

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:	November 20, 2022
Subject:	NERT – GWETS Operation Monthly Report – November 2022

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 2022.

# **Summary of GWETS Operation**

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS and ion exchange (IX) system normally in November 2022. Flow from PC-118, PC-119, PC-120, PC-121, and PC-133 were routed to the IX system, bypassing all flow meters associated with the FBR plant for the month of November. The flow rate to the IX system averaged approximately 268 gallons per minute (gpm). The flow rate to the FBR plant averaged approximately 897 gpm during November. At the end of the month, the filled GW-11 Pond volume was at 37.7 million gallons (MG), which would allow 17.2 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 increased since the end of October 2022; 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 1.5 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 50 mg/L. In comparison, the influent perchlorate concentration to the FBRs for the month of October 2022 averaged 54 mg/L, with a maximum concentration of 56 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 maintenance activities as well as extraction well short-term shutdown events. Below is a description of the events that occurred:

### **Diversion Events / Well Shutdowns**

- Influent diversion occurred on November 1, 2022 from 10:45am to 3:53pm due to a scheduled PLC update. The plant was brought back online, onsite testing was done, and the Effluent was returned to the outfall. Approximately 295,000 gallons of water were added to GW-11.
- Extraction well field shutdown of the Interceptor Well Field (IWF) on November 16, 2022 from 6:50am to 2:36pm due to maintenance efforts on the discharge piping for the GWTP plant. Maintenance was conducted and the well field was brought back online.

### 3. IX Treatment Plant

During the month of February 2022, flooding conditions were observed adjacent to the SWF as a result of the City of Henderson's (CoH's) use of inactive Birding Ponds 10 through 13. The discharge to these ponds resulted in an increase in groundwater elevation adjacent to the SWF by approximately 5 feet. This increase in groundwater elevation caused flooding adjacent to the SWF extraction wells and within four extraction well vaults. ETI temporarily increased the pumping rate of extraction wells PC-120 and PC-121 to reduce flooding with the well vaults. Additionally, the concentration of perchlorate in shallow groundwater increased resulting in increased loading to the IX treatment plant. The CoH ceased discharging water to Birding Ponds 10 through 13 in February 2022. The groundwater elevation adjacent to the SWF is no longer elevated but perchlorate concentrations are still elevated, although decreasing, in shallow groundwater adjacent to wells PC-118, PC-119, PC-120, and PC-121.

## 4. Spills

There were no reportable spills in the Month of November.

## 5. Maintenance

Major maintenance performed by ETI in the reporting month included:

- I. Repaired and replaced Media Return pump #1.
- II. Installed new "T" connection for the solids removal piping at the GWTP.
- III. Repaired broken containment wall at the EQ.
- IV. Pressure flushed GWTP discharge piping.
- V. Repaired South DAF rakes.
- VI. Installed a new sump pump near tank T-204.
- Preventative maintenance performed by ETI in the reporting month included:
  - I. Greased all motors that are online around the plant.
  - II. Cleaned the air filters for the external A/C units for the lift station MCC's.
  - III. Flushed the sump pits around the plant.
  - IV. Flushed the ORP lines around the plant.

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

## **Facility Projects**

- 1. Chromium Treatment Subsystem Envirogen received a Work Authorization for this scope in February 2022. The 100 percent design for the Chromium Treatment Subsystem was submitted and approved by NDEP on May 26,2022. With a number of supply chain delays, Envirogen is currently targeting early December 2022 to complete the final modifications required to treat groundwater extracted as part of the Unit 4 Source Area In-Situ Bioremediation Treatability Study as well as the flow currently routed to the existing Chromium Treatment Plant (i.e. GWTP) from the IWF and AP Area wells. However, the supply chain delays have not had an impact on implementation of the Unit 4 Source Area In-Situ Bioremediation Treatability Study as groundwater extraction is less than originally anticipated and tank T-201 is only filled to approximately 30 percent of capacity. ETI prefers that tank T-201 be filled to approximately 50 percent capacity before bringing the CTS online.
- 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 and began in December 2021. ETI will incorporate a summary of the treatment operations once the system becomes operational (anticipated to occur in 1Q 2023).
- 3. 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. Attachment C contains a status summary prepared by the Trust of all agreed upon items. Specific details on inprogress items are provided below:
  - I. (WA 21-02) East Air Compressor Complete
  - II. (WA 21-03) Wiring at Lift Station 3
    - 1. The A/C units were installed and project is complete.
  - III. (WA 21-04) Motor Control Center at Lift Station 1

