
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: Nov 20, 2018

Subject: NERT – GWETS Operation Monthly Report – Oct 2018

At the request of the Nevada Environmental Response Trust (Trust), Envirogen Technologies, Inc. (ETI) is providing this summary of the groundwater extraction and treatment system (GWETS) operation and performance during October 2018.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in October 2018. Flow from PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 182 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,028 gpm during October 2018. At the end of the month, the GW-11 Pond volume was at 34.8 million gallons (MG), which would allow 19.2 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 stayed the same from the end of September 2018. Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the IX system averaged 0.85 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 208 mg/L for the month, with a maximum concentration of 240 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of September 2018 averaged 117 mg/l, with a maximum concentration of 130 mg/l. Fluctuations in the influent perchlorate concentrations are due to the changes in the AP-5 treatment feed rate and not a result of groundwater changes.

Enhanced Operational Metrics

Tables 1 and 2 provide a summary of the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. These tables also include data associated with the AP-5 decant liquids. Figure 2 graphically presents historical perchlorate and chromium mass flux information. Attachment A provides a summary of the NPDES permit analytes with numerical discharge limits.

Operational Issues

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

1. GW-11

There were no operational issues with GW-11 in the month of October.

2. Biological Plant

Treatment of AP-5 water through the FBR Biological plant continued in the month of October beginning with a flow rate of 5.0 gpm and increasing to 7.0 gpm throughout the end of the month.

There were influent / effluent diversions and well shutdowns during the reporting period generally associated with maintenance activities. Below is a description of the events that occurred:

Diversions Events

- Effluent Diversion to GW-11 occurred on October 2, 2018 from 12:50pm to 4:12pm due to maintenance on the Ferric Chloride injection line. Approximately 220,000 gallons of Effluent were diverted to GW-11.
- Influent diversion to GW-11 occurred on October 6, 2018 from 4:40am to 7:42am due to a malfunction of the flow control valve on the P-601 pump. The positioner for that valve has been replaced.
- Influent diversion to GW-11 occurred on October 11, 2018 at 8:07am until 11:40am due to a planned maintenance event (High Voltage Electrical survey of the FBR MCC). Approximately 187,000 gallons were diverted to GW-11.
- Art-2 (Athens Well Field extraction well) went offline on October 20, 2018 at 5:13am to 10:42am due to a malfunction of the VFD motor control unit. The VFD cooling fan was replaced and the extraction well was brought back online.
- Influent diversion to GW-11 occurred on October 29, 2018 at 9:00am to 12:30pm due to maintenance on the Stabilized Lake Mead Water line to the NERT Site.
- The Athens Well Field went offline on October 29, 2018 at 12:48pm to 1:18am due to a malfunction of the VFD motor control unit at Lift Station 2. A temporary air conditioning unit was installed at Lift Station 2 until the permanent air conditioning unit was repaired by outside contractors.

3. Spills

There were no reportable spills for the month of October.

4. Maintenance

- Major maintenance performed by ETI in the month included:
 - I. Completed the installation of the pig catcher at LS1.

- II. Pulled and replaced the pump and motor on extraction well I-E3-2 on the AP Area well field.
 - III. Completed the installation of the level sensor on the peroxide tote.
 - IV. Replaced the elbow on the ferric chloride feed line.
 - V. Installed the new actuator for the 601 level control valve.
 - VI. Installed the new valves and piping on the 1603 sludge tank.
 - VII. Replaced the EFF 8" valve at the EQ area that was leaking inside containment.
 - VIII. Installed the piping for the new pH probe for FBR 5.
 - IX. FBR 5 was taken offline to remove the damaged check valve that was stuck in the pipe.
 - X. The check valve was replaced on the discharge of pump P-3015.
 - XI. Measured and installed transducer on extraction well I-W.
 - XII. Installed the new bed height pump for FBR 3.
 - XIII. Installed the strainer on the effluent line.
 - XIV. Replaced fuse, motor and gearbox on the flocculator at GWTP.
- Preventative Maintenance completed or being performed by ETI in the month included:
 - I. Inspected the batteries and suspension on the utility carts.
 - II. Flushed the auto drain on the airlines and inspected for any leaks.
 - III. Pulled all the airlifts on the sand filter and washed down the weirs.
 - IV. Performed the PM's on the turbines at LS1. The oil was changed, temperature readings were taken, and the packing was inspected.
 - V. Calibrated the flowmeter from LS1 to LS2.
 - VI. Inspected and adjusted the floats for the level control on the LS1 wet well.
 - VII. Cleaned the seal water lines for the recycle pumps.

