

MEMO

To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Andrew Harley/Tt

Date: May 20, 2015

Subject: NERT – GWETS Operation Monthly Report – April 2015

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

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) reports that the GWETS mechanically operated normally in April 2015, with the exception of a leaking check valve into the secondary containment area located within the Chrome Plant and discussed below. The GW-11 pond was bypassed from April 7 to April 10, 2015 due to the installation of a new influent flow meter described in more detail below. The flow rate to the plant averaged approximately 961 gallons per minute (gpm) during April 2015. At the end of the month, the GW-11 Pond volume was 49.5 million gallons (MG), which would allow 9 days of available additional storage in event of an emergency plant shutdown with continued well field pumping. The water volume stored in the GW-11 Pond decreased approximately 0.1 MG from the end of March. This report contains a new Figure 1 depicting GW-11 pond volume, evaporation assumptions and additional storage available. Based on the volume projection graph in Figure 1, Tetra Tech believes GW-11 pond volume will continue to decrease and return to 15 days of available storage during July 2015. The influent perchlorate concentration to the Fluidized Bed Reactor (FBR) plant averaged 97 mg/L for the month, with a maximum concentration of 100 mg/L.

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

Enhanced Operational Metrics

Tetra Tech continues to move forward with the approved Enhanced Operational Metrics program to add instruments, controls, data acquisition systems, along with various other technical upgrades to improve the efficiency of GWETS data collection and reporting. A new flow meter and sample tap were installed

in the influent to the GW-11 pond as part of this project in April. An implementation schedule is presented in more detail under the GWETS Upgrades and Facility Projects section below.

Ground Penetrating Radar has identified the water pipes historically installed to convey water from the extraction wells appear to be outside the authorized Right of Way at the Athens Well Field and the Seep Well Field. As a result, the implementation schedule may be impacted while this matter is resolved.

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

Operational Issues

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

1. GW-11 Pond

- GW-11 Pond was bypassed from approximately 0700 on Wednesday, April 8th until 0620 on Friday April 10th during the installation of the new influent flowmeter and sample tap under the Enhanced Operational Metrics project. This planned bypass did not cause any disruption to the GWETS extraction wells.
- GW-11 Pond Leak Detection System: On behalf of the Trust, Tetra Tech continues to evaluate how to repair the leak detection pipes so that the correct pump depth can be determined for the NE extraction pipe. The timeline for the repair may be lengthy due to the on-going use of the GW-11 pond.
- GW-11 Pond Liner: Tetra Tech has completed installation of down gradient piezometers in the north berm to evaluate if GW-11 Pond water is leaking through the secondary liner.
- Dye Tracer Test: Dye testing utilizing the down gradient piezometers in the north berm to evaluate the integrity of the pond's secondary liner is currently ongoing. Dye was added to both the northeast and northwest sumps on April 22, 2015.

2. Maintenance

- Major maintenance that was performed or completed in the month included:
 - i. Dissolved Air Flotation (DAF) Vessel D551 was pressure washed and sandblasted. DAF Vessel D551 rehabilitation will continue in May with welding

operations. This rehabilitation process results in no impact to the treatment process due to full DAF redundancy.

- On April 1, 2015, a check valve located within the Chrome Plant leaked approximately 50 gallons of influent water into a secondary containment area. The Interceptor Well Field was temporarily shut down for approximately 5 hours while the check valve was replaced. All of the water that leaked from the faulty check valve was captured within the secondary containment area.
- Preventative Maintenance completed or being performed in the month included:
 - i. ETI installed the rebuilt Interceptor Booster Pump A. The pump is currently in standby mode.
 - ii. ETI has sent Raw Water Feed Pump P102B to Henderson Electric for repair. Previous repair work was not complete.
 - iii. ETI rotated the P-1001 GWTP effluent pumps for routine maintenance.
 - iv. ETI repaired the bed height pump fittings in FBR A.
 - v. Filter Reject Pump P1701B has been removed for seal repair work.
 - vi. ETI has tied the PDM sump pump into the Siemens computer and added the pump to the dialer on a call out.
 - vii. ETI replaced the gasket at the diversion valve to direct flow between the filter presses.

