
To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Michael Del Vecchio, Director Engineering and Project Management

Date: Dec 20, 2021

Subject: NERT – GWETS Operation Monthly Report – November 2021

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 2021.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in November 2021. Flow from PC-118, PC-119, PC-120, PC-121, and PC-133 was routed to the IX system, bypassing all flow meters associated with the FBR plant. The flow rate to the IX system averaged approximately 264 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 880 gpm during November 2021. At the end of the month, the available GW-11 Pond volume was at 36.8 million gallons (MG), which would allow 18.4 days of available additional storage in the event of an emergency FBR plant shutdown with continued well field pumping. The available water volume stored in the GW-11 Pond increased since the end of October 2021; 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 0.38 mg/L for the month. The influent perchlorate concentration to the FBR plant averaged 49 mg/L for the month, with a maximum concentration of 60 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of October 2021 averaged 66 mg/L, with a maximum concentration of 76 mg/L.

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. Attachment A provides a summary of 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 and major repairs and/or equipment replaced during this reporting period.

1. GW-11

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

2. Biological Plant

There were influent / effluent diversions during the reporting period generally associated with GW-11 pond level maintenance as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

Diversion Events / Well Shutdowns

- Effluent diversion to GW-11 occurred on November 4, 2021 from 8:58am to 9:45am due to maintenance efforts at the outfall. Approximately 44,000 gallons of water were diverted to GW-11.
- Influent diversion to GW-11 occurred on November 9, 2021 from 6:50am to 3:34pm due to maintenance efforts during a scheduled down day. Maintenance was completed and the treatment plant was brought back online.
- Extraction well shutdown of PC-133 (SWF) occurred on November 11, 2021 from 7:15am to 11:03am due to maintenance efforts on the pump motor. Maintenance was completed at the well was brought back online.
- Extraction well shutdown of I-W (IWF) occurred on November 12, 2021 from 7:45am to 9:20am due to maintenance efforts on the flow meter. Maintenance was completed at the well was brought back online.
- Effluent diversion to GW-11 occurred on November 19, 2021 from 5:16pm to 8:03pm as a precautionary measure due to high Effluent turbidity. Adjustments were made to the process and the effluent was returned to the outfall. Approximately 150,000 gallons of water were diverted to GW-11.
- Effluent diversion to GW-11 occurred on November 20, 2021 from 3:03pm to 5:45pm as a precautionary measure due to high Effluent turbidity. Adjustments were made to the process and the effluent was returned to the outfall. Approximately 145,000 gallons of water were diverted to GW-11.
- Effluent diversion to GW-11 occurred on November 29, 2021 from 1:13pm to 4:30pm as a precautionary measure due to high Effluent turbidity. Adjustments were made to the process and the effluent was returned to the outfall. Approximately 184,000 gallons of water were diverted to GW-11.

3. Spills

There were no reportable spills in the month of November.

4. Maintenance

- Major maintenance performed by ETI in the reporting month included:
 - I. Installed a new I/P communicator for the FBR 2 feed valve.
 - II. Replaced the air hoses for the FBR A feed valve.
 - III. Rebuilt the bed height pump for FBR 2.
 - IV. Replaced the sludge pump for the South DAF.
 - V. Replaced wiring for the east compressor.
 - VI. Installed a new flow transmitter for extraction well I-W.
 - VII. Installed a new drop line for the sand filter flush line.
 - VIII. Installed new brackets on the IWF extraction wells to support the flowmeter when maintenance is performed.
 - IX. Pulled the pump from extraction well ART-8A due to a failed 7.5 hp motor. The well casing riser needs to be replaced, due to excessive rusting, prior to well maintenance completion.
 - X. Replaced the SLMW globe valve at the EQ for backwashing the GAC's.

- Preventative maintenance performed by ETI in the reporting month included:
 - I. Drained the Aeration, North DAF, T-601, and sludge tanks to inspect during the down day.
 - II. Cleared weeds from the base of the north side berm of GW-11.
 - III. Changed out the strainer baskets on the IX Treatment System.
 - IV. Switched to the P-1014 recycle pump on the FBR 3/4 pump skid to test for vibration.
 - V. Greased all motors that are online around the plant.
 - VI. Cleaned the air filters for the external A/C units for the lift station MCC's.
 - VII. Flushed the sump pits around the plant.
 - VIII. Flushed the ORP lines around the plant.
 - IX. Calibrated the level control valve for Separator 2.

