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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:** Ryan Sullivan, Vice President Service and O&M

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**Date:** June 20, 2017

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**Subject:** NERT – GWETS Operation Monthly Report – May 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 May 2017.

### Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in May 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 262 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 1,102 gpm during May 2017. At the end of the month, the GW-11 Pond volume was at 38.8 million gallons (MG), which would allow 16.5 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 7.0 MG from the end of April 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 2.0 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 88 mg/L for the month, with a maximum concentration of 96 mg/L. In comparison, the influent perchlorate concentration for the month of April 2017 averaged 87 mg/l, with a maximum concentration of 96 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).

On May 18, 2017 a NV Energy power outage associated with severe dust storm resulted in a 20-hour shut down of the Seep Well Field, Lift Station 1, and the IX system. Operation of these systems was restored on May 19, 2017 at 1:30 pm when NV Energy completed repairs to their power distribution system.

### 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 continued to withdraw water from the GW-11 pond while combining this flow with Lift Station flow in the TK-101 tanks for equalization purposes. The average flow rate for May from the GW-11 pond was approximately 137 gpm.

### 2. Biological Plant

There were no significant plant interruptions. There was one planned diversion into GW-11 for the month of May and three unplanned diversions due to electrical supply interruptions. Below is a description of the events that occurred:

- Influent Diversion to GW-11 on May 5<sup>th</sup> from 12:30pm to 1:30pm. The plant influent was diverted due to planned maintenance activities on the Effluent Diversion valve. During this diversion, approximately 52,140 gallons of effluent were returned to GW-11 resulting in an increase of water stored in GW-11.
- Influent Diversion to GW-11 on May 17<sup>th</sup> from 7:26am and 7:46am and again from 8:30am to 8:38am due to a site-wide power supply interruption resulting from repairs being implemented by Tronox.
- Influent Diversion to GW-11 on May 18<sup>th</sup> from 5:00pm to 6:15pm due to the NV Energy power supply interruption at Lift Station1 (described above) resulting in a loss of flow.
- Influent Diversion to GW-11 on May 24<sup>th</sup> from 10:20am to 10:45am due to site-wide power supply interruption resulting from repairs being implemented by Tronox.

### 3. Spills

There was one minor spill in the month of May.

On Monday May 15, 2017 at approximately 6:44am, Envirogen informed the Trust that the Conditioning tank at the Groundwater Treatment Plant (GWTP) had overflowed and approx. 10 gallons of that overflow had escaped containment. This overflow resulted from the night-shift operator failing to adequately monitor the solids transfer process and responding to an overflowing tank in a timely manner.

### 4. Maintenance

- Major maintenance performed by ETI in the month included:
  - I. Contractors installed fiberglass drip trays around the FBR recycle skids. Drip containment was also added around the north side of the FBR containment near the DAF.
  - II. The filter press cloths were replaced on the east filter press (X-902). All of the plates were pressure washed and the unit was inspected.

- III. Electrical static tests were completed on all the motors (20 hp and higher) around the plant. The test checks for any discrepancies in the leads, windings and housings. No major discrepancies were found at this time.
  - IV. The P-1012 recycle motor was sent to Henderson Electric to have the splash guard replaced as well as the bearing. The spare motor was put online while this motor was under repair and no down time occurred. The motor was received back during the reporting period.
  - V. A new swing check valve was installed on the discharge of FBR#2 recycle line to replace the obsolete Techno check valves from the original installation.
  - VI. A new 8" Spears butterfly valve was installed on the diversion piping at the EQ. This valve was replaced due to wear and tear.
  - VII. New wye strainers were installed on the IX unit at LS#1.
  - VIII. The P-601 level control valve positioner was replaced. The internal components were worn from age.
  - IX. The well pump assembly in PC-116 was pulled to replace the 7.5 hp Franklin motor and the 150 gpm Grundfos pump.
- Preventative Maintenance completed or being performed by ETI in the month included:
    - I. All Motors were lubricated around the plant as well as the bearing for the sludge pumps. The oil was changed in the pump gear boxes.
    - II. Inspection of the DAF's were complete. No major faults were found.
    - III. The air dryers and filters were all cleaned out around the plant.
    - IV. Oil and filter changes were completed on the Air Center.
    - V. The transducers were pulled and inspected for damage and proper location in the well.

