2015 an effluent diversion occurred following the failure of the micronutrient pump. The pump failure caused the effluent to be out of spec. Approximately 272,816 gallons were diverted to GW-11 between 7:27 and 10:09am until the micronutrient pump was repaired and discharging to the Las Vegas Wash resumed.
        ii. Effluent was diverted from 10:45 am to 12:30 pm on September 15, 2015 due to a leaking valve on the effluent line in the D-1 Building. Approximately 18,931 gallons were diverted to GW-11 until the leak was repaired.
        iii. Due to a leaking gasket on the influent line at the equalization area, the FBR plant was placed in recycle mode on September 22, 2015. The plant was in recycle from 3:21 pm until 4:31 pm when the gasket was repaired. Approximately 30,635 gallons were diverted during this time.

    - Ecology:
        i. Consistent with last year, a rapid increase in the boatman bug population in GW-11 resulted in plugging of the automatic strainers downstream of GW-11. Starting on September 2nd flows from all well fields were routed directly to the P-101 tanks at the equalization area and into the plant. This operating mode will continue until cooler weather kills off this bug bloom at which time flows will be directed back to GW-11 for equalization.

2. Maintenance

    - Major maintenance that was performed or completed in the month included:

i. The computer that is used to view the lift stations and the Allen-Bradley controls for the GWTP experienced a hardware malfunction and is being repaired. A new motherboard and power supply have been ordered and will be replaced. All processes at the GWTP are controlled locally so the computer malfunction did not impact operation, it just required manual collection of flow data.

- Preventative Maintenance completed or being performed in the month included:
  i. ETI made multiple minor conduit repairs on the I-wells located between the control box and the wells within the Interceptor Well Field.
  ii. ETI replaced the gasket and installed a blind flange on an old piping system in the equalization area.
  iii. ETI is beginning the startup process for FBRs 5 and 6. The FBRs have been inoculated are performing well with 50 gpm forward flow. ETI will continue to bring FBRs 5 and 6 online and then transition to the rehabilitation process of FBRs 7 and 8.
  iv. ETI completed the piping on the DAF pressure tank.
  v. ETI removed obstructions from the DAF sludge box and suction piping.
  vi. The suction disc and lower housing on DAF Float Pump – P502 have been replaced.
  vii. The sand filter discharge piping was routed to the filtrate tank.
  viii. A broken elbow on the 3-inch piping that is used to fill the caustic tank was repaired.

- Outstanding maintenance and repairs from the previous month are outlined below:
  i. As of the date of this memo, the Raw Water Feed Pump P102B was returned from Motion Industries and repairs are now complete.

GWETS Upgrades and Facility Projects

The following is a summary of 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 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.

2. Enhanced Operational Metrics

Work on site began in late August remains on schedule. Commissioning of the upgrades will be complete by mid-November, with data available for the November reporting period.

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 September 30, 2015, is attached (Please see 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 September.

Tetra Tech Activities

Tetra Tech conducted calls with ETI to review operation of the GWETS on September 3rd, 10th, 17th, and 24th. Becki Dano, CEM, performed visits to the GWETS on September 4th, 11th, 18th, and 25th. Ms. Dano also reviewed permit and sampling forms for the entire month to ensure each 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]	569[1]	11	0.000	Future Metric
AWF Total Extraction[5]	294[1]	157	0.36	Future Metric
IWF Total Extraction[6]	63[1]	800	8.32	Future Metric
GWTP Effluent[7]	60	809	0.49	ND
GW-11 Influent[4]	46[3]	Future Metric	Future Metric	Future Metric
GW-11 Effluent/ FBR Influent[7]	46	103	0.023	0.024

Notes:

TR = Total Recoverable; NA = Not Available; 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. Flow not directed to GW-11 during September due to boatman bugs plugging filters.

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	2,297	0.09
AWF Total Extraction	16,681	40
IWF Total Extraction	18,150	189
GWTP Effluent	17,586	11
GW-11 Influent[2]	Future Metric	Future Metric
GW-11 Effluent/FBR Influent	1,694	0.38

Notes:

TR = Total Recoverable; NA = Not Available.