Attachment B contains a summary of all maintenance activities completed during the reporting period.

Facility Projects

1. Chromium Treatment Subsystem – Envirogen has established a scope of work for this activity and is currently working on system design. It is anticipated Envirogen will submit a Work Authorization for this scope in January 2022. Envirogen is targeting May of 2022 to complete the modifications required to treat groundwater extracted as part of the Unit 4 Source Area In-Situ Bioremediation Treatability Study as well flow currently routed to the existing Chromium Treatment Plant (i.e. GWTP) from the IWF and AP Area wells.

2. Treatment System Extension (TSE) – Envirogen has delivered all of the contracted equipment for the GWETS extension. TSE construction and system start-up is being facilitated by Arcadis through terms with the Trust. Currently it is anticipated the construction will commence in December 2021.

3. Facility Repair/Replacement Items – ETI and the Trust have finalized a list of facility items to be addressed in connection with Amendment 8 to the O&M Agreement. Attachment C contains a status summary of all agreed upon items prepared by the Trust. Specific details on in-progress items is provided below:
 - I. NERT provided ETI authorization on October 21, 2021 to replace the East Air Compressor (Work Authorization 21-02). ETI completed the installation of the East Air Compressor on November 29, 2021 and the unit is online and performing as expected. Efforts related to this Work Authorization and corresponding Amendment 8 task are considered complete.
 - II. NERT provided authorization during the reporting period for the following projects, all of which are in the procurement phase of execution
 - i. (WA 21-03) Wiring at Lift Station 3
 - ii. (WA 21-04) Motor Control Center at Lift Station 1
 - iii. (WA 21-05) Replacement of Safety Shower System
 - iv. (WA 21-07) Replacement of all pH and ORP probes
 - v. (WA 21-08) Wiring IWF wells
 - vi. (WA 21-09) Siemens controls upgrade

Tables

Operational Metrics

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ^{4 5}	Chromium (TR) (mg/L) ^{4 5}	Chromium(VI) (mg/L) ^{4 5}
SWF Total Extraction ¹	741 ³	5.6	0.0003	0.0011
AWF Total Extraction ¹	396 ³	55	0.13	0.08
IWF Total Extraction ¹	56 ³	374	5.8	6.3
AP Area Total Extraction ¹	9.1 ³	723	0.17	0.16
GWTP Effluent ²	66	282	0.06	ND
GW-11 Influent ¹	6.4	65	0.18	0.050
FBR Influent ²	880	49	0.016	0.017

Notes:

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

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

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

3: Sum of daily average flow for individual wells.

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) ¹	Chromium (TR) (lbs/month) ¹	Chromium (VI) (lbs/month) ¹
SWF Total Extraction	1,505	0.07	0.30
AWF Total Extraction	7,876	19	12
IWF Total Extraction	7,521	117	126
AP Area Total Extraction	2,379	0.55	0.52
GWTP Effluent	6,750	1.3	ND
GW-11 Influent	150.7	0.42	0.116
FBR Influent ¹	15,029	5.0	5.1