3. Outstanding maintenance and repairs from the previous month have been addressed as outlined below:

- ETI is continuing the rehabilitation process on the FBRs.
- An air hose remains in place to bypass carbon steel lines that are corroded at the DAF Pressure Tanks and Pressure Pump P551. ETI will be meeting with contractors in May to receive bids for new isolation valves to move forward in the replacement project.
- A new pressure regulator was received for the compressed air receiver tank. ETI is waiting for a planned FBR plant shut down to replace the regulator. Because ETI does not deem replacing the regulator as a critical maintenance activity, ETI will coordinate the shutdown with other required maintenance activities. This future shutdown of the FBR plant will not require the well fields to be shut down.

GWETS Upgrades and Facility Projects

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

1. 2013 Optimization

ENVIRON's 2013 Optimization Project is complete, and the formal report was included as an attachment to the Semiannual Performance Report submitted to the NDEP on April 30, 2015.

2. AP-5 Solids Removal

Tetra Tech is moving forward with the Phase II AP-5 Solids Removal project. The first procurement packages will be completed and distributed in May. Tetra Tech is continuing on to the next phase of design. Coordination between Tetra Tech and NDEP, ETI, and the Trust on this project is ongoing.

3. Enhanced Operational Metrics

Tetra Tech has received bids for all equipment. Construction activities are scheduled for May, June, and July 2015. Construction completed in April included the new GW-11 pond influent flow meter, static mixer, and sample tap. Construction began on April 8, 2015 and the first new analytical samples were collected from the GW-11 Influent line on April 10, 2015. The first readings from the influent flow meter were collected on April 27, 2015. Phased activation of the operational metrics upgrades will continue through July 2015.

Equipment Availability Tracking

ETI operators continue to update the equipment tracking form on a weekly basis at a minimum, or whenever there is a change in the status of key equipment. During regular site visits, Tetra Tech field personnel continue to verify the entries on the form, including both the operating status and confirming the inventory of required shelf spares. The equipment tracking form submitted by ETI to Tetra Tech on April 30, 2015, is attached (Please see Attachment B).

GWETS Staffing

ETI continued to staff the GWETS using a single shift during the month of April. As of May 7, 2015, ETI began 24-hour staffing of the GWETS at the direction of the Trust. ETI continues to follow the security procedures in the Standard Operating Procedures (SOP).

GWETS Security

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

Tetra Tech Activities

Tetra Tech conducted calls with ETI to review operation of the GWETS on April 2nd, 16th, and 30th. Becki Dano, CEM, of Tetra Tech, performed visits to the GWETS on April 3rd, 10th, 16th and 24th. Ms. Dano also reviewed permit and sampling forms for the entire month to ensure each was correct and up-to-date, checked equipment status, and verified shelf spare inventory.

Summary

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

Tables

Operational Metrics

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics				
Location ID	Average Flow Rate (gpm)	Perchlorate (mg/L) ²	Chromium TR (mg/L) ²	Chromium(VI) (mg/L) ^{2,8}
SWF Total Extraction ⁵	559 ¹	11	0.002	Future Metric
AWF Total Extraction ⁵	287 ¹	174	0.42	Future Metric
IWF Total Extraction ⁶	66 ¹	957	7.39	Future Metric
GWTP Effluent ⁷	59	1130	0.61	ND
GW-11 Influent ⁴	916 ³	130	0.12	0.04
GW-11 Effluent/ FBR Influent ⁷	916	97	0.03	0.02

Notes:

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

1: Sum of daily average flow for individual wells .

2: All concentrations reported are monthly flow weighted averages.

3: Flow has historically been a calculated metric, but Tetra Tech transitioned to flow meter measurement beginning on April 27, 2015.

4: Perchlorate and chromium concentrations transitioned to in-line samples beginning in April 2015.

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

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

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

8: Hexavalent chromium will be analyzed and reported monthly beginning in 2015 as part of the Enhanced Operational Metrics project.

Nevada Environmental Response Trust Groundwater Extraction and Treatment System Monthly Stakeholder Metrics		
Location ID	Perchlorate (lbs/month) ¹	Chromium TR (lbs/month) ¹
SWF Total Extraction	2,287	0.38
AWF Total Extraction	18,086	45
IWF Total Extraction	22,835	176
GWTP Effluent	24,082	13
GW-11 Influent	42,979	40
GW-11 Effluent/FBR Influent	32,184	11

Notes:

TR = Total Recoverable; NA = Not Available.

