

# MEMO

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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:** Derek Amidon/Tt

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**Date:** April 21, 2015

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**Subject:** NERT – GWETS Operation Monthly Report – March 2015

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At the request of the Nevada Environmental Response Trust (Trust), Tetra Tech, Inc. (Tetra Tech) provides this summary of the groundwater extraction and treatment system (GWETS) operation and oversight tasks performed during March 2015.

### Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) reports that the GWETS has mechanically operated normally in March, 2015. The flow rate to the plant averaged approximately 1,001 gallons per minute (gpm) during March, 2015. Pumping rates from the Seep Well Field were temporarily increased at the direction of the Trust due to water accumulation identified within the Seep Sump. At the end of the month, the GW-11 Pond volume was 49.6 million gallons (MGs), which would allow 9 days of available storage in event of an emergency. The water volume stored in the GW-11 Pond increased approximately 0.2 MG from the end of February. The influent perchlorate concentration to the FBR plant averaged 95 mg/L for the month, with a maximum concentration of 100 mg/L.

Analytical data indicate that permitted effluent discharges at GWETS Outfall 001 were within the NPDES permitted numerical discharge limits (Please see Attachment A, prepared by ENVIRON).

### Enhanced Operational Metrics

Tetra Tech continues to move forward with the approved Enhanced Operational Metrics program to add instruments, controls, data acquisition systems, along with various other technical upgrades to improve the efficiency of GWETS data collection and reporting. An implementation schedule is presented in more detail under the GWETS Upgrades and Facility Projects section below.

The attached Tables 1 and 2 as summarized below provide a summary of the current GWETS operational metrics that provide data for flow rates, perchlorate and chromium concentrations, and mass removal. As also summarized below, attached Figure 1 presents historical perchlorate and chromium mass flux.

- Table 1 – Flow Rate and Perchlorate and Chromium Concentrations

- Table 2 – Perchlorate and Chromium Mass Flux
- Figure 1 – Historical Perchlorate Mass Flux

## Operational Issues

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

### 1. GW-11

- Automatic Strainers: As stated in the February monthly metrics report, actions were taken on March 4, 2015, to prevent algal buildup on the exterior surface of the strainers. ETI continues to operate only one strainer as recommended by the manufacturer.
- GW-11 Pond leak detection system: In a letter dated March 19, 2015 to Ms. Nikita Lingenfelter of the Nevada Department of Environmental Protection (NDEP) Bureau of Water Pollution Control (BWPC), the Trust provided background information and informed BWPC of implemented and planned corrective actions related to the GW-11 Pond leak detection system. The SW, SE, and NW pumps are installed at their correct depths in their respective extraction pipes (also referred to as wells). The pump in the NE extraction pipe remains stuck at a depth that is not at the bottom of the well. On behalf of the Trust, Tetra Tech is currently evaluating how to repair the leak detection pipes so that the correct pump depth can be determined for the NE extraction pipe. It was noted that the timeline for the repair may be lengthy due to the on-going use of the GW-11 pond.
- GW-11 Pond Liner: Tetra Tech is evaluating the integrity of the GW-11 pond liner by: (i) collecting liner samples to assess the remaining useful life of the primary and secondary GW-11 Pond liner systems; and (ii) installing piezometers in the down gradient north berm to evaluate if GW-11 Pond water is leaking through the secondary liner. The investigation field work is planned to be completed in May, 2015.

### 2. Maintenance

- No major maintenance was performed or completed in the month.
- Preventative Maintenance completed or being performed in the month included:
  - ETI replaced fittings and valves on the ferrous sulfate feed system.
  - ETI installed a new ram head, cleared lines, and adjusted pressure on the Groundwater Treatment Plant (GWTP) filter press.
  - ETI is continuing the rehabilitation process on the FBRs and is in the process of transferring carbon out of FBR 6.
  - In response to a previously reported spill that occurred on February 25, 2015, and referenced in a Notice of Violation issued by NDEP, ETI cut in new drainage lines at the East Filter Press in the D-1 Building. The new drainage lines are a

conservative measure to help prevent the escape of any water from the building and directs flow to the sump pump.

