To:	Nevada Division of Environmental Protection Nevada Environmental Response Trust
Cc:	Nevada Environmental Response Trust Stakeholders
From:	Jeff Lance
Date:	April 28, 2016
Subject:	NERT – GWETS Operation Monthly Report – March 2016

At the request of the Nevada Environmental Response Trust (Trust), Envirogen Technologies Inc. (ETI) provides this summary of the groundwater extraction and treatment system (GWETS) operation and performance during March 2016.

Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) mechanically operated the GWETS normally in March 2016. The flow rate to the plant averaged approximately 908 gallons per minute (gpm) during March 2016. At the end of the month, the GW-11 Pond volume was at 43.66 million gallons (MG), which would allow 13.04 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 increased approximately 0.2 MG from the end of February. Figure 1 in this report depicts the actual and projected GW-11 pond volumes and additional storage available.

The influent perchlorate concentration to the FBR plant averaged 84 mg/L for the month, with a maximum concentration of 97 mg/L.

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

Enhanced Operational Metrics

Tables 1 and 2 provide a summary of the current GWETS operational metrics that provide data for flow rates, perchlorate and chromium concentrations, and mass removal. 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 Leak Detection System: ETI was able to dislodge and lower the NE corner sump pump an additional 20 feet, to a total depth of approximately 115 feet. An obstruction in the casing prevented it from going any further.
    - ETI installed three of the four dedicated generators at each pond corner to reduce the effort required to complete the leak detection pumping procedures. The remaining generator will be installed after a protective cover is fabricated, which is scheduled to occur in April, 2016.

2. Biological Plant

    - There were no significant Plant interruptions or unplanned diversions for the month of March that met the immediate NEDP Notification Requirements.

    - Plant Recycle/Power Outage, Mar. 08, 2016: Flow to the plant was switched from GW11 to Tanks 101 that receive flow from LS2. A planned power outage was scheduled for this day to repair the overhead power lines that feed the onsite laboratory and stopped our ability to monitor the influent to the plant. Due to ETI's inability to monitor the influent there was a potential of high perchlorate loading from LS2 that could have upset the FBR's so the plant was put in recycle mode for the duration of the outage – 5hr 37 min.

    - Diversion to GW11, Mar 10, 2016: The Plant's operating communication system was disrupted due to a faulty PLC in the main server which caused the plant to shut down. The effluent flow was diverted to GW11 until the plant could be brought back online. The event lasted 1hr 37min and 92,926 gals were diverted to GW11.

    - Plant Recycle for Maintenance, Mar. 17, 2016: Plant put in recycle mode for maintenance work on the sand filter. The event lasted 1hr 55 min.

    - Diversion to GW11 for Maintenance, Mar 28, 2016: Effluent flow was diverted to allow for the GAC valves to be repaired. The event lasted 2hrs 17min and 77,077 gals were diverted to GW11.

    - Diversion to GW11 for Maintenance, Mar 28, 2016: Effluent flow was diverted to allow for repair of the check valve in the discharge pipeline. The event lasted 1hr 45min and 70,875 gals were diverted to GW11

3. Spills

- No reportable spills occurred in March 2016.

4. Maintenance

- Major maintenance performed by ETI in the month included:
    i. Repaired overhead power lines from D1 building and secured power pole with new guy wire
    ii. South DAF was sand blasted to remove coating and performed an inspection that revealed numerous repairs needed on the sides and bottom of the tank.
    iii. South DAF repairs made to the tank, interior recoated, auger removed and serviced. The DAF will be put back in service following installation of the new pressure tank.
    iv. Pressure tanks for both North and South DAF's are leaking and corroded and require replacement. New tanks were ordered and are scheduled to be installed the first week of June, 2016.
    v. The sand filter was taken offline to perform repairs to the header, air lifts and return pump.
    vi. FBR 8 repairs were completed, vessel sealed and wet tested, ready to be returned to service.
    vii. FBR 7 is being drained in preparation for an inspection and repair as needed.
    viii. A design is being prepared to install an inductor style pump to replace the existing diaphragm Media Return pumps that have ongoing maintenance issues.

