
To: Nevada Division of Environmental Protection
Nevada Environmental Response Trust

Cc: Nevada Environmental Response Trust Stakeholders

From: Frank Johns/Tt

Date: January 9, 2015

Subject: NERT – GWETS Operation Monthly Report – November 2014

Tetra Tech is providing this monthly report to provide a summary of GWETS operation during November 2014 and oversight tasks performed by Tetra Tech.

Summary of GWETS Operation

The groundwater extraction and treatment system (GWETS) operated normally in November, with the exception of the on-going operational bypass of GW-11 and two spills of treated effluent as described below. GW-11 is still being bypassed due to high suspended solids content, primarily insects and some algae, causing frequent plugging of the bag filters and increased the backwash frequency for the GAC. Envirogen Technologies, Inc. (ETI) has ordered automatic cleaning filters to replace the bag filters. The new filters are expected to be online with the pond taken out of bypass during the first full week of January. Delays in shipping from the manufacturer have pushed back the installation date by several weeks.

On November 12, 2014, a gasket on a fitting in the treated effluent line was found to be leaking. When ETI responded to a notification from Tronox security at approximately 2:00 AM PST, the operator tried to tighten the bolts on the fitting. Tightening the bolts did not stop the leak so the treated effluent was diverted to GW-11. During the period of diversion, approximately 321,850 gallons of treated effluent were diverted to GW-11. There was no measurable increase in pond level and the available storage remained at 13.8 days. The leak of treated effluent was estimated to be flowing at less than 2 gpm for less than 12 hours. Therefore, the maximum volume of treated water released was less than 1,500 gallons. The spill was reported to the NDEP via telephone on November 12, 2014, within the 24-hour reporting timeframe, and assigned Spill Incident No. 141112-03. A leak in this area of the treated effluent pipe is not captured by a sump nor does any leak notification exist in this area. The Trust will be auditing facility sensors and computer logic in early 2015 to determine if additional modifications should be implemented to safeguard against this type of event during unstaffed operations.

On November 23, 2014, the effluent booster pump shut off due to a fault on the variable frequency drive (VFD). The influent to the GWETS was still being pumped and treated through the GWETS. Hence, the water level in the effluent tank continued to rise past the high-level sensor, but neither an alarm callout occurred

nor did the sequence of events occur that would have put the GWETS into recycle. In addition, the sumps in the D-1 Building where the effluent tank is located did not have a call out alarm in-service, and one sump was not programmed to start automatically. The result was that the D-1 Building flooded from the effluent storage tank overflow. Approximately 75% of the treated groundwater did correctly exit through the treated effluent discharge pipe via gravity. The effluent pump that failed was down for approximately 4 hours and 10 minutes. There was a release of an estimated 50,000 gallons of treated groundwater that did not go through the effluent pipe or was not captured through the D-1 Building sump containment system. The spill was reported to the NDEP via telephone on November 23, 2014, within the 24-hour reporting timeframe, and assigned Spill Incident No. 141123-01. Initial corrective actions implemented in response to this spill are detailed later in this report.

The flow rate to the plant averaged approximately 933 gpm during the month. At the end of the month, the GW-11 volume was 43.1 million gallons (MG), which would allow 13.4 days of available storage in event of an emergency. The volume increased approximately 0.3 MG from the end of October. The influent perchlorate concentration from the equalization tank to the FBR plant averaged 101 mg/L for the month, with a maximum concentration of 107 mg/L.

There were no exceedances of NPDES-permitted discharge limitations at the GWETS Outfall for perchlorate or any other constituent (Attachment A, prepared by ENVIRON).

Operational Metrics

The approved program to add instruments, controls, data acquisition systems, along with various other technical upgrades to improve the efficiency of data collection and reporting remains on-schedule for phased activation beginning in March 2015.

See attached Tables 1 and 2 for a summary of the current GWETS operational metrics. The attached Figure 1 provides a summary of perchlorate mass flux.

