
To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Michael Del Vecchio, Director of Engineering and Project Management

Date: December 31, 2024

Subject: NERT –GWETS Operation Monthly Report –November 2024

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 November 2024.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in November 2024. Flow from PC-118, PC-119, C-120, PC-121, and PC-133 were routed to the IX system, bypassing all flow meters associated with the FBR plant for November. The flow rate to the IX system averaged approximately 228 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 930 gpm. At the end of the month, the filled GW-11 Pond volume was at 35.61 million gallons (MG), which would allow 18.6 days of 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 has decreased since October 2024; Figure 1 in this report depicts the actual GW-11 pond volumes and additional storage available.

The influent perchlorate concentration in the IX system averaged 0.97 mg/L for the month, and the concentration in the FBR plant averaged 36 mg/L for the month, with a maximum concentration of 45 mg/L.

During November, ETI continued implementing a preventative maintenance program to refurbish all front and back-side FBRs. Through this program, FBRs will be systematically emptied and dismantled to determine the extent of refurbishment. Additional information on this program is presented later in this report.

Enhanced Operational Metrics

Tables 1 and 2 summarize the current GWETS operational metrics data for flow rates, perchlorate and chromium concentrations, and mass removal. Figure 2 graphically presents historical perchlorate mass flux information. Attachment A summarizes the NPDES permit analytes with numerical discharge limits.

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, major repairs, and/or equipment replaced during this reporting period.

1. GW-11

There were no operational issues with GW-11 in November.

2. Biological Plant

There were influent/effluent diversions during the reporting period associated with general maintenance or FBR refurbishment activities as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- An influent diversion occurred on November 3, 2024, from 11:54 am to 1:13 pm, due to a fault with the FBR 2 pump interlock. Maintenance personnel cleared the fault and the plant returned to normal operations.
- An effluent diversion occurred on November 11, 2024, from 8:46 am to 10:33 am, due to scheduled maintenance on the effluent pipeline at Lift Station 1 (LS-1). Maintenance repaired the valve and the effluent was redirected back to the outfall.
- An influent diversion occurred on November 21, 2024, from 7:00 am to 9:59 am, due to an effluent pipe leaking within the containment area in the D1 building. Maintenance isolated the leak and the plant returned to normal operations.
- An effluent diversion occurred on November 24, 2024, from 2:10 pm to 3:44 pm, due to an air compressor fault. A backup air compressor was activated while maintenance repaired the faulty air compressor and the effluent was redirected back to the outfall.
- An influent diversion occurred on November 25, 2024, from 3:38 am to 11:57 am, due to a faulty ethanol pump. Maintenance replaced the ethanol pump and the plant returned to normal operations.
- LS-1, SWF, and IX were shut down for scheduled generator maintenance on November 26, 2024, from 2:56 pm to 3:46 pm. The generator preventive maintenance was completed, and the SWF and IX returned to normal operations.
- An effluent diversion occurred on November 25, 2024, from 6:50 am to 12:00 pm, due to a failed CTS control valve. Maintenance replaced the control valve, and the plant returned to normal operations.

3. IX Treatment Plant

The concentration of perchlorate in shallow groundwater remains elevated in the western wells of the SWF. This increase is a result of the City of Henderson (City) discharging water to Birding Ponds 10 through 13 from late August through October 2023. The perchlorate concentrations in groundwater adjacent to the western leg of the SWF are expected to remain elevated for an extended period as a result of this activity.

4. Treatment System Extension (TSE)

In October 2024, operations at the TSE plant continued to be idle. In July 2024, NERT developed a new version of the Cooperative Agreement to facilitate system restart and provided it to TIMET for their review. While NERT has conceptually discussed the TSE restart with TIMET, TIMET has yet to provide comments to NERT. The timeline for restarting the system will be established during the negotiation of the updated Cooperative Agreement.

5. Effluent Filtration System(EFS)

During November 2024, the EFS operated normally and produced approximately 432,000 gallons of filtered GWETS effluent, which supported the utility water requirements of GWETS operations.

6. Chromium Treatment Subsystem(CTS)

During November 2024, The CTS operated normally and treated approximately 2,137,387 gallons of groundwater.

7. Spills

There were no reportable spills during November.