- 1. Work started but delayed due to flooding at the SWF, also impacting Lift Station 1. MCC & major equipment has been delivered. Work to resume in December 2022.
- IV. (WA 21-05) Replacement of Safety Shower System
  - 1. Installation is complete.
- V. (WA 21-06) Influent Pipeline Combination Valves
  - Work started but delayed due to flooding at the SWF (couldn't turn off well field with the elevated groundwater levels). Work to resume in December 2022.
- VI. (WA 21-07) Replacement of all pH and ORP probes.
  - 1. Installation is complete.
- VII. (WA 21-08) Wiring IWF wells
  - New wire has been installed at the wells, awaiting new starters to be delivered. Due to supply chain issues, some of the required electrical items are delayed. Installation to occur in January 2023.
- VIII. (WA 21-09) Siemens controls upgrade
  - Spare parts still being received. Estimated completion by the end of December.
- IX. (WA 22-01) DAF Pilot
  - 1. Pilot is complete and the report is under Trust review.
- X. (WA 22-02) Sludge Pump and Bins
  - 1. Work is complete.
- XI. (WA 22-03) Influent and Effluent Pump Motors
  - 1. Equipment is on order. Deliveries have begun. Estimated completion by the end of December.
- XII. (WA 22-04) FBR Skid Upgrades
  - 1. Upgrades are complete.
- XIII. (WA 22-05) Large Valve Upgrades
  - 1. Upgrades are complete.
- XIV. (WA 22-07) LS2 Pump Replacement
  - 1. Work is complete.
- 4. Improved Biological Treatment Plant Efficiency Consistent with Attachment D to the December 2021 GWETS Operation Monthly Report, Envirogen plans to take five FBRs out of service and maintain them in working condition should they be needed in the future. This action will reduce the use of electricity and water and still maintain sufficient treatment capacity to address current groundwater extracted from the IWF, AWF, and the SWF as well as groundwater to be extracted as part of the Unit 4 Source Area In-Situ Bioremediation Treatability Study. FBR A was placed into Offline mode on April 13, 2022. The electrical and mechanical components of the pump skid were inspected and removed when applicable. The removal of the sand media is complete. Final inspection of all internal components is also complete. The remaining FBRs scheduled to be taken out of service will be addressed flowing startup of the CTS.

5. GWETS Pipeline Realignments - ETI was made aware of at least three locations approximately 1.75 miles from the site which will require the modification of the influent and effluent pipelines due to conflicts with ongoing development in the area. The Trust has authorized Tetra Tech to engage with the required property owners to design and build the new sections of pipeline. ETI continues to work with both Tetra Tech and the Trust to verify plans are acceptable and plant downtime is kept to a minimum during the construction efforts. In December, it is anticipated that the first pipeline realignment project will begin.

# **Tables**

Operational Metrics

Nevada Environmental Response Tr	Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics											
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L)⁴	Chromium (TR) (mg/L)⁴	Chromium(VI) (mg/L)⁴								
SWF Total Extraction <sup>1</sup>	708³	8.1	0.0020	0.0013								
AWF Total Extraction <sup>1</sup>	450³	52	0.12	0.12								
IWF Total Extraction <sup>1</sup>	47³	366	5.8	5.9								
AP Area Total Extraction <sup>1</sup>	8.5 ³	558	0.18	0.19								
GWTP Effluent <sup>2</sup>	58	385	0.27	ND								
GW-11 Influent <sup>1</sup>	1.5	35	0.094	0.046								
FBR Influent <sup>2</sup>	897	49	0.13	0.009								

### Notes:

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

TR = Total Recoverable.

- 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.

Table Updated: 12/15/2022

Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics											
Location ID	Perchlorate (lbs/month) <sup>1</sup>	Chromium (TR) (lbs/month) <sup>1</sup>	Chromium (VI) (lbs/month) <sup>1</sup>								
SWF Total Extraction	2,075	0.52	0.33								
AWF Total Extraction	8,389	19	20								
IWF Total Extraction	6,279	99	101								
AP Area Total Extraction	1,720	0.54	0.59								
GWTP Effluent	8,094	5.6	ND								
GW-11 Influent	19	0.050	0.024								
FBR Influent <sup>1</sup>	15,964	41	2.9								

Notes:

ND = Not detected above laboratory method detection limit.

TR = Total Recoverable.