- Preventative Maintenance completed or being performed by ETI in the month included:
    i. Replace all of the influent and effluent control valves on the GAC Tanks.
    ii. Trouble shooting of the flow meters and totalizers on the IWF wells along with LS2 flow meter
    iii. Serviced the combination valves on the effluent pipeline.
    iv. Replaced PLC in the primary server in the control room.

- Outstanding or ongoing maintenance and repairs from the previous month are outlined below:
    i. FBR 7 is off-line and currently in the rehabilitation process. All forward flow is being sent to FBRs 5 and 6, on-going from last month.

GWETS Upgrades and Facility Projects

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

1. AP-5 Solids Removal

   Tetra Tech is moving forward with the design to relocate the AP-5 pond solids to three large tanks for washing to remove perchlorate salts, with eventual treatment of the perchlorate containing wash water in the GWETS. The tanks have been ordered, and site subgrade preparation will begin in April, 2016. Pumping tests are planned for April, 2016.

2. Enhanced Operational Metrics
   No change in status from the last reporting period.

3. GWETS Data Accessibility (GWETS/NET)
   No change in status from the last reporting period.

4. GW-11 Pond Level monitoring
   Tetra Tech has finalized design drawings and is preparing to install a pressure transducer and associated equipment to provide continuous monitoring of the water elevation in the GW-11 pond. The equipment will include a display at the EQ area and transmit water level data to the control room in the D1 Bldg. Contractor bids have been received and system installation is planned for May 2016.

5. GWETS Discharge Flow Evaluation
   Tetra Tech is preparing to conduct a capacity evaluation of the GWETS discharge pipeline. The evaluation will include modeling followed by pumping and flow rate measurement over a range of discharge rates to validate model results. Field testing is scheduled of late May 2016.

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 verify the entries on the form, including both the operating status and confirmation of the inventory of required shelf spares. The equipment tracking form is included as Attachment B.

GWETS Staffing

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

Tables

Operational Metrics

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics				
Location ID	**Average Flow Rate (gpm)**	**Perchlorate (mg/L)[2]**	**Chromium (TR) (mg/L)[2]**	**Chromium(VI) (mg/L)[2]**
SWF Total Extraction[3]	538[1]	8	0.001	0.007
AWF Total Extraction[3]	258[1]	129	0.36	0.452
IWF Total Extraction[3]	53[1]	696	8.98	7.074
GWTP Effluent[4]	55	685	0.18	ND
GW-11 Influent	23	81	0.04	0.026
GW-11 Effluent/ FBR Influent[4]	908	85	0.07	0.055

Notes:

TR = Total Recoverable; 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: Perchlorate and chromium TR sampled monthly, values reported from TestAmerica.

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

Nevada Environmental Response Trust I Groundwater Extraction and Treatment System I Monthly Stakeholder Metrics			
Location ID	**Perchlorate (lbs/month)[1]**	**Chromium (TR) (lbs/month)[1]**	**Chromium (VI) (lbs/month)[1]**
SWF Total Extraction	1,546	0.2	1.3
AWF Total Extraction	12,484	35	44
IWF Total Extraction	13,797	178	140
GWTP Effluent	14,077	3.7	0.0
GW-11 Influent[2]	695	0.3	0.2
GW-11 Effluent/FBR Influent[2]	28,636	23	19

Notes:

TR = Total Recoverable.

