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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:** September 20, 2016

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**Subject:** NERT – GWETS Operation Monthly Report – August 2016

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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 August 2016.

### Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS normally in August 2016. The flow rate to the plant averaged approximately 963 gallons per minute (gpm) during August 2016. At the end of the month, the GW-11 Pond volume was at 43.9 million gallons (MG), which would allow 12.9 days of available additional storage in the event of an emergency plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond increased approximately 3.1 MG from the end of July. Figure 1 in this report depicts the actual and projected GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the FBR plant averaged 80 mg/L for the month, with a maximum concentration of 93 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

- Complications caused by the Boatman bugs and excessive algae growth on the screens forced the plant operators to switch back and forth from GW-11 to the Equalization Tanks.
- Until the pond is put back into fulltime equalization operations, diversions into GW-11 may become common until the average daily temperature drops creating a less desirable growth environment for the Boatman, as well as, algal blooms.

### 2. Biological Plant

There were no significant plant interruptions. There were several unplanned diversions for the month of August. Below is a description of the short duration events that occurred:

- Diversions to GW-11 on August 4th and 8th (at 8:01 am and 11:18 am, respectively), totaling a combined volume of approximately 210,167 gallons of water was diverted back to GW-11. Discharge to the LVW resumed at 10:45 and 12:21 respectively. The plant was unstable due to a loss of communication as a result of a lightning strike at the plant during an electrical storm. Damage to the main plant server and PLC's were repaired and the plant was returned to normal operations.
- Diversions to GW-11 on August 11th, 15th, and 21st (at 7:31 pm, 4:14 pm and 11:03 pm, respectively), totaling a combined volume of approximately 79,646 gallons of water was diverted back to GW-11. Discharge to the LVW resumed at 8:08 pm, 5:08 pm and 12:24 am respectively. The plant was discharged into GW-11 for precautionary measures. Complications caused by the Boatman bugs and excessive algae growth on the screens forced the plant operators to switch back and forth from GW-11 to the Equalization Tanks. This resulted in a swing of the influent load to the FBRs in up to 40 ppm. As such, ETI was forced to divert effluent to GW-11 to ensure that electron donor (ethanol) was not being under or over fed to the system. Until the pond is put back into fulltime equalization operations, diversions like this may become common until the temperature drops creating a less desirable growth environment for the Boatman, as well as, algal blooms.
- Diversion to GW-11 on August 29, 2016: Diversion occurred at 9:19 pm due to an increase in influent perchlorate load and subsequent low sulfides. Effluent discharge resumed to the LVW



at 10:20 pm. Approximately 54,870 gallons of water was diverted to GW-11. Low sulfides do not indicate the plant is out of compliance, but are analyzed for and used as an indication that something may not be operationally correct, most likely due to the ethanol feed dosage being too low. Additional analytical and adjustments were required to ensure effluent compliance before the water was returned to the LVW.

### **3. Spills**

No reportable spills occurred in the month of August.

### **4. Maintenance**

- Major maintenance performed by ETI in the month included:
  - i. Ground Water Treatment Plant (GWTP) Programmable Logic Controller (PLC), experienced a loss of communication from GWTP to the D1 control building due to an electrical surge/short caused by a broken communication switch from the I-Wells PLC Panel to the D1 computer. ETI personnel replaced the switch and reestablished network communication between I-wells to the D1 Control Room. The system was returned to service.
  - ii. FT-1002- GWTP Effluent Flowmeter. Flow meter power supply was destroyed by a lightning strike. ETI Installed a new power supply and returned the flow meter to normal service.
  - iii. Dissolved Air Flotation (DAF) Sludge pump had a worn pedestal bearing. The bearing was replaced and put back into service.
  - iv. Set up pump and hoses and began transferring of media from FBR A to FBR 4 so FBR A vessel can be inspected and repaired as necessary.
  - v. Athens Road Well Field was down for several hours on August 18th. One of the Trust's consultants was here working on programming for the enhanced matrix punch list. When they tried to download the updated version, a glitch with one of the software drivers caused a false 'Not Ready' signal to be displayed from LS3 to LS2 causing LS3 to go down. Troubleshooting and updates to the software took approximately three hours
- Preventative Maintenance completed or being performed by ETI in the month included:
  - i. Air cylinders for the plate shifters in the filter presses were taken out for service and reinstalled. New seals were installed and are ready for use.
  - ii. Sand filter reject pump was removed so the impeller could be replaced due to wear caused from sand passing through the pump. Pump was re-installed and is ready for use.
  - iii. P-1014 recycle pump was inspected and the oil changed. The pump motor was also greased.