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

Table Updated: 12/15/2022

# **Figures**

Operational Metrics

Figure 1 - GW-11 Pond Volume Through 11/30/2022

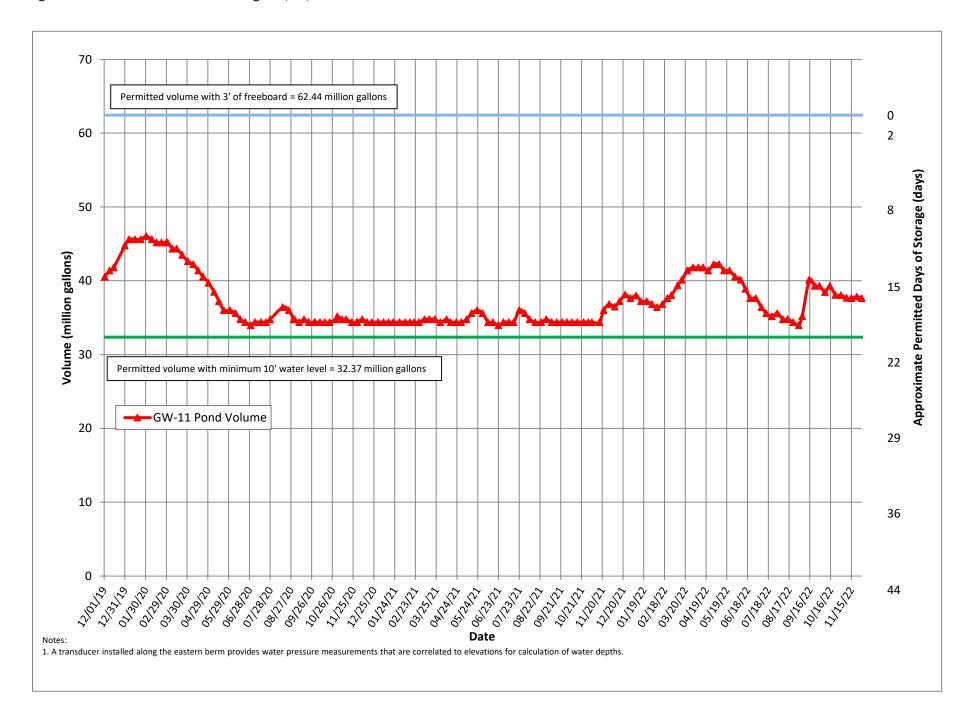
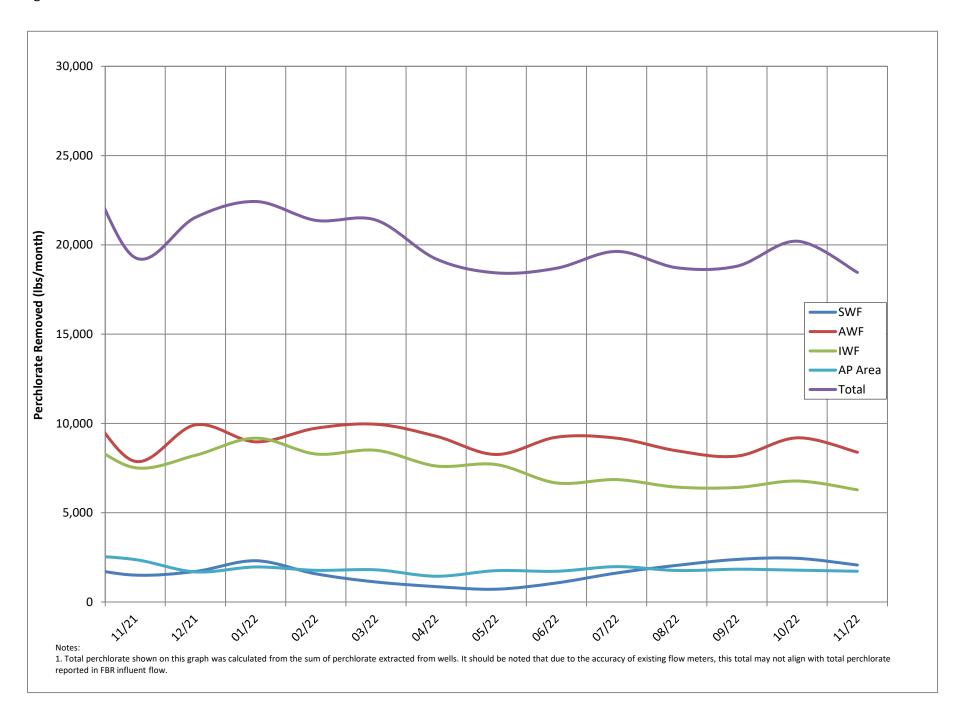


Figure 2 - Historical Perchlorate Mass Removed From Environment



# **Attachment A**

NPDES Tracking Sheet (Prepared by Ramboll)

NPDES Permit NV0023060 - Analytes with Numerical Discharge Limits WORKING TRACKING SPREADSHEET DRAFT - NOT TO BE SUBMITTED TO AGENCY