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

2: GW-11 was being bypassed from 3/2/16 through 3/31/16

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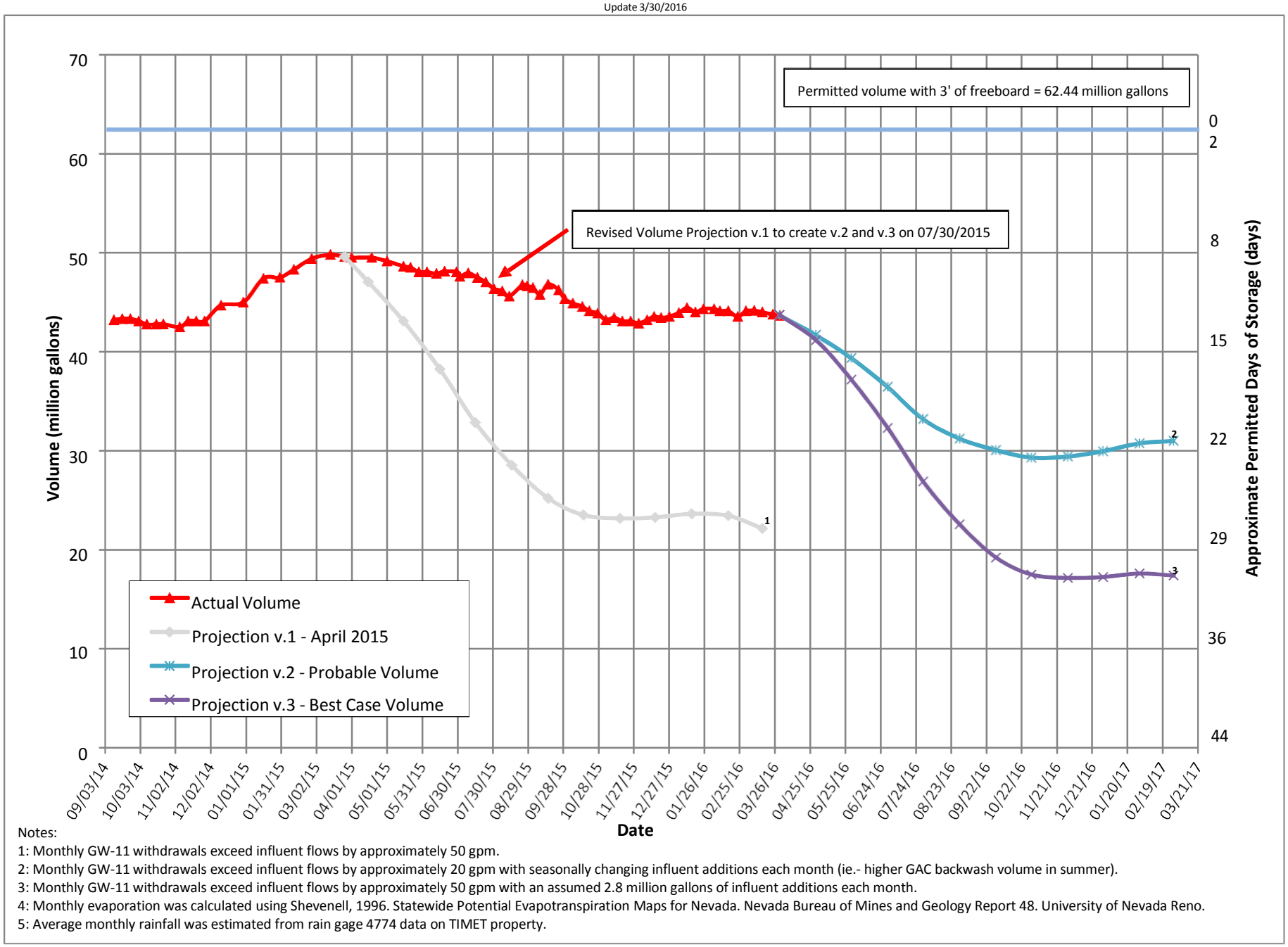
Figures
Operational Metrics

Figure 1 – GW11 Volume Graph



Notes:

1: Monthly GW-11 withdrawals exceed influent flows by approximately 50 gpm.