- iv. VT-200 Turbine at LS#2 was inspected and underwent maintenance including an oil change, bearings greased, and temperature and vibration testing to ensure proper operation.
- v. Inspected the combo valves on the pipeline. Cleaned out debris from the vaults and actuated the valves to ensure proper operation. Remove a few of the combo valves and cleared debris from the floats and re-installed.
- vi. Completed full service on the sand filter. All airlifts were removed and cleared. New quick connect air fittings and new collars were installed to create an adequate seal around the top of the airlifts.
- vii. P-102A 100 hp influent motor & pump was sent to Motion Industries for machining on the shaft. A new mechanical seal was installed and the motor was serviced with new insulation and bearings. Work was performed as a preventative measure and was taken out of service prior to failure.

## **GWETS Upgrades and Facility Projects**

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

### **1. AP-5 Solids Removal**

Tetra Tech is continuing to move forward with the construction of the three large tanks in order to wash and remove perchlorate salts, with eventual treatment of the perchlorate containing wash water in the GWETS.

### **2. Lift Station #2 & #3**

ETI is currently in the process of implementing infrastructure improvements at Lift Stations 2 and 3 as approved by NERT and has ordered long lead items including the turbine pumps. All Lift Station #2 & #3 upgrades are scheduled to be complete in mid-October of 2016.

### **3. Lift Station #1 upgrades**

A proposal has been assembled and submitted by ETI Engineering for proposed upgrades to Lift Station #1. The Trust approved this proposal on 9/9/16 and is scheduled to be complete by 12/31/16.

### **4. IWF well modifications**

A proposal for the IWF is being prepared to address the Trust's desire to improve the flow meter accuracy and installation of VFDs on the extraction pumps (to support the COP). Project includes Installation of new wiring and VFDs for well field. Also install new wiring to improve flow meter accuracy. Target submission to the Trust is 9/26/16.

### **5. Spill containment enhancements**



A proposal for secondary containment modifications has been assembled by ETI Engineering and was submitted on 8/9/16.

**6. Chromium Treatment Plant**

Supply and install a replacement chromium treatment plant. ETI is preparing a proposal for the work and anticipates submittal on 9/20/16.

**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 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) <sup>4 5</sup>	Chromium (TR) (mg/L) <sup>4 5</sup>	Chromium(VI) (mg/L) <sup>4 5</sup>
SWF Total Extraction <sup>2</sup>	550 <sup>1</sup>	11	0.32	ND
AWF Total Extraction <sup>2</sup>	359 <sup>1</sup>	108	0.28	0.36
IWF Total Extraction <sup>2</sup>	65 <sup>1</sup>	642	8.2	10
GWTP Effluent <sup>3</sup>	66	866	0.36	0.083
GW-11 Influent <sup>2</sup>	471	87	0.089	8.3
GW-11 Effluent/ FBR Influent <sup>3</sup>	963	80	0.049	0.043

## Notes:

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

1: Sum of daily average flow for individual wells.

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

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

4: All concentrations reported are monthly flow weighted averages.

5: 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	2,231	0.32	ND
AWF Total Extraction	14,486	37	48
IWF Total Extraction	15,582	198	247
GWTP Effluent	21,460	8.9	0.08
GW-11 Influent	15,283	15.6	8.3
GW-11 Effluent/FBR Influent	28,570	17	16

Notes:

TR = Total Recoverable.