## 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 with Tetra Tech performed a checkout of the system in May. A punch list was issued and it is expected to re-test the system in June. It is also anticipated the contract changes between the Trust and ETI for the treatment of AP-5 material will also be completed in June.
2. **Spill containment enhancements**  
The work authorization for secondary containment modifications has been issued by the Trust. Approximately 65% of the work was completed in May. It is expected that these modification will be completed by late June or early July.
3. **Upgraded above ground well piping and flow meters at the Seep Well field**  
Work Authorization has been approved by the Trust. Parts have been received and it is anticipated this work will be completed in June.
4. **Upgrade of ART 8A and 2 well pumps**  
The new well pump at ART-8A is installed and calibrated and fully functional. ETI also modified the programming of the controls to allow ART-2 and ART-2A pumps to run simultaneously in automatic, thus allowing increased pumping. Thus, this upgrade was completed in May.
5. **Addition of the Chrome Plant, GWTS, to the O&M manual**  
Work authorization has been issued by the Trust. The draft manual section was completed by ETI and 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>	674.1 <sup>1</sup>	8.4	ND	0.00068
AWF Total Extraction <sup>2</sup>	376.4 <sup>1</sup>	75	0.19	0.18
IWF Total Extraction <sup>2</sup>	64.4 <sup>1</sup>	644	8.2	7.7
AP Area Total Extraction <sup>3</sup>	5.3 <sup>1</sup>	794	NA	0.027
GWTP Effluent <sup>4</sup>	82.0	682	0.23	ND
GW-11 Influent <sup>2</sup>	7.1	65	0.30	0.072
GW-11 Effluent/ FBR Influent <sup>4</sup>	1,101.5	88	0.09	0.042

## 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	2,116	ND	0.17
AWF Total Extraction	10,580	27	25
IWF Total Extraction	15,462	196	184
AP Area Total Extraction	1,570	NA	0.05
GWTP Effluent	20,872	7.2	0.00
GW-11 Influent	173	0.80	0.19
GW-11 Effluent/FBR Influent	35,951	38	17