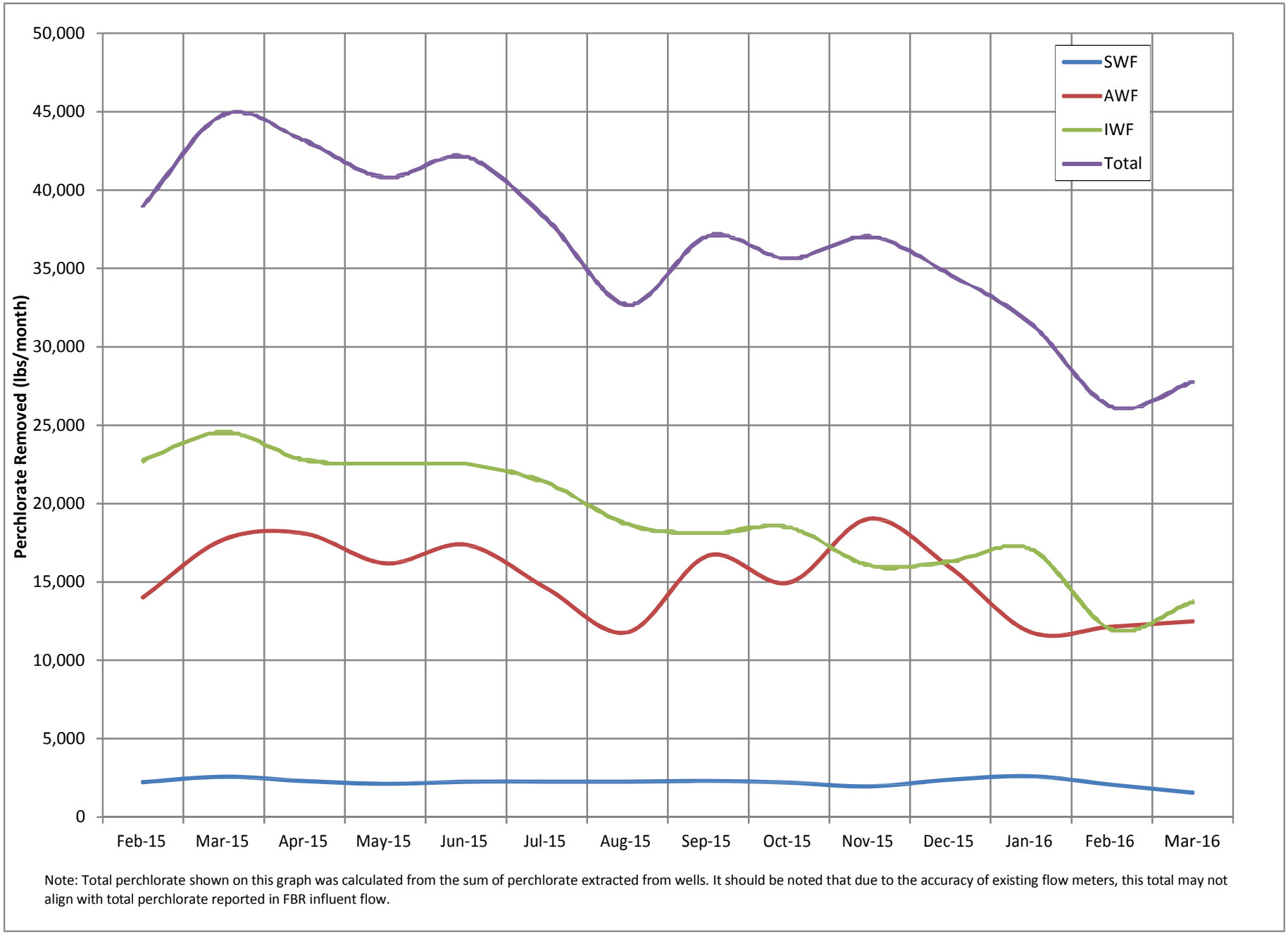
2: Monthly GW-11 withdrawals exceed influent flows by approximately 20 gpm with seasonally changing influent additions each month (ie.- higher GAC backwash volume in summer).

3: Monthly GW-11 withdrawals exceed influent flows by approximately 50 gpm with an assumed 2.8 million gallons of influent additions each month.

4: 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.

5: Average monthly rainfall was estimated from rain gage 4774 data on TIMET property.