3. Outstanding maintenance and repairs from the previous month have been addressed as outlined below:
  - The spare Raw Water Feed Pump P102B repair was completed, installed, and is on standby status.
  - A new autosampler for the Ion Chromatograph (IC) unit was purchased and received by ETI, and the loaner autosampler has been replaced with the new autosampler.
  - An air hose remains in place to bypass carbon steel lines that are corroded at the dissolved air flotation (DAF) Pressure Tanks and Pressure Pump P551.
    - i. Due to other plant maintenance activities during the month, ETI delayed the low priority airline replacement project to begin in April. ETI will determine if they have the capabilities to finish replacing the corroded air lines or if these replacements are better completed by an outside contractor.
  - A new pressure regulator was received for the compressed air receiver tank. ETI is waiting for a FBR plant shut down to replace the regulator. Replacing the regulator is not deemed to be a critical item, ETI will coordinate the shutdown with other required maintenance activities. The FBR shut down will not require well fields to be shut down.

### **GWETS Upgrades and Facility Projects**

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

1. 2013 Optimization  
ENVIRON's 2013 Optimization Project is complete, and a formal report will be included as an attachment to the Semiannual Performance Report to be submitted to the NDEP at the end of April 2015 by ENVIRON.
2. AP-5 Solids Removal  
The Phase II Work Plan for AP-5 Solids Removal was approved by NDEP on March 24, 2015. Tetra Tech is moving forward with the next phase of design and continues to coordinate with the NDEP, ETI, and the Trust on this project.
3. Enhanced Operational Metrics  
Tetra Tech is currently in the final design review phase and procuring instruments and contractor services. Construction activities are scheduled for April, May and June 2015 starting with the installation of the new GW-11 influent flow meter, static mixer and sample tap. Phased activation of the operational metrics upgrades will continue through July 2015.

### **Equipment Availability Tracking**

ETI operators continue to update the equipment tracking form on a weekly basis at a minimum, or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel continue to verify the entries on the form, including both the operating status and confirming the inventory

of required shelf spares. The equipment tracking form submitted by ETI to Tetra Tech on April 5, 2015, is attached (Please see Attachment B).

### **GWETS Staffing**

ETI continues to staff the GWETS using a single shift and follows the security procedure in the Standard Operating Procedures (SOP).

### **GWETS Security**

During weekly calls, ETI notifies Tetra Tech of any issues with GWETS security. There were no GWETS security issues reported during the month.

### **Tetra Tech Activities**

Tetra Tech conducted calls with ETI to review operation of the GWETS March 5<sup>th</sup>, 12<sup>th</sup>, and 19<sup>th</sup>. Tetra Tech staff were on-site on March 25<sup>th</sup> and communicated with ETI regarding the GWETS operation during that time. Becki Dano, CEM, of Tetra Tech, performed visits to the GWETS on March 6<sup>th</sup>, 12<sup>th</sup> and April 3<sup>rd</sup>. On the April 3<sup>rd</sup> site visit, Ms. Dano reviewed the previous two weeks of paperwork, as well as the paperwork for the last week of March. Ms. Dano also reviewed permit and sampling forms for the entire month to ensure each was correct and up-to-date, checked equipment status, and verified shelf spare inventory.

### **Summary**

Based on our review of available and relevant information, Tetra Tech concurs with ETI's management of the GWETS during the reporting period. No additional involvement from either the Trust or Tetra Tech is recommended at this time.

# Tables

## Operational Metrics

Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) <sup>2</sup>	Chromium TR (mg/L) <sup>2</sup>	Chromium(VI) (mg/L) <sup>2,8</sup>
SWF Total Extraction <sup>5</sup>	591 <sup>1</sup>	12	0.002	Future Metric
AWF Total Extraction <sup>5</sup>	287 <sup>1</sup>	165	0.42	Future Metric
IWF Total Extraction <sup>6</sup>	68 <sup>1</sup>	964	7.52	Future Metric
GWTP Effluent <sup>7</sup>	61	957	0.50	ND
GW-11 Influent	NA <sup>3</sup>	NA <sup>4</sup>	NA <sup>4</sup>	Future Metric
GW-11 Effluent/ FBR Influent <sup>7</sup>	1001	95	0.05	0.02

## Notes:

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

1: Sum of daily average flow for individual wells .

2: All concentrations reported are monthly flow weighted averages.

3: Flow is a calculated metric, but will be transitioned to flow meter measurement beginning in April 2015.

4: Perchlorate and chromium can be calculated, but will be transitioned to in-line samples beginning in April 2015.

5: Perchlorate sampled monthly, chromium TR sampled quarterly, values reported from TestAmerica.

6: Perchlorate and chromium TR sampled quarterly, values reported from TestAmerica.

