

То:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Jeff Lambeth, Director of Operations
Date:	March 20, 2017
Subject:	NERT – GWETS Operation Monthly Report – March 2017

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 March 2017.

### **Summary of GWETS Operation**

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in March 2017. Flow from PC-118, PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing the FBR plant as directed by the Trust. The flow rate to the IX system averaged approximately 260 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 951 gpm during March 2017. At the end of the month, the GW-11 Pond volume was at 51.4 million gallons (MG), which would allow 7.7 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 3.1 MG from the end of February 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 102 mg/L for the month, with a maximum concentration of 120 mg/L. In comparison, the influent perchlorate concentration for the month of February 2017 averaged 103 mg/l, with a maximum concentration of 110 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 March from the GW-11 pond was approximately 60 gpm.

#### 2. Biological Plant

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

Effluent Diversion to GW-11 on March 29th from 11:46am to 3:49pm. The plant effluent was diverted due to underperforming biological activity in the FBR's and the presence of detectable concentrations of perchlorate in the effluent water. Adjustments were made by ETI and effluent discharge to the Las Vegas Wash resumed following laboratory verification of water quality. During this diversion, approximately 211,443 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 March.

#### 4. Maintenance

- Major maintenance performed by ETI in the month included:
- I. FCV1020 FBR 2 A new 3/8" air regulator and positioner was installed on the actuator and the valve was put back into auto.
- II. Extraction well I-AD The motor saver showed a Current Fault. ETI Tightened connections and reset. The sample was able to be collected.
- III. FI506 DAF D551-The recycle flow orifice plate had rusted. ETI replaced it with a new one.
- IV. P1302 Effluent Booster pumps A small leak developed on the 8" fitting at the discharge of the pump. A new header was built and installed.
- V. P402 Bio filter sump The discharge piping was replaced and tied into the feed line for the DAF.
- VI. T1702 Sand filter The unit was emptied and the sand was washed and put back into vessel. All of the airlifts were rebuilt, new air hoses were run and a new boot was installed. The unit was brought back online.
- VII. East Compressor The 50 hp motor was replaced as well as the contactors in the control panel.
- VIII. Kaeser Air Compressor The 40 hp motor was serviced and re-installed. The unit is functioning correctly.
- IX. Extraction Well ART-8A The well showed an overload on the VFD caused from a defective pump. The well was pulled and the pump was replaced and all components were inspected.
- X. Extraction Well ART-2/2A Both of the VFD's were showing a high temperature alarm. The pump and motor were replaced on ART-2. ART-2A has a new pump and motor.
- XI. Front Gate The welds were replaced on the guide bar for the front gate.
- XII. Lift Station 2 A new swing check valve was installed on the discharge of turbine #1 to replace

the worn swing check in place.

- Preventative Maintenance completed or being performed by ETI in the month included:
- I. Sequence Test ETI Tested all signal related to the auto plant shutdown.
- II. PH and ORP online analyzers ETI Calibrated and Standardized Units with buffer solutions.
- III. Plant Computer ETI generated a backup and cleaned the air filters for the computer enclosures.
- IV. GW-11 Pond Level Sensor ETI removed and cleaned sensor and checked the signal loop to the control room.
- V. LS1 Turbine pump Services were performed, including oil changes, grease and replacing the packing.

### **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

Sediment washing continued following transfer of the material from the AP-5 Pond. ETI has coordinated with Tetra Tech on the programming and controls for the treatment portion of the system. It is expected that decant liquids will be ready for treatment sometime in mid-2017.

- 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. Some items onsite will require SMP approval which is in progress. The other remaining items will be installed in April-May.
- 3. Upgraded above ground well piping and flow meters at the Seep Well field Work Authorization has been submitted to the Trust.
- 4. **Upgrade of ART 8A and 2 well pumps –** Work authorization submitted to the Trust for 8A. Further testing being conducted by ETI on ART 2.