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

Figure 1 - GW-11 Pond Volume Through 11/30/2021

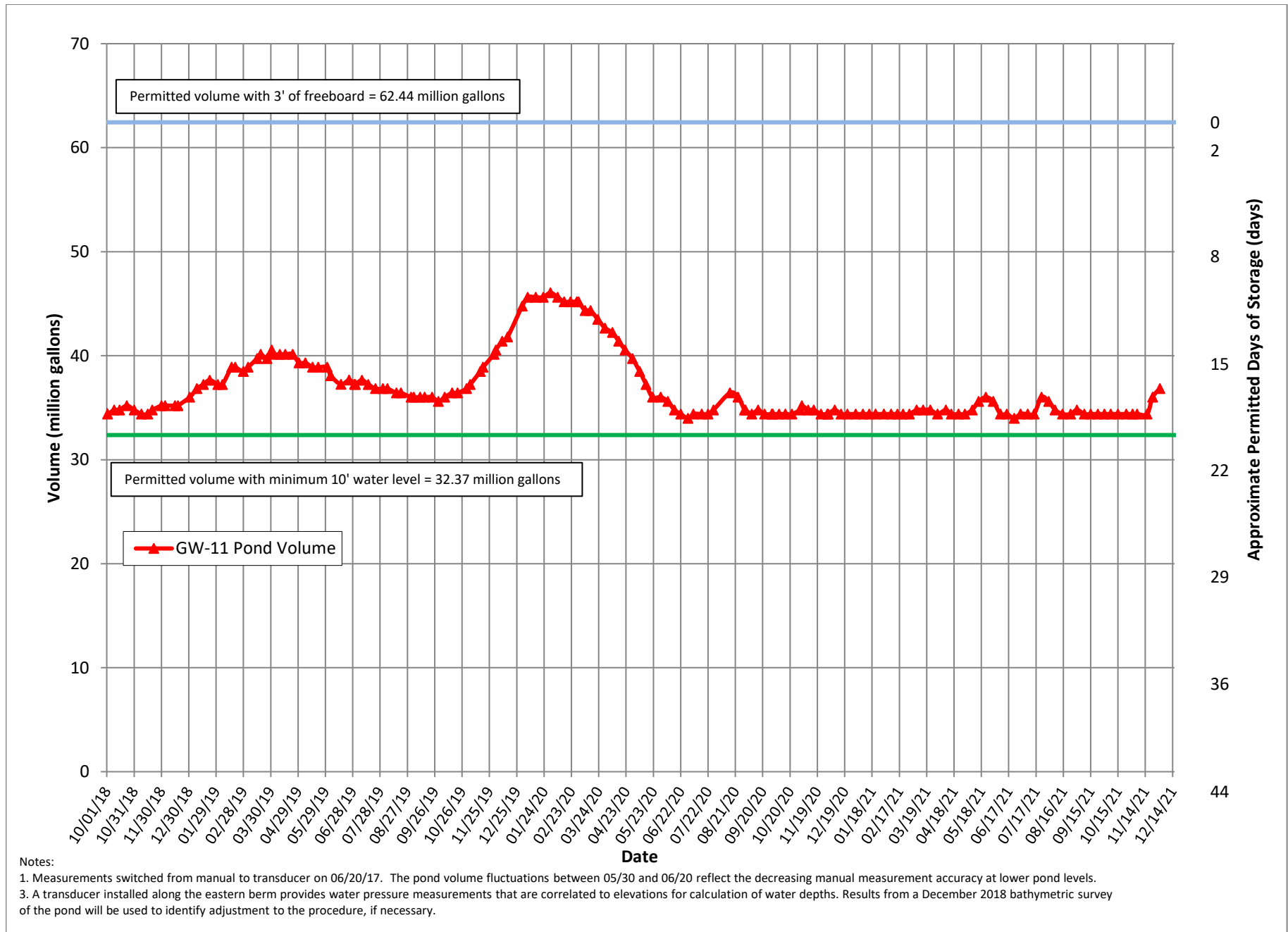
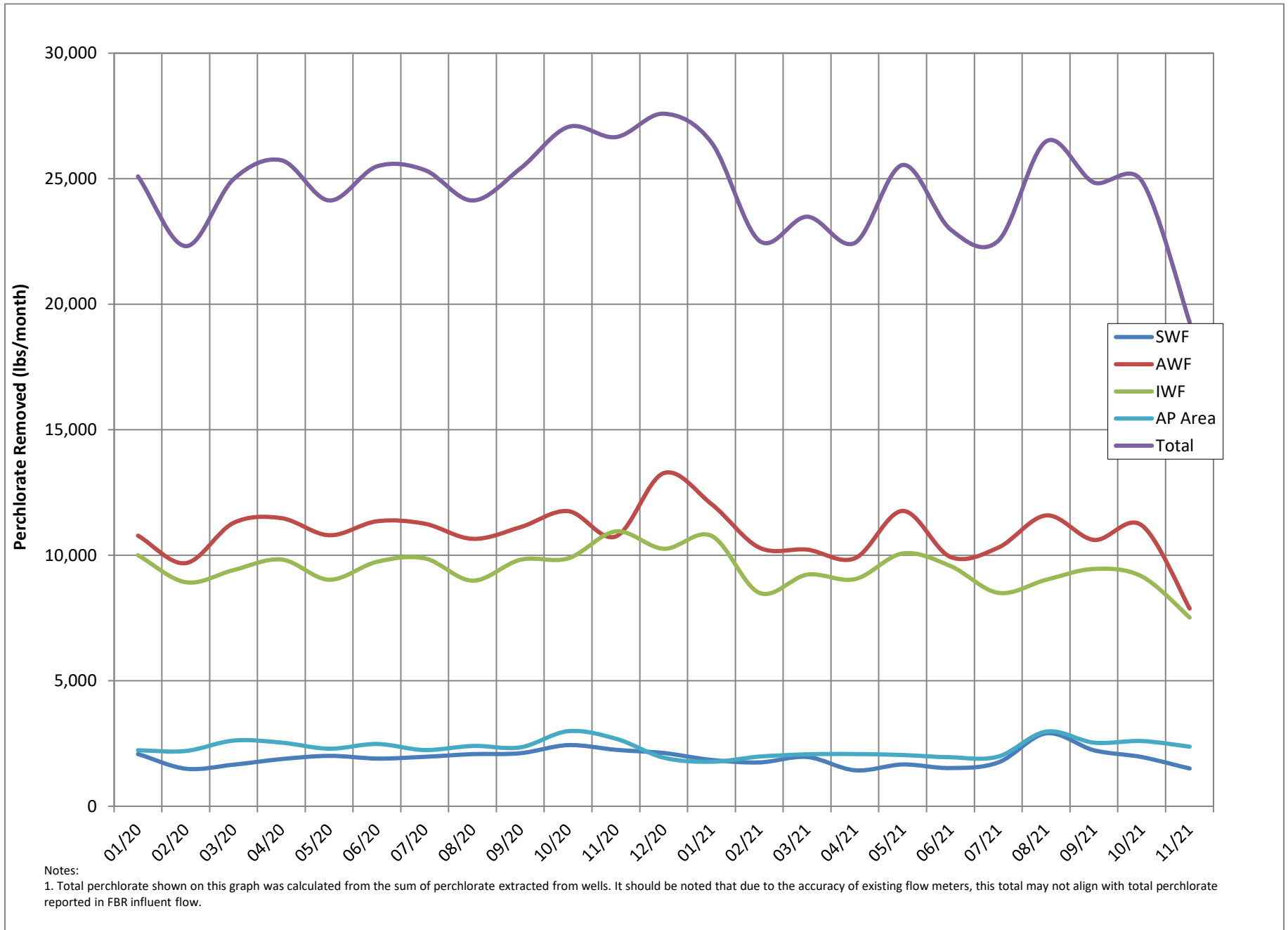