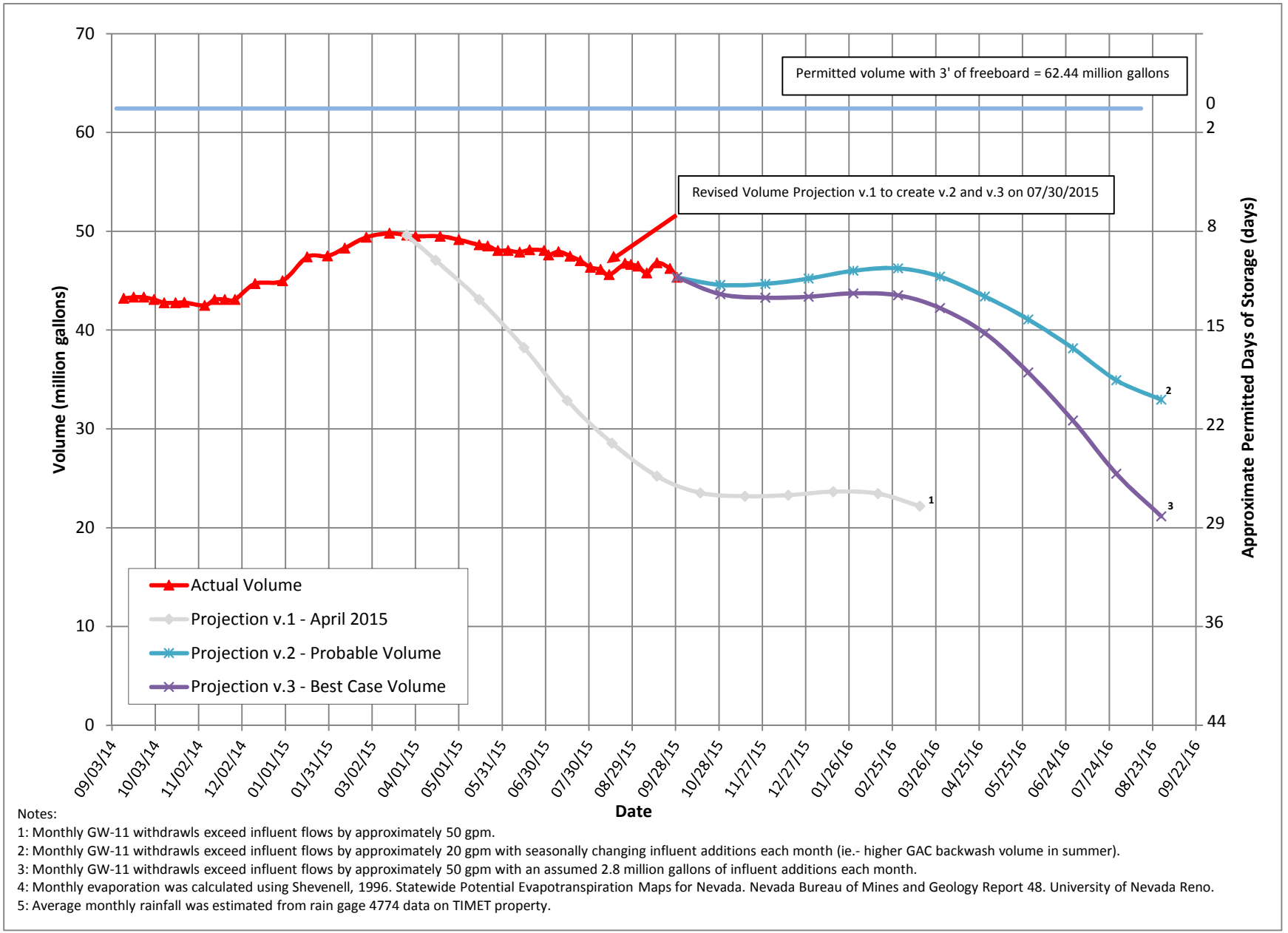
1: Total lbs extracted is calculated from flow weighted average concentration and average flow (see Table 1).