8. Maintenance

Major maintenance performed by ETI in the reporting month included:

- I. The ethanol pump for FBR 3 has been replaced.
- II. The Siemens digital output module for FBR 5 has been replaced.
- III. The ball valve for the CTS influent pipe was replaced.
- IV. The IX influent pump VFD and network cables were replaced.
- V. A faulty PVC joint was replaced on the effluent diversion pipe at the EQ.
- VI. The Kaeser air compressor's input/output (I/O) module was repaired.
- VII. The CTS actuator positioner valve was replaced.
- VIII. The turbidity meters were cleaned and calibrated.
- IX. The pond's pressure transmitter was replaced.

Preventative maintenance performed by ETI in the reporting month included:

- I. Inspected all FBR chemical drawdowns.
- II. The FBR sump pump vaults were cleaned.
- III. The Alarm and Auto dialer system was tested.
- IV. Inspected backstage separators and aeration tank.
- V. Inspected and cleaned the chemical skids on the FBR pad.
- VI. Inspected all safety showers for the D1 building.
- VII. Completed the preventive maintenance on the sand filter.

FBR Refurbishment

- I. The refurbishment of FBR 7 is currently in progress.

Facility Projects

1. Facility Repair/Replacement Items – Envirogen and the Trust have finalized a list of facility items to be addressed in connection with Amendment 8 to the O&M Agreement. All work except for the replacement of the DAF and concrete repairs has been completed. Specific details on in-progress items are provided below:
 - A (WA23-03) Dissolved Air Flotation (DAF) Vessel replacement
 1. The replacement DAF was delivered in December 2023, and installation began in September 2024 and will be completed in January 2025.
 - B Concrete Repair at various locations on the FBR pad
 1. Work is anticipated to be completed in January 2025.
2. Improved Biological Treatment Plant Efficiency – Consistent with Attachment D to the December 2021 GWETS Operation Monthly Report, Envirogen plans to take three FBRs out of service and maintain them in working condition should they be needed. This action will reduce electricity and water use while maintaining sufficient treatment capacity to address current groundwater extracted from the IWF, AWF, and SWF. FBR A was placed into offline mode on April 13, 2022. After the ongoing FBR refurbishment, the remaining four FBRs scheduled to be taken out of service will be addressed in the 2nd quarter of 2025.

Tables

Operational Metrics

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm) ⁶	Perchlorate (mg/L) ⁷	Chromium (TR) (mg/L) ⁷	Chromium(VI) (mg/L) ⁷
SWF Total Extraction ^{1,2}	715	9	0.0008	0.0034
AWF Total Extraction ^{1,2}	425	46	0.13	0.13
IWF Total Extraction ^{1,2}	45	324	5.6	5.5
AP Area Total Extraction ^{1,2}	7.9	624	0.20	0.18
Chromium Treatment Subsystem Effluent ^{3,4}	51	345	0.62	ND
GW-11 Influent ^{1,2}	0	30	0.075	0.059
FBR Influent ^{3,4}	930	42	0.10	0.034
Treatment System Extension Influent ^{3,4,5}	0.0	0.0	0.0	0.0

Notes:

ND = Not detected above laboratory method detection limit (Cr(VI)= 0.25 µg/L).

1: Perchlorate and Chromium TR sampled monthly, values reported from Eurofins TestAmerica.

2: Chromium (VI) sampled monthly, values reported from Pace National.

3: Perchlorate and Chromium TR sampled weekly, values reported from Eurofins TestAmerica.

4: Chromium (VI) sampled weekly, values reported from Pace National.

5: TSE offline from 11/01 to 11/30.

6: Sum of daily average flow for individual wells.

7: All concentrations reported are monthly flow weighted averages.

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics			
Location ID	Perchlorate (lbs/month) ¹	Chromium (TR) (lbs/month) ¹	Chromium (VI) (lbs/month) ¹
SWF Total Extraction	1,935	0.16	0.73
AWF Total Extraction	7,109	20	20
IWF Total Extraction	5,312	91	90
AP Area Total Extraction	1,775	0.56	0.52
Chromium Treatment Subsystem Effluent	6,315	11	ND
GW-11 Influent	30	0.075	0.059
FBR Influent ¹	14,126	34	11
Treatment System Extension Influent ^{1,2}	0.0	0.0	0.0

Notes:

ND = Not detected above laboratory method detection limit (Cr(VI)= 0.25 µg/L).