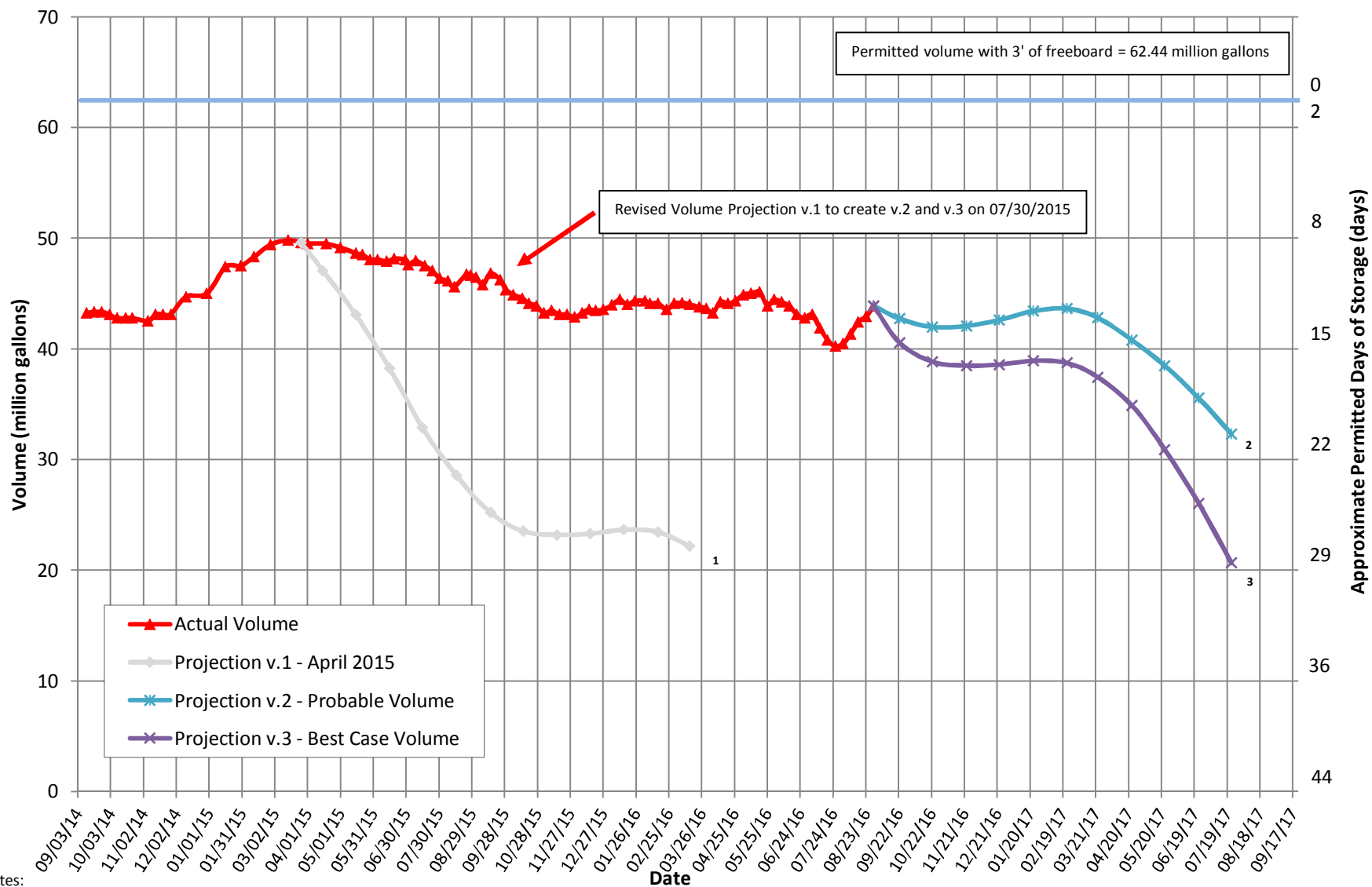
1: Total lbs extracted is calculated from flow weighted average concentration and average flow (see Table 1).