Figure 2 - Historical Perchlorate Mass Removed From Environment



Attachment A

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits

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. (lbs/day)	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)		Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (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			
January 2021	1.80	1.90	0.6	0.009	6.6	6.8	ND (<0.25)	12	100	1,300	1.0	19	290	4	7	ND (<5.0)	ND (<5.0)	38	3,900		
February 2021	1.76	1.85	0.55	0.008	6.5	6.7	ND (<0.25)	5.6	100	1,200	10	21	320	6	6.1	11	38	170			
March 2021	1.76	1.84	ND (<0.31)	0.0023	6.5	6.9	ND (<0.25)	2.2	110	1,100	1.4	15	220	2.6	6.6	5	15	80			
April 2021	1.72	1.82	9	0.12	6.6	7.2	ND (<0.25)	1.2	72	940	0.29	7	100	2.2	5.2	ND (<5.0)	ND (<5.0)	37			
May 2021	1.65	1.84	ND (<0.31)	0.0021	6.5	6.9	ND (<0.4)	4.7	100	1,700	0.56	16	220	2.8	3.2	ND (<5.0)	ND (<5.0)	34	3,600		
June 2021	1.72	1.82	ND (<0.31)	0.0022	6.5	6.6	ND (<0.25)	2.1	78	990	0.69	15	230	1.7	5.7	ND (<5.0)	ND (<5.0)	35			
July 2021	1.63	1.86	ND (<0.31)	0.0021	6.6	7.0	ND (<0.25)	14	100	1,500	0.50	20	210	1.0	4.4	ND (<5.0)	ND (<5.0)	27			
August 2021	1.69	1.84	ND (<0.31)	0.0022	6.5	6.7	ND (<0.20)	3.7	110	1,900	0.67	17	250	3.1	6	ND (<4.3)	ND (<5.0)	30	3,600		
September 2021	1.70	1.85	0.9	0.013	6.5	7.2	ND (<0.50)	ND (<0.85)	110	1,200	0.43	13	160	1.5	2.1	ND (<5.0)	ND (<5.0)	38			
October 2021	1.70	1.79	3.0	0.03	6.6	6.8	ND (<0.50)	0.85 J	69	700	0.48	21	290	2.1	4.8	ND (<5.0)	ND (<5.0)	37	3,200		
November 2021	1.66	1.78	0.16	0.0022	6.5	7.3	ND (<0.50)	1.9	130	1,300	0.52	9	120	1.6	4.6	ND (<5.0)	ND (<5.0)	35			
December 2021 (month to date)	1.78	1.84	0.91	0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (<5.0)	ND (<5.0)	36			