Operational Issues

In addition to routine plant repairs conducted by ETI in accordance with its 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 continues to be bypassed due to the issue with insects and algae causing plugging of the bag filters ahead of the GAC units. ETI has ordered automatic cleaning filters to replace the bag filters which are scheduled for installation in late December with full operation by the end of the first full week in January.
2. Preventative and/or corrective actions taken to address the November 12, 2014 treated effluent line spill:
 - ETI maintenance employee evaluated and repaired the gasket.
 - A leak in this area of the treated effluent pipe is not captured by a sump nor does any leak notification exist in this area. The Trust will be auditing facility sensors and computer logic

in early 2015 to determine if additional modifications should be implemented to safeguard against this type of event during unstaffed operations.

3. Preventative and/or corrective actions taken to address the November 23, 2014 effluent tank spill are detailed here. The required actions and details related to implementing the preventative and/or corrective actions were verified complete on December 9, 2014 and are described below:
 - ETI will update its Program (Groundwater Extraction and Treatment System Preventative Maintenance Program) to perform more frequent inspections of all computer components, including the I/O Card either through an automatic diagnosis or a manual check at the end of each shift.
 - i. The operators now have an Alarm Response Log with each of the alarms printed and a table for recording when the alarm is tested. The operators run through the alarm log on a daily basis near the end of their shift to check each alarm. This procedure will help in providing early warning of an I/O or Communication card failure.
 - ETI will update its operations protocols and computer system logic to include additional contingencies in the event of multiple failures during unstaffed periods.
 - i. The alarm set point was moved to the bottom of the possible range. The high level alarm causes the FBR inlet valves to close which builds up pressure in the influent line resulting in a diversion valve on the influent line to open to redirect the flow to GW-11.
 - ETI will staff the GWETS 24/7 until the I/O Card is repaired and functionality of the high-level sensor is restored and verified.
 - i. ETI's instrumentation maintenance subcontractor replaced the failed I/O card. The high level sensor and alarm has been verified as operational.
 - ii. ETI has stocked shelf spares for all I/O cards.
 - ETI will install a level controller and automatic start capabilities for the D-1 Building sumps. This will prevent water in the D-1 Building from accumulating and spilling outside of the D-1 Building.
 - i. For the ISEP and PDM sump pumps, level controllers were installed and configured and an alarm was added to the auto dialer.
 - ETI will add a system call out trigger if a D-1 Building sump pump is activated.
 - i. This has been completed and verified. An alarm is activated if the ISEP pump runs for longer than five minutes (an event that indicates an unusual amount of water entering the sump).
 - ETI will apply a modification to the computer system logic for the effluent pumps so they work together as lead and lag (i.e., one pump backs up the other).
 - i. This has been completed and verified.
4. Maintenance
 - Major maintenance being performed or completed in the month included:
 - i. Small wiring cut addressed on I-O well and new flowmeter installed.
 - ii. The manway on the GAC 201C unit was leaking from around the seal. The manway leak was located in the equalization containment area. An outside contractor repaired the manway leak.
 - iii. FBR A Feed Pump continues to run in manual mode until I/O card can be replaced. A replacement is on-hand, but full plant shutdown is required to replace the card. Operating the feed pump in this manner does not present any operational concerns.