GWETS Upgrades and Facility Projects

Treatment System Extension – ETI is continuing to proceed on production of the process engineering including Process Flow, Mass Balance and P&IDs for initial submission to NDEP. ETI anticipates the design package will be ready for submission early December 2018. Along with the process engineering, ETI is moving forward with mechanical designs for all the vessels and prefabricated containers along with the overall layout. These also should be finalized by early December. ETI continues to coordinate with Tetra Tech, who will install the system including the interconnection between TIMET and the Trust. Preliminary layouts and other installation information was given to Tetra Tech. ETI also supplied Tetra Tech with the required information for the air permit analysis required for this addition.

Equipment Availability Tracking

ETI operators continue to update the equipment tracking form on a weekly basis or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel verify the entries on the form, including both the operating status and confirmation of the inventory of required shelf spares. The equipment tracking form is included as Attachment B.

GWETS Staffing

ETI continues with 24-hour staffing of the GWETS at the direction of the Trust and continues to follow the security procedures in the Standard Operating Procedures (SOP).

Tables

Operational Metrics

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ^{6 7}	Chromium (TR) (mg/L) ^{6 7}	Chromium(VI) (mg/L) ^{6 7}
SWF Total Extraction ¹	740 ⁵	10	0.0016	0.0016
AWF Total Extraction ¹	476 ⁵	76	0.16	0.16
IWF Total Extraction ¹	56 ⁵	622	7.8	7.4
AP Area Total Extraction ¹	8.1 ⁵	986	0.075	0.082
GWTP Effluent ²	56	708	0.32	ND
GW-11 Influent ¹	0.17	50	0.065	0.052
FBR Influent ^{2 3}	1,028	208	0.044	0.029
T-205 Effluent (AP-5 Wash Water) ^{3 4}	5.8	17,715	NA	NA

Notes:

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

- 1: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.
- 2: Perchlorate, chromium TR, and chromium (VI) sampled weekly, values reported from TestAmerica.
- 3: AP-5 Wash Water perchlorate data is also included in the GW-11 Effluent/ FBR Influent totals.
- 4: Flow weighted average concentration based on mass flow meter readings.
- 5: Sum of daily average flow for individual wells.
- 6: All concentrations reported are monthly flow weighted averages.
- 7: ND analytical values are treated as zero values in the flow weighted average calculations.

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) ³	Chromium (TR) (lbs/month) ³	Chromium (VI) (lbs/month) ³
SWF Total Extraction	2,753	0.45	0.45
AWF Total Extraction	13,411	29	29
IWF Total Extraction	13,090	164	157
AP Area Total Extraction	2,962	0.23	0.25
GWTP Effluent	14,781	6.6	ND
GW-11 Influent	3.1	0.00	0.00
FBR Influent ¹	79,724	20	13
T-205 Effluent (AP-5 Wash Water) ^{1 2}	38,302	NA	NA

Notes:

TR = Total Recoverable; NA = Not Analyzed.

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

2: AP-5 Wash Water concentrations and mass flux are estimates based on mass flow meter readings.