## 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*



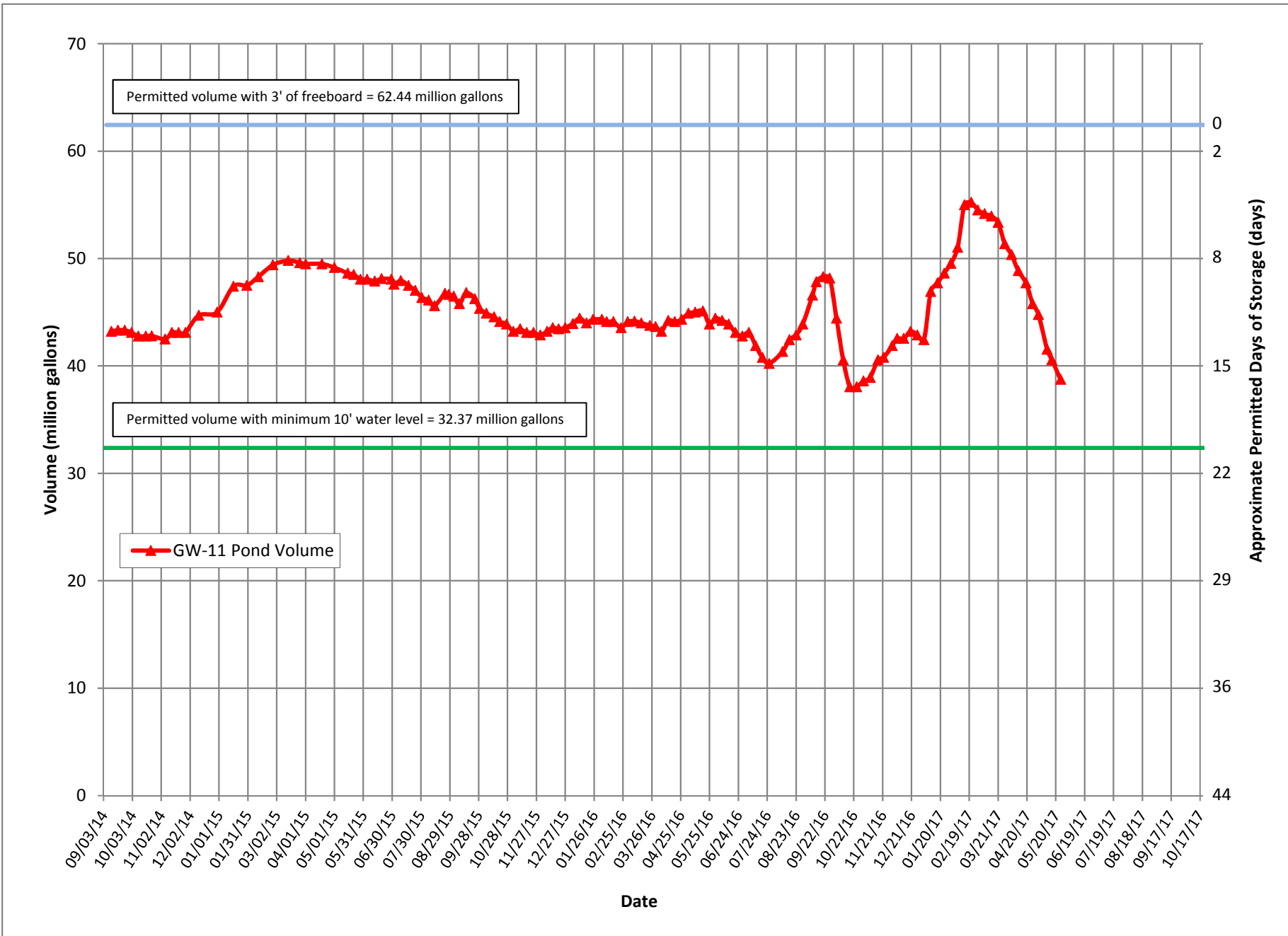
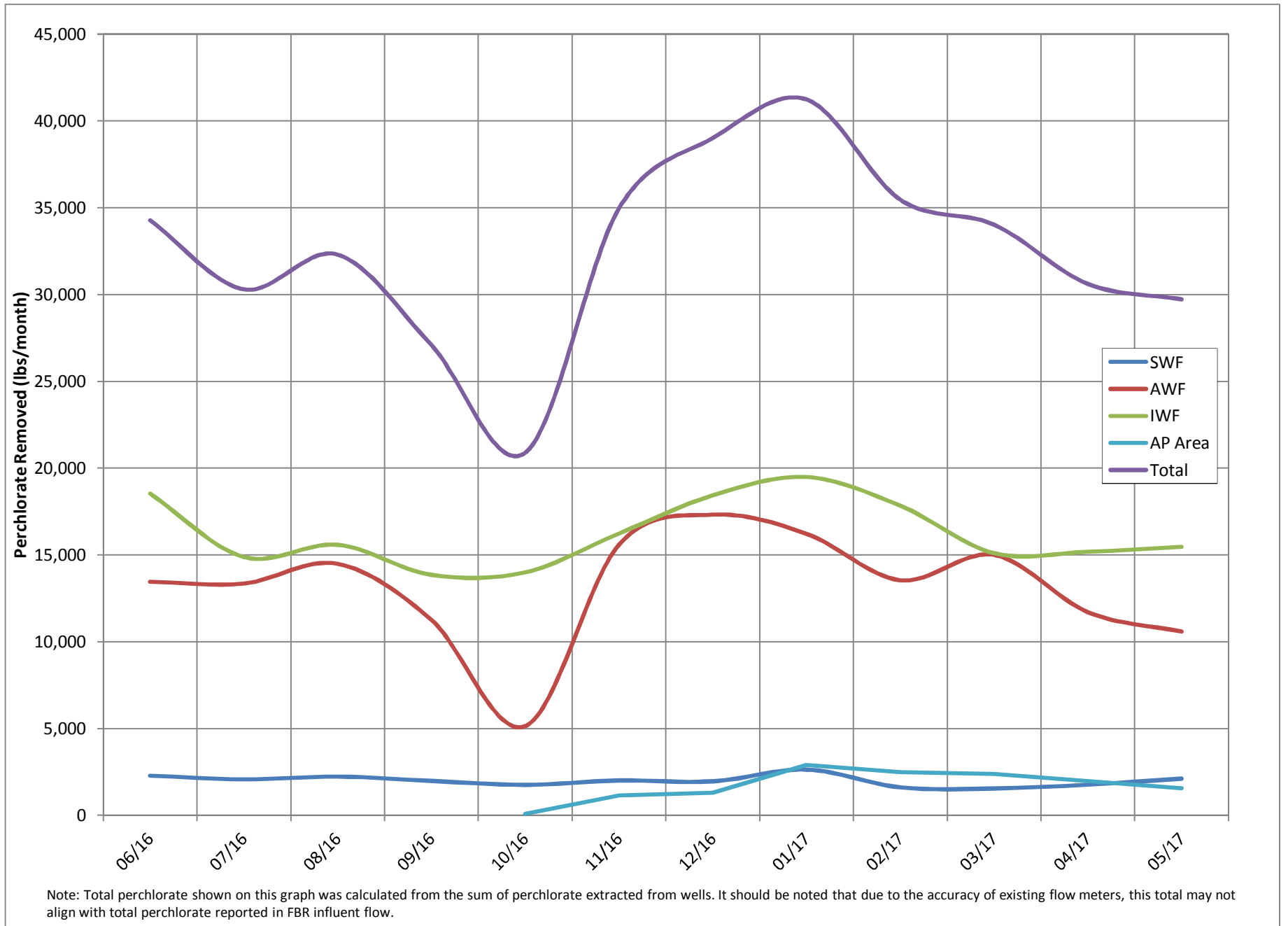