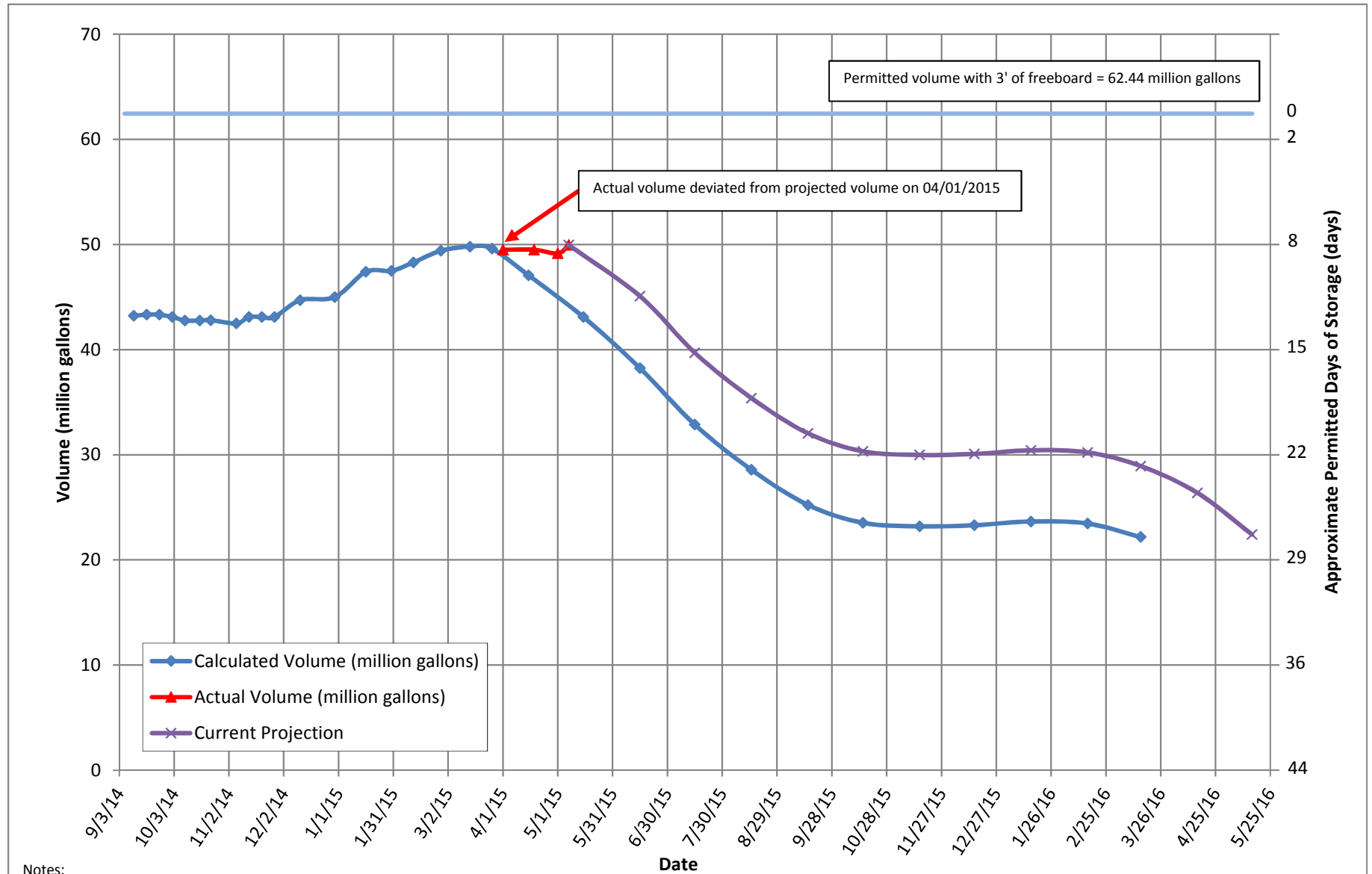
1: Total lbs extracted is calculated from flow weighted average concentration and average flow (see Table 1).