- iv. Air hose is in place to bypass carbon steel lines that are corroded at the DAF Pressure Tanks and Pressure Pump P551. ETI is discussing solutions and schedule for repair.
 - v. New seal will be installed in December for Effluent Pump P601.
 - vi. New piping installed on the UV Effluent Tank overflow to split the discharge to ISEP and PDM sumps.
 - vii. Repaired seal water line for Filtrate Tank Effluent (recycle) Pump P903.
 - viii. New feed line was installed for Micro Nutrient System.
 - ix. West compressor oil was replaced on December 9th.
 - x. New controller for East Compressor was installed by Ingersol Rand on December 9th.
 - xi. Panel view of the MCC in the FBR pad has been installed and is operational.
 - Preventative Maintenance completed or being performed in the month included:
 - i. FBR 4 feed valve mounting bracket ordered.
 - ii. Broken straps on FBR 5 are being replaced as part of the complete overhaul of FBR 5.
 - iii. Received rebuild kits for filter press pump P902
 - iv. New pump heads still on order for the DAF polymer systems.
 - v. Spare belts received for the Media Return Pump Kit.
5. Outstanding maintenance and repairs from the previous month have been addressed as outlined below:
- Allen-Bradley computer is still operating inconsistently. A new computer is on order.
 - i. A new computer was received the last week of November and the computer system is now fully operational.
 - Installing new nozzles and laterals on FBR 5.
 - i. Nozzles and laterals have been installed on FBR 5.
 - Replacing sump pump at the GWTP.
 - i. Temporary sump pump was installed at the GWTP until a new permanent pump can be purchased.
 - Repairing the ram head of the filter press at the GWTP
 - i. Ram head repair completed.
 - New mechanical seal ordered for effluent pump (P601) on old effluent pumping system.
 - i. New seal arrived and based on plant priority has not been installed yet. The leak is very minor and does not present any operational risk when running the pump.
 - New positioner ordered for filter reject tank on the sand filter system.
 - i. New positioner has been received, but not installed. The filtrate water is dirty so to make the use of the positioner viable, the level controller needs to be updated. The level controller is on order and both will be replaced when it arrives. Currently, ETI is successfully operating by keeping the positioner 100% open and controlling flow. There is no risk associated with operating temporarily in this manner. As of the date of this memo, the level controller has arrived and both are scheduled to be installed the week of January 12th.

- Replacement kits ordered for filter press pump P902
 - i. Received rebuild kits.
- New pump heads ordered for DAF polymer system.
 - i. Still on order in November. These additional pump heads are for shelf spares, the DAF polymer system is fully operational.

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

PC-150 began pumping on November 12, 2014. ART-7B became operational in October. Another round of flow optimization for the IWF will be initiated in January since both of these AWF wells are now operational. Capture zone analyses for the IWF and AWF were performed in November and are expected to continue into December. A data deliverable is expected to be provided to the NDEP at the end of January. A formal report will be included as an attachment to the Semiannual Performance Report to be submitted to the NDEP at the end of April 2015.

2. AP-5 Solids Removal

Tetra Tech has continued development of a work plan for the removal of solids from the pond. The draft work plan is scheduled to be submitted to the NDEP by mid-December. Tetra Tech continues to coordinate with the NDEP, ETI, and the Trust on this project. This will be a long-term project that will directly impact GWETS operations across multiple levels once implemented.

3. Enhanced Operational Metrics

Tetra Tech started design for the enhanced operational metrics project in September. A meeting was held in late October to coordinate recommended upgrades to instrumentation and controls with ETI. Design continues on schedule.

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 in the form, including both the operating status and the presence of the required shelf spares. The equipment tracking form submitted to Tetra Tech on December 4, 2014, is attached (Attachment B).

GWETS Staffing

ETI continues to staff the GWETS using a single shift and follows the security procedure in the Standard Operating Procedures (SOP) dated April 30, 2014. When the Effluent tank overflow spill occurred on November 23rd, ETI switched to 24/7 staffing until the preventive and corrective actions listed in the spill report, and in this report, were completed. Tetra Tech verified the required actions were completed during a site visit on December 9th and ETI was permitted to resume single shift staffing on December 10th.

GWETS Security

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

Tetra Tech Activities

Tetra Tech conducted weekly calls with ETI to review operation of the GWETS on November 2nd, 9th, and 16th. A face-to-face meeting was held at the Site on November 22nd. No meeting was held during the week of November 24th due to the Thanksgiving holiday. Becki Dano, CEM, of Tetra Tech, performed visits to the GWETS on November 7th, 14th, 20th, and 26th. Becki checked permit and sampling forms to ensure each was correct and up-to-date, checked equipment status, and viewed shelf spare inventory.