Figure 2 - Historical Perchlorate Mass Flux



# 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)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	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)	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	25	8,000
January 2017	1.38	1.42	1.3	0.014	6.75	7.13	0.13	30	510	9,600	0.60	62	370	4.8	1.1	2.4	4.3	28	
February 2017	1.28	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	5,400
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	1.45	1.55	0.5	0.006	6.70	6.88	0.13	20	570	4,000	1.3	24	260	2.4	2.8	2.8	4.1	33	
May 2017 (month to date)	1.46	1.53	0.5	0.006	6.68	6.76	0.13	9.0	540	3,300	1.00	19	220	2.3	2.7	1.6	2.8	20	4,900

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	263	--	0.31	3.9	--	0.084	1.1	4/26/2017	2.7	34		
4/30 - 5/6	5/6/2017	ND (<1.0)	0.5	0.006	5/1/2017	6.76	ND (<0.25)	7.6	490	1,800	ND (<0.50)	19	236	--	0.11	1.4	--	0.55	6.8	5/3/2017	1.2	15		
5/7 - 5/13	5/13/2017	ND (<1.0)	0.5	0.006	5/8/2017	6.68	ND (<0.25)	8.5	450	3,000	0.64	19	236	--	0.17	2.1	--	0.033	0.41	5/10/2017	1.5	19		
5/14 - 5/20	5/20/2017	ND (<1.0)	0.5	0.006	5/15/2017	6.69	ND (<0.25)	9.0	540	3,300	1.0	16	183	--	0.31	3.5	--	0.081	0.9	5/17/2017	0.94	11		
5/21 - 5/27	5/27/2017	NA	NA	NA	5/22/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5/24/2017	2.8	35		
					5/29/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5/31/2017	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: June 2, 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		2	PC-116 tripped the breaker. The pump was pulled and the motor showed signs of leaks around the top casing lid. The pump was still rotating correctly but it was replaced due to the age. A 7.5 hp 4" motor was installed with a 150s50-2 pump.
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		1	A power loss occurred caused by NV Energy power lines. The power loss tripped the breakers and knocked out the transformer. Hampton Tedder came in and was able to diagnose the problem and make the repairs to the power line fuses. Power was re-established by NV Energy and the liftstation was brought back online.
<b>2 Athens Road Wells and Lift Station 3</b>						
2.01		Athens Road Well Field, 9 wells	Running		2	A new VFD was installed on ART 2A to replace the issue with the over heating issue that was occurring with the previous VFD.
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			
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		3	Larger holes were drilled into the casing lids to have better access to collect well depth readings.
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running			
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running			

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
<b>5</b>		<b>Equalization Area and GW-11 Pond</b>				
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	Spill containment installation began around the EQ area.
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			3	The system is continuing with the overhaul and repair project to the vessel and all associated components.
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401			3	The pump has been rebuilt and is ready for service.
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		2	The motor was pulled and sent to Henderson Electric for repairs to the bearing splash guard. The shelf spare was installed in its place while the repairs were being completed.
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			

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  
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 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
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>				
7.01	PID01B	FBR 3	Running			
7.02	PID01B	FBR 4	Running			
7.03	PID02B	First Stage Separator Tank - T2012	Running			
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			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
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		3	The belt was replaced and the pump was lubricated.
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		3	The pump was pulled and the repairs were made to the discs and the pump was put back online.
10.14	PID05	DAF Vessel - D551	Running			
10.15	PID05	DAF Pressure Pump - P551	Running			
10.16	PID05	DAF Float Pump - P552	Running			The pump was pulled and the repairs were made to the discs and the pump was put back online.
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		2	The positioner failed on the flow actuator. A new positioner was installed and the system was put back into service.
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			
12.03	PID17	Filter Reject Pump - P1701A	Standby			

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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 cloths have been replaced and the drip trays are almost complete with their overhaul.
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			
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			
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
		<b>Utility Systems</b>				

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<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		3	There are no controls at the screen however it can be used as a visual tool to observe the plant. The control screen may require a calibration of the touchscreen controls. ETI will calibrate, repair, and/or replace elements to bring back to full functionality.
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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