Figures

Operational Metrics

Figure 1: GW-11 Projected vs Actual Pond Volume

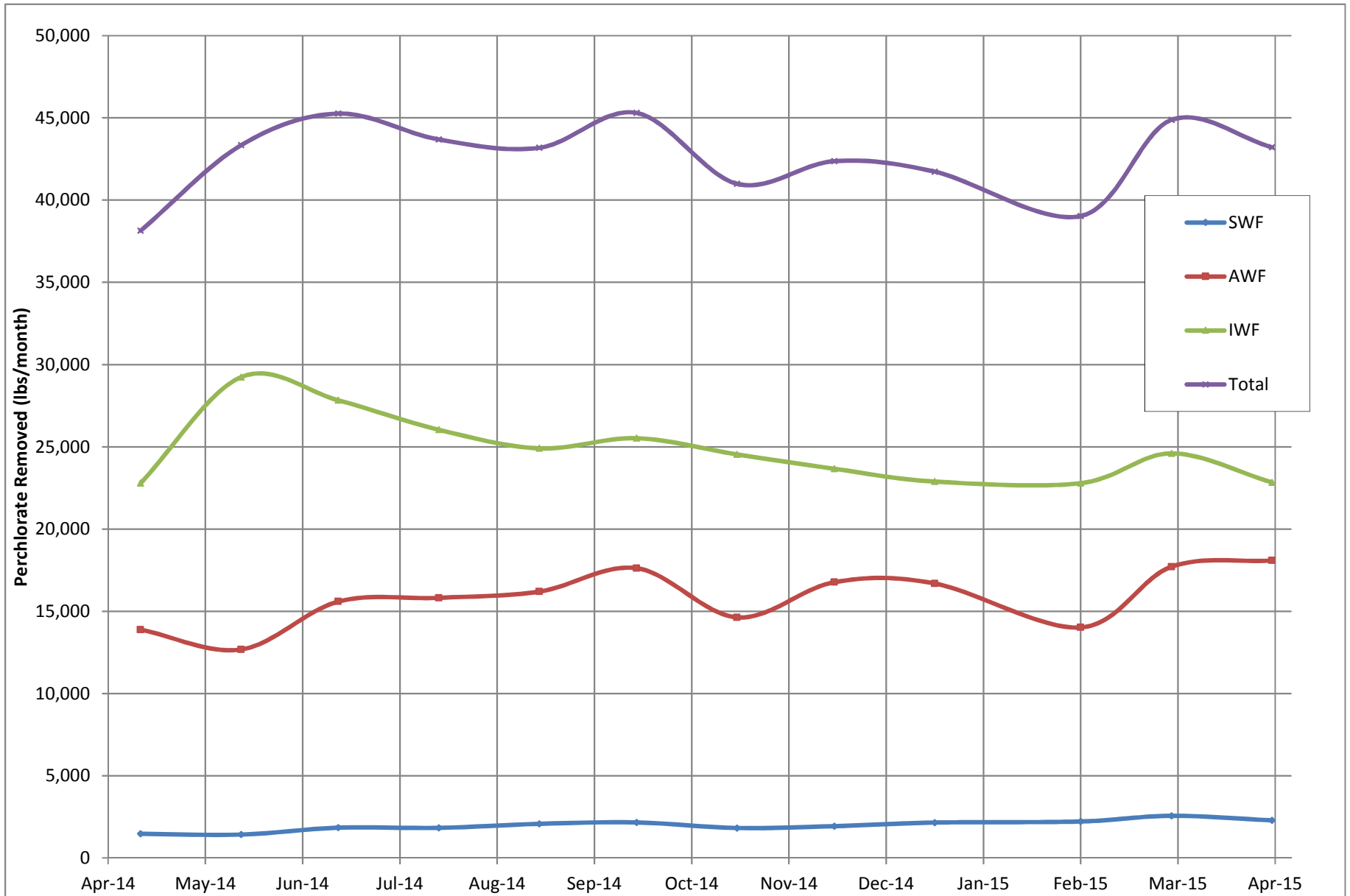
Nevada Environmental Response Trust
 GW-11 Pond Volume
 Projected v. Actual
 Update 05/11/2015



Notes:

- 1: Monthly evaporation was calculated using Shevenell, 1996. Statewide Potential Evapotranspiration Maps for Nevada. Nevada Bureau of Mines and Geology Report 48. University of Nevada Reno.
- 2: Estimated monthly evaporation and rainfall is listed in Table 1.
- 3: Monthly additions from backwash, diversions, and other influent sources was estimated to be 2.8 million gallons per month based on an average from the last six months that GW-11 has been online.
- 4: Monthly GW-11 effluent flow was estimated to exceed influent flow by 2.2 million gallons per month. For pond volume to decrease the effluent flow must exceed the influent flow by a minimum of 50 gpm.