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.

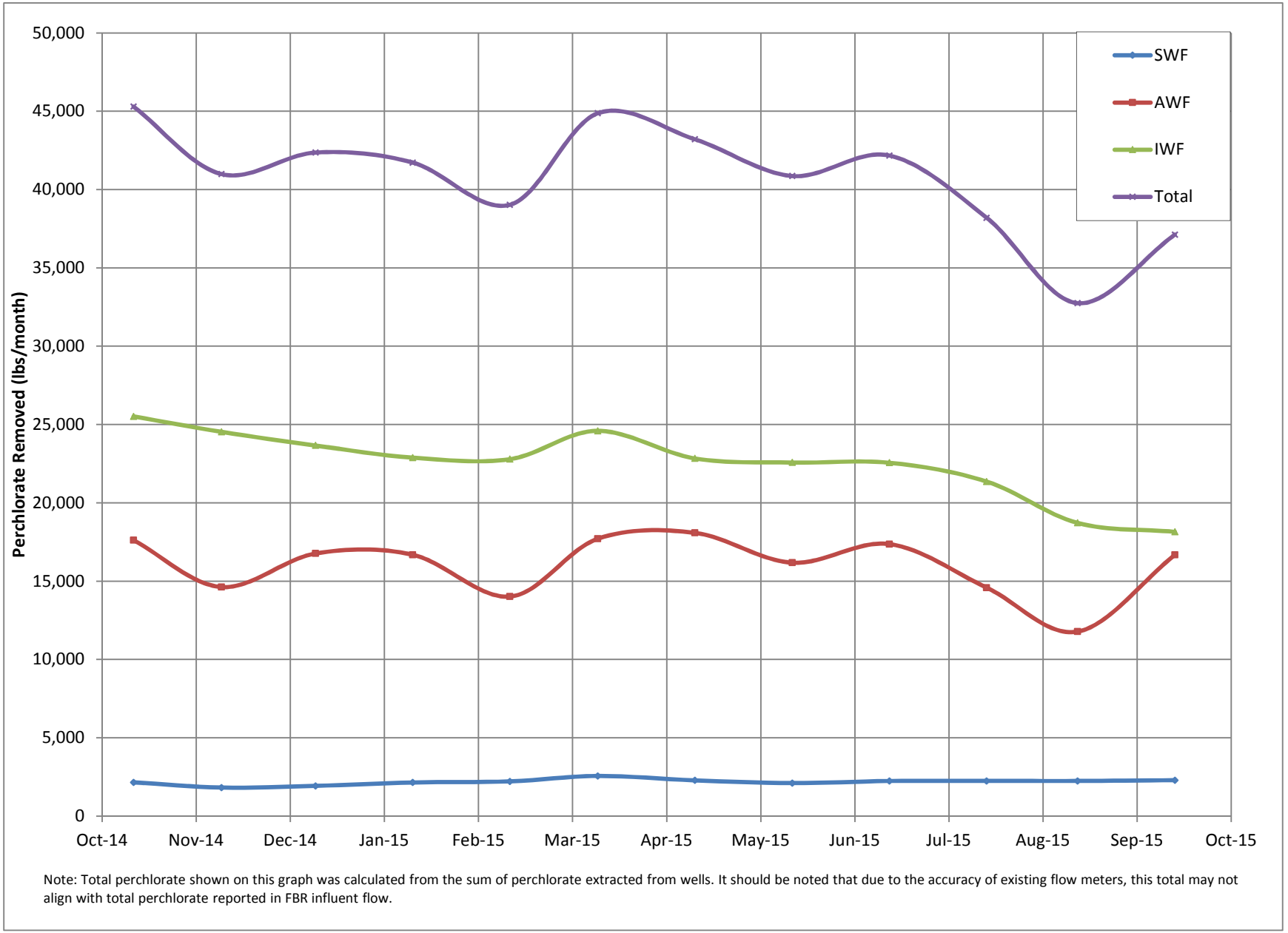
2: Monthly GW-11 withdrawls exceed influent flows by approximately 20 gpm with seasonally changing influent additions each month (ie.- higher GAC backwash volume in summer).