# Figures

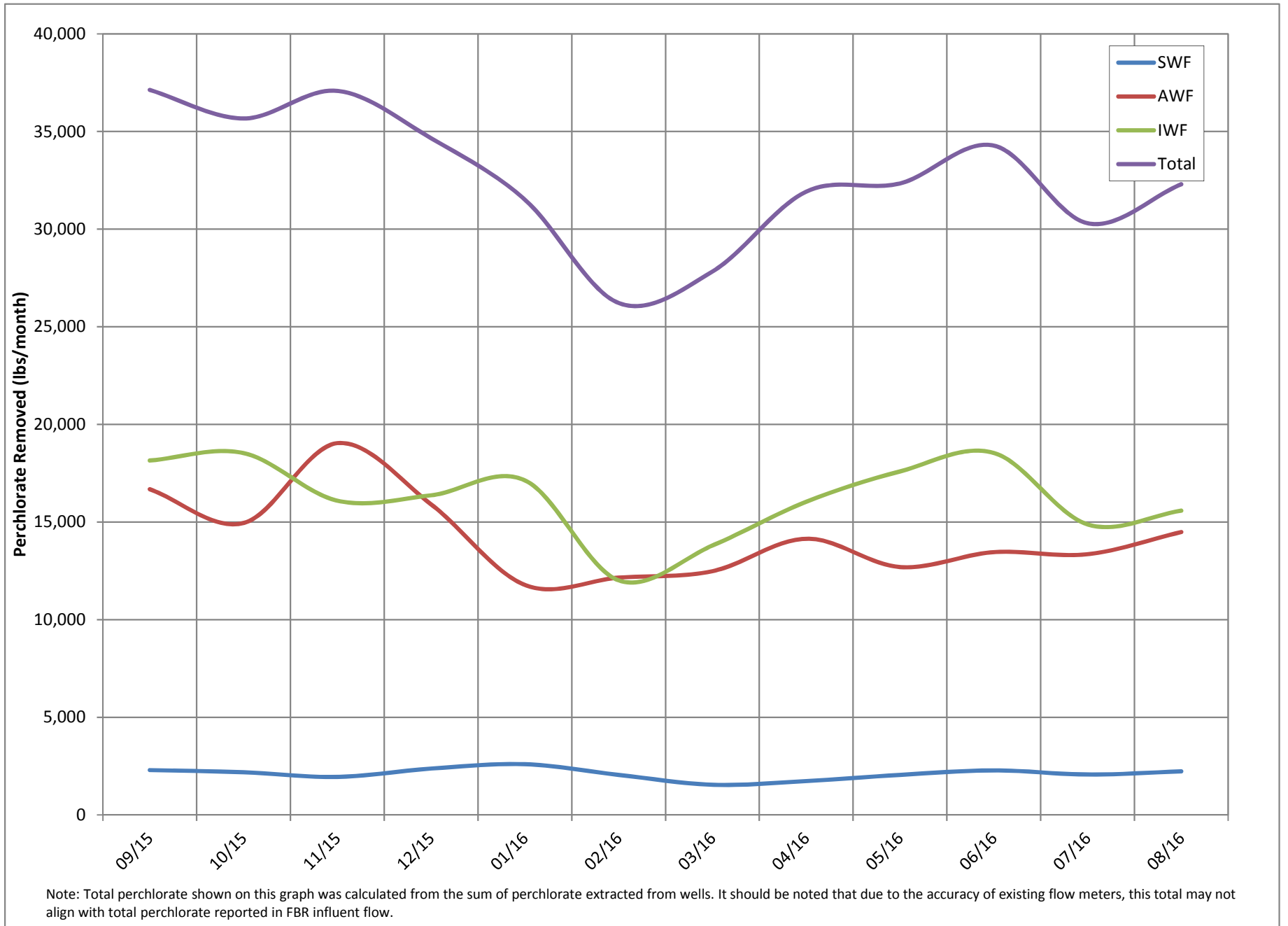
## Operational Metrics



Notes:

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





# 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 <sub>5</sub> (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. (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 2016	1.28	1.39	1.3	0.013	6.89	0.00013	0.022	24	250	4.5	47	9	0.25	5.8	6.5	61	0.26	2.9			
February 2016	1.34	1.41	1.3	0.014	6.96	0.00013	0.015	20	230	3.6	41	6	0.62	3.9	6.0	43					
March 2016	1.37	1.43	1.3	0.014	6.83	0.00013	0.027	21	240	3.1	35	13	1.9	4.3	5.8	49					
April 2016	1.36	1.44	1.3	0.014	6.84	0.00013	0.026	21	240	2.8	27	4.9	1.2	3.9	6.2	44					
May 2016	1.40	1.47	1.3	0.015	6.66	0.00013	0.019	22	260	2.7	32	3	0.8	4.7	6.7	54	0.22	2.5			
June 2016	1.30	1.43	1.3	0.014	6.64	0.00013	0.014	11	130	1.6	18	7	1.0	1.7	3.5	19					
July 2016	1.26	1.39	1.3	0.013	6.69	0.00013	0.020	9	90	1.6	16	6	1.2	2.1	4.1	22					
August 2016 (month to date)	1.29	1.43	NA	NA	6.76	0.00013	0.016	13	140	1.5	17	3.6	0.66	6.6	13	71	0.22	2.3			