TR = Total Recoverable.

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

2: TSE offline from 11/01 to 11/30.

Figures

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 11/30/2024

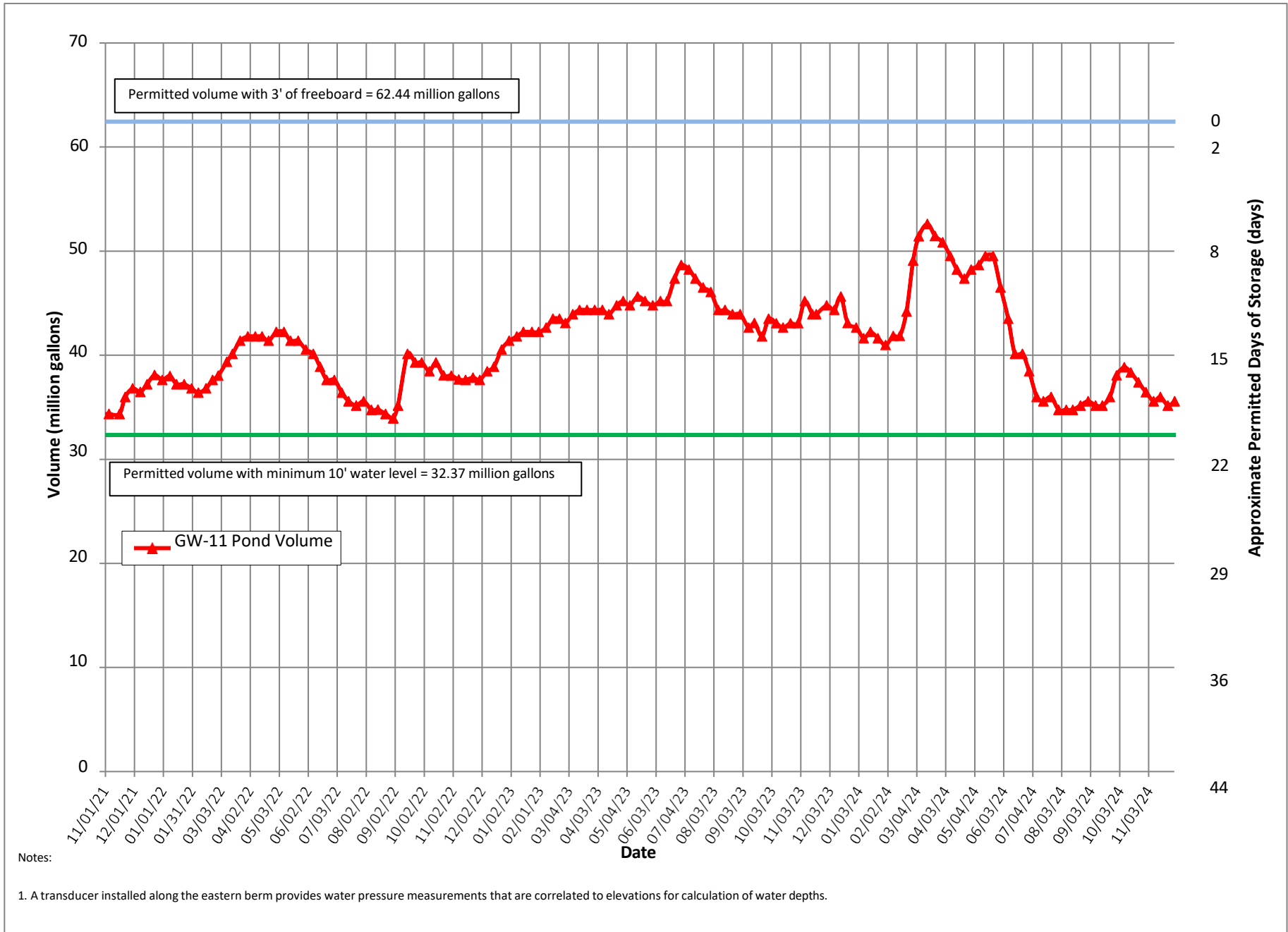
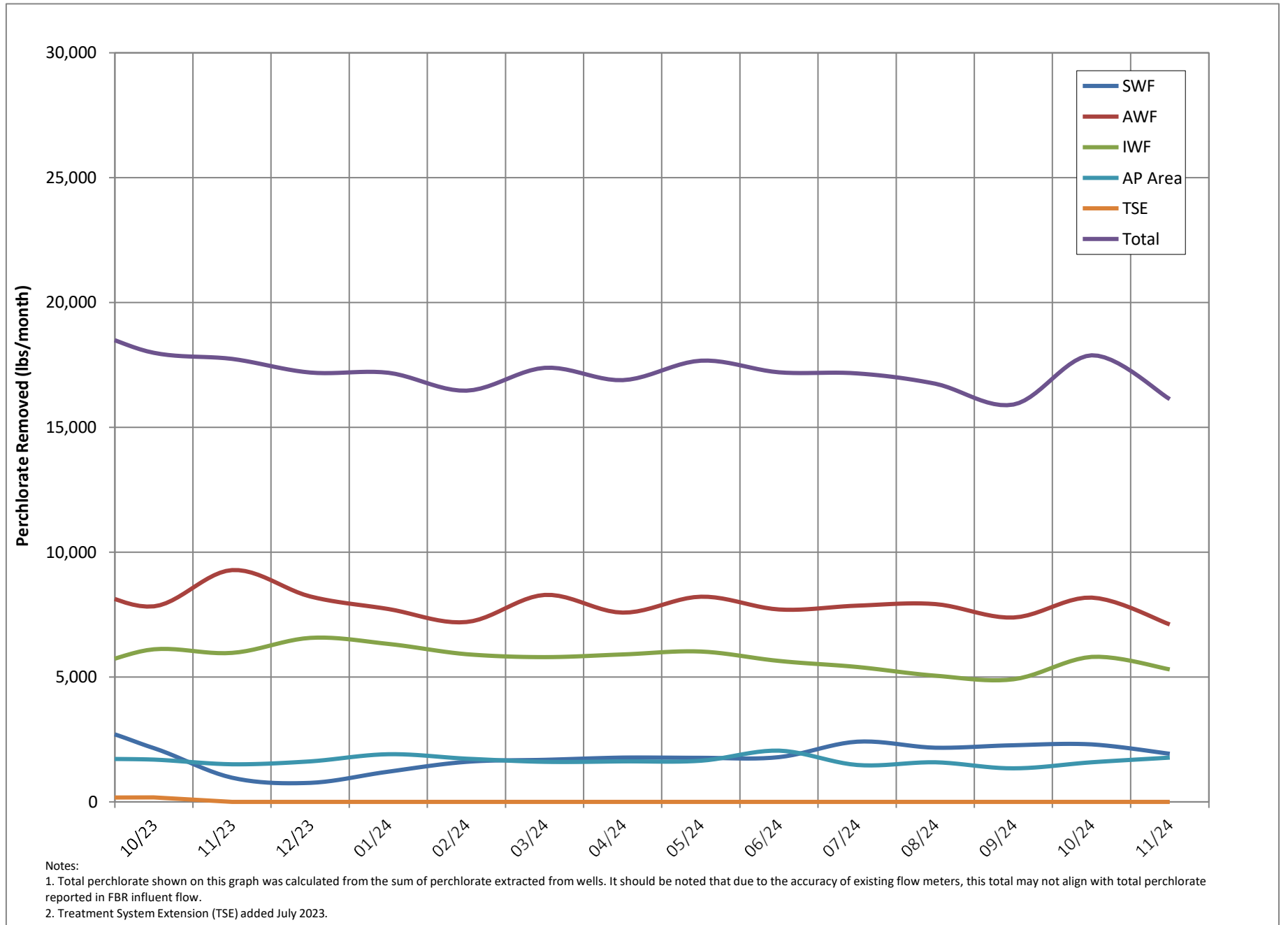


Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

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 ₅ (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. (µg/L)	Daily Max. (mg/L)	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)	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	

Month	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 ₅ (inhibited)	Total Dissolved Solids (TDS)						
January 2024	1.76	1.85	ND (<1.6)	0.012	6.98	7.21	ND (<0.150)	12	320	1200	1.8	20	280	1.8	5.3	4.7	13	63	
February 2024	1.35	1.88	ND (<1.6)	0.009	7.20	7.26	ND (<0.150)	35	310	1900	5.9	18	210	0.4	4.9	ND (<5.0)	ND (<5.0)	29	3,900
March 2024	1.59	1.85	ND (<1.6)	0.011	7.04	7.40	ND (<0.150)	59	430	1000	0.87	16	210	0.8	5.8	ND (<5.0)	ND (<5.0)	34	
April 2024	1.66	1.77	ND (<1.6)	0.011	7.04	7.15	0.414	57	420	1100	1.1	20	260	2.2	2.7	ND (<5.0)	ND (<5.0)	34	
May 2024	1.54	1.83	2.0	0.026	6.68	7.25	ND (<0.200)	39	580	1100	1.7	14	190	1.7	2.6	ND (<5.0)	ND (<5.0)	33	4,300
June 2024	1.74	1.85	0.9	0.013	6.92	7.22	ND (<0.200)	15	340	1000	2.5	19	280	2.8	3.3	3.4	6.2	51	
July 2024	1.62	1.86	ND (<1.6)	0.011	7.10	7.21	ND (<0.200)	19	430	1400	1.2	20	280	1.5	2.5	2.9	4.4	39	
August 2024	1.47	1.66	ND (<1.6)	0.010	6.85	7.18	0.225	10	420	1700	0.78	12	150	2.0	2.2	ND (<5.0)	ND (<5.0)	31	4,500
September 2024	1.47	1.67	ND (<1.6)	0.010	6.88	7.13	ND (<0.200)	26	470	500	0.59	18	250	1.1	1.4	ND (<5.0)	ND (<5.0)	34	
October 2024	1.68	1.86	ND (<1.6)	0.011	6.62	6.98	ND (<0.200)	21	450	1300	0.73	17	230	2.2	3.4	ND (<5.0)	ND (<5.0)	34	
November 2024 (month to date)	1.64	1.86	ND (<1.6)	0.011	6.89	7.10	ND (<0.200)	21	500	1400	0.63	18	240	2.0	4.1	ND (<5.0)	ND (<5.0)	34	4,300
December 2024 (month to date)	NA	NA	NA	NA	6.99	6.99	ND (<0.200)	13	450	760	0.66	11	NA	NA	NA	ND (<5.0)	ND (<5.0)	NA	