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

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 10/31/2018

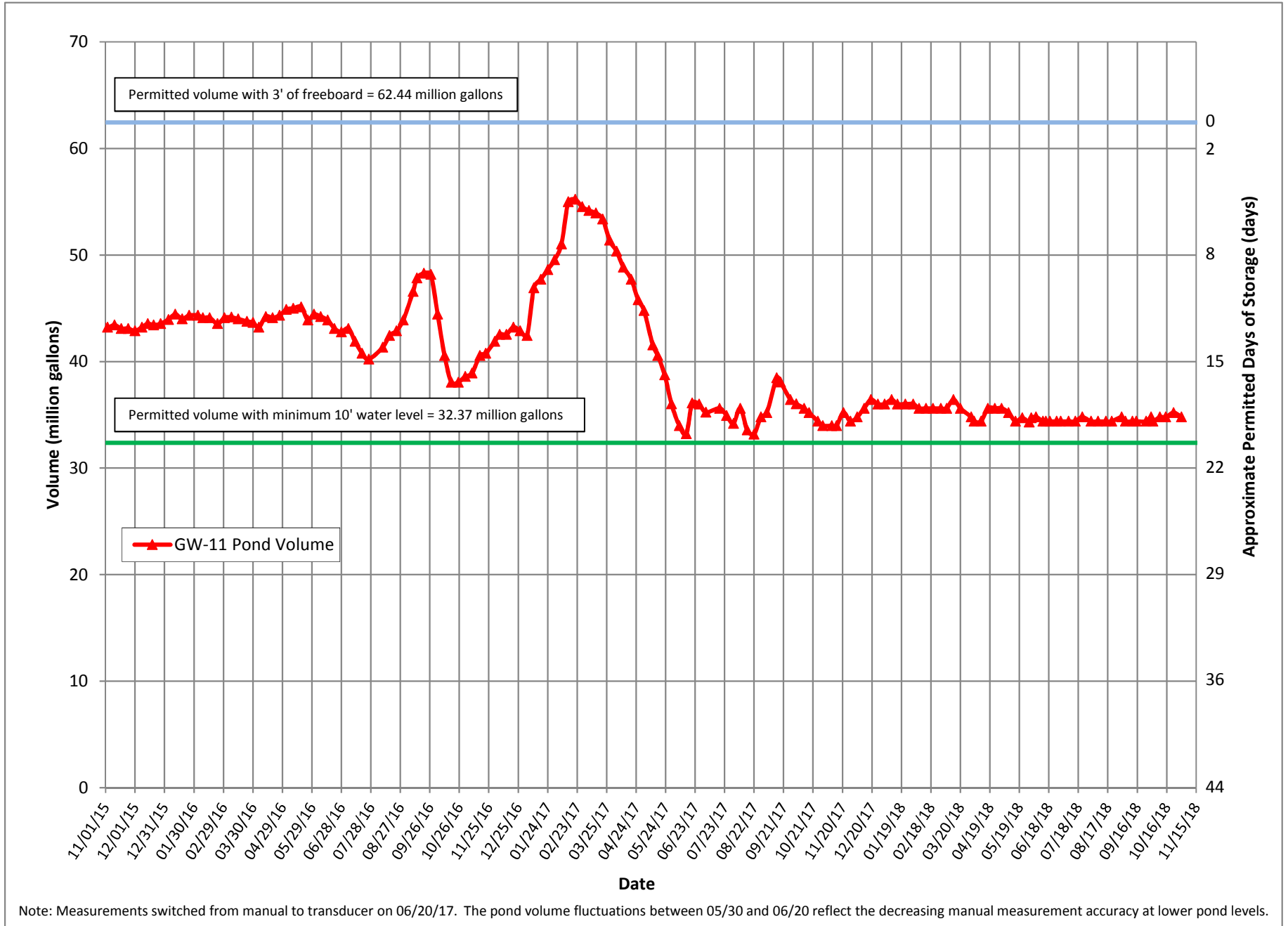
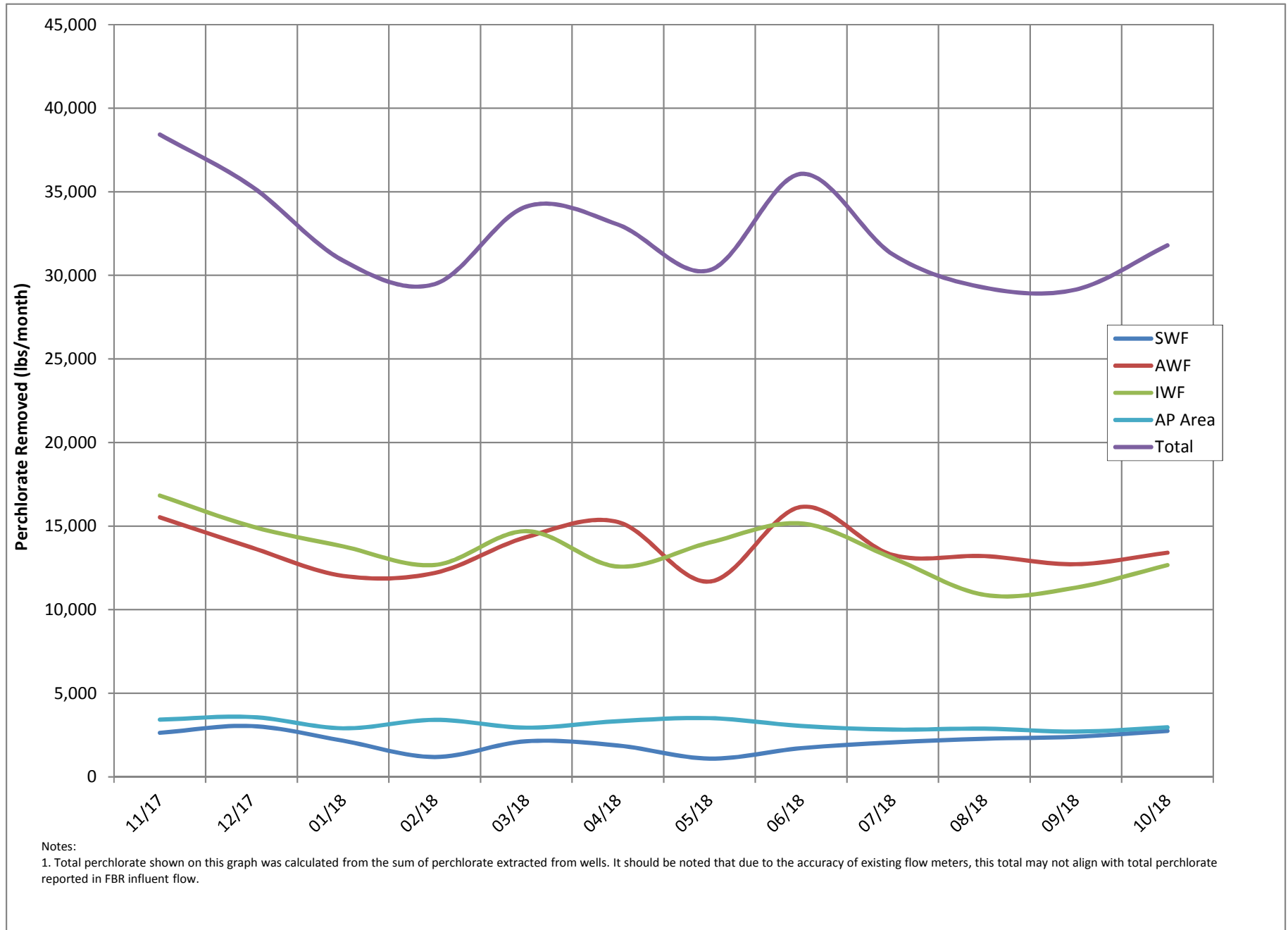


Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Treated Effluent at Outfall 001																					
Continuous		Daily Samples, composited weekly				Weekly Grab Samples										Weekly, collected separately			Quarterly		
Flow Rate		Perchlorate				pH	Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Suspended Solids (TSS)	Total Ammonia as N		Total Phosphorus as P		BOD ₅ (inhibited)			Total Dissolved Solids (TDS)	
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)			Daily Min. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	Daily Max. (mg/L)		
2.52	2.88	18	0.38			6.5	9.0	10	100	5,000	10,000	20	135	2,839	20*	10*		25	40	525	8,000

January 2018	1.80	1.88	0.5	0.0075	6.70	7.02	0.49	18	600	3,900	14	17	260	170	1.9			2.9	3.9	45	
February 2018	1.83	1.88	1.5	0.022	6.81	6.87	ND (<0.25)	8.2	590	2,300	12	16	230	150	1.5			2.9	4.0	43	4,600
March 2018	1.79	1.89	0.5	0.0075	6.76	7.19	ND (<0.25)	15	430	2,600	10	13	200	50	2.6			2.8	4.1	43	
April 2018	1.68	1.81	0.5	0.0070	6.60	7.30	ND (<0.25)	8.7	380	1,100	0.89	9	130	3	2.3			1.9	2.7	27	
May 2018	1.69	1.85	0.8	0.012	6.89	7.00	ND (<0.25)	9.4	370	2,400	1.6	10	140	3.2	2.2			1.4	2.2	19	4,000
June 2018	1.69	1.94	4	0.058	6.61	6.98	ND (<0.25)	9.0	370	230	1.4	8	110	8	2.1			1.7	3.0	24	
July 2018	1.65	1.86	0.5	0.0069	6.70	7.0	1.6	4.0	420	1,300	0.83	6.9	100	3.5	1.3			1.6	2.1	19	
August 2018	1.67	1.85	0.5	0.0069	6.60	6.76	ND (<0.25)	2.8	370	1,300	1.6	9	120	2.3	2.5			1.7	2.1	22	4,500
September 2018	1.70	1.86	0.5	0.0071	6.68	6.85	ND (<0.25)	3.2	390	1,000	1.8	5.0	70	2.8	0.9			1.5	2.0	19	
October 2018 (month to date)	1.78	1.90	0.6	0.0072	6.63	7.50	3.0	24.0	290	7,500	8.4	16.7	90	44	0.9			1.8	2.3	27	
November 2018 (month to date)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			NA	NA	NA	