Daily Grab Sample Dates	Sample Composite	µg/L	lbs/day	Sample Date	S.U.	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					
1/3 - 1/9	1/9/2021	ND (<0.31)	0.16	0.0023	1/4/2021	6.6	ND (<0.25)	2.2	100	650	0.16	24	367	--	0.064	1.0	--	0.38	5.8	1/6/2021	ND (<5.0)	2.5	38		
1/10 - 1/16	1/16/2021	ND (<0.31)	0.16	0.0023	1/12/2021	6.7	ND (<0.25)	2.9	82	720	0.32	21	319	--	0.14	2.1	--	0.36	5.5	1/13/2021	ND (<5.0)	2.5	38		
1/17 - 1/23	1/23/2021	1.8	1.8	0.027	1/18/2021	6.8	ND (<0.25)	3.6	83	1,300	1.0	18	278	--	0.87	13	--	0.68	10	1/20/2021	ND (<5.0)	2.5	38		
1/24 - 1/30	1/30/2021	ND (<0.31)	0.16	0.0023	1/25/2021	6.6	ND (<0.25)	12	64	940	0.21	14	215	--	0.095	1.5	--	0.39	6.0	1/27/2021	ND (<5.0)	2.5	39		
1/31 - 2/6	2/6/2021	ND (<0.31)	0.16	0.0023	2/1/2021	6.7	ND (<0.25)	5.3	5.6*	49	880	1.1	13	198	--	0.99	15	--	0.43	6.6	2/3/2021	ND (<5.0)	2.5	38	
2/7 - 2/13	2/13/2021	0.92 J	0.92	0.014	2/8/2021	6.6	ND (<0.25)	4.4	57	1,100	1.0	28	429	--	0.25	3.8	--	0.45	6.9	2/10/2021	ND (<5.0)	2.5	36		
2/14 - 2/20	2/20/2021	ND (<0.31)	0.16	0.0023	2/15/2021	6.5	ND (<0.25)	2.9	76	930	0.16	22	330	--	0.16	2.4	--	0.38	5.7	2/17/2021	38	569			
2/21 - 2/27	2/27/2021	0.96 J	0.96	0.0140	2/23/2021	6.7	ND (<0.25)	ND (<0.85)	100	1,200	0.19	21	316	--	0.16	2.4	--	0.34	5.1	2/24/2021	ND (<5.0)	2.5	37		
2/28 - 3/6	3/6/2021	ND (<0.31)	0.16	0.0022	3/2/2021	6.6	ND (<0.25)	1.1	96	570	1.4	11	155	--	0.30	4.2	--	0.34	4.8	3/4/2021	ND (<5.0)	2.5	38		
3/7 - 3/13	3/13/2021	ND (<0.31)	0.16	0.0023	3/8/2021	6.6	ND (<0.25)	2.2	110	960	0.21	20	286	--	0.21	3.0	--	0.37	5.3	3/10/2021	ND (<5.0)	2.5	37		
3/14 - 3/20	3/20/2021	ND (<0.31)	0.16	0.0023	3/15/2021	6.5	ND (<0.25)	ND (<0.85)	78	700	0.46	21	316	--	0.22	3.3	--	0.63	9.5	3/17/2021	ND (<5.0)	2.5	37		
3/21 - 3/27	3/27/2021	ND (<0.31)	0.16	0.0023	3/22/2021	6.9	ND (<0.25)	ND (<0.85)	53	1,100	ND (<0.050)	18	271	ND (<0.039)	0.020	0.29	--	0.55	8.3	3/24/2021	15	228			
3/28 - 4/3	4/3/2021	ND (<0.31)	0.16	0.0023	3/29/2021	6.6	ND (<0.25)	ND (<0.85)	61	840	0.25	ND (<10)	5	74	--	0.13	1.9	--	0.34	5.0	3/31/2021	ND (<5.0)	2.5	37	
4/4 - 4/10	4/10/2021	10	10	0.14	4/5/2021	6.6	ND (<0.25)	1.1	38	880	0.22	ND (<10)	5	74	--	0.16	2.4	--	0.37	5.5	4/7/2021	ND (<5.0)	2.5	37	
4/11 - 4/17	4/17/2021	ND (<0.31)	0.16	0.0023	4/12/2021	7.0	7.0*	ND (<0.25)	ND (<0.85)	30	920	0.24	13	194	--	0.14	2.1	--	0.33	4.9	4/14/2021	ND (<5.0)	2.5	37	
4/18 - 4/24	4/24/2021	ND (<0.31)	0.16	0.0022	4/19/2021	7.0	7.0*	ND (<0.25)	1.2	49	940	0.29	ND (<10)	5	75	--	0.15	2.2	--	0.33	4.9	4/21/2021	ND (<5.0)	2.5	37
4/25 - 5/1	5/1/2021	24	24	0.35	4/27/2021	7.2	ND (<0.25)	ND (<0.85)	72	790	0.23	ND (<10)	5	75	--	0.15	2.3	--	0.35	5.3	4/28/2021	ND (<5.0)	2.5	38	