Daily Grab Sample Dates	Composite Sample Date	µg/L	lbs/day	Sample Date	S.U.	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	Sample Date	mg/L			
12/31 - 1/6	1/6/2024	ND (<1.6)	0.8	0.012	1/3/2024	6.98	ND (<0.150)	12	260	830	0.89	--	16	233	--	0.12	1.7	--	0.44	6.4	1/3/2024	ND (<5.0)	2.5	36
1/7 - 1/13	1/13/2024	ND (<1.6)	0.8	0.012	1/10/2024	7.18	ND (<0.150)	11	310	590	0.72	--	19	268	--	0.13	1.8	--	0.48	6.8	1/10/2024	ND (<5.0)	2.5	35
1/14 - 1/20	1/20/2024	ND (<1.6)	0.8	0.012	1/17/2024	7.01	ND (<0.150)	12	320	1200	0.80	--	28	358	--	0.071	0.9	--	0.47	6.0	1/17/2024	Footnote 1	13	171
1/21 - 1/27	1/27/2024	ND (<1.6)	0.8	0.012	1/24/2024	7.21	ND (<0.150)	5.0	280	360	1.8	--	17	251	--	0.27	4.0	--	0.29	4.3	1/24/2024	ND (<5.0)	2.5	37
1/28 - 2/3	2/3/2024	ND (<1.6)	0.8	0.011	1/31/2024	7.12	ND (<0.150)	8.3	270	770	0.63	--	20	296	ND (<0.039)	0.0195	0.3	--	0.19	2.8	1/31/2024	ND (<5.0)	2.5	37
2/4 - 2/10	2/10/2024	ND (<1.6)	0.8	0.011	2/7/2024	7.20	ND (<0.150)	35	290	1900	0.81	--	23	279	--	0.051	0.6	Footnote 2	0.69	8.4	2/7/2024	ND (<5.0)	2.5	30
2/11 - 2/17	2/17/2024	ND (<1.6)	0.8	0.009	2/14/2024	7.24	ND (<0.150)	8.8	310	1100	5.9	--	20	240	ND (<0.039)	0.0195	0.2	--	0.51	6.1	2/14/2024	ND (<5.0)	2.5	30
2/18 - 2/24	2/24/2024	ND (<1.6)	0.8	0.010	2/22/2024	7.24	ND (<0.150)	18	220	950	0.63	--	13	191	ND (<0.039)	0.0195	0.3	--	0.17	2.5	2/22/2024	ND (<5.0)	2.5	37
2/25 - 3/2	3/2/2024	ND (<1.6)	0.8	0.005	2/29/2024	7.26	ND (<0.150)	15	160	1800	1.50	--	16	114	--	0.045	0.3	--	0.36	2.6	2/29/2024	ND (<5.0)	2.5	18
3/3 - 3/9	3/9/2024	ND (<1.6)	0.8	0.009	3/7/2024	7.40	ND (<0.150)	17	290	440	0.69	--	14	140	--	0.059	0.6	Footnote 3	1.5	14.6	3/7/2024	ND (<5.0)	2.5	25
3/10 - 3/16	3/16/2024	ND (<1.6)	0.8	0.011	3/13/2024	7.11	ND (<0.150)	15	430	710	0.80	--	25	358	--	0.13	1.9	--	0.40	5.7	3/13/2024	ND (<5.0)	2.5	36
3/17 - 3/23	3/23/2024	ND (<1.6)	0.8	0.012	3/20/2024	7.04	ND (<0.150)	25	430	1000	0.84	--	11	165	ND (<0.039)	0.0195	0.3	--	0.046	0.7	3/20/2024	ND (<5.0)	2.5	37
3/24 - 3/30	3/30/2024	ND (<1.6)	0.8	0.012	3/27/2024	7.37	ND (<0.150)	59	430	940	0.87	--	12	181	ND (<0.039)	0.0195	0.3	--	0.15	2.3	3/27/2024	ND (<5.0)	2.5	38
3/31 - 4/6	4/6/2024	ND (<1.6)	0.8	0.011	4/3/2024	7.09	ND (<0.150)	44	420	1100	0.98	--	19	264	--	0.15	2.1	--	0.21	2.9	4/3/2024	ND (<5.0)	2.5	35
4/7 - 4/13	4/13/2024	ND (<1.6)	0.8	0.011	4/10/2024	7.10	0.414	57	330	970	0.98	--	28	346	--	0.16	2.0	--	0.23	2.8	4/10/2024	ND (<5.0)	2.5	31
4/14 - 4/20	4/20/2024	ND (<1.6)	0.8	0.012	4/17/2024	7.04	ND (<0.150)	26	360	740	1.1	--	13	192	--	0.21	3.1	--	0.21	3.1	4/17/2024	ND (<5.0)	2.5	37