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)

	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	6.72	0.00013	0.0049	13	132	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	198	3.6	40	1.6	1.8	3.7	5.9	40		
September 2015 (month to date)	1.32	1.43	1.3	0.013	6.91	0.00013	0.098	9.0	100	1.4	15	1.8	1.6	2.4	3.2	26		

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	6.92	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	NA	NA	NA	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		
					9/21/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9/23/2015	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: October 2, 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		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running			
2.02		*Lift Station 3 Lift Pump A*	Standby			
2.03		*Lift Station 3 Lift Pump B*	Running			
2.04		*Area in and around Lift Station 3*	Running			
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		3	ETI made multiple minor conduit repairs on the I-wells located between the control box and the wells.
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*	Standby			
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		3	ETI replaced gasket and installed blind flange on an old piping system no longer in use.
5.06	PID10A	*Raw Water Feed Pump - P102A*	Running			
5.07	PID10A	*Raw Water Feed Pump - P102B*	Maintenance		3	Motion industries received parts for the pump and work has begun.
5.08	PID10B	*Carbon Absorber - LGAC 201A*	Running			
5.09	PID10B	*Carbon Absorber - LGAC 201B*	Running			
5.10	PID10B	*Carbon Absorber - LGAC 201C*	Running			
6		**First Stage FBRs A, 1** *& 2*				
6.01	PID14	*FBR A*	Running			
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*	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*	Standby			
6.14	PID07A	*FBR 1 pH Feed Pump - P711*	Standby			
6.15	PID07A	*FBR 2 pH Feed Pump - P712*	Standby			
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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			
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*	Off		3	ETI is beginning start up procedures on FBR.
8.02	PID03A	*FBR 6*	Off		3	ETI is beginning start up procedures on FBR.
8.03	PID03C	*Second Stage Separator Tank - T3011*	Off			
8.04	PID03A	*Media Return Pump - P3011*	Off			
8.05	PID03A	*Second Stage FBR Pump - P3015*	Off			
8.06	PID03A	*Second Stage FBR Pump - P3016*	Off			
8.07	PID03A	*Second Stage FBR Pump - P301A*	Off			
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*	Off			
8.13	PID07B	*FBR 6 Electron Donor Assembly Pump - P736*	Off			

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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			
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*	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*	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	*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		3	ETI has completed piping activities on the pressure tank.
10.11	PID05	*DAF Vessel - D501*	Running		3	The DAF sludge box clogged up. ETI removed suction piping to clear obstrucions from piping.
10.12	PID05	*DAF Pressure Pump - P501*	Running			
10.13	PID05	*DAF Float Pump - P502*	Running		3	ETI replaced suction disc and lower housing on pump.
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			

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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*	Running			
11.03	PID06	*Effluent Pump - P602*	Standby			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*	Running		3	Airlift 1 is stuck so ETI is attempting to pull, clear, and reinstall.
12.02	PID17	*Filter Reject Tank*	In operation		4	ETI piped the sandfilter discharge piping to the filtrate 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*	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			
14.09	PID09	*Filtrate Tank*	In operation			
14.10	PID09	*Filtrate Tank Effluent (recycle) Pump - P903*	Running			

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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		3	ETI repaired broken elbow on 3'-inch piping to fill the caustic tank.
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			
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		2	The computer to view liftstations and Allen Bradley controls for the GWTP is getting repaired. The motherboard and power supply will be replaced.
30		**MCC FBR Pad**	In operation			
31		**MCC in D-1**	In operation			
32		**MCC in EQ area**	In operation			

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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