Daily Grab Sample Dates	Composite Sample Date	µg/L	lbs/day	Sample Date	S.U.	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	Sample Date	mg/L		
12/31 - 1/6	1/6/2018	ND (<1.0)	0.5	0.0077	1/2/2018	7.02	ND (<0.25)	6.6	600	1,600	14	12	185	--	12	183**	--	0.082	1.3	1/3/2018	2.2	33	
1/7 - 1/13	1/13/2018	ND (<1.0)	0.5	0.0072	1/8/2018	6.86	ND (<0.25)	4.8	600	2,800	11	18	263	--	11	160	--	0.13	1.9	1/10/2018	3.2	48	
1/14 - 1/20	1/20/2018	ND (<1.0)	0.5	0.0076	1/15/2018	6.70	0.25	5.7	550	1,100	11	7.9	122	--	10	142**	--	0.11	1.7	1/17/2018	3.9	58	
1/21 - 1/27	1/27/2018	ND (<1.0)	0.5	0.0076	1/22/2018	6.83	0.49	18	530	3,900	12	26	401	--	11	170**	--	0.18	2.8	1/24/2018	2.3	36	
1/29 - 2/3	2/3/2018	ND (<1.0)	0.5	0.0077	1/29/2018	6.72	ND (<0.25)	11	580	3,800	9.8	21	316	--	8.9	134	--	0.11	1.7	1/31/2018	3.1	47	
2/4 - 2/10	2/10/2018	ND (<1.0)	0.5	0.0076	2/5/2018	6.87	ND (<0.25)	5.4	580	960	12	6.9	104	--	9.9	150**	--	0.047	0.71	2/7/2018	2.6	40	
2/11 - 2/17	2/17/2018	3.1	3.1	0.048	2/12/2018	6.81	ND (<0.25)	6.8	590	1,300	12	7.0	106	--	10	151	--	0.0555	0.840	2/14/2018	2.3	35	
2/18 - 2/24	2/24/2018	ND (<1.0)	0.5	0.0077	2/19/2018	6.86	ND (<0.25)	7.0	550	2,300	12	16	240	--	10	150	--	0.11	1.7	2/21/2018	2.8	43	
2/25 - 3/3	3/3/2018	1.7	1.7	0.024	2/26/2018	6.84	ND (<0.25)	8.2	550	1,700	12	33	481	--	6.9	101	--	0.19	2.8	2/28/2018	4.0	55	
3/4 - 3/10	3/10/2018	ND (<1.0)	0.5	0.0073	3/5/2018	6.96	ND (<0.25)	11	430	2,600	9.8	18	269	--	8.3	124	--	0.24	3.6	3/7/2018	4.1	60	
3/11 - 3/17	3/17/2018	ND (<1.0)	0.5	0.0076	3/12/2018	6.76	ND (<0.25)	7.1	360	2,100	10	17	258	--	8.6	130**	--	0.22	3.3	3/14/2018	3.7	58	
3/18 - 3/24	3/24/2018	ND (<1.0)	0.5	0.0075	3/19/2018	7.14	ND (<0.25)	15	290	2,300	ND (<0.50)	12	175	--	0.39	5.7	--	0.11	1.6	3/21/2018	2.5	38	
3/25 - 3/31	3/31/2018	ND (<1.0)	0.5	0.0076	3/26/2018	7.19	ND (<0.25)	3.6	340	890	ND (<0.50)	5.9	90	--	0.45	6.0	--	0.13	2.0	3/28/2018	0.95	14	
4/1 - 4/7	4/7/2018	ND (<1.0)	0.5	0.0073	4/2/2018	7.30	ND (<0.25)	5.2	150	1,100	0.75	21	313	--	0.75	11	--	0.29	4.3	4/4/2018	1.7	25	
4/8 - 4/14	4/14/2018	ND (<1.0)	0.5	0.0066	4/9/2018	6.74	ND (<0.25)	4.1	300	1,100	0.89	7.4	100	--	0.14	1.9**	--	0.17	2.3	4/11/2018	2.2	31	
4/15 - 4/21	4/21/2018	ND (<1.0)	0.5	0.0070	4/16/2018	6.60	ND (<0.25)	8.7	380	560	ND (<0.50)	3.3	44	--	0.18	2.4	--	0.14	1.9	4/18/2018	2.7	37	
4/22 - 4/28	4/28/2018	ND (<1.0)	0.5	0.0070	4/23/2018	6.91	ND (<0.25)	5.3	290	480	ND (<0.50)	6.1	89	ND (<0.10)	0.050	0.73**	--	0.16	2.3	4/25/2018	0.90	13	
4/29 - 5/5	5/5/2018	2.0	2.0	0.030	4/30/2018	6.97	ND (<0.25)	5.1	300	1,000	ND (<0.50)	5.6	80	--	0.19	2.7	--	0.057	0.82	5/2/2018	2.0	30	