											Treated Effluent	at Outfall 001							
	Contin	nuous	Daily Samples, con	nposited weekly							Weekly	Grab Samples				Weekly,	collected sep	arately	Quarterly
	Flow	Rate	Perchlo	orate	р	Н	Hexavalent Chromium	Total Chromium	Manganese	Total Iron	Total Inorganic Nitrogen (TIN)	Total Suspendo (TSS)	ed Solids	Total Ammonia as N	Total Phosphorus as P	B	<b>DD</b> 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)	Daily Average (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (Ibs/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
122	1.85	1.92	0.7	0.011	7.0	7.4	ND (<0.50)	12	61	1,100	0.88	10	150	2.0	7	ND (<5.0)	ND (<5.0)	39	
022	1.77	1.95	2.2	0.033	6.8	7.5	ND (<0.50)	7.4	78	1,200	1.6	17	240	2.6	6.1	ND (<5.0)	ND (<5.0)	38	3,800
2	1.70	1.84	2.7	0.038	6.5	7.2	ND (<0.50)	2.1	170	1,200	2.9	12	170	1.5	8	ND (<5.0)	ND (<5.0)	35	
	1.72	1.82	1.3	0.020	7.1	7.2	ND (<0.50)	14	200	590	2.5	8	120	1.7	3.5	ND (<5.0)	ND (<5.0)	36	
	1.74	1.82	ND (<0.31)	0.0022	6.5	7.5	ND (<0.50)	11	320	1,100	2.5	6	87	1.8	5.1	ND (<5.0)	ND (<5.0)	36	3,900
	1.75	1.77	1.7	0.025	6.5	7.4	ND (<0.50)	14	270	890	2.2	10	140	1.7	3.9	ND (<5.0)	ND (<5.0)	37	
	1.69	1.80	1.8	0.025	6.5	6.9	ND (<0.50)	19	280	930	1.8	11	150	1.5	4.3	ND (<5.0)	ND (<5.0)	36	
22	1.66	1.73	0.5	0.0065	6.5	7.4	ND (<0.50)	8.9	360	1,100	1.6	12	170	1.4	5.2	ND (<5.0)	ND (<5.0)	35	4,100
r 2022	1.52	1.85	0.6	0.0090	6.5	7.7	0.57	50	630	1,200	1.4	13	180	2.1	4.4	ND (<5.0)	ND (<5.0)	29	<u></u>
022	1.74	1.84	0.3	0.0046	6.5	6.9	ND (<0.50)	26	440	1,100	0.9	21	300	1.8	3.8	ND (<5.0)	ND (<5.0)	36	
2022	1.68	1.74	1.8	0.024	6.6	7.2	ND (<0.150)	13	470	710	0.9	9	120	1.3	4.5	ND (<5.0)	ND (<5.0)	35	4,400
2022 (month to date)	1.64	1.71	0.8	0.011	7.5	7.5	1.83	8.5	320	750	1.1	13	180	3.8	6.1	ND (<5.0)	ND (<5.0)	35	

