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**To:** Nevada Division of Environmental Protection  
Nevada Environmental Response Trust

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**Cc:** Nevada Environmental Response Trust Stakeholders

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**From:** Jeff Lambeth, Director of Operations

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**Date:** May 20, 2017

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**Subject:** NERT – GWETS Operation Monthly Report – April 2017

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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 April 2017.

### Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in April 2017. Flow from PC-118, PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 264 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,066 gpm during April 2017. At the end of the month, the GW-11 Pond volume was at 45.8 million gallons (MG), which would allow 11.6 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased approximately 5.6 MG from the end of March 2017. Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the IX system averaged 2.3 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 87 mg/L for the month, with a maximum concentration of 96 mg/L. In comparison, the influent perchlorate concentration for the month of March 2017 averaged 102 mg/l, with a maximum concentration of 120 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 Ramboll Environ).

### Enhanced Operational Metrics

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

## Operational Issues

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

### 1. GW-11

ETI maintained a reduced flow from the GW-11 pond while combining this flow with Lift Station flow in the TK-101 tanks for equalization purposes. The average flow rate for April from the GW-11 pond was approximately 111 gpm.

### 2. Biological Plant

There were no significant plant interruptions. There was one planned diversion into GW-11 for the month of April. Below is a description of the event that occurred:

- Influent Diversion to GW-11 on April 6<sup>th</sup> from 10:00am to 10:55am. The plant influent was diverted to allow for the connection of the piping for future treatment of the AP-5 water to the current Influent line. During this diversion, approximately 52,250 gallons of effluent were returned to GW-11 resulting in an increase of water stored in GW-11.

### 3. Spills

There were no reportable spills in the month of April.

- There was one minor non-reportable spill in the month of April. On Thursday April 20, 2017 at approximately 6:25 pm, Envirogen informed the Trust that the support that held a discharge hose for a temporary pump installed at the Filter Press Filtrate tank had broken. This resulted in the hose shifting position and spraying approximately 50 gallons of treated effluent against the inside wall of the D-1 building. None of this treated water contacted soil.

### 4. Maintenance

- Major maintenance performed by ETI in the month included:
  - I. P736 Ethanol pump – the pump was replaced with a new pump using the same wet end materials. New electrical connections were used and the wet end check valves were cleaned.
  - II. Extraction well ART2/2A – A new 1.5 hp Franklin motor and Grundfos pump (40s15-5) was installed in the well. The faults were also cleared on the VFD.
  - III. Extraction well ART8A – New electrical connections were made from the motor to the breaker box. A new larger pump (150s75-4) was installed to achieve a higher pressure rating for the well.
  - IV. DAF Vessel D501/551 – New level sight glasses were installed on the pressure tanks to better control the aeration of the water in the DAF vessels.
  - V. Lift Station 1 VT100 turbine pump – A new spool piece was fabricated to replace the damaged one currently in use. The turbine pump was shut down for one hour while the work was performed. The wet well high level alarm sequence was tested at this time. The SWF shut down for approx. 10 minutes.
  - VI. Extraction well I-N – The motor saver was showing a current fault in the panel. The pump was pulled and new ½ hp motor was installed with all new electrical connections to the control box.

- VII. Extraction well I-Q – The transducer was pulled and inspected while replacing the 1/2hp Franklin motor and all of the electrical connections from the motor to the control box. New conduit was installed to replace the worn connections and damage due to sun exposure.
  - VIII. Filter Press X901/902 – The plate shifters were overhauled replacing all tubing, fittings and connections to make the plate shifters functional.
- Preventative Maintenance completed or being performed by ETI in the month included:
    - I. DAF Vessel D501/551 – Both of the vessels were drained, pressure washed and inspected for any damage to the vessel or the associated mechanical parts. The hardware was replaced on the auger and gaps were filled with sealant.
    - II. Extraction well fields AWF/SWF – The wells and vaults were inspected for proper operation.
    - III. Sand Filter T1702 – The airlifts for the sand filter were all pulled and inspected for proper operation. The air cleaners were hosed out. All of the airlifts are in good working order.
    - IV. Seal Water System – The seal water lines and roto-meters were flushed out to ensure proper cooling and lubrication for the mechanical seals on the FBR fluidization pumps.
    - V. ORP analyzers – The ORP analyzers were cleaned and calibrated around the plant.
    - VI. Turbidity Meters – The DAF and Effluent turbidity meters were cleaned and calibrated.