Figure 2 - Historical Perchlorate Mass Flux



Note: Total perchlorate shown on this graph was calculated from the sum of perchlorate extracted from wells. It should be noted that due to the accuracy of existing flow meters, this total may not align with total perchlorate reported in FBR influent flow.

Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)

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

Weekly samples								
pH	Hexavalent Chromium	Total Chromium	Total Suspended Solids (TSS)		Total Iron		Total Ammonia as N	Total Phosphorus as P
30-Day Avg. (S.U.)	Daily Max. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)	30-Day Avg. (lbs/day)
6.5 to 9.0	0.01	0.1	135	1,634	10	121.03	40	20

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

January 2015	1.20	1.39	1.3	0.013	6.59	0.00013	0.021	25	250	4.1	40	2.6	1.5	3.7	6.0	37	0.20	2.1
February 2015	1.34	1.42	1.3	0.014	6.85	0.00013	0.029	21	230	3.3	37	2.5	1.6	6	13	69		
March 2015	1.32	1.38	1.3	0.014	6.71	0.00013	0.043	26	280	4.9	54	7.4	2.0	4.6	9.2	49		
April 2015 (month-to-date)	1.30	1.34	1.3	0.014	6.87	0.00013	0.0080	15	160	3.1	33	4.3	1.7	2.1	2.9	23	0.090	0.99

Daily Grab Sample Dates	Composite Sample Date	ug/L	lbs/day	Sample Date	S.U.	mg/L	mg/L	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	Sample Date	mg/L	lbs/day	mg/L	lbs/day
1/4 - 1/10	1/10/2015	ND (<2.5)	1.3	0.010	1/5/2015	6.53	ND (<0.00025)	0.021	24	201	4.8	40	--	0.94	7.9	1/7/2015	3.1	26	0.20	2.1
1/11 - 1/17	1/17/2015	ND (<2.5)	1.3	0.013	1/12/2015	6.64	ND (<0.00025)	0.019	19	192	3.9	39	ND (<0.10)	0.05	0.51	1/14/2015	3.9	39		
1/18 - 1/24	1/24/2015	ND (<2.5)	1.3	0.014	1/19/2015	6.65	ND (<0.00025)	0.018	25	276	3.4	38	--	0.13	1.4	1/21/2015	1.8	20		
1/25 - 1/31	1/31/2015	ND (<2.5)	1.3	0.013	1/26/2015	6.54	ND (<0.00025)	0.019	30	316	4.1	43	ND (<0.10)	0.05	0.53	1/28/2015	6.0	63		
2/1 - 2/7	2/7/2015	ND (<2.5)	1.3	0.014	2/2/2015	6.90	ND (<0.00025)	0.010	11	121	1.6	18	--	0.20	2.2	2/4/2015	4.5	49		
2/8 - 2/14	2/14/2015	ND (<2.5)	1.3	0.014	2/9/2015	6.67	ND (<0.00025)	0.024	17	196	0.66	7.6	--	0.33	3.8	2/11/2015	5.7	66		
2/15 - 2/21	2/21/2015	ND (<2.5)	1.3	0.014	2/17/2015	6.97	ND (<0.00025)	0.0064	19	212	3.9	44	--	0.21	2.3	2/18/2015	1.5	17		
2/22 - 2/28	2/28/2015	ND (<2.5)	1.3	0.014	2/23/2015	6.85	ND (<0.00025)	0.029	36	401	7.1	79	--	0.16	1.8	2/25/2015	13	145		
3/1 - 3/7	3/7/2015	ND (<2.5)	1.3	0.013	3/2/2015	6.82	ND (<0.00025)	0.043	42	441	4.9	51	--	0.22	2.3	3/5/2015	9.2	97		
3/8 - 3/14	3/14/2015	ND (<2.5)	1.3	0.014	3/9/2015	6.89	ND (<0.00025)	0.011	26	296	4.8	55	--	0.44	5.0	3/11/2015	2.6	30		
3/15 - 3/21	3/21/2015	ND (<2.5)	1.3	0.014	3/16/2015	6.64	ND (<0.00025)	0.0071	23	257	5.0	56	--	0.69	7.7	3/18/2015	2.2	25		
3/22 - 3/28	3/28/2015	ND (<2.5)	1.3	0.014	3/23/2015	6.64	ND (<0.00025)	0.013	19	211	4.8	53	--	0.71	7.9	3/25/2015	4.2	47		
3/29 - 4/4	4/4/2015	ND (<2.5)	1.3	0.014	3/30/2015	6.55	ND (<0.00025)	0.0074	20	219	4.9	54	--	1.3	14	4/1/2015	2.7	30		
4/5 - 4/11	4/11/2015	ND (<2.5)	1.3	0.013	4/6/2015	6.96	ND (<0.00025)	0.0057	18	193	4.7	50	--	0.27	2.9	4/8/2015	2.9	31		
4/12 - 4/18	4/18/2015	ND (<2.5)	1.3	0.014	4/13/2015	7.04	ND (<0.00025)	0.0080	10	110	0.38	4.2	--	0.37	4.1	4/15/2015	1.9	21	0.090	0.99
4/19 - 4/25	4/25/2015	NA	NA	NA	4/20/2015	6.62	ND (<0.00025)	0.0046	17	183	4.2	45	--	0.55	5.9	4/22/2015	0.85	9.1		
4/26 - 5/2	5/2/2015	NA	NA	NA	4/27/2015	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4/29/2015	NA	NA		