5/6 - 5/12	5/12/2018	ND (<1.0)	0.5	0.0072	5/7/2018	7.00	ND (<0.25)	8.0	360	2,300	1.6	13	157	--	0.53	8.1**	--	0.37	4.5	5/9/2018	2.2	34	
5/13 - 5/19	5/19/2018	ND (<1.0)	0.5	0.0069	5/14/2018	6.89	ND (<0.25)	7.6	280	2,400	ND (<0.50)	13	192	--	0.11	1.6**	--	0.11	1.6	5/16/2018	1.1	13	
5/20 - 5/26	5/26/2018	ND (<1.0)	0.5	0.0069	5/21/2018	6.94	ND (<0.25)	9.4	350	1,700	ND (<0.50)	12	177	ND (<0.10)	0.050	0.74**	--	0.086	1.3	5/23/2018	1.2	15	
5/27 - 6/2	6/2/2018	ND (<1.0)	0.5	0.0071	5/29/2018	6.98	ND (<0.25)	ND (<2.5)	370	100	1.1	2.3	28	--	0.33	4.0**	--	0.13	1.6	5/30/2018	ND (<0.50)	0.25	3.8
6/3 - 6/9	6/9/2018	14**	14	0.21	6/4/2018	6.98	ND (<0.25)	4.6	320	81	ND (<0.50)	6.5	104	ND (<0.10)	0.050	0.80**	--	0.14	2.2	6/6/2018	3.0	48	
6/10 - 6/16	6/16/2018	ND (<1.0)	0.5	0.0069	6/11/2018	6.89	ND (<0.25)	5.4	370	96	0.85	7.2	105	--	0.11	1.6**	--	0.16	2.3	6/13/2018	1.9	22	
6/17 - 6/23	6/23/2018	ND (<1.0)	0.5	0.0068	6/18/2018	6.61	ND (<0.25)	9.0	360	230	1.4	14	162	--	1.4	16**	--	0.17	2.0	6/20/2018	0.83	11	
6/24 - 6/30	6/30/2018	ND (<1.0)	0.5	0.0067	6/25/2018	6.76	ND (<0.25)	4.4	310	95	ND (<0.50)	4.0	58	ND (<0.10)	0.050	0.73**	--	0.13	1.9	6/27/2018	1.1	16	
7/1 - 7/7	7/7/2018	ND (<1.0)	0.5	0.0070	7/2/2018	6.89	ND (<0.25)	4.0	340	91	ND (<0.50)	5.2	76	--	0.11	1.6	--	0.14	2.1	7/5/2018	1.6	19	
7/8 - 7/14	7/14/2018	ND (<1.0)	0.5	0.0069	7/9/2018	6.81	ND (<0.25)	2.8	380	520	ND (<0.50)	4.1	61	--	0.27	4.0**	--	0.096	1.4	7/11/2018	2.1	26	
7/15 - 7/21	7/21/2018	ND (<1.0)	0.5	0.0066	7/16/2018	7.0	ND (<0.25)	3.6	320	850	ND (<0.50)	6.6	75	--	0.22	2.5**	--	0.052	0.59	7/18/2018	1.1	17	
7/22 - 7/28	7/28/2018	ND (<1.0)	0.5	0.0071	7/23/2018	6.83	ND (<0.25)	3.9	340	940	0.83	9.0	133	--	0.19	2.8**	--	0.072	1.1	7/25/2018	1.5	13	
7/29 - 8/4	8/4/2018	ND (<1.0)	0.5	0.0071	7/30/2018	6.70	1.6	3.5	420	1,300	ND (<0.50)	9.4	146	--	0.12	1.9	--	0.072	1.1	8/1/2018	2.1	31	
8/5 - 8/11	8/11/2018	ND (<1.0)	0.5	0.0066	8/6/2018	6.64	ND (<0.25)	ND (<2.5)	330	1,100	ND (<0.50)	9.0	108	--	0.30	3.6**	--	0.025	0.30	8/8/2018	1.8	22	
8/12 - 8/18	8/18/2018	ND (<1.0)	0.5	0.0070	8/13/2018	6.63	ND (<0.25)	ND (<2.5)	350	1,200	1.0	7.1	104	--	0.21	3.1**	--	0.068	0.99	8/15/2018	1.8	23	
8/19 - 8/25	8/25/2018	ND (<1.0)	0.5	0.0069	8/20/2018	6.60	ND (<0.25)	2.8	370	1,300	1.2	8.4	124	--	0.17	2.5**	--	0.52	7.7	8/22/2018	1.9	21	
8/26 - 9/1	9/1/2018	ND (<1.0)	0.5	0.0071	8/27/2018	6.76	ND (<0.25)	2.5	370	1,100	1.6	11	130	--	0.55	6.5**	--	0.091	1.1	8/29/2018	0.95	14	
9/2 - 9/8	9/8/2018	ND (<1.0)	0.5	0.0068	9/4/2018	6.72	ND (<0.25)	ND (<2.5)	390	880	1.8	5.7	84	--	0.41	6.0**	--	0.080	1.2	9/5/2018	2.0	23	
9/9 - 9/15	9																						