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
1/2 - 1/8	1/8/2022	ND (<0.31)	0.16	0.002	1/3/2022	7.0	ND (<0.50)	4.8	11	910	0.35	14 14	220		0.13	0.13	2.0		0.47	7.4	1/5/2022	ND (<5.0)	2.5	39		
1/9 - 1/15	1/15/2022	0.61 J	0.61	0.009	1/10/2022	7.4	ND (<0.50)	2.2	38	600	0.41	ND(<10) 5	78		0.18	0.18	2.8		0.25	3.9	1/12/2022	ND (<5.0)	2.5	38		
1/16 - 1/22	1/22/2022	0.52 J	0.52	0.008	1/17/2022	7.2	ND (<0.50)	12	55	1,100	0.64	19 19	301		0.16	0.16	2.5		0.73	12	1/19/2022	ND (<5.0)	2.5	39		
1/23 - 1/29	1/29/2022	1.5	1.5	0.023	1/24/2022	7.0	ND (<0.50)	1.4	61	530	0.63	ND(<10) 5	78		0.10	0.10	1.6		0.34	5.3	1/26/2022	ND (<5.0)	2.5	39		
1/30 - 2/5	2/5/2022	3.8	3.8	0.059	1/31/2022	7.2	ND (<0.50)	3.1	56	720	0.88	ND(<10) 5	78		0.084	0.084	1.3		0.41	6.4	2/2/2022	ND (<5.0)	2.5	40		
2/6 - 2/12	2/12/2022	ND (<0.31)	0.16	0.002	2/7/2022	7.5	ND (<0.50)	4.2 3.0	69	730	1.6	16 16	249		0.17	0.17	2.7		0.38	5.9	2/9/2022	ND (<5.0)	2.5	41	2/9/2022	3,800
2/13 - 2/19	2/19/2022	3.9	3.9	0.056	2/14/2022	6.8	ND (<0.50)	2.1	69	840	0.94	13 13	191		0.25	0.25	3.7		0.40	5.9	2/16/2022	ND (<5.0)	2.5	36		
2/20 -2/26	2/26/2022	0.91 J	0.91	0.013	2/22/2022	7.3	ND (<0.50)	2.5	65	1,000	1.4	21 21	302		0.18	0.18	2.6		0.42	6.0	2/23/2022	ND (<5.0)	2.5	36		
2/27 - 3/5	3/5/2022	ND (<0.31)	0.16	0.002	2/28/2022	7.2	ND (<0.50)	7.4	78	1,200	1.6	16 16	222		0.10	0.10	1.4		0.46	6.4	3/2/2022	ND (<5.0)	2.5	34		
3/6 - 3/12	3/12/2022	7.4	7.4	0.099	3/7/2022	7.2	ND (<0.50)	1.1	85	1,200	1.9	14 14	191		0.23	0.23	3.1		1.2	16	3/9/2022	ND (<5.0)	2.5	32		
3/13 - 3/19	3/19/2022	ND (<0.31)	0.16	0.002	3/14/2022	6.5	ND (<0.50)	1.1	50	860	1.1	13 13	173		0.076	0.076	1.0		0.43*	5.7	3/16/2022	ND (<5.0)	2.5	37		
3/20 - 3/26	3/26/2022	1.6	1.6	0.024	3/21/2022	7.1	ND (<0.50)	1.8	170	660	2.9	ND(<10) 5	74		0.053	0.053	0.8		0.40	5.9	3/23/2022	ND (<5.0)	2.5	37		
3/27 - 4/2	4/2/2022	4.3	4.3	0.064	3/28/2022	6.7	ND (<0.50)	2.1	160	820	2.5	15 15	230		0.074	0.074	1.1		0.45	6.9	3/30/2022	ND (<5.0)	2.5	36		
4/3 - 4/9	4/9/2022	4.3	4.3	0.064	4/4/2022	7.1	ND (<0.50)	1.2	190	590	2.4	ND(<10) 5	76		0.099	0.099	1.5		0.29	4.4	4/6/2022	ND (<5.0)	2.5	38		
4/10 - 4/16	4/16/2022	ND (<0.31)	0.16	0.002	4/11/2022	7.2	ND (<0.50)	1.5	180	540	2.5	10 10	147		0.078	0.078	1.1		0.25	3.7	4/13/2022	ND (<5.0)	2.5	36		
4/17 - 4/23	4/23/2022	ND (<0.31)	0.16	0.002	4/18/2022	7.2	ND (<0.50)	14	200	520	0.52	ND(<10) 5	73		0.12	0.12	1.7		0.16	2.3	4/20/2022	ND (<5.0)	2.5	35		
4/24 - 4/30	4/30/2022	0.71	0.71	0.010	4/25/2022	7.1	ND (<0.50)	3.0	140	370	1.9	12 12	167		0.17	0.17	2.4		0.27	3.8	4/27/2022	ND (<5.0)	2.5	34		
5/1 - 5/7	5/7/2022	ND (<0.31)	0.16	0.002	5/2/2022	7.3	ND (<0.50)	3.7	150	660	1.8	ND(<10) 5	69		0.11	0.11	1.5		0.31	4.3	5/4/2022	ND (<5.0)	2.5	32	5/4/2022	3,900
5/8 - 5/14	5/14/2022	ND (<0.31)	0.16	0.002	5/9/2022	7.5	ND (<0.50)	3.4	170	770	2.5	ND(<10) 5	72		0.15	0.15	2.2		0.45	6.5	5/11/2022	ND (<5.0)	2.5	38		
5/15 - 5/21	5/21/2022	ND (<0.31)	0.16	0.002	5/16/2022	6.5	ND (<0.50)	6.6	260	580	1.8	ND(<10) 5	75		0.10	0.10	1.5		0.33	4.9	5/18/2022	ND (<5.0)	2.5	36		
5/22 - 5/28	5/28/2022	ND (<0.31)	0.16	0.002	5/23/2022	6.7	ND (<0.50)	6.1	280	560	2.2	ND(<10) 5	73		0.13	0.13	1.9		0.25	3.7	5/25/2022	ND (<5.0)	2.5	36		
5/29 - 6/4	6/4/2022	2.9	2.9	0.043	5/31/2022	7.3	ND (<0.50)	11	320	1,100	1.8	10 10	147		0.13	0.13	1.9		0.41	6.0	6/2/2022	ND (<5.0)	2.5	37		
6/5 - 6/11	6/11/2022	2.8	2.8	0.041	6/6/2022	7.4	ND (<0.50)	5.0	270	580	2.2	ND(<10) 5	74		0.13	0.13	1.9		0.26	3.8	6/8/2022	ND (<5.0)	2.5	37		
6/12 - 6/18	6/18/2022	2.6	2.6	0.038	6/13/2022	7.2	ND (<0.50)	14	250	890	2.0	16 16	233		0.095	0.095	1.4		0.31	4.5	6/15/2022	ND (<5.0)	2.5	37		
6/19 - 6/25	6/25/2022	ND (<0.31)	0.16	0.002	6/20/2022	6.5	ND (<0.50)	4.5	260	680	2.1	ND(<10) 5	73		0.16	0.16	2.3		0.28	4.1	6/22/2022	ND (<5.0)	2.5	36		