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)

Analytes with Numerical Discharge Limits - NPDES Permit NV0023060

WORKING TRACKING SPREADSHEET
DRAFT - NOT TO BE SUBMITTED TO AGENCY

	Continuous		Daily samples, composited weekly		Weekly samples									Weekly samples, collected separately			Quarterly sample	
	Flow Rate		Perchlorate		pH	Hexavalent Chromium	Total Chromium	Total Suspended Solids (TSS)		Total Iron		Total Ammonia as N	Total Phosphorus as P	BOD_5 (inhibited)			Manganese	
	30-Day Avg. (MGD)	Daily Maximum (MGD)	30-Day Avg. (ug/L)	30-Day Avg. (lbs/day)	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)	30-Day Avg. (mg/L)	Daily Max. (mg/L)	30-Day Avg. (lbs/day)	30-Day Avg. (mg/L)	30-Day Avg. (lbs/day)
	1.45	1.75	**18**	**0.22**	**6.5 to 9.0**	**0.01**	**0.1**	**135**	**1,634**	**10**	**121.03**	**40**	**20**	**25**	**40**	**254**	**5**	**60.52**
December 2015	1.32	1.43	1.3	0.014	6.94	0.00013	0.011	16	170	2.2	24	3.7	0.6	8	20	92		
January 2016	1.28	1.39	1.3	0.014	6.89	0.00013	0.022	24	250	4.5	47	9	0.25	5.8	6.5	61	0.26	2.9
February 2016	1.34	1.41	1.3	0.015	6.96	0.00013	0.015	20	230	3.6	41	6	0.62	3.9	6.0	43		
March 2016 (month to date)	1.39	1.45	1.3	0.015	6.88	0.00013	0.026	21	250	3.2	37	13	2.1	4.3	5.8	50		

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
11/29 - 12/5	12/5/2015	ND (<2.5)	1.3	0.014	11/30/2015	7.00	ND (<0.00025)	0.014	21	239	4.4	50	ND (<0.10)	0.05	0.57	ND (<0.025)	0.013	0.14	12/2/2015	7.7	88		
12/6 - 12/12	12/12/2015	ND (<2.5)	1.3	0.012	12/7/2015	6.85	ND (<0.00025)	0.0082	19	190	3.5	35	--	0.23	2.3	ND (<0.025)	0.013	0.12	12/9/2015	4.2	42		
12/13 - 12/19	12/19/2015	ND (<2.5)	1.3	0.015	12/14/2015	6.86	ND (<0.00025)	0.0075	18	211	1.8	21	--	0.81	9.5	--	0.11	1.3	12/16/2015	1.8	21		
12/20 - 12/26	12/26/2015	ND (<2.5)	1.3	0.014	12/21/2014	7.10	ND (<0.00025)	0.0090	19	208	3.1	34	--	0.14	1.5	--	0.036	0.39	12/23/2015	7.4	81		
12/27 - 1/2	1/2/2016	ND (<2.5)	1.3	0.014	12/29/2015	6.94	ND (<0.00025)	0.011	6.6	75	0.51	5.8	--	0.14	1.6	--	0.060	0.68	12/30/2015	20	227		
1/3 - 1/9	1/9/2016	ND (<2.5)	1.3	0.013	1/4/2016	6.92	ND (<0.00025)	0.0070	18	193	3.9	42	--	0.32	3.4	--	0.028	0.30	1/6/2016	5.7	61		
1/10 - 1/16	1/16/2016	ND (<2.5)	1.3	0.014	1/11/2016	7.02	ND (<0.00025)	0.022	25	260	5.0	52	--	1.8	19	ND (<0.025)	0.013	0.13	1/13/2016	6.5	68		
1/17 - 1/23	1/23/2016	ND (<2.5)	1.3	0.013	1/19/2016	6.62	ND (<0.00025)	0.016	30	311	5.1	53	--	0.96	10	ND (<0.025)	0.013	0.13	1/20/2016	6.0	62		
1/24 - 1/30	1/30/2016	ND (<2.5)	1.3	0.014	1/25/2016	7.01	ND (<0.00025)	0.014	23	255	3.8	42	--	0.19	2.1	--	0.040	0.44	1/27/2016	4.8	53	0.26	2.9
1/31 - 2/6	2/6/2016	ND (<2.5)	1.3	0.014	2/1/2016	6.94	ND (<0.00025)	0.015	35	394	4.5	51	--	0.18	2.0	--	0.059	0.66	2/3/2016	6.0	68		
2/7 - 2/13	2/13/2016	ND (<2.5)	1.3	0.015	2/9/2016	7.18	ND (<0.00025)	0.013	16	181	3.8	43	--	0.98	11	--	0.059	0.67	2/10/2016	2.5	28		
2/13 - 2/20	2/20/2016	ND (<2.5)	1.3	0.015	2/15/2016	6.82	ND (<0.00025)	0.0092	14	158	2.8	32	--	0.33	3.7	--	0.048	0.54	2/17/2016	3.4	38		
2/21 - 2/27	2/27/2016	ND (<2.5)	1.3	0.015	2/22/2016	6.91	ND (<0.00025)	0.013	16	181	3.4	38	--	0.50	5.6	--	0.054	0.61	2/24/2016	3.5	40		
2/28 - 3/5	3/5/2016	ND (<2.5)	1.3	0.014	3/1/2016	7.11	ND (<0.00025)	0.0092	12	132	2.0	22	--	1.9	21	--	0.062	0.68	3/2/2016	3.3	36		
3/6 - 3/12	3/12/2016	ND (<2.5)	1.3	0.015	3/7/2016	6.91	ND (<0.00025)	0.012	18	202	2.6	29	--	1.4	16	--	0.096	1.1	3/9/2016	2.7	30		
3/13 - 3/19	3/19/2016	ND (<2.5)	1.3	0.015	3/14/2016	6.68	ND (<0.00025)	0.026	33	388	4.1	48	--	0.71	8.3	--	0.23	2.7	3/16/2016	5.8	68		
3/20 - 3/26	3/26/2016	NA	NA	NA	3/21/2016	6.81	ND (<0.00025)	0.023	22	260	4.1	48	--	0.45	5.3	--	0.32	3.8	3/23/2016	5.5	65		
3/27 - 4/2	4/2/2016	NA	NA	NA	3/28/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3/30/2016	NA	NA		
					4/4/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4/6/2016	NA	NA		