5/2 - 5/8	5/8/2021	ND (<0.31)	0.16	0.0020	5/3/2021	6.8	ND (<4.0)	ND (<0.85)	54	950	0.33	ND (<10)	5	59	--	0.19	2.3	--	0.31	3.7	5/5/2021	ND (<5.0)	2.5	25	
5/9 - 5/15	5/15/2021	ND (<0.31)	0.16	0.0021	5/4/2021	6.7	ND (<0.25)	<0.85	<0.85	72	970	0.56	15	217	--	0.44	6.4	--	0.38	5.5	5/12/2021	ND (<5.0)	2.5	37	
5/16 - 5/22	5/22/2021	ND (<0.31)	0.16	0.0021	5/17/2021	6.9	ND (<0.25)	3.7	100	1,700	0.14	23	301	--	0.11	1.4	--	0.079	1.0	5/19/2021	ND (<5.0)**	2.5	37		
5/23 - 5/29	5/29/2021	ND (<0.31)	0.16	0.0023	5/24/2021	6.5	ND (<0.25)	4.7	98	790	0.21	20	295	--	0.090	1.3	--	0.17	2.5	5/26/2021	ND (<5.0)	2.5	37		
5/30 - 6/5	6/5/2021	ND (<0.31)	0.16	0.0023	6/1/2021	6.6	ND (<0.25)	2.1	77	690	0.33	12	180	--	0.15	2.2	--	0.41	6.1	6/2/2021	ND (<5.0)*	2.5	37		
6/6 - 6/12	6/12/2021	ND (<0.31)	0.16	0.0023	6/7/2021	6.6	ND (<0.20)	1.6	78	990	0.22	16	237	--	0.065	1.0	--	0.10	1.5	6/9/2021	ND (<5.0)	2.5	37		
6/13 - 6/19	6/19/2021	ND (<0.31)	0.16	0.0022	6/14/2021	6.6	ND (<0.20)	1.7	61	960	0.69	23	343	--	0.11	1.6	--	0.53	7.9	6/16/2021	ND (<5.0)	2.5	35		
6/20 - 6/26	6/26/2021	ND (<0.31)	0.16	0.0021	6/21/2021	6.5	ND (<0.20)	ND (<0.85)	50	530	0.35	15	222	--	0.12	1.8	--	0.36	5.3	6/23/2021	ND (<5.0)	2.5	30		
6/27 - 7/3	7/3/2021	ND (<0.31)	0.16	0.0022	6/28/2021	6.5	ND (<0.20)	1.4	54	860	0.52	11	164	--	0.12	1.8	--	0.52	7.8	6/30/2021	ND (<5.0)	2.5	30		
7/4 - 7/10	7/10/2021	ND (<0.31)	0.16	0.0022	7/6/2021	6.7	ND (<0.20)	1.9	55	630	0.27	20	205	--	0.084	0.86	--	0.31	3.2	7/7/2021	ND (<5.0)	2.5	37		
7/11 - 7/17	7/17/2021	ND (<0.31)	0.16	0.0021	7/12/2021	6.6	ND (<0.20)	0.94	45	750	0.22	ND (<10)	5	66	--	0.058	0.76	--	0.28	3.7	7/14/2021	ND (<5.0)	2.5	37	
7/18 - 7/24	7/24/2021	ND (<0.31)	0.16	0.0017	7/20/2021	6.6	ND (<0.20)	14	100	1,500	0.50	45	404	--	0.22	2.0	--	0.45	4.0	7/21/2021	ND (<5.0)	2.5	34		
7/25 - 7/31	7/31/2021	ND (<0.31)	0.16	0.0024	7/27/2021	7.0	ND (<0.25)	2.7	50	1,100	ND (<0.050)	11	171	ND (<0.039)	0.020	0.30	--	0.43	6.7	7/28/2021	ND (<5.0)	2.5	38		
8/1 - 8/7	8/7/2021	ND (<0.31)	0.16	0.0023	8/2/2021	6.5	ND (<0.20)	1.2	36	1,900	0.67	29	445	--	0.40	6.1	--	0.88	14	8/4/2021	ND (<5.0)	2.5	37		
8/8 - 8/14	8/14/2021	ND (<0.31)	0.16	0.0022	8/9/2021	6.5	ND (<0.20)	2.5	91	730	0.50	16	238	--	0.14	2.1	--	0.42	6.3	8/11/2021	ND (<5.0)	2.5	31		
8/15 - 8/21	8/21/2021	ND (<0.31)	0.16	0.0022	8/17/2021	6.5	ND (<0.20)	1.4	1.8	110	860	0.39	ND (<10)	5	60	--	0.17	2.0	--	0.33	4.0	8/18/2021	ND (<2.0)	1.0	13
8/22 - 8/28	8/28/2021	ND (<0.31)	0.16	0.0020	8/23/2021	6.5	ND (<0.20)	3.7	99	530	0.27	12	175	--	0.21	3.1	--	0.32	4.7						