6/26 - 7/2	7/2/2022	ND (<0.31)	0.16	0.002	6/27/2022	6.5	ND (<0.50)	12	210	860	1.8	13 13	190		0.088	0.088	1.3		0.23	3.4	6/29/2022	ND (<5.0)	2.5	37		
7/3 - 7/9	7/9/2022	3.2	3.2	0.046	7/5/2022	6.9	ND (<0.50)	11	260	930	1.6	14 14	204		0.10	0.10	1.5		0.38	5.5	7/6/2022	ND (<5.0)	2.5	37		
7/10 - 7/16	7/16/2022	3.5	3.5	0.050	7/11/2022	6.5	ND (<0.50)	19	280	840	1.8	ND(<10) 5	72		0.085	0.085	1.2		0.20	2.9	7/13/2022	ND (<5.0)	2.5	36		
7/17 - 7/23	7/23/2022	ND (<0.31)	0.16	0.002	7/18/2022	6.6	ND (<0.50)	2.9	240	630	1.4	ND(<10) 5	71		0.12	0.12	1.7		0.32	4.6	7/20/2022	ND (<5.0)	2.5	35		
7/24 - 7/30	7/30/2022	ND (<0.31)	0.16	0.002	7/25/2022	6.8	ND (<0.50)	11	220	770	1.7	20 20	271		0.12	0.12	1.6		0.31	4.2	7/27/2022	ND (<5.0)	2.5	34		
7/31 - 8/6	8/6/2022	1.7	1.7	0.024	8/1/2022	7.4	ND (<0.50)	8.1	320	1,100	1.6	20 20	285		0.15	0.15	2.1		0.39	5.6	8/3/2022	ND (<5.0)	2.5	36		
8/7 - 8/13	8/13/2022	ND (<0.31)	0.16	0.002	8/8/2022	6.7	ND (<0.50)	5.8	360	570	0.40	ND(<10) 5	65		0.10	0.10	1.3		0.26	3.4	8/10/2022	ND (<5.0)	2.5	36	8/8/2022	4,100
8/14 - 8/20	8/20/2022		0.16	0.002	8/16/2022	6.5	ND (<0.50)	3.7	350	770	1.4	14 14	200		0.095	0.095	1.4		0.36	5.1	8/17/2022	ND (<5.0)	2.5	35		
8/21 - 8/27	8/27/2022	ND (<0.31)	0.16	0.002	8/22/2022	7.0	ND (<0.50)	8.9	280	890	0.34	16 16	220		0.079	0.079	1.1		0.48	6.6	8/24/2022	ND (<5.0)	2.5	36		
8/28 - 9/3	9/3/2022	ND (<0.31)	0.16	0.002	8/29/2022	7.1	ND (<0.50)	4.2	330	670	1.1	ND(<10) 5	58		0.10	0.10	1.2		0.45	5.2	8/31/2022	ND (<5.0)	2.5	34		
9/4 - 9/10	9/10/2022	ND (<0.31)	0.16	0.001	9/9/2022	7.7	0.57	ND (<0.85)	630	ND<10	0.23	ND(<10) 5	18		0.12	0.12	0.4		0.096	0.3	9/9/2022	ND (<5.0)	2.5	9	ĺ	
9/11 - 9/17	9/17/2022	2.1	2.1	0.030	9/13/2022	7.0	ND (<0.50)	38	390	1,200	0.94	20 20	291		0.041	0.041	0.6		0.34	5.0	9/14/2022	ND (<5.0)	2.5	37		
9/18 - 9/24	9/24/2022	ND (<0.31)	0.16	0.002	9/19/2022	7.3	NS	6.6	360	860	1.4	23 23	355		0.31	0.31	4.8		0.54	8.3	9/21/2022	ND (<5.0)	2.5	36		
9/25 - 10/1	10/1/2022	ND (<0.31)	0.16	0.002	9/21/2022	6.5	ND (<0.50)	50	350	810	1.1	13 13	188		0.15	0.15	2.2		0.27	3.9	9/29/2022	ND (<5.0)	2.5	36		
10/2 - 10/8	10/8/2022	ND (<0.31)	0.16	0.002	9/26/2022	6.5	ND (<0.50)	7.9	400	630	1.2	ND(<10) 5	73		0.17	0.17	2.5		0.31	4.5	10/5/2022	ND (<5.0)	2.5	36		
10/9 - 10/15	10/15/2022	ND (<0.31)	0.16	0.002	10/5/2022	6.9	ND (<0.50)	26	350	1,100	0.85	35 35	511		0.099	0.099	1.4		0.36	5.3	10/12/2022	ND (<5.0)	2.5	36		
10/16 - 10/22	10/22/2022	ND (<0.31)	0.16	0.002	10/12/2022	6.9	ND (<0.50)	10	440	580	0.66	16 16	229		0.11	0.11	1.6		0.26	3.7	10/19/2022	ND (<5.0)	2.5	36		
10/23 - 10/29	10/29/2022	ND (<1.6)	0.80	0.012	10/19/2022	6.8	ND (<0.50)	6.0	390	690	0.62	20 20	288		0.16	0.16	2.3		0.21	3.0	10/26/2022	ND (<5.0)	2.5	37		
10/30 - 11/5	11/5/2022	ND (<1.6)	0.80	0.011	10/26/2022	6.5	ND (<0.150)***	ND (<0.85)	380	330	0.90	11 11	161		0.12	0.12	1.8		0.22	3.2	11/2/2022	ND (<5.0)	2.5	36		
11/6 - 11/12	11/12/2022	2.0	2.0	0.029	11/2/2022	7.2	ND (<0.150)	7.7	370	710	0.41	11 11	158		ND(<0.039)	0.020	0.3		0.33	4.8	11/9/2022	ND (<5.0)	2.5	36		
11/13 - 11/19	11/19/2022	4.4	4.4	0.059	11/9/2022	6.8	ND (<0.150)	11	310	480	0.77	12 12	174		ND(<0.039)	0.020	0.3		0.33	4.8	11/17/2022	ND (<5.0)	2.5	32	11/17/2022	4,400
11/20 - 11/26	11/26/2022	ND (<1.6)	0.8	0.011	11/17/2022	6.6	ND (<0.150)	3.8	470	680	0.18	ND(<10) 5	63		0.097	0.097	1.2		0.38	4.8	11/21/2022	ND (<5.0)	2.5	36		
11/27 - 12/3	12/3/2022	ND (<1.6)	0.8	0.011	11/21/2022	7.0	ND (<0.150)	13	350	670	0.89	ND(<10) 5	72		0.16	0.16	2.3		0.38	5.5	11/30/2022	ND (<5.0)	2.5	36		
12/4 - 12/10	12/10/2022	ND (<1.6)	0.8	0.011	11/30/2022	6.8	ND (<0.150)	7.6	320	570	0.94	10 10	142		0.16	0.16	2.3		0.20	2.8	12/7/2022	ND (<5.0)	2.5	35		
		•			12/7/2022	7.5	1.83	8.5	320	750	1.1	13 13	184		0.27	0.27	3.8		0.43	6.1	12/12/2022	NA	NA	NA		
					12/12/2022	NA	NA	NA	NA	NA	NA	NA NA	NA	NA	NA	NA	NA	NA	NA	NA						