#### **Equipment Availability Tracking**

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

#### **GWETS Staffing**

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

## **Tables**

**Operational Metrics** 

#### Table 1 - Flow Rate and Perchlorate and Chromium Concentrations

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics										
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) <sup>56</sup>	Chromium (TR) (mg/L)⁵ <sup>6</sup>	Chromium(VI) (mg/L) <sup>56</sup>						
SWF Total Extraction <sup>2</sup>	674.0 <sup>1</sup>	6.1	0.00075	0.00050						
AWF Total Extraction <sup>2</sup>	387.7 <sup>1</sup>	104	0.19	0.17						
IWF Total Extraction <sup>2</sup>	65.1 <sup>1</sup>	622	7.7	7.0						
AP Area Total Extraction <sup>3</sup>	5.4 <sup>1</sup>	1,205	NA	0.035						
GWTP Effluent⁴	80.2	766	0.57	ND						
GW-11 Influent <sup>2</sup>	3.4	93	0.11	0.00090						
GW-11 Effluent/ FBR Influent⁴	951.3	102	0.039	0.025						

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 I Groundwater Extraction and Treatment System I 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	1,544	0.19	0.13							
AWF Total Extraction	14,999	27	25							
IWF Total Extraction	15,098	187	170							
AP Area Total Extraction	2,405	NA	0.07							
GWTP Effluent	22,910	17	0.00							
GW-11 Influent	118	0.14	0.00							
GW-11 Effluent/FBR Influent	36,025	14	8.8							

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**

**Operational Metrics** 

Nevada Environmental Response Trust GW-11 Pond Volume Update 3/28/2017







## **Attachment A**

NPDES Tracking Sheet (Prepared by ENVIRON)

NA

								Treated Effluent at Outfall 001																					
	Contin	uous	Daily Samp	oles, comp	oosited weekly								Weekly Grab Sa	mples									Weekly, c	ollected s	eparately		Quarterly		
	Flow Rate		Flow Rate			Perchlor	ate		pŀ	1	Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Susp (	ended Solids TSS)	Total	Ammonia	as N	Tota	l Phosphoru	us as P		во	D <sub>s</sub> (inhibit	ed)		Total Dissolved Solids (TDS)
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day (µg/	Avg. 'L)	30-Day Avg. (Ibs/day)		Daily Min. (S.U.)	Daily Max. (S.U.)	Daily Max. (µg/L)	Daily Max. (μg/L)	Daily Max. (µg/L)	Daily Max. (µg/L)	Daily Max. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (Ibs/day)	30 (	I-Day Avg. Ibs/day)			30-Day Avg (Ibs/day)	3.		30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (Ibs/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		
	4.30		1 :		0.014		6.75	7.42	0.425	20	540	0.000	0.50	67	270					11					20				
January 2017	1.38	1.42	1	,	0.014		6.75	7.13	0.125	30	510	9,600	0.60	25	220		4.8			0.0			2.4	4.3	28		5 400		
February 2017	1.28	1.44	13	2	0.08		6.72	6.90	0.125	56	530	4,200	0.39	2.5	250		3.2			1.0			3.7	0.4	29		- 5,400		
April 2017 (month to date)	1.50	1.44	N/	,	0.015		0.05 NA	0.80	0.125	9.5	540	4,700	1.0	NA NA	NA		D NA			NA			2.0	5.4 NA	52				
April 2017 (month to date)	1.35	1.40			NA .		100	100	NA	100	114	110	NA				11/4						100	100	100				
	Daily Grab Sample Dates	Composite Sample Date		μg/L	lbs/day	Sample Date	S.U	J.	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	6.7	6	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	7.0	3	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	1/10/2017	5,400		
	1/15 - 1/21	1/21/2017	ND (<2.5)	1.3	0.015	1/16/2017	7.1	3	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	6.8	9	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	6.7	5	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	7.0	0	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 (<2.5)	1.3	0.014	2/13/2017	7.1	6	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 (<2.5)	1.3	0.015	2/21/2017	6.7	3	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 (<2.5)	1.3	0.015	2/27/2017	6.7	2	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 (<2.5)	1.3	0.014	3/6/201/	6./	8	ND (<0.25)	7.9	490	1,800	1.6	1/	197		1.0	12		0.11	1.3	3/8/201/	2.3		2/				
	3/12 - 3/18	3/18/2017	ND (<2.5)	1.3	0.015	3/13/2017	6./	5	ND (<0.25)	b./	540	2,300	1.2	21	244		0.50	5.8		0.058	0.67	3/15/201/	1.9		22				
	3/19 - 3/25	3/25/2017	ND (<2.5)	1.3	0.015	3/20/2017	6.6	5	ND (<0.25)	9.5	490	4,700	ND (<0.50)	27	202		0.32	3./		0.073	0.85	3/22/201/	1.8		21				
	3/20 - 3/31	3/31/201/	NA	NA	NA	3/2//2017	6.8	0	ND (<0.25)	7.1	540	2,900	1.2	27	302		0.26	2.9		0.10	1.12	3/29/2017	5.4		60				
						4/5/201/	IN/	۹.	NA	NA	NA	NA	NA	N/A	N/A	NA	NA	NA	NA	NA	NA	4/5/201/	NA		NA				