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

8: Hexavalent chromium will be analyzed and reported monthly beginning Spring 2015.

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>
SWF Total Extraction	2,566	0.43
AWF Total Extraction	17,709	45
IWF Total Extraction	24,597	192
GWTP Effluent	21,800	11
GW-11 Influent	NA <sup>2</sup>	NA <sup>2</sup>
GW-11 Effluent/FBR Influent	35,469	19

Notes:

TR = Total Recoverable; NA = Not Available.

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

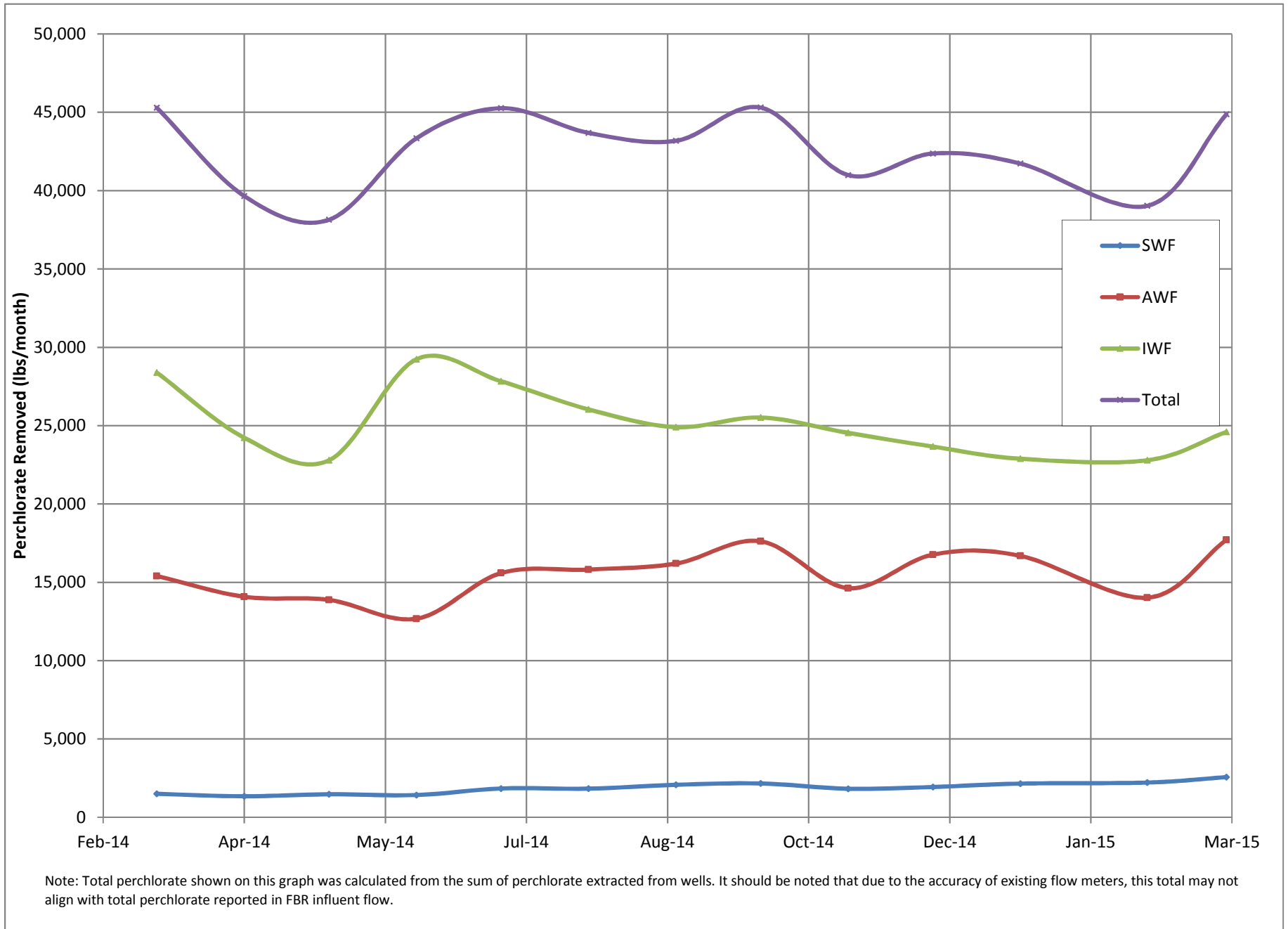
2: GW-11 Influent data will be available beginning in April 2015.