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

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

Last Updated: December 16, 2022

<sup>\*</sup> Additional samples were collected this week. NA = Not Available To Date

NS = Not Sampled or Not Analyzed

<sup>-- =</sup> Analyte detected; see column adjacent to right

<sup>\*</sup> 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.

<sup>\*\*</sup> Samples collected on September 9, 2022 occurred when only the IX was discharging.

<sup>\*\*\*</sup> Effective 10/24/2022, hexavalent chromium samples are being analyzed at Pace Analytical.

# **Attachment B**

**Equipment Tracking Form** 

Sup-	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			
1.02		Lift Station 1 Lift Pump A				
1.03		Lift Station 1 Lift Pump B				
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				
2.02		Lift Station 3 Lift Pump A	Standby			
2.03		Lift Station 3 Lift Pump B				
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			
4.02		Ferrous Sulfate Feed System	Running			
4.03		Polymer Feed System	Running			
4.04		Clarifier	In operation			
4.05		Filter Press	Running			Installed "T" piping to allow solids removal via dewatering bags.
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			Pressure flushed the effluent pipeline to remove accumulated solids.
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			Repaired broken concrete containment wall.
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	-			

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

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Sup-	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
5.10	PID10B	Carbon Absorber - LGAC 201B				
5.11	PID10B	Carbon Absorber - LGAC 201C				
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A				EQUIPMENT OFFLINE
6.02	PID14	Separator Tank - 1401				EQUIPMENT OFFLINE
6.03	PID14	Media Return Pump - P 1401				EQUIPMENT OFFLINE
6.04	PID14	P1401A				EQUIPMENT OFFLINE
6.05	PID01A	P1401B				EQUIPMENT OFFLINE
6.06	PID01A		Running			
6.07	PID02A		Running			
6.08	PID01A	First Stage Separator Tank - T2011				
6.09	PID01A	Media Return Pump - P2011	-			Replaced damaged pump.
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				
6.13	PID07A	FBR A pH Feed Pump - P71A				
6.14	PID07A	FBR 1 pH Feed Pump - P711				
6.15	PID07A	FBR 2 pH Feed Pump - P712				
6.16 6.17		FBR A Nutrient (Urea) Feed Pump - P72A	-			
	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721 FBR 2 Nutrient (Urea) Feed Pump - P722				
6.18 6.19	PID07A PID15	, , ,				Favings out offling
6.20	PID15 PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A FBR 1 Nutrient (Phos Acid) Feed Pump - P1521				Equipment offline
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Fump - P1522				
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A				
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731				
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732				
7		First Stage FBRs 3 & 4	r.cg			
7.01	PID01B	<u> </u>	Running			
7.02	PID01B		Running			
7.03	PID02B	First Stage Separator Tank - T2012				
7.04	PID01B	Media Return Pump - P2012				
7.05	PID01B	First Stage FBR Pump - P1013				
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				