Note: All analytical responsibilities are performed by TestAmerica Laboratories, Inc. (TestAmerica) in frvine, California, unless otherwise indicated. ^ Following reciept of the 34 ug/L sample reasult, 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

No = Not Version 10 June 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: April 7, 2017

## **Attachment B**

Equipment Tracking Form

Sub- System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
		Main Plant Equipment				
1		Seep Wells and Lift Station 1				
1.01		Seep Well Field, 9 wells	Running		2	PC-133 was shutdown and pulled to investigate fluctuating flows. The electrical was replaced and the 1.5hp motor was also replaced. Large amounts of roots were also found in the well casing.
1.02		Lift Station 1 Lift Pump A	Running			
1.03		Lift Station 1 Lift Pump B	Standby			
1.04		Area in and around Lift Station 1	Running		2	The pressure guages on the 3" piping from PC-121, 120, and 117 had small drip leaks. The wells were temporarily shutdown and the piping was replaced. A controlled sutdown took place and contractors replaced the main breaker to the MCC as well as the breaker to PC-121.
2		Athens Road Wells and Lift Station 3				
2.01		Athens Road Well Field, 9 wells	Running			ART-8A was shutdown and had the pigtail replaced. While it was out, debris was found in the pump. This debris was able to cause a fault on the VFD. The pump was replaced with a new one. The pigtail and motor were replaced on ART-2.
2.02		Lift Station 3 Lift Pump A	Standby			
2.03		Lift Station 3 Lift Pump B	Running			
2.04		Area in and around Lift Station 3	Running		3	Contractors installed new curbing around the wetwell.
3		Lift Station 2 and Transmission Pipelines				
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		2	A new swing check valve was installed on the discharge piping.
3.04		Lift Station 2 Lift Pump B	Standby			
3.05		Area in and around Lift Station 2	Running			
4		Interceptor Wells and Cr Treatment Plant				
4.01		IWF Well Field, 30 wells	Running			
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation	ļ		
4.05		Filter Press	Running	ļ		
4.06		GWTP Effluent Tank	In operation	ļ		
4.07		Interceptor Booster Pump A	Running	ļ		
4.08		Interceptor Booster Pump B	Standby			