## GWETS Upgrades and Facility Projects

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

1. **AP-5 Solids Removal**  
ETI has coordinated with Tetra Tech on the programming and controls for the treatment portion of the system. Final field checkout of the system is expected in Mid-May.
2. **Spill containment enhancements**  
The work authorization for secondary containment modifications has been issued by the Trust. Work has been completed at Lift Stations 2 & 3. ETI has completed the SMP work plan and it has been approved by NDEP. With the approval of the SMP work plan, construction at the various areas of the plant has begun and will continue through May.
3. **Upgraded above ground well piping and flow meters at the Seep Well field**  
Work Authorization has been approved by the Trust and parts are on order. It is expected to begin field work after receipt of the parts which should be sometime in June.
4. **Upgrade of ART 8A and 2 well pumps**  
Work authorization has been approved by the Trust for ART-8A and the new pump is installed. Final calibration of 8A will be completed in early May. The extraction rate for ART-8A has increased to approximately 180 gpm. Further testing has been completed ETI on ART 2 and ETI is pursuing costing for a possible solution to the increased flow for ART 2.
5. **Addition of the Chrome Plant, GWETS, to the O&M manual**  
Work authorization has been issued by the Trust and this section of the manual is in process. This section of the manual should be submitted to the Trust in May.

## 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

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*Operational Metrics*

Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) <sup>5 6</sup>	Chromium (TR) (mg/L) <sup>5 6</sup>	Chromium(VI) (mg/L) <sup>5 6</sup>
SWF Total Extraction <sup>2</sup>	679.7 <sup>1</sup>	7.2	ND	0.00070
AWF Total Extraction <sup>2</sup>	362.7 <sup>1</sup>	89	0.22	0.21
IWF Total Extraction <sup>2</sup>	65.7 <sup>1</sup>	640	8.1	7.6
AP Area Total Extraction <sup>3</sup>	5.4 <sup>1</sup>	1,017	NA	0.036
GWTP Effluent <sup>4</sup>	82.3	621	0.66	ND
GW-11 Influent <sup>2</sup>	0.7	480	0.50	0.45
GW-11 Effluent/ FBR Influent <sup>4</sup>	1,066.0	87	0.13	0.090

## Notes:

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

1: Sum of daily average flow for individual wells.

2: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.

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

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

5: All concentrations reported are monthly flow weighted averages.

6: ND analytical values are treated as zero values in the flow weighted average calculations.

Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) <sup>1</sup>	Chromium (TR) (lbs/month) <sup>1</sup>	Chromium (VI) (lbs/month) <sup>1</sup>
SWF Total Extraction	1,765	ND	0.17
AWF Total Extraction	11,703	29	28
IWF Total Extraction	15,181	193	180
AP Area Total Extraction	1,966	NA	0.07
GWTP Effluent	18,450	20	0.00
GW-11 Influent	113	0.12	0.11
GW-11 Effluent/FBR Influent	33,568	51	35

## Notes:

TR = Total Recoverable; NA = Not Analyzed.