4/21 - 4/27	4/27/2024	ND (<1.6)	0.8	0.011	4/24/2024	7.15	ND (<0.150)	42	360	840	1.1	--	18	244	--	0.11	1.5	--	0.13	1.8	4/24/2024	ND (<5.0)	2.5	34
4/28 - 5/4	5/4/2024	ND (<1.6)	0.8	0.010	5/1/2024	7.06	ND (<0.150)	33	380	600	0.20	ND (<10)	5	53	--	0.20	2.1	--	0.21	2.2	5/1/2024	ND (<5.0)	2.5	27
5/5 - 5/11	5/11/2024	ND (<1.6)	0.8	0.009	5/8/2024	6.68	ND (<0.150)	18	420	930	1.2	--	23	287	--	0.084	1.0	--	0.21	2.6	5/8/2024	ND (<5.0)	2.5	31
5/12 - 5/18	5/18/2024	ND (<1.6)	0.8	0.010	5/15/2024	7.22	ND (<0.150)	1.3	360	910	1.7	--	14	187	ND (<0.039)	0.0195	0.3	--	0.21	2.8	5/15/2024	ND (<5.0)	2.5	33
5/19 - 5/25	5/25/2024	6.7	6.7	0.088	5/22/2024	7.25	ND (<0.200)	39	580	1100	0.46	--	18	246	ND (<0.039)	0.0195	0.3	--	0.19	2.6	5/22/2024	ND (<5.0)	2.5	34
5/26 - 6/1	6/1/2024	ND (<1.6)	0.8	0.012	5/29/2024	7.19	ND (<0.200)	11	280	650	0.99	--	12	182	--	0.30	4.6	--	0.18	2.7	5/29/2024	ND (<5.0)	2.5	38
6/2 - 6/8	6/8/2024	ND (<1.6)	0.8	0.012	6/4/2024	7.20	ND (<0.200)	9.2	230	790	2.5	--	26	399	--	0.29	4.4	--	0.23	3.5	6/4/2024	ND (<5.0)	2.5	38
6/9 - 6/15	6/15/2024	1.3	1.3	0.018	6/11/2024	7.14	ND (<0.200)	15	260	670	2.1	--	15	217	--	0.31	4.5	--	0.29	4.2	6/11/2024	ND (<5.0)	2.5	36
6/16 - 6/22	6/22/2024	ND (<1.6)	0.8	0.011	6/18/2024	6.92	ND (<0.200)	11	340	560	0.81	--	18	272	--	0.042	0.6	--	0.19	2.9	6/18/2024	ND (<5.0)	2.5	38
6/23 - 6/29	6/29/2024	ND (<1.6)	0.8	0.012	6/25/2024	7.22	ND (<0.200)	12	300	1000	1.0	--	17	248	--	0.12	1.8	--	0.19	2.8	Footnote 4	Footnote 5	6.2	91
6/30 - 7/6	7/6/2024	ND (<1.6)	0.8	0.012	7/2/2024	7.12	ND (<0.200)	13	340	880	1.2	--	18	278	--	0.10	1.5	--	0.27	4.2	7/2/2024	ND (<5.0)	2.5	39
7/7 - 7/13	7/13/2024	ND (<1.6)	0.8	0.010	7/9/2024	7.13	ND (<0.200)	6.7	320	1200	0.91	--	34	501	--	0.14	2.1	--	0.18	2.7	7/9/2024	ND (<5.0)	2.5	37
7/14 - 7/20	7/20/2024	ND (<1.6)	0.8	0.011	7/16/2024	7.21	ND (<0.200)	6.3	270	520	0.46	--	12	154	ND (<0.039)	0.0195	0.2	--	0.090	1.2	7/16/2024	ND (<5.0)	2.5	32
7/21 - 7/27	7/27/2024	ND (<1.6)	0.8	0.010	7/23/2024	7.10	ND (<0.200)	19	340	1400	0.75	--	20	270	ND (<0.039)	0.0195	0.3	--	0.16	2.2	7/23/2024	ND (<5.0)	2.5	34
7/28 - 8/3	8/3/2024	ND (<1.6)	0.8	0.011	7/30/2024	7.13	ND (<0.200)	17	430	890	0.34	--	17	199	--	0.28	3.3	--	0.20	2.3	7/30/2024	Footnote 6	4.4	51
8/4 - 8/10	8/10/2024	ND (<1.6)	0.8	0.010	8/6/2024	6.90	0.225	10	420	930	0.71	--	13	142	--	0.22	2.4	--	0.18	2.0	8/6/2024	ND (<5.0)	2.5	27
8/11 - 8/17	8/17/2024	ND (<1.6)																						