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

NA = Not Available To Date

NS = No Sample

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

-- = Analyte detected; see column adjacent to right

Last Updated: May 8, 2015

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			
1.02		Lift Station 1 Lift Pump A	Standby			
1.03		Lift Station 1 Lift Pump B	Running			
1.04		Area in and around Lift Station 1	Running			
2		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 3	Running			
3		Lift Station 2 and Transmission Piplines				
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			
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Standby		2	ETI installed the rebuilt pump with a new oil plug, the seal repaired, a new coupling, and a flex coupling adapter.
4.08		Interceptor Booster Pump B	Running			
4.09		Area In And Around GWTP	Running		3	ETI rotated the P-1001 GWTP effluent pumps.

¹Status Codes

Running - Unit is in operation

Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

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

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
5		Equalization Area and GW-11 Pond				
5.01	PID10A	Pond GW-11	In operation			
5.02	PID10A	Pond Water Pump - P101A	Running			
5.03	PID10A	Pond Water Pump - P101B	Standby			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation			
5.06	PID10A	Raw Water Feed Pump - P102A	Running			
5.07	PID10A	Raw Water Feed Pump - P102B	Maintenance		3	Henderson Electric has the pump and is making repairs.
5.08	PID10B	Carbon Absorber - LGAC 201A	Running			
5.09	PID10B	Carbon Absorber - LGAC 201B	Running			
5.10	PID10B	Carbon Absorber - LGAC 201C	Running			
6		First Stage FBRs A, 1 & 2				
6.01	PID14	FBR A	Running		3	ETI repaired the bed height pump fittings.
6.02	PID14	Separator Tank - 1401	Running			
6.03	PID14	Media Return Pump - P 1401	Running			
6.04	PID14	P1401A	Standby			
6.05	PID01A	P1401B	Running			
6.06	PID01A	FBR 1	Running			
6.07	PID02A	FBR 2	Running			
6.08	PID01A	First Stage Separator Tank - T2011	Running			
6.09	PID01A	Media Return Pump - P2011	Running			
6.10	PID01A	First Stage FBR Pump - P1011	Standby			
6.11	PID01A	First Stage FBR Pump - P1012	Running			
6.12	PID01A	First Stage FRB Pump - P101A	Running			
6.13	PID07A	FBR A pH Feed Pump - P71A	Standby			
6.14	PID07A	FBR 1 pH Feed Pump - P711	Standby			
6.15	PID07A	FBR 2 pH Feed Pump - P712	Standby			
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off			
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off			
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off			
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running			
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running			
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running			
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running			
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running			
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running			

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Maintenance - Out of service for maintenance