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
Main Plant Equipment						
1 Seep Wells and Lift Station 1						
1.01		Seep Well Field, 9 wells	Running		4	Adjusted the placement of the well casing lid to align the hole to collect a depth reading
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 Athens Road Wells and Lift Station 3						
2.01		Athens Road Well Field, 9 wells	Running		1	When pulling the well from ART-8A the well casing riser rusted off. The well pump is mounted on a pitless adaptor that is mounted on to the riser. Waiting for the well repair company to rebuild the well casing so the well can be put back online. ART-8 is currently 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			
3 Lift Station 2 and Transmission Pipelines						
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			
4 Interceptor Wells and Cr Treatment Plant						
4.01		IWF Well Field, 30 wells	Running		4	Assembled and installed piping stand for the IWF wells to secure flowmeters while maintenance is performed on the wells.
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running		4	Added fluid to the hydraulic tank.
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running		3	Re-piped the discharge of the sump pump.
5 Equalization Area and GW-11 Pond						
5.01	PID10A	Pond GW-11	In operation		4	Cleared weeds from the base of the north side berm.
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation		3	Replaced the SLMW globe valve for backwashing the GAC's.
5.06	PID10A	Raw Water Feed Pump - P102A				
5.07	PID10A	Raw Water Feed Pump - P102B				
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			3	Calibrated the feed valve. Also added new hose fittings for the supply for the actuator.
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		3	Replaced the I/P communicator on the feed valve.
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				
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			
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			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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		1	Drained the separator to inspect for solids and replace the valve at the base.
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			
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			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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		1	The tank was drained to be cleaned out and inspected.
10.02	PID04	Aeration Blower - B401	Running		3	Replaced the air filter for the blower.
10.03	PID04	Bio filter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Bio filter Sump				
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Bio filter Sump Pump - P402A	Standby			
10.09	PID04	Bio filter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation			
10.11	PID05	DAF Vessel - D501	Running		1	Drained the vessel to inspect and pressure wash.
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running		1	Changed out the pump due to failed bearings.
10.14	PID05	DAF Vessel - D551	Running		1	Drained the vessel to pressure wash and inspect.
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		1	The tank was drained and inspected for solids.
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602				
12		Sand Filter System				
12.01	PID17	Sand Filter			3	Replaced numerous airlifts.
12.02	PID17	Filter Reject Tank	In operation			
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-1	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation		1	Drained and opened the tank to inspect for solids.
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	In operation			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902				
14.07	PID09	West Press	Standby		4	
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	In operation			
24	PID07B	Polymer Systems - DAF	In operation		2	Rebuilt both pumps. New fitting were installed.
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
		Utility Systems				
26		Compressed Air System				
26.01	PID08	West Compressor	Running			
26.02	PID08	East Compressor	Running		1	The compressor is in the process of being replaced.
26.03	PID08	O2 Compressor	Running			
26.04	PID08	Compressed Air Receiver Tank	In operation			
26.05	PID08	Air Dryer	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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			
		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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Attachment C