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

NA = Not Available To Date
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: April 8, 2016

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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*	Running			
1.03		*Lift Station 1 Lift Pump B*	Standby			
1.04		*Area in and around Lift Station 1*	Running		3	Replaced worn valve at sample port on PC-120
2		**Athens Road Wells and Lift Station** 3				
2.01		*Athens Road Well Field, 9 wells*	Running		2	Short in wiring supplying power to ART-9. Ran a jumper from 7b to bring the well back online. Contractors are completing the work to include pulling new wire. Pump and motor are in working order.
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	Replaced two combo valves on the pipeline, removed debris from enclosures.
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*	Running		3	Replaced flex coupling connecting motor to pump
4.08		*Interceptor Booster Pump B*	Standby			
4.09		*Area In And Around GWTP*	Running		3	Removed flowmeter and inspected for proper operation. No faults found. Flowmeter in-service.

[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

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*	Standby			
5.03	PID10A	*Pond Water Pump - P101B*	Standby		3	New seal received. Tentative plan in place. Pump still operational.
5.04	PID10A	*Equalization Tanks*	In operation			
5.05	PID10A	*Area in and Around EQ*	In operation		2	Replaced damaged 4" butterfly valve supplying SLW to Tronox.
5.06	PID10A	*Raw Water Feed Pump - P102A*	Running			
5.07	PID10A	*Raw Water Feed Pump - P102B*	Standby			
5.08	PID10A	*F-101 Filters*	Standby			
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*	Running			
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*	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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
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*	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*	Running			
8.02	PID03A	*FBR 6*	Running		3	Replaced worn airline tubing for the in bed cleaners
8.03	PID03C	*Second Stage Separator Tank - T3011*	Running			
8.04	PID03A	*Media Return Pump - P3011*	Running		3	Replaced belt
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			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
9		**Second Stage FBRs 7** & 8				
9.01	PID03B	*FBR 7*	Off		4	FBR drained and opened. Finishing the removal of carbon to inspect the nozzles and headers.
9.02	PID03B	*FBR 8*	Off		4	Wet test complete.
9.03	PID03D	*Second Stage Separator Tank - T3012*	Off			
9.04	PID03B	*Media Return Pump - P3012*	Off			
9.05	PID03B	*Second Stage FBR Pump - P3017*	Off			
9.06	PID03B	*Second Stage FBR Pump - P3018*	Off			
9.07	PID03B	*Second Stage FBR Pump - P302A*	Off			
9.08	PID07A	*FBR 7 pH Feed Pump - P717*	Off			
9.09	PID07A	*FBR 8 pH Feed Pump - P718*	Off			
9.10	PID07A	*FBR 7 Nutrient (Urea) Feed Pump - P727*	Off			
9.11	PID07A	*FBR 8 Nutrient (Urea) Feed Pump - P728*	Off			
9.12	PID07B	*FBR 7 Electron Donor Assembly Pump - P737*	Off			
9.13	PID07B	*FBR 8 Electron Donor Assembly Pump - P738*	Off			
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		3	Replaced worn regulator for the N.DAF air supply to pressure tank.
10.11	PID05	*DAF Vessel - D501*	Maintenance		2	Vessel ready to be put back into service.
10.12	PID05	*DAF Pressure Pump - P501*	Maintenance			
10.13	PID05	*DAF Float Pump - P502*	Standby			
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			