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

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

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

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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	Standby			
9.08	PID07A	FBR 7 pH Feed Pump - P717	Standby			
9.09	PID07A	FBR 8 pH Feed Pump - P718	Standby			
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off			
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off			
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running			
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running			
10		Aeration and DAF System				
10.01	PID04	Aeration Tank	In operation			
10.02	PID04	Aeration Blower - B401	Running			
10.03	PID04	Biofilter	In operation			
10.04	PID04	Nutrient Solution	Running			
10.05	PID04	Biofilter Sump	Running			
10.06	PID04	Nutrient Pump - P401	Running			
10.07	PID04	Biofilter Sump Pump - P402A	Standby			
10.09	PID04	Biofilter Blower	Running			
10.10	PID05	DAF Pressure Tanks	In operation		4	ETI has put an air hose in place to bypass carbon steel lines that are corroded.
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Maintenance		3	The vessel has been pressure washed and sandblasted. ETI has welders scheduled to begin repairs on the vessel next week.
10.15	PID05	DAF Pressure Pump - P551	Maintenance		4	ETI is bypassing steel air lines with the hose feeding the pressure tank.
10.16	PID05	DAF Float Pump - P552	Standby			
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			

¹Status Codes

Running - Unit is in operation

Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

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

Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
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	Running			
12		Sand Filter System				
12.01	PID17	Sand Filter	Running			
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Running			
12.04	PID17	Filter Reject Pump - P1701B	Standby		3	The pump has been removed and work has been started to repair seal.
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	Running			
13.04	PID10C	Area Around Effluent and North D-1	Running		3	A new valve has been received. Blind flanges are currently installed. No risk present. PDM sump pump has been tied into the Seimans computer by ETI.
14		Solids Collection and Pressing System				
14.01	PID16	Sludge Storage Tank	In operation			
14.02	PID16	Solids Storage Effluent Pump - P1601	Running			
14.03	PID16	Solids Cond. Tank	In operation			
14.04	PID09	Sludge Mixer	Running			
14.05	PID09	Filter Press Pump - P901	Running		3	ETI has replaced the gasket at the diversion valve to direct flow between filter presses.
14.06	PID09	Filter Press Pump - P902	Running			
14.07	PID09	West Press	Standby			
14.08	PID09	East Press	Running			
14.09	PID09	Filtrate Tank	In operation			
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running			

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Sub-System	P&ID	Description	Status ¹	Checked	Criticality ²	Notes
Chemical Systems						
15		Electron Donor System				
15.01	PID07B	<i>Electron Donor Tank</i>	In operation			
15.02	PID07B	<i>Booster Pump P739A</i>	Standby			
15.03	PID07B	<i>Booster Pump P739B</i>	Running			
17	PID07C	Micro Nutrient System	In operation			
18	PID07C	Hydrogen Peroxide System	In operation			
19	PID07C	De-Foam System	In operation			
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation			
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation			
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
23	PID07C	Ferric Chloride System	In operation			
24	PID07B	Polymer Systems - DAF	In operation			
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
Utility Systems						
26		Compressed Air System				
26.01	PID08	<i>West Compressor</i>	Running			
26.02	PID08	<i>East Compressor</i>	Running			
26.03	PID08	<i>O2 Compressor</i>	Running			
26.04	PID08	<i>Compressed Air Receiver Tank</i>	In operation		4	The regulator has been received. ETI is waiting for plant shut down to replace the regulator. A new valve and piping was also built to replace the rusted and damaged valve.
26.05	PID08	<i>Air Dryer</i>	Running			
26.06	PID08	<i>Oil Removal Filter</i>	In operation			
26.07	PID08	<i>Particulate Filter</i>	In operation			
27	PID16	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			

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Standby - Spare or duplicate, not currently in operation

Maintenance - Out of service for maintenance

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

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

¹ Status Codes

Equipment

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

¹ Criticality Codes

1 = Critical Cannot continue with operation until repairs made
 2 = Important Can still operate safely and in compliance with permits, but risks are increased
 3 = Moderate Work needs to be performed, but plant can still operate with redundancy that is in place
 - Tasks performed to either improve the existing equipment (i.e., testing new options)
 4 = Low - Minor repairs that in no way alter the performance of the plant

Tanks, Pipelines, Ponds

In operation
 Out of service

Spares

In stock

¹ 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