# Figures

## Operational Metrics



Figure 1 - Historical Perchlorate Mass Flux



# Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

Continuous		Daily samples, composited weekly	
Flow Rate		Perchlorate	
30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (ug/L)	30-Day Avg. (lbs/day)
1.45	1.75	18	0.22

Weekly samples								
pH	Hexavalent Chromium	Total Chromium	Total Suspended Solids (TSS)		Total Iron		Total Ammonia as N	Total Phosphorus as P
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)
6.5 to 9.0	0.01	0.1	135	1,634	10	121.03	40	20

Weekly samples, collected separately			Quarterly sample	
BOD <sub>5</sub> (inhibited)			Manganese	
30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)
25	40	254	5	60.52

January 2015	1.20	1.39	1.3	0.012	6.59	0.00013	0.021	25	250	4.1	40	2.6	1.5	3.3	4.3	33	0.20	2.0
February 2015	1.35	1.42	1.3	0.014	6.85	0.00013	0.029	21	230	3.3	37	3.8	1.6	6.2	13	69		
March 2015 (month-to-date)	1.32	1.38	1.3	0.014	6.75	0.00013	0.043	28	300	4.9	54	5.7	2.5	4.7	9.2	50		

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	mg/L	lbs/day	Sample Date	mg/L	lbs/day	mg/L	lbs/day
1/4 - 1/10	1/10/2015	ND (<2.5)	1.3	0.010	1/5/2015	6.53	ND (<0.00025)	0.021	24	201	4.8	40	--	0.94	7.9	0.083	0.69	1/7/2015	3.1	26	0.20	2.0
1/11 - 1/17	1/17/2015	ND (<2.5)	1.3	0.013	1/12/2015	6.64	ND (<0.00025)	0.019	19	192	3.9	39	ND (<0.10)	0.05	0.51	0.16	1.6	1/14/2015	3.9	39		
1/18 - 1/24	1/24/2015	ND (<2.5)	1.3	0.014	1/19/2015	6.65	ND (<0.00025)	0.018	25	276	3.4	38	--	0.13	1.4	0.16	1.8	1/21/2015	1.8	20		
1/25 - 1/31	1/31/2015	ND (<2.5)	1.3	0.013	1/26/2015	6.54	ND (<0.00025)	0.019	30	316	4.1	43	ND (<0.10)	0.05	0.53	0.17	1.8	1/28/2015	4.3	45		
2/1 - 2/7	2/7/2015	ND (<2.5)	1.3	0.014	2/2/2015	6.90	ND (<0.00025)	0.010	11	121	1.6	18	--	0.20	2.2	0.12	1.3	2/4/2015	4.5	49		
2/8 - 2/14	2/14/2015	ND (<2.5)	1.3	0.014	2/9/2015	6.67	ND (<0.00025)	0.024	17	196	0.66	7.6	--	0.33	3.8	0.27	3.1	2/11/2015	5.7	66		
2/15 - 2/21	2/21/2015	ND (<2.5)	1.3	0.014	2/17/2015	6.97	ND (<0.00025)	0.0064	19	215	3.9	44	--	0.21	2.4	0.067	0.76	2/18/2015	1.5	17		
2/22 - 2/28	2/28/2015	ND (<2.5)	1.3	0.014	2/23/2015	6.85	ND (<0.00025)	0.029	36	401	7.1	79	--	0.61	6.8	0.12	1.3	2/25/2015	13	145		
3/1 - 3/7	3/7/2015	ND (<2.5)	1.3	0.013	3/2/2015	6.82	ND (<0.00025)	0.043	42	441	4.9	51	--	0.22	2.3	0.25	2.6	3/5/2015	9.2	97		
3/8 - 3/14	3/14/2015	ND (<2.5)	1.3	0.014	3/9/2015	6.89	ND (<0.00025)	0.011	26	296	4.8	55	--	0.44	5.0	0.46	5.2	3/11/2015	2.6	30		
3/15 - 3/21	3/21/2015	ND (<2.5)	1.3	0.014	3/16/2015	6.64	ND (<0.00025)	0.0071	23	257	5.0	56	--	0.69	7.7	0.066	0.74	3/18/2015	2.2	25		
3/22 - 3/28	3/28/2015	NA	NA	NA	3/23/2015	6.64	ND (<0.00025)	0.013	19	211	4.8	53	--	0.71	7.9	0.11	1.2	3/25/2015	NA	NA		
					3/30/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4/1/2015	NA	NA		