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	
1/3 - 1/9	1/9/2016	ND (<2.5)	1.3	0.013	1/4/2016	6.92	ND (<0.00025)	0.0070	18	193	3.9	42	--	0.32	3.4	--	0.028	0.30	1/6/2016	5.7	61
1/10 - 1/16	1/16/2016	ND (<2.5)	1.3	0.013	1/11/2016	7.02	ND (<0.00025)	0.022	25	260	5.0	52	--	1.8	19	ND (<0.025)	0.013	0.13	1/13/2016	6.5	68
1/17 - 1/23	1/23/2016	ND (<2.5)	1.3	0.013	1/19/2016	6.62	ND (<0.00025)	0.016	30	311	5.1	53	--	0.96	9.9	ND (<0.025)	0.013	0.13	1/20/2016	6.0	62
1/24 - 1/30	1/30/2016	ND (<2.5)	1.3	0.014	1/25/2016	7.01	ND (<0.00025)	0.014	23	255	3.8	42	--	0.19	2.1	--	0.040	0.44	1/27/2016	4.8	53
1/31 - 2/6	2/6/2016	ND (<2.5)	1.3	0.014	2/1/2016	6.94	ND (<0.00025)	0.015	35	394	4.5	51	--	0.18	2.0	--	0.059	0.66	2/3/2016	6.0	68
2/7 - 2/13	2/13/2016	ND (<2.5)	1.3	0.014	2/9/2016	7.18	ND (<0.00025)	0.013	16	181	3.8	43	--	0.98	11	--	0.059	0.67	2/10/2016	2.5	28
2/13 - 2/20	2/20/2016	ND (<2.5)	1.3	0.014	2/15/2016	6.82	ND (<0.00025)	0.0092	14	158	2.8	32	--	0.33	3.7	--	0.048	0.54	2/17/2016	3.4	38
2/21 - 2/27	2/27/2016	ND (<2.5)	1.3	0.014	2/22/2016	6.91	ND (<0.00025)	0.013	16	181	3.4	38	--	0.50	5.6	--	0.054	0.61	2/24/2016	3.5	40
2/28 - 3/5	3/5/2016	ND (<2.5)	1.3	0.014	3/1/2016	7.11	ND (<0.00025)	0.0092	12	132	2.0	22	--	1.9	21	--	0.062	0.68	3/2/2016	3.3	36
3/6 - 3/12	3/12/2016	ND (<2.5)	1.3	0.014	3/7/2016	6.91	ND (<0.00025)	0.012	18	202	2.6	29	--	1.4	16	--	0.096	1.1	3/9/2016	2.7	30
3/13 - 3/19	3/19/2016	ND (<2.5)	1.3	0.015	3/14/2016	6.68	ND (<0.00025)	0.026	33	388	4.1	48	--	0.71	8.3	--	0.23	2.7	3/16/2016	5.8	68
3/20 - 3/26	3/26/2016	ND (<2.5)	1.3	0.015	3/21/2016	6.81	ND (<0.00025)	0.023	22	256	4.1	48	--	0.45	5.2	--	0.32	3.7	3/23/2016	5.5	64
3/27 - 4/2	4/2/2016	ND (<2.5)	1.3	0.014	3/28/2016	6.65	ND (<0.00025)	0.027	19	213	2.6	29	--	1.2	13	--	0.12	1.3	3/30/2016	4.1	46
4/3 - 4/9	4/9/2016	ND (<2.5)	1.3	0.014	4/6/2016	6.71	ND (<0.00025)	0.013	14	160	2.6	30	--	0.37	4.2	--	0.060	0.69	4/6/2016	1.4	16
4/10 - 4/16	4/16/2016	ND (<2.5)	1.3	0.014	4/11/2016	6.82	ND (<0.00025)	0.017	23	254	3.5	39	--	0.48	5.3	--	0.11	1.2	4/13/2016	6.0	66
4/17 - 4/23	4/23/2016	ND (<2.5)	1.3	0.014	4/18/2016	6.82	ND (<0.00025)	0.026	25	281	2.8	32	--	0.44	5.0	--	0.17	1.9	4/20/2016	6.2	70