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

# Figures

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*Operational Metrics*



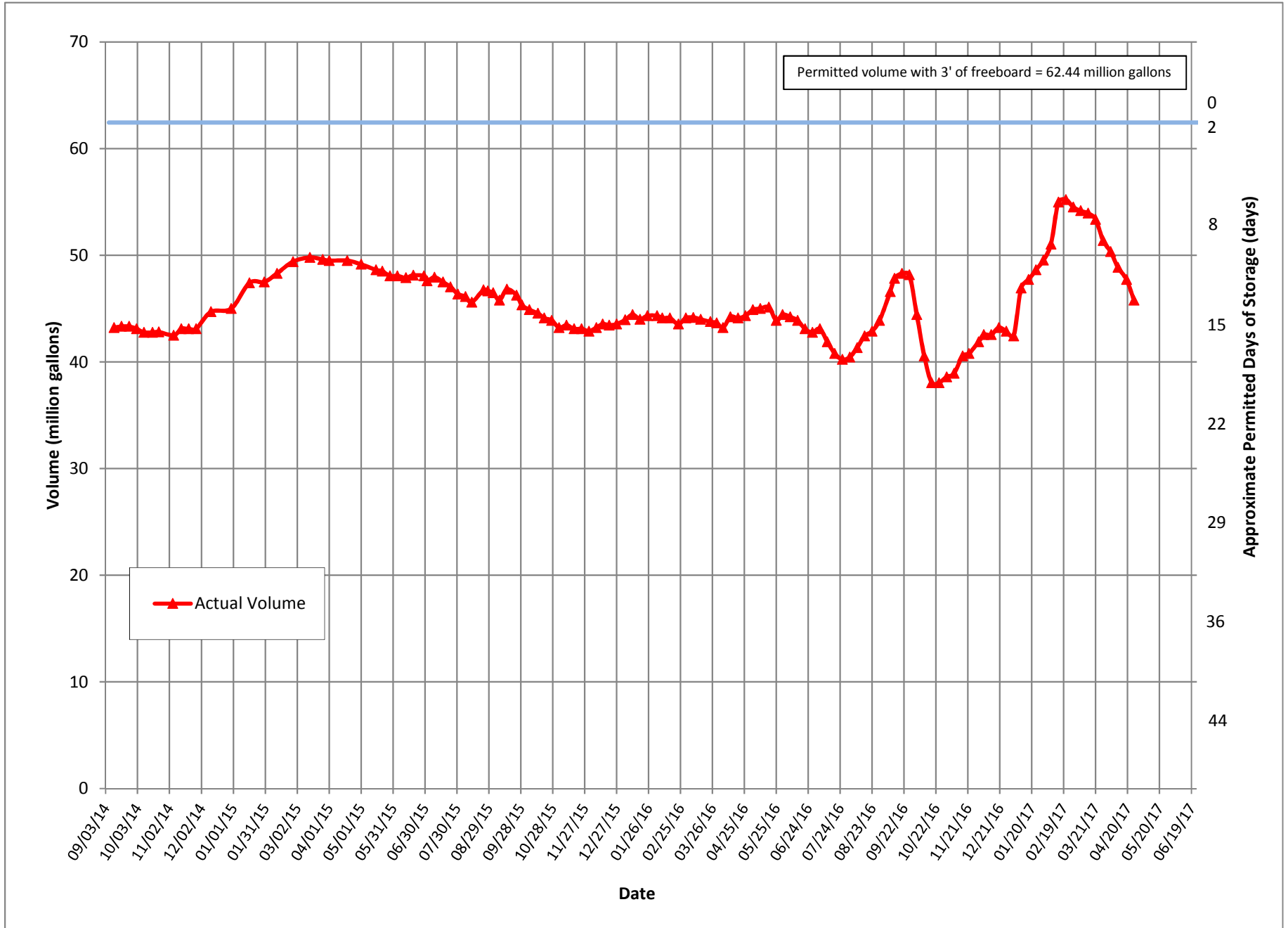
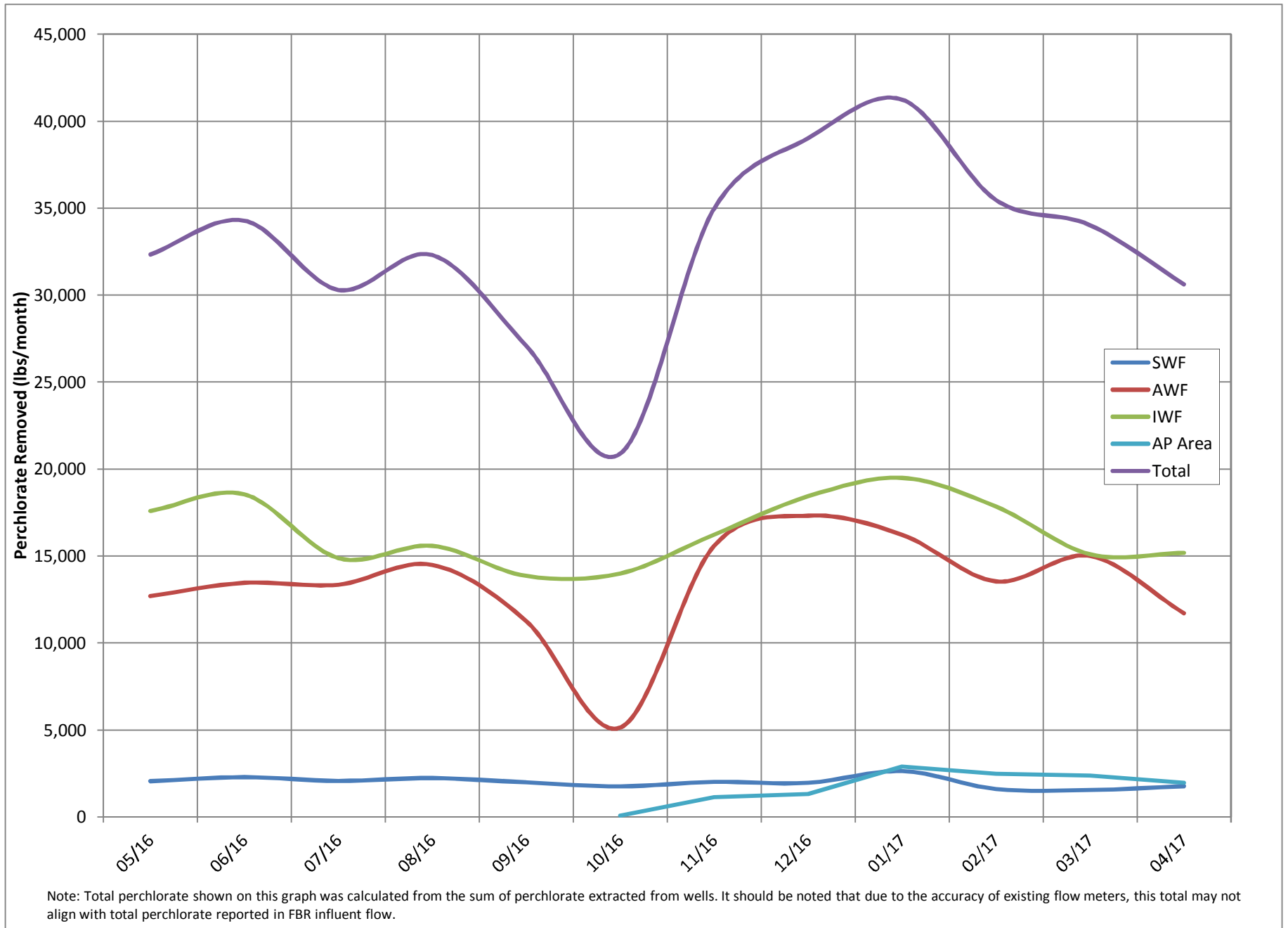