Summary

Based on our review of available and relevant information and the changes implemented in regard to the recent leaks, Tetra Tech concurs with the management of the GWETS at this time. Tetra Tech concurred with ETI staffing the GWETS 24/7 until the preventive and corrective actions listed in the spill report were completed. 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	525 ¹	10	0.001	Future Metric
AWF Total Extraction ⁵	273 ¹	148	0.42	Future Metric
IWF Total Extraction ⁶	68 ¹	1,004	8.23	Future Metric
GWTP Effluent ⁷	58	947	0.69	ND
GW-11 Influent	NA ³	NA ⁴	NA ⁴	Future Metric
GW-11 Effluent/ FBR Influent ⁷	933	136	0.10	0.07

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: GW-11 is currently offline. Flow is a calculated metric, but will be transitioned to flow meter measurement beginning in 2015

4: Perchlorate and chromium can be calculated, but will be transitioned to in-line samples beginning in 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 January 2015

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	1,824	0
AWF Total Extraction	14,629	43
IWF Total Extraction	24,536	201
GWTP Effluent	19,695	14
GW-11 Influent	NA ²	NA ²
GW-11 Effluent/FBR Influent	45,691	34

Notes:

TR = Total Recoverable; NA = Not Available

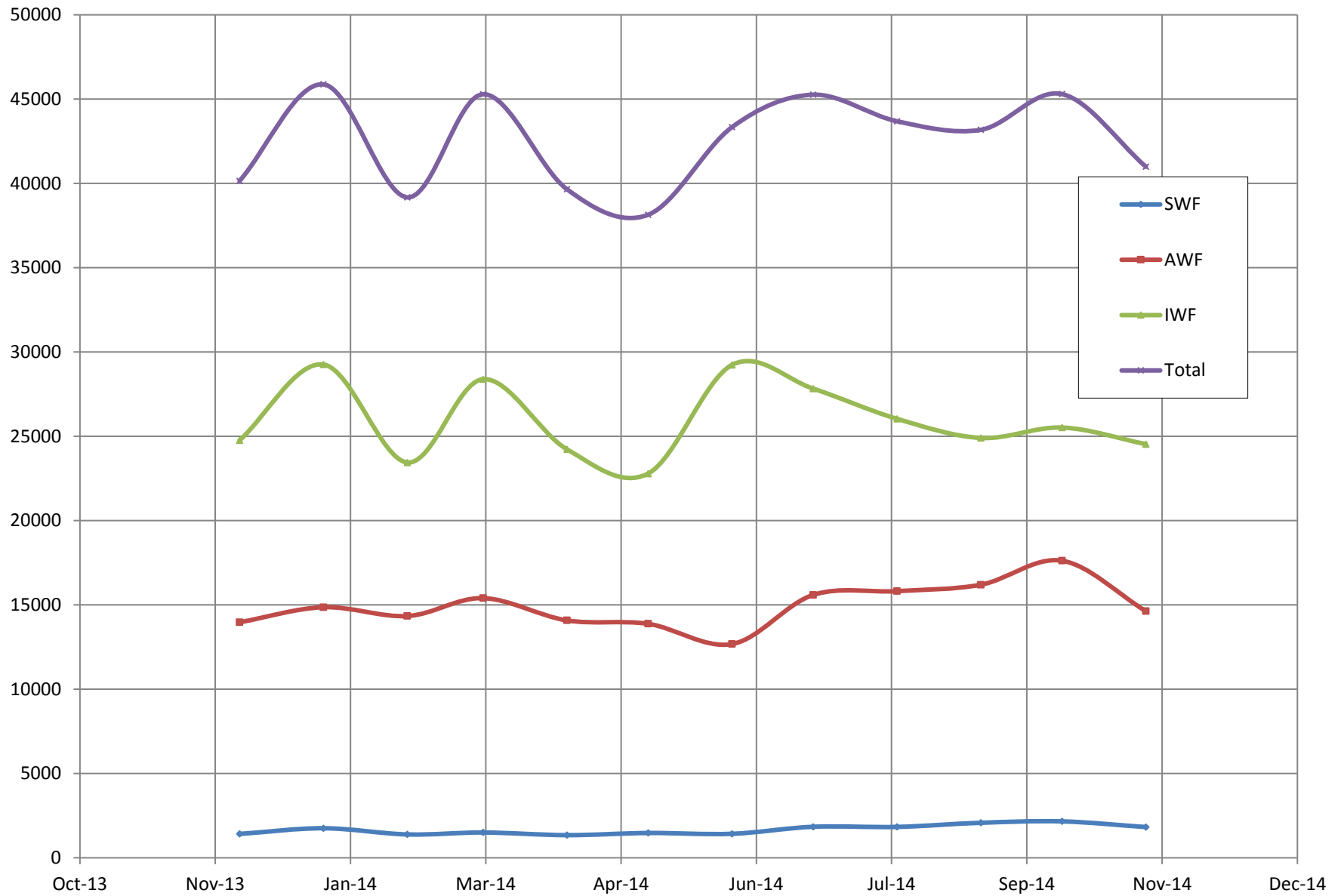
1: Total lbs extracted is calculated from flow weighted average concentration and average flow (see Table 1)