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	Adjusted the level floats on the wet well
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 Pipelines				
3.01		Influent Pipeline	In operation			
3.02		Effluent Pipeline	Running			
3.03		Lift Station 2 Lift Pump A	Running			
3.04		Lift Station 2 Lift Pump B	Standby			
3.05		Area in and around Lift Station 2	Running			
4		Interceptor Wells and Cr Treatment Plant				
4.01		IWF Well Field, 30 wells	Running		2	Installed a new pump and motor on I-E3-2. Changed out the transducer on I-W.
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation		3	Replaced the fuses and gearbox on the mixer.
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		3	A bypass valve was installed on the effluent line.
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
5.08	PID10A	F-101 Filters	Running			
5.09	PID10B	Carbon Absorber - LGAC 201A	Running		1	The system was taken offline to inspect and make repairs to the underflow system.
5.10	PID10B	Carbon Absorber - LGAC 201B	Running			
5.11	PID10B	Carbon Absorber - LGAC 201C	Running			
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A				
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401				
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			
7.03	PID02B	First Stage Separator Tank - T2012	Running		3	Replaced the bed height control pump and installed a sun shade.
7.04	PID01B	Media Return Pump - P2012	Running			
7.05	PID01B	First Stage FBR Pump - P1013	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
7.06	PID01B	First Stage FRB Pump - P1014	Running			
7.07	PID01B	First Stage FRB 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		1	The FBR was temporarily taken offline to remove the damaged check flap that was stuck in the piping. The piping was separated and the piece was removed. A new check flap was installed.
8.02	PID03A	FBR 6	Running			
8.03	PID03C	Second Stage Separator Tank - T3011	Running			
8.04	PID03A	Media Return Pump - P3011	Running			
8.05	PID03A	Second Stage FBR Pump - P3015	Running			
8.06	PID03A	Second Stage FBR Pump - P3016	Standby			
8.07	PID03A	Second Stage FBR Pump - P301A	Running			
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Running			
9		Second Stage FBRs 7 & 8				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
9.04	PID03B	Media Return Pump - P3012	Running			
9.05	PID03B	Second Stage FBR Pump - P3017	Running			
9.06	PID03B	Second Stage FBR Pump - P3018	Running			
9.07	PID03B	Second Stage FBR Pump - P302A	Running			
9.08	PID07A	FBR 7 pH Feed Pump - P717	Off			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Off			