Figure 2 - Historical Perchlorate Mass Flux



# Attachment A

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*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 <sub>5</sub> (inhibited)			Total Dissolved Solids (TDS)		
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (µg/L)	30-Day Avg. (lbs/day)	Daily Min. (S.U.)	Daily Max. (S.U.)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	30-Day Max (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)		30-Day Avg. (lbs/day)		30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	Daily Max. (mg/L)		
2.52	2.88	18	0.38	6.5	9.0	10	100	5,000	10,000	20	135	2,839	20*		10*		25	40	525	8,000	
January 2017	1.38	1.42	1.3	0.014	6.75	7.13	0.13	30	510	9,600	0.60	62	370	4.8		1.1		2.4	4.3	28	5,400
February 2017	1.28	1.44	9	0.08	6.72	7.16	0.13	36	530	4,200	0.59	25	230	3.2		0.9		5.7	8.4	59	
March 2017	1.38	1.44	0.5	0.006	6.65	6.80	0.13	9.5	540	4,700	1.6	27	260	6		1.0		2.8	5.4	32	
April 2017	1.44	1.55	0.5	0.006	6.70	6.88	0.13	20	570	4,000	1.3	24	270	2.8		2.8		2.8	4.1	33	NA
May 2017 (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			
1/1 - 1/7	1/7/2017	ND (<2.5)	1.3	0.014	1/3/2017	6.76	ND (<0.25)	8.0	280	3,100	ND (<0.50)	26	300	--	0.35	4.0	--	0.046	0.53	1/4/2017	2.2	25		
1/8 - 1/14	1/14/2017	ND (<2.5)	1.3	0.015	1/11/2017	7.03	ND (<0.25)	30	410	9,600	0.60	62	728	--	0.60	7.0	--	0.13	1.5	1/11/2017	ND (<0.50)	0.25	2.9	
1/15 - 1/21	1/21/2017	ND (<2.5)	1.3	0.015	1/16/2017	7.13	ND (<0.25)	17	510	3,400	ND (<0.50)	27	313	--	0.23	2.7	--	0.078	0.91	1/18/2017	4.3	50		
1/22 - 1/28	1/28/2017	ND (<2.5)	1.3	0.014	1/24/2017	6.89	ND (<0.25)	29	480	3,100	ND (<0.50)	22	247	--	0.37	4.2	--	0.079	0.89	1/25/2017	2.9	33		
1/29 - 2/4	2/4/2017	ND (<2.5)	1.3	0.014	1/30/2017	6.75	ND (<0.25)	16	390	3,100	0.52	23	263	--	0.52	5.9	--	0.13	1.5	2/1/2017	3.9	45		
2/5 - 2/11	2/11/2017	34^	34	0.29	2/6/2017	7.00	ND (<0.25)	21	460	4,200	ND (<0.50)	25	211	ND (<0.10)	0.050	0.42	--	0.13	1.1	2/10/2017	8.4	71		
2/12 - 2/18	2/18/2017	ND (<1.0)	0.5	0.005	2/13/2017	7.16	ND (<0.25)	36	320	340	ND (<0.50)	19	24	206	260	--	0.12	1.3	--	0.11	1.2	2/15/2017	5.2	56
2/19 - 2/25	2/25/2017	ND (<1.0)	0.5	0.006	2/21/2017	6.73	ND (<0.25)	10	480	3,900	0.59	19	224	--	0.59	7.0	--	0.059	0.70	2/22/2017	5.4	64		
2/26 - 3/4	3/4/2017	ND (<1.0)	0.5	0.006	2/27/2017	6.72	ND (<0.25)	8.9	530	3,400	ND (<0.50)	19	224	--	0.36	4.2	--	0.046	0.54	3/1/2017	2.7	32		
2/5 - 3/11	3/11/2017	ND (<1.0)	0.5	0.006	3/6/2017	6.78	ND (<0.25)	7.9	490	1,800	1.6	17	197	--	1.0	12	--	0.11	1.3	3/8/2017	2.3	27		
3/12 - 3/18	3/18/2017	ND (<1.0)	0.5	0.006	3/13/2017	6.75	ND (<0.25)	6.7	540	2,900	1.2	21	244	--	0.50	5.8	--	0.058	0.67	3/15/2017	1.9	22		
3/19 - 3/25	3/25/2017	ND (<1.0)	0.5	0.006	3/20/2017	6.65	ND (<0.25)	9.5	490	4,700	ND (<0.50)	27	315	--	0.32	3.7	--	0.073	0.85	3/22/2017	1.8	21		
3/26 - 4/1	3/31/2017	ND (<1.0)	0.5	0.006	3/27/2017	6.80	ND (<0.25)	7.1	540	2,900	1.2	27	302	--	0.26	2.9	--	0.10	1.1	3/29/2017	5.4	60		
4/2 - 4/8	4/8/2017	ND (<1.0)	0.5	0.006	4/3/2017	6.72	ND (<0.25)	17	570	3,500	0.87	20	233	ND (<0.10)	0.050	0.58	--	0.066	0.77	4/5/2017	2.3	27		
4/9 - 4/15	4/15/2017	ND (<1.0)	0.5	0.006	4/10/2017	6.70	ND (<0.25)	12	570	3,900	1.2	24	278	--	0.16	1.9	--	0.16	1.9	4/12/2017	1.9	22		
4/16 - 4/22	4/22/2017	ND (<1.0)	0.5	0.006	4/17/2017	6.88	ND (<0.25)	20	530	4,000	ND (<0.50)	23	285	--	0.25	3.1	--	0.62	7.7	4/19/2017	4.1	51		
4/23 - 4/29	4/29/2017	ND (<1.0)	0.5	0.006	4/24/2017	6.82	ND (<0.25)	11	520	2,900	1.3	21	265	--	0.31	3.9	--	0.084	1.1	4/26/2017	2.7	34		
				5/1/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