Criticality 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

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

Sub- System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
4.09		Area In And Around GWTP	Running			
5		Equalization Area and GW-11 Pond				
5.01	PID10A	Pond GW-11	In operation			
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation			
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			
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A				
6.02	PID14	Separator Tank - 1401				
6.03	PID14	Media Return Pump - P 1401				
6.04	PID14	P1401A				
6.05	PID01A	P1401B				
6.06	PID01A	FBR 1	Running			
6.07	PID02A	FBR 2	Running			
6.08	PID01A	First Stage Separator Tank - T2011	Running			
6.09	PID01A	Media Return Pump - P2011	Running			
6.10	PID01A	First Stage FBR Pump - P1011	Standby			
6.11	PID01A	First Stage FBR Pump - P1012	Running			
6.12	PID01A	First Stage FRB Pump - P101A	Running			
6.13	PID07A	FBR A pH Feed Pump - P71A	Off			
6.14	PID07A	FBR 1 pH Feed Pump - P711	Off			
6.15	PID07A	FBR 2 pH Feed Pump - P712	Off			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off			
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off			
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off			
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running			
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running			
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			

Running - Unit is in operation Standby - Spare or duplicate, not currently in operation 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

Maintenance - Out of service for maintenance 3 = Moderate -Off - Not currently needed for use, but can be placed in service 4 = Low - Minor

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
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running			
7		First Stage FBRs 3 & 4				
7.01	PID01B	FBR 3	Running			
7.02	PID01B	FBR 4	Running			
7.03	PID02B	First Stage Separator Tank - T2012	Running			
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			
8		Second Stage FBRs 5 & 6	-			
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			
9		Second Stage FBRs 7 & 8				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running			
9.03	PID03D	Second Stage Separator Tank - T3012	Running			
9.04	PID03B	Media Return Pump - P3012	Running			
9.05	PID03B	Second Stage FBR Pump - P3017	Running			

Running - Unit is in operation Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

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 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
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			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank	In operation			
10.02	PID04	Aeration Blower - B401	Running			
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump				
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby		2	The discharge of the pump is now tied back into the system.
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation			
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Running			
10.15	PID05	DAF Pressure Pump - P551	Running			
10.16	PID05	DAF Float Pump - P552	Running			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			
11		Pumping System (Old Effluent)				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602	Standby			
12		Sand Filter System				
12.01	PID17	Sand Filter			2	The sandfilter was overhauled with a new boot, cleaned and correctly installed sandwashers, all neew air hoses, the sand was cleaned, new hangers and the airlifts were rebuilt.
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running			

Running - Unit is in operation Standby - Spare or duplicate, not currently in operation 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

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
13		Effluent Tank and Pumping				
13.01	PID10C	UV Effluent Tank	Running			
13.02	PID10C	Effluent Booster Pump - P1302A	Running		1	A new header was installed on the discharge of the pump. The previous header was damaged and was causing a drip leak.
13.03	PID10C	Effluent Booster Pump - P1302B	Standby			
13.04	PID10C	Area Around Effluent and North D-1	Running			
14		Solids Collection and Pressing System				
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			
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			
		Chemical Systems				
15		Electron Donor System				
15.01	PID07B	Electron Donor Tank	In operation			
15.02	PID07B	Booster Pump P739A	Running			
15.03	PID07B	Booster Pump P739B	Standby			
17	PID07C	Micro Nutrient System	In operation			
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			
		Utility Systems				
26		Compressed Air System				

Running - Unit is in operation Standby - Spare or duplicate, not currently in operation

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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

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
26.01	PID08	West Compressor	Running			
26.02	PID08	East Compressor	Running		2	The motor showed an overload fault that shut down the unit. The motor and contactors were both replaced and the system was brought back up.
26.03	PID08	O2 Compressor	Running		2	The motor had a bad front bearing causing it to lock up. The motor was rebuilt by Henderson Electric and the unit was put back online.
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			
		Miscellaneous Systems				
33		Operations Office/Network	In operation			
34		Laboratory Analyzers	In operation			
35		Security Systems	In operation			
		Shelf Spares				
		Media Return Pump Rebuild Kit	In stock			
		pH Feed Pump	In stock			
		Nutrient Feed Pump	In stock			
		Electron Donor Feed Pump	In stock		1	The new shelf spare has been received.
		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.

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

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3 = Moderate - Work needs to be performed, but plant can still operate with redundancy that is in place