Facility Repair/Replacement Project Status

GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS

PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

ITEM	RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 11/30/21
1	Dissolved Air Floatation (DAF) Vessels ETI to pilot an alternate technology (AquaDisk filters) and make a recommendation	-	Preparation of Draft Work Authorization by ETI in progress. To Trust by 12/31.
2	DAF Pump Skid Rebuild On-hold pending outcome of DAF pilot	-	-
3	Main Influent Pipeline Air/Vacuum Release Valves ETI to replace valves and valve boxes as required	-	Draft Work Authorization received by NERT. Finalization of Work Authorization terms in progress.
4	In-kind Replacement of GWTP GWTP replacement not required due to design/build of Chromium Treatment Subsystem	N/A	N/A
5	Wiring at Lift Station #3 (controls) ETI to replace wiring as required	ETI WA 21-03 \$60,035	Work Authorization approved by NERT. Procurement and installation planning underway.
6	Wiring at Lift Station #1 (wells) Project on hold due to potential modification of the SWF with ROD or due to Cadence Sports Park. NERT will authorize interim repairs if necessary.	N/A	N/A
7	Motor Control Center at Lift Station #1 ETI to replace as required	ETI WA 21-04 \$186,315	Work Authorization approved by NERT. Procurement and installation planning underway.
8	IWF Wiring ETI to replace as required	ETI WA 21-08 \$436,481	Work Authorization approved by NERT. Procurement and installation planning underway.
9	FBR Skid Equipment Replacements ETI to replace what is immediately required in lieu of complete replacements	-	Preparation of Draft Work Authorization by ETI in progress. To Trust by 12/31.
10	Influent / Effluent Pump Motors ETI to procure additional motors for more frequent rotation	-	Preparation of Draft Work Authorization by ETI in progress. To Trust by 12/31.
11	Overhaul Lift Station #2 West Wet Well Turbine ETI to overhaul as required	-	Preparation of Draft Work Authorization by ETI in progress. To Trust by 12/31.
12	Replacement of Safety Showers ETI to replace safety shower system in batches over ~2 years	ETI WA 21-05 \$131,899	Work Authorization approved by NERT. Procurement and installation planning underway.

GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS

PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

ITEM		RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 11/30/21
13	East Air Compressor	ETI to replace as required	ETI WA 21-02 \$29,784	Compressor installed. Project complete.
14	pH and ORP Probes	ETI to replace certain probes as required throughout FBR plant	ETI WA 21-07 \$108,893	Work Authorization approved by NERT. Procurement and installation planning underway.
15	Exterior Shell of Ethanol Storage Tank	ETI to repair as required	-	Preparation of Draft Work Authorization for Trust review by 3/31/22.
16	FBR Containment Pad Concrete	ETI to monitor status of affected areas. NERT will authorize interim repairs if necessary.	N/A	N/A
17	Siemens Control System Repairs	Spare parts and software updates to be procured in lieu of a complete system replacement.	ETI WA 21-09 \$103,061	Work Authorization approved by NERT. Procurement and installation planning underway.
18	Sludge Pump and Sluge Bins	ETI to replace as required	-	Preparation of Draft Work Authorization for Trust review by 3/31/22.
19	FBR Fluidization Pumps Check Valves	ETI to replace as required	-	Preparation of Draft Work Authorization for Trust review by 3/31/22.
20	D-1 Asbestos Evaluation	NERT to complete an asbestos survey	TT WA 21-12 \$7,400	Survey to be completed in December