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

\* Following receipt of the 34 µg/L sample result, the individual daily effluent samples collected between 2/5 and 2/11 were submitted for perchlorate analysis. The individual effluent samples were also composited by the laboratory to create a new effluent composite sample. All re-analyzed effluent samples were non-detect for perchlorate.

NA = Not Available To Date

ND = Not Detected above laboratory reporting limit; concentration in adjacent cell to right is one-half the reporting limit (per Permit condition)

-- = Analyte detected; see column adjacent to right

\* Total phosphorus discharge limitation of 10 lbs/day applies between March 1 and October 31; Ammonia discharge limitation of 20 lbs/day applies between April 1 and September 30; no limits apply the rest of the year.

Last Updated: May 5, 2017

# Attachment B

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*Equipment Tracking Form*

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>Main Plant Equipment</b>						
<b>1 Seep Wells and Lift Station 1</b>						
1.01		Seep Well Field, 9 wells	Running			
1.02		Lift Station 1 Lift Pump A	Running		1	A crack in the flange for the spool piece at the discharge of the pump was found. The liftstation had to be taken down to replace the spool.
1.03		Lift Station 1 Lift Pump B	Standby			
1.04		Area in and around Lift Station 1	Running		2	A bolt on the hose used to retrieve the pig from the pipeline had two bolts that rusted out and were damaged. The flange was removed and new gasket and hardware was installed.
<b>2 Athens Road Wells and Lift Station 3</b>						
2.01		Athens Road Well Field, 9 wells	Running		2	Tightened a check valve on ART-4, installed a larger pump on ART-2A (62s20-5), continued troubleshooting the flow issues with ART-8A. A new pump was installed on ART-8A (150s75-4).
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			
<b>3 Lift Station 2 and Transmission Pipelines</b>						
3.01		Influent Pipeline	In operation			
3.02		Effluent Pipeline	Running		2	The new combo valves have been received. A scheduled down will be set up for installation.
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			
<b>4 Interceptor Wells and Cr Treatment Plant</b>						
4.01		IWF Well Field, 30 wells	Running		2	I-N had a 1/2 motor installed as well as all new electrical connections from the motor to the control panel.
4.02		Ferrous Sulfate Feed System	Running		3	A new pump was installed to replace the worn pump.
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running			
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running			
<b>5 Equalization Area and GW-11 Pond</b>						
5.01	PID10A	Pond GW-11	In operation			

Status Codes

Running - Unit is in operation  
 Standby - Spare or duplicate, not currently in operation  
 Maintenance - Out of service for maintenance  
 Off - Not currently needed for use, but can be placed in service

Criticality Codes

1 = Critical - Cannot continue with operation until repairs made  
 2 = Important - Can still operate safely and in compliance with permits, but risks are increased  
 3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place  
 4 = Low - Minor repairs that in no way alter the performance of the plant

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation		2	A new 8" butterfly valve was installed to replace the worn diversion valve.
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B	Running			
5.08	PID10A	F-101 Filters	Running			
5.09	PID10B	Carbon Absorber - LGAC 201A	Running			
5.10	PID10B	Carbon Absorber - LGAC 201B	Running			
5.11	PID10B	Carbon Absorber - LGAC 201C	Running			
<b>6</b>		<b>First Stage FBRs A, 1 &amp; 2</b>				
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			
<b>7</b>		<b>First Stage FBRs 3 &amp; 4</b>				