[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

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*	Standby			
12		**Sand Filter System**				
12.01	PID17	*Sand Filter*	Maintenance		2	Sand filter back online. Tightened header, re secured boots connecting airlifts, flushed tank with SLW.
12.02	PID17	*Filter Reject Tank*	Out of service			
12.03	PID17	*Filter Reject Pump - P1701A*	Maintenance		3	Pulled volute to repair inside of the casing.
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*	In operation			
14.02	PID16	*Solids Storage Effluent Pump - P1601*	Running			
14.03	PID16	*Solids Cond. Tank*	In operation			
14.04	PID09	*Sludge Mixer*	Running			
14.05	PID09	*Filter Press Pump - P901*	Running			
14.06	PID09	*Filter Press Pump - P902*	Running			
14.07	PID09	*West Press*	Standby			
14.08	PID09	*East Press*	Running			
14.09	PID09	*Filtrate Tank*	In operation			
14.10	PID09	*Filtrate Tank Effluent (recycle) Pump - P903*	Running			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	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*	Standby			
17.00	PID07C	*Micro Nutrient System*	In operation			
18.00	PID07C	*Hydrogen Peroxide System*	In operation			
19.00	PID07C	*De-Foam System*	In operation			
20.00	PID15	*Nutrient (Phosphoric Acid) System* (Tank only - pumps included in FBRs)	In operation			
21.00	PID07A	*Nutrient (Urea) System* (Tank only - pumps included in FBRs)	In operation			
22.00	PID07A	*pH System* (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
23.00	PID07C	*Ferric Chloride System*	In operation			
24.00	PID07B	*Polymer Systems - DAF*	In operation			
25.00	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		2	*Oil added for cooling. Ingersoll Rand to investigate where leak is.*
26.02	PID08	*East Compressor*	Running		2	*New contactor and overload switch replaced. Compressor ready for service.*
26.03	PID08	*O2 Compressor*	Running			
26.04	PID08	*Compressed Air Receiver Tank*	In operation			
26.05	PID08	*Air Dryer*	Running			
26.06	PID08	*Oil Removal Filter*	In operation			
26.07	PID08	*Particulate Filter*	In operation			
27.00	PID16	*Oxygen System*	In operation			
28.00	PID16	*GWETS Plant Controls/ Siemens Controls*	In operation			
29.00	PID16	*Well Control System/ Allen Bradley Controls*	In operation			
30.00	PID16	*MCC FBR Pad*	In operation			
31.00	PID16	*MCC in D-1*	In operation			
32.00	PID16	*MCC in EQ area*	In operation			

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Sub-System	P&ID	Description	Status[1]	Checked	Criticality[2]	Notes
		Miscellaneous				
33.00		*Operations Office/Network*	In operation			
34.00		*Laboratory Analyzers*	In operation			
35.00		*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

Tanks, Pipelines, Ponds

In operation

Out of service

Spares

In stock

[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
4 = Low	- Tasks performed to either improve the existing equipment (i.e., testing new options)
	- Minor repairs that in no way alter the performance of the plant

[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