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

NA = Not Available To Date

NS = No Sample

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

-- = Analyte detected; see column adjacent to right

Last Updated: April 3, 2015

# Attachment B

## 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</b>		<b>Seep Wells and Lift Station 1</b>				
1.01		Seep Well Field, 9 wells	Running			
1.02		Lift Station 1 Lift Pump A	Standby			
1.03		Lift Station 1 Lift Pump B	Running			
1.04		Area in and around Lift Station 1	Running			
<b>2</b>		<b>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</b>		<b>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</b>		<b>Interceptor Wells and Cr Treatment Plant</b>				
4.01		IWF Well Field, 30 wells	Running			
4.02		Ferrous Sulfate Feed System	Running		3	ETI replaced fittings, valve and check valve.
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running		3	ETI installed new ram head, cleared lines, and adjusted pressure.
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Maintenance		3	ETI is waiting on a quote for new seal.
4.08		Interceptor Booster Pump B	Running			
4.09		Area In And Around GWTP	Running			

<sup>1</sup>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

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	Running			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation			
5.06	PID10A	Raw Water Feed Pump - P102A	Running			
5.07	PID10A	Raw Water Feed Pump - P102B	Maintenance		3	The pump is ready for pick up from Henderson Electric.
5.08	PID10B	Carbon Absorber - LGAC 201A	Running			
5.09	PID10B	Carbon Absorber - LGAC 201B	Running			
5.10	PID10B	Carbon Absorber - LGAC 201C	Running			
<b>6</b>		<b>First Stage FBRs A, 1 &amp; 2</b>				
6.01	PID14	FBR A	Running			
6.02	PID14	Separator Tank - 1401	Running			
6.03	PID14	Media Return Pump - P 1401	Running			
6.04	PID14	P1401A	Standby			
6.05	PID01A	P1401B	Running			
6.06	PID01A	FBR 1	Running			
6.07	PID02A	FBR 2	Running			
6.08	PID01A	First Stage Separator Tank - T2011	Running			
6.09	PID01A	Media Return Pump - P2011	Running			
6.10	PID01A	First Stage FBR Pump - P1011	Standby			
6.11	PID01A	First Stage FBR Pump - P1012	Running			
6.12	PID01A	First Stage FRB Pump - P101A	Running			
6.13	PID07A	FBR A pH Feed Pump - P71A	Standby			
6.14	PID07A	FBR 1 pH Feed Pump - P711	Standby			
6.15	PID07A	FBR 2 pH Feed Pump - P712	Standby			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off			
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off			
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off			
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running			
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running			
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running			

<sup>1</sup>Status Codes

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Maintenance - Out of service for maintenance

Off - Not currently needed for use, but can be placed in service

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>7</b>		<b>First Stage FBRs 3 &amp; 4</b>				
7.01	PID01B	FBR 3	Off			
7.02	PID01B	FBR 4	Off			
7.03	PID02B	First Stage Separator Tank - T2012	Off			
7.04	PID01B	Media Return Pump - P2012	Off			
7.05	PID01B	First Stage FBR Pump - P1013	Off			
7.06	PID01B	First Stage FRB Pump - P1014	Off			
7.07	PID01B	First Stage FBR Pump - P102A	Off			
7.08	PID07A	FBR 3 pH Feed Pump - P713	Off			
7.09	PID07A	FBR 4 pH Feed Pump - P714	Off			
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723	Off			
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Off			
7.12	PID15	FBR 3 Nutrient (Phos Acid) Feed Pump - P1523	Off			
7.13	PID15	FBR 4 Nutrient (Phos Acid) Feed Pump - P1524	Off			
7.14	PID07B	FBR 3 Electron Donor Assembly Pump - P733	Off			
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Off			
<b>8</b>		<b>Second Stage FBRs 5 &amp; 6</b>				
8.01	PID03A	FBR 5	Off			
8.02	PID03A	FBR 6	Off		4	ETI is in the process of transferring carbon for the FBR rehab process.
8.03	PID03C	Second Stage Separator Tank - T3011	Off			
8.04	PID03A	Media Return Pump - P3011	Off			
8.05	PID03A	Second Stage FBR Pump - P3015	Off			
8.06	PID03A	Second Stage FBR Pump - P3016	Off			
8.07	PID03A	Second Stage FBR Pump - P301A	Off			
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Off			
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Off			