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²
Main Plant Equipment					
Seep Wells and Lift Station 1					
1.01		Seep Well Field, 9 wells	Running		
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	Running		
Athens Road Wells and Lift Station 3					
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	Running		
Lift Station 2 and Transmission Pipelines					
3.01		Influent Pipeline	Running		
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	Running		
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	Running		
4.05		Filter Press	Running		
4.06		GWTP Effluent Tank	Running		
4.07		Interceptor Booster Pump	Running		
4.08		Interceptor Booster Pump	Standby		
4.09		Area In And Around GWTP	Running		
Equalization Area and GW-11 Pond					
5.01	PID10A	Pond GW-11	Maintenance		Replaced the pond pressure transmitter
5.02	PID10A	Pond Water Pump - P101A	Running		
5.03	PID10A	Pond Water Pump - P101B	Standby		
5.04	PID10A	Equalization Tanks	Running		
5.05	PID10A	Area in and Around EQ	Running		
5.06	PID10A	Raw Water Feed Pump - P102A	Standby		
5.07	PID10A	Raw Water Feed Pump - P102B	Running		
5.08	PID10A	F-101 Filters	Running		
5.09	PID10B	Carbon Absorber - LGAC 201A	Offline		

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5.10	PID10B	Carbon Absorber - LGAC 201B	Offline		
5.11	PID10B	Carbon Absorber - LGAC 201C	Offline		
First Stage FBRs A, 1 & 2					
6.01	PID14	FBR	Offline		
6.02	PID14	Separator Tank - 1401	Offline		
6.03	PID14	Media Return Pump - P 1401	Offline		
6.04	PID14	P1401A	Offline		
6.05	PID01A	P1401B	Offline		
6.06	PID01A	FBR	Running		
6.07	PID02A	FBR	Standby		
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	Standby		
6.13	PID07A	FBR A pH Feed Pump - P71A	Offline		
6.14	PID07A	FBR 1 pH Feed Pump - P711	Offline		
6.15	PID07A	FBR 2 pH Feed Pump - P712	Offline		
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Offline		
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Offline		
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Offline		
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Offline		
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		
First Stage FBRs 3 & 4					
7.01	PID01B	FBR	Running		
7.02	PID01B	FBR	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		

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723	Offline			
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P724	Offline			
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		3	Replaced FBR 3 ethanol pump
7.15	PID07B	FBR 4 Electron Donor Assembly Pump - P734	Running			
Second Stage FBRs 5 & 6						
8.01	PID03A	FBR	Running			
8.02	PID03A	FBR	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	Offline			
8.09	PID07A	FBR 6 pH Feed Pump - P716	Offline			
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Offline			
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Offline			
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Running			
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Running			
Second Stage FBRs 7 & 8						
9.01	PID03B	FBR	Maintenance		3	FBR 7 down due to refurbishment
9.02	PID03B	FBR	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	Maintenance		3	Out of service for factory pump rebuild
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	Offline			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Offline			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Offline			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Offline			
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	Running			
10.02	PID04	Aeration Blower - B401	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	
10.03	PID04	Bio filter	Running			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump	Running			
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	Running			
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	Offline		3	Offline due to New DAF installation
10.15	PID05	DAF Pressure Pump - P551	Offline		3	Offline due to New DAF installation
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	Running			
11.02	PID06	Effluent Pump - P601	Standby			
11.03	PID06	Effluent Pump - P602	Running			
12		Sand Filter System				
12.01	PID17	Sand Filter	Running			
12.02	PID17	Filter Reject Tank	Running			
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running			
13		Effluent Tank and Pumping				
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-	Running			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	Running			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	Running			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902	Standby			
14.07	PID09	West Press	Standby			

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14.08	PID09	East Press	Running			
14.09	PID09	Filtrate Tank	Running			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump- P903	Running			
Chemical System						
15 Electron Donor System						
15.01	PID07B	Electron Donor Tank	Running			
15.02	PID07B	Booster Pump P739A	Running			
15.03	PID07B	Booster Pump P739B	Standby			
17	PID07C	Micro Nutrient System	Running			
18	PID07C	Hydrogen Peroxide System	Running			
19	PID07C	De-Foam System	Running			
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	Running			
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	Running			
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	Running			
23	PID07C	Ferric Chloride	Running			
24	PID07B	Polymer Systems - DAF	Running			
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	Running			
Utility System						
26 Compressed Air System						
26.01	PID08	West Compressor	Running		3	Replaced I/O Module
26.02	PID08	East Compressor	Standby			
26.03	PID08	O2 Compressor	Offline			
26.04	PID08	Compressed Air Receiver Tank	Running			
26.05	PID08	Air Dryer	Running			
26.06	PID08	Oil Removal Filter	Running			
26.07	PID08	Particulate Filter	Running			
27	PID16	Oxygen System	Offline			
28		GWETS Plant Controls/ Siemens Controls	Running			
29		Well Control System/ Allen Bradley Controls	Running			
30		MCC FBR Pad	Running			
31		MCC in D-	Running			
32		MCC in EQ area	Running			

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Miscellaneous System					
33		Operations Office/Network	Running		
34		Laboratory Analyzers	Running		
35		Security Systems	Running		
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		
		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		

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