4/24 - 4/30	4/30/2016	ND (<2.5)	1.3	0.015	4/25/2016	7.02	ND (<0.00025)	0.011	21	245	0.70	8.2	--	0.44	5.1	--	0.092	1.1	4/27/2016	2.1	24
5/1 - 5/7	5/7/2016	ND (<2.5)	1.3	0.014	5/2/2016	6.84	ND (<0.00025)	0.019	25	289	2.9	34	ND (<0.10)	0.05	0.58	--	0.089	1.0	5/4/2016	3.9	45
5/8 - 5/14	5/14/2016	ND (<2.5)	1.3	0.014	5/9/2016	6.64	ND (<0.00025)	0.0078	22	254	2.6	30	--	0.27	3.1	--	0.075	0.87	5/11/2016	2.5	29
5/15 - 5/21	5/21/2016	ND (<2.5)	1.3	0.014	5/16/2016	6.51	ND (<0.00025)	0.011	20	231	3.2	37	--	0.18	2.1	--	0.085	0.98	5/18/2016	6.7	77
5/22 - 5/28	5/28/2016	ND (<2.5)	1.3	0.015	5/23/2016	6.60	ND (<0.00025)	0.011	29	349	3.4	41	ND (<0.10)	0.05	0.60	--	0.067	0.81	5/25/2016	5.5	66
5/29 - 6/4	6/4/2016	ND (<2.5)	1.3	0.014	5/31/2016	6.72	ND (<0.00025)	0.0063	15	172	1.6	18	--	0.94	11	--	0.047	0.54	6/1/2016	1.2	14
6/5 - 6/11	6/11/2016	ND (<2.5)	1.3	0.013	6/6/2016	6.69	ND (<0.00025)	0.0030	3.7	39	0.43	4.6	--	0.34	3.6	--	0.027	0.29	6/8/2016	ND (<0.50)	0.25
6/12 - 6/18	6/18/2016	ND (<2.5)	1.3	0.014	6/13/2016	6.68	ND (<0.00025)	0.0049	6.9	75	1.3	14	--	0.22	2.4	--	0.046	0.50	6/15/2016	1.8	20
6/19 - 6/25	6/25/2016	ND (<2.5)	1.3	0.013	6/20/2016	6.82	ND (<0.00025)	0.0078	10	106	1.3	14	--	0.31	3.3	--	0.12	1.3	6/22/2016	1.7	18
6/26 - 7/2	7/2/2016	ND (<2.5)	1.3	0.014	6/27/2016	6.57	ND (<0.00025)	0.014	25	280	3.5	39	--	1.5	16.8	--	0.17	1.9	6/29/2016	3.5	39
7/3 - 7/9	7/9/2016	ND (<2.5)	1.3	0.014	7/4/2016	6.51	ND (<0.00025)	0.0049	2.6	28	1.1	12	--	0.18	1.9	--	0.12	1.3	7/6/2016	1.5	16
7/10 - 7/16	7/16/2016	ND (<2.5)	1.3	0.013	7/11/2016	6.78	ND (<0.00025)	0.0035	4.5	47	1.1	12	--	0.32	3.4	--	0.040	0.42	7/13/2016	0.97	10
7/17 - 7/23	7/23/2016	ND (<2.5)	1.3	0.014	7/18/2016	6.75	ND (<0.00025)	0.0078	9.0	93	1.4	15	--	1.4	15	--	0.19	2.0	7/20/2016	4.1	43
7/24 - 7/30	7/30/2016	ND (<2.5)	1.3	0.013	7/25/2016	6.72	ND (<0.00025)	0.020	19	196	2.7	28	--	0.30	3.1	--	0.10	1.0	7/27/2016	2.0	21
7/31 - 8/6	8/5/2016	NA	NA	NA	8/1/2016	6.82	ND (<0.00025)	0.0069	4.2	43	0.69	7.1	--	0.30	3.1	--	0.053	0.55	8/3/2016	3.2	33
8/7 - 8/13	8/13/2016	NA	NA	NA	8/8/2016	6.69	ND (<0.00025)	0.016	21	232	2.4	27	--	0.37	4.1	--	0.070	0.77	8/10/2016	3.6	40
8/14 - 8/20	8/20/2016	NA	NA	NA	8/15/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8/17/2016	13	141
					8/22/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8/24/2016	NA	NA