<sup>1</sup>Status Codes

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Maintenance - Out of service for maintenance

Off - Not currently needed for use, but can be placed in service

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<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			
9.05	PID03B	Second Stage FBR Pump - P3017	Standby			
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	Standby			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Standby			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off			
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
<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	Biofilter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Biofilter Sump	Running			
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Biofilter Sump Pump - P402A	Standby			
10.09	PID04	Biofilter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation		4	An air hose is in place to bypass carbon steel lines that are corroded.
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	Maintenance		3	The vessel is offline to make repairs and recoat interior. Work will be ongoing.
10.15	PID05	DAF Pressure Pump - P551	Maintenance		4	Steel air lines are being bypassed with a hose feeding the pressure tank.
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			

<sup>1</sup>Status Codes

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Maintenance - Out of service for maintenance

Off - Not currently needed for use, but can be placed in service



Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<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	Running			
<b>12</b>		<b>Sand Filter System</b>				
12.01	PID17	Sand Filter	Running			
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Running			
12.04	PID17	Filter Reject Pump - P1701B	Standby		3	The new seal has been received by ETI.
<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	Running			
13.04	PID10C	Area Around Effluent and North D-1	Running		3	ETI received a new valve. This new valve is not critical to the process and does not present any risk. Blind flanges are currently installed.
<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	Running			
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running		4	ETI cut in new drainage lines for precautionary drainage.
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			

<sup>1</sup>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

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>Chemical Systems</b>						
<b>15</b>		<b>Electron Donor System</b>				
15.01	PID07B	<i>Electron Donor Tank</i>	In operation			
15.02	PID07B	<i>Booster Pump P739A</i>	Standby			
15.03	PID07B	<i>Booster Pump P739B</i>	Running			
17	PID07C	<b>Micro Nutrient System</b>	In operation			
18	PID07C	<b>Hydrogen Peroxide System</b>	In operation			
19	PID07C	<b>De-Foam System</b>	In operation			
20	PID15	<b>Nutrient (Phosphoric Acid) System</b> (Tank only - pumps included in FBRs)	In operation			
21	PID07A	<b>Nutrient (Urea) System</b> (Tank only - pumps included in FBRs)	In operation			
22	PID07A	<b>pH System</b> (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
23	PID07C	<b>Ferric Chloride System</b>	In operation			
24	PID07B	<b>Polymer Systems - DAF</b>	In operation			
25	PID09	<b>Polymer System - Solids Dewatering</b> (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	<i>West Compressor</i>	Running		4	Ingersoll Rand performed PM's on both compressors.
26.02	PID08	<i>East Compressor</i>	Running		4	Ingersoll Rand performed PM's on both compressors.
26.03	PID08	<i>O2 Compressor</i>	Running			
26.04	PID08	<i>Compressed Air Receiver Tank</i>	In operation		4	ETI received regulator and is waiting for plant shut down to replace. ETI is also waiting on additional parts. A new valve and new piping was built to replace rusted and damaged valve.
26.05	PID08	<i>Air Dryer</i>	Running			
26.06	PID08	<i>Oil Removal Filter</i>	In operation			
26.07	PID08	<i>Particulate Filter</i>	In operation			
27	PID16	<b>Oxygen System</b>	In operation			
28		<b>GWETS Plant Controls/ Siemens Controls</b>	In operation			
29		<b>Well Control System/ Allen Bradley Controls</b>	In operation			
30		<b>MCC FBR Pad</b>	In operation			
31		<b>MCC in D-1</b>	In operation			
32		<b>MCC in EQ area</b>	In operation			

<sup>1</sup>Status Codes

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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

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>Miscellaneous Systems</b>						
33		Operations Office/Network	In operation			
34		Laboratory Analyzers	In operation		3	New ion chromatograph autosampler installed.
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			

<sup>1</sup> Status Codes

**Equipment**

Running                    Unit is in operation  
 Standby                  Duplicate or installed spare, not currently operating  
 Maintenance            Out for repairs or maintenance  
 Off                         Not currently needed, but available

<sup>1</sup> 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  
                                  - Tasks performed to either improve the existing equipment (i.e., testing new options)  
 4 = Low                   - Minor repairs that in no way alter the performance of the plant

**Tanks, Pipelines, Ponds**

In operation  
 Out of service

**Spares**

In stock

<sup>1</sup> 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