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Criticality Codes

1= Critical - Cannot continue with operation until repairs made  
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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
7.01	PID01B	FBR 3	Running			
7.02	PID01B	FBR 4	Running			
7.03	PID02B	First Stage Separator Tank - T2012	Running		2	The level control valve positioner was replaced. Debris from the airlines caused the internal valve in the positioner to stop shifting air to the chambers.
7.04	PID01B	Media Return Pump - P2012	Running			
7.05	PID01B	First Stage FBR Pump - P1013	Running			
7.06	PID01B	First Stage FRB Pump - P1014	Running			
7.07	PID01B	First Stage FBR Pump - P102A	Running			
7.08	PID07A	FBR 3 pH Feed Pump - P713	Running			
7.09	PID07A	FBR 4 pH Feed Pump - P714	Running			
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723				
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - 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			
<b>8</b>		<b>Second Stage FBRs 5 &amp; 6</b>				
8.01	PID03A	FBR 5	Running			
8.02	PID03A	FBR 6	Running			
8.03	PID03C	Second Stage Separator Tank - T3011	Running			
8.04	PID03A	Media Return Pump - P3011	Running			
8.05	PID03A	Second Stage FBR Pump - P3015	Running			
8.06	PID03A	Second Stage FBR Pump - P3016	Standby			
8.07	PID03A	Second Stage FBR Pump - P301A	Running			
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Running			
<b>9</b>		<b>Second Stage FBRs 7 &amp; 8</b>				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running		2	The level control valve positioner was replaced. Debris from the airlines caused the internal valve in the positioner to stop shifting air to the chambers.
9.03	PID03D	Second Stage Separator Tank - T3012	Running		3	The pulley was re-installed on the pump after the key was removed from the shaft from being damaged.
9.04	PID03B	Media Return Pump - P3012	Running			

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
9.05	PID03B	Second Stage FBR Pump - P3017	Running			
9.06	PID03B	Second Stage FBR Pump - P3018	Running			
9.07	PID03B	Second Stage FBR Pump - P302A	Running			
9.08	PID07A	FBR 7 pH Feed Pump - P717	Off			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Off			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
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			
<b>10</b>		<b>Aeration and DAF System</b>				
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		3	New level sight glasses were installed on the pressure tanks. A new level pressure relief valve was installed on the south pressure tank.
10.11	PID05	DAF Vessel - D501	Running		2	The vessel was taken offline to be pressure washed and inspected.
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		2	The vessel was taken offline to be pressure washed and inspected.
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			
<b>11</b>		<b>Pumping System (Old Effluent)</b>				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602	Standby			
<b>12</b>		<b>Sand Filter System</b>				
12.01	PID17	Sand Filter				
12.02	PID17	Filter Reject Tank	In operation			

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12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running			
<b>13</b>		<b>Effluent Tank and Pumping</b>				
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			
<b>14</b>		<b>Solids Collection and Pressing System</b>				
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		2	The press has been taken offline to overhaul the filter cloths and the drip trays
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			
		<b>Chemical Systems</b>				
<b>15</b>		<b>Electron Donor System</b>				
15.01	PID07B	Electron Donor Tank	In operation		2	All new pumps have been installed for the backstage FBR's.
15.02	PID07B	Booster Pump P739A	Running			
15.03	PID07B	Booster Pump P739B	Standby			
<b>17</b>	PID07C	Micro Nutrient System	In operation			
<b>18</b>	PID07C	Hydrogen Peroxide System	In operation			
<b>19</b>	PID07C	De-Foam System	In operation			
<b>20</b>	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation			
<b>21</b>	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation			
<b>22</b>	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
<b>23</b>	PID07C	Ferric Chloride System	In operation			
<b>24</b>	PID07B	Polymer Systems - DAF	In operation			
<b>25</b>	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			

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<b>Utility Systems</b>						
<b>26</b>		<b>Compressed Air System</b>				
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			
30		MCC FBR Pad	In operation			
31		MCC in D-1	In operation			
32		MCC in EQ area	In operation			
<b>Miscellaneous Systems</b>						
33		Operations Office/Network	In operation			
34		Laboratory Analyzers	In operation			
35		Security Systems	In operation			
<b>Shelf Spares</b>						
		Media Return Pump Rebuild Kit	In stock			
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock			
		Phosphoric Acid Feed Pump	In stock			
		Interceptor Well Pumps (4 each)	In stock			
		Seep Well Pump (1 each, same as Athens so total of 2)	In stock			
		Athens Road Well Pump (1 each, same as Seep so total of 2)	In stock			Spares are on the shelf.

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