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

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

Last Updated: August 26, 2016



# Attachment B

## Equipment Tracking Form

Sub-System	P&ID	Description	Status	Checked	Criticality	Notes
<b>Main Plant Equipment</b>						
<b>1 Seep Wells and Lift Station 1</b>						
1.01		Seep Well Field, 9 wells	Running		2	Replaced the Endress-Hauser flowmeter with a new version. The new meter performs the same. Model # is DT1200-A25A1A. Installed a new 5 hp motor on PC-115R after a bad connection froze the old one.
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			
<b>2 Athens Road Wells and Lift Station 3</b>						
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			
<b>3 Lift Station 2 and Transmission Pipelines</b>						
3.01		Influent Pipeline	In operation			
3.02		Effluent Pipeline	Running		2	Completed inspection of the combo valves. Replaced one of the floats with a softer lighter style to improve performance. Cleared debris from the end of pipe. New CV's have been received 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	Replaced the 1" discharge fittings on I-AC that were corroded through. Also replaced the missing fuses from the panel removed by Ramboll. This is not a constant flowing well. Installed a new ½ hp Franklin motor on I-D. Motor failed due to wear and tear. Old motor was many years old.
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running		3	Replaced worn 1 ½" air diaphragm pump with a new rebuilt one that was on the shelf. Diaphragms failed do to wear and tear. New airline oiler installed.
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	Checked	Criticality	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	Replaced worn valve connected to the pressure indicator for the GAC's. Removed old SLW flush line that is not in service.
5.06	PID10A	Raw Water Feed Pump - P102A	Running		2	Pulled the 100 hp motor and pump and sent it to Motion Industries for condition based repairs. Machine work was performed on the shaft, new bearings in the motor and a new mechanical seal installed on the pump.
5.07	PID10A	Raw Water Feed Pump - P102B	Standby			
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	Standby		3	FBR A was shutdown to begin transferring media to FBR 4 so the inside of the vessel can be inspected.
6.02	PID14	Separator Tank - 1401	Standby			
6.03	PID14	Media Return Pump - P 1401	Standby			
6.04	PID14	P1401A	Standby			
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		3	Pump was rebuilt and is ready for service when the FBR is ready to go back online. Only a bearing needed to be replaced due to wear.
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			

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Sub-System	P&ID	Description	Status	Checked	Criticality	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	Off			
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	Off			
7.07	PID01B	First Stage FBR Pump – P302A	Off		2	Replacing suction spool piece that had a small drip leak.
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	Running			
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Off			
<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			

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<b>11</b>		<b>Pumping System (Old Effluent)</b>				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Standby			
11.03	PID06	Effluent Pump - P602	Running			
<b>12</b>		<b>Sand Filter System</b>				
12.01	PID17	Sand Filter	Running		3	Removed damaged seats designed to hold in the airlifts and replaced them with rubber expansion couplings.
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Running			
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		3	Pump has all new parts and is online ready for service.
14.06	PID09	Filter Press Pump - P902	Running		3	Pump has all new parts and is online ready for service.
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running		3	The rollers, air cylinders, tubing and fitting are being replaced to put the plate shifters back online.
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			

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<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			
17.00	PID07C	Micro Nutrient System	In operation			
18.00	PID07C	Hydrogen Peroxide System	In operation			
19.00	PID07C	De-Foam System	In operation			
20.00	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation			
21.00	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation			
22.00	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation		2	Pump failed. New pump put in place and new tubing run.
23.00	PID07C	Ferric Chloride System	In operation			
24.00	PID07B	Polymer Systems - DAF	In operation			
25.00	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
<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			
27.00	PID16	Oxygen System	In operation			
28.00	PID16	GWETS Plant Controls/Siemens Controls	In operation			
29.00	PID16	Well Control System/Allen Bradley Controls	In operation			
30.00	PID16	MCC FBR Pad	In operation			
31.00	PID16	MCC in D-1	In operation			
32.00	PID16	MCC in EQ area	In operation			

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<b>Miscellaneous</b>						
33.00		Operations Office/Network	In operation			
34.00		Laboratory Analyzers	In operation			
35.00		Security Systems	In operation			
<b>Shelf Spares</b>						
		Media Return Pump Rebuild Kit	In stock			Spare media return parts have been received and a spare pump has been rebuilt ready for service on the shelf.
		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			New ½ hp motors are on order. (4)
		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			

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