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9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off			
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank	In operation			
10.02	PID04	Aeration Blower - B401	Running			
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump				
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation			
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Running			
10.15	PID05	DAF Pressure Pump - P551	Running			
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			
11		Pumping System (Old Effluent)				
11.01	PID06	Effluent Tank 601	In operation		2	A new actuator was installed to control the tank level.
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602	Standby			
12		Sand Filter System				
12.01	PID17	Sand Filter				
12.02	PID17	Filter Reject Tank	In operation		4	The solids were removed from the bottom of the 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			
13.04	PID10C	Area Around Effluent and North D-1	Running			
14		Solids Collection and Pressing System				

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14.01	PID16	Sludge Storage Tank	In operation			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	In operation			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902				
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running			
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		4	A new level indicator system was installed to measure the tote.
18	PID07C	Hydrogen Peroxide System	In operation		2	A new level indicator was installed for the tote level. A new feed valve was installed.
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		4	A new drawdown column was installed.
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			

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26.07	PID08	Particulate Filter	In operation			
27	PID16	Oxygen System	In operation			
28		GWETS Plant Controls/ Siemens Controls	In operation			
29		Well Control System/ Allen Bradley Controls	In operation			
30		MCC FBR Pad	In operation			
31		MCC in D-1	In operation			
32		MCC in EQ area	In operation			
Miscellaneous Systems						
33		Operations Office/Network	In operation			
34		Laboratory Analyzers	In operation			
35		Security Systems	In operation			
Shelf Spares						
		Media Return Pump Rebuild Kit	In stock			
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock			
		Phosphoric Acid Feed Pump	In stock			Spares are on the shelf
		Interceptor Well Pumps (4 each)	In stock			Pumps and motors are stocked.
		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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