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Sup-	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
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				
8.08	PID07A	FBR 5 pH Feed Pump - P715				
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		Running			
9.03	PID03D	Second Stage Separator Tank - T3012				
9.04	PID03B	Media Return Pump - P3012	Running			
9.05	PID03B	Second Stage FBR Pump - P3017				
9.06	PID03B	Second Stage FBR Pump - P3018				
9.07	PID03B	Second Stage FBR Pump - P302A	Running			
9.08	PID07A	FBR 7 pH Feed Pump - P717				
9.09	PID07A	FBR 8 pH Feed Pump - P718				
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727				
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728				
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	•			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank				
10.02	PID04	Aeration Blower - B401				
10.03	PID04		In operation			
10.04	PID04	Nutrient Solution	Running			

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Sup-	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
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			
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			Repaired and repositioned rakes.
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				
12		Sand Filter System				
12.01	PID17	Sand Filter				
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A				
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			
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank				
14.02	PID16	Solids Storage Effluent Pump - P1601				
14.03	PID16	Solids Cond. Tank				
14.04	PID09	Sludge Mixer				
14.05	PID09	Filter Press Pump - P901	Running			
14.06	PID09	Filter Press Pump - P902				
14.07	PID09	West Press				
14.08	PID09	East Press				
14.09	PID09	Filtrate Tank				
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			

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Sub-	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
		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				
17	PID07C	Micro Nutrient System	In operation			
18	PID07C	Hydrogen Peroxide System				
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			
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				
26.02	PID08	East Compressor				
26.03	PID08	O2 Compressor				
26.04	PID08	Compressed Air Receiver Tank				
26.05	PID08	Air Dryer				
26.06	PID08	Oil Removal Filter	•			
26.07	PID08	Particulate Filter				
27	PID16	Oxygen System				
28		GWETS Plant Controls/ Siemens Controls	•			
29		Well Control System/ Allen Bradley Controls				
30		MCC FBR Pad				
31		MCC in D-1				
32		MCC in EQ area	In operation			
		Miscellaneous Systems				
33		Operations Office/Network				
34		Laboratory Analyzers				
35		Security Systems	In operation			

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Sup-	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
		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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- 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
- 4 = Low Minor repairs that in no way alter the performance of the plant

# **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 11/30/22
1	Dissolved Air Floatation (DAF) Vessels	ETI to pilot an alternate technology (AquaDisk filters) and make a recommendation	ETI WA 22-01 \$58,203 Executed 1/13/22	Pilot is complete. Working on proposal for a new DAF.
2	DAF Pump Skid Rebuild	On-hold pending outcome of DAF pilot and evaluation of plant hydraulics	N/A	N/A
3	Main Influent Pipeline Air/Vacuum Release Valves	ETI to replace valves and valve boxes as required	ETI WA 21-06 \$40,535 Executed 12/21	Currently anticipating to complete site work during December plant shutdown.
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 Executed 11/21	Project is complete.
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 Executed 12/21	Currently anticipating to complete site work during December plant shutdown.
8	IWF Wiring	ETI to replace as required	ETI WA 21-08 \$436,481 Executed 12/21	New wire has been installed at the wells.  Delivery of the new starters has been delayed.  Installation to occur in January.
9	FBR Skid Equipment Replacements	ETI to replace what is immediately required in lieu of complete replacements	ETI WA 22-04 \$142,061 Executed 2/4/22	Project is complete.
10	Influent / Effluent Pump Motors	ETI to procure additional motors for more frequent rotation	ETI WA 22-03 \$31,800 Executed 2/4/22	Anticipating return of existing motor in December to complete the project.
11	Overhaul Lift Station #2 West Wet Well Turbine	ETI to overhaul as required	ETI WA 22-07 \$97,304 Executed 3/7/22	Project is complete.
12	Replacement of Safety Showers	ETI to replace safety shower system in batches over ~2 years	ETI WA 21-05 \$131,899 Executed 11/21	Project is complete.

# **GWETS AMENDMENT 8 REPAIR/REPLACEMENT STATUS**

# PREPARED BY NEVADA ENVIRONMENTAL RESPONSE TRUST

ITEM		RESOLUTION	WORK AUTHORIZATION	STATUS AS OF 11/30/22
13	East Air Compressor	ETI to replace as required	ETI WA 21-02 \$29,784 Executed 10/21	Project is complete.
14	pH and ORP Probes	ETI to replace certain probes as required throughout FBR plant	ETI WA 21-07 \$108,893 Executed 11/21	Project is complete
15	Exterior Shell of Ethanol Storage Tank	ETI to repair as required	-	Submittal of draft Work Authorization for Trust review by 12/31/22. Awaiting contractor quote.
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 Executed 11/21	Currently anticipating to complete computer tie in December.
18	Sludge Pump and Sludge Bins	ETI to replace as required	ETI WA 22-02 \$102,183 Executed 2/7/22	Project is complete.
19	Lift Station Repairs	ETI to replace as required	ETI WA 22-05 \$20,738 Executed 2/4/22	Project is complete.
20	D-1 Asbestos Evaluation	NERT to complete an asbestos survey	TT WA 21-12 \$7,400 Executed 11/21	Survey complete. Report complete and forwarded to ETI. Project complete.