2: GW-11 is currently offline

Figures

Operational Metrics

Figure 1 - 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

December 2013	1.30	1.34	1.3	0.014	6.98	0.00013	0.014	20	220	3.6	39	1.8	1.7	2.5	3.8	27		
January 2014	1.34	1.37	1.3	0.014	6.91	0.00013	0.036	28	320	4.2	47	5.3	3.3	4.2	5.2	47	0.57	6.5
February 2014	1.37	1.44	1.3	0.014	7.08	0.00013	0.020	19	220	2.9	33	10	3.2	5.2	9.9	58		
March 2014	1.38	1.48	1.3	0.014	6.98	0.00048	0.012	25	260	5.2	55	6	2.3	2.6	3.7	30		
April 2014	1.07	1.46	1.3	0.012	6.63	0.00029	0.028	17	170	3.8	37	2.2	1.9	4.3	6.3	44	0.15	1.6
May 2014	1.37	1.48	1.3	0.014	6.81	0.0013	0.012	19	220	3.3	38	8	3.1	3.1	3.4	35		
June 2014	1.31	1.37	1.3	0.014	6.69	0.00013	0.017	17	170	3.3	35	5	2.0	2.4	5.4	26		
July 2014	1.11	1.40	1.3	0.012	6.88	0.00013	0.020	32	290	6.7	61	2.2	3.2	4.3	5.4	40	0.24	2.0
August 2014	1.27	1.60	1.3	0.013	6.80	0.00013	0.034	20	210	3.9	41	2.8	2.1	3.2	5.7	33		
September 2014	1.16	1.32	1.3	0.012	6.73	0.00013	0.029	26	260	4.4	43	3	11	2.3	3.8	22		
October 2014	1.19	1.23	1.3	0.012	6.86	0.00013	0.026	15	150	3.0	29	9	5.9	3.1	4.5	31	0.42	4.1
November 2014	1.18	1.23	1.3	0.012	7.22	0.00013	0.016	16	160	3.3	32	3.0	1.3	2.1	4.4	21		
December 2014 (month-to-date)	1.14	1.20	NA	NA	6.83	0.00013	0.012	18	170	3.5	33	2.5	0.90	NA	NA	NA		

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	mg/L	lbs/day	Sample Date	mg/L	lbs/day	mg/L	lbs/day
12/1 - 12/7	12/7/2013	ND (<2.5)	1.3	0.014	12/2/2013	7.11	ND (<0.00025)	0.0031	39	430	4.2	46	ND (<0.10)	0.05	0.5	0.053	0.58	12/5/2013	1.4	15		
12/8 - 12/14	12/14/2013	ND (<2.5)	1.3	0.013	12/9/2013	6.65	ND (<0.00025)	0.014	15	160	3.7	40	ND (<0.10)	0.05	0.5	0.089	0.95	12/11/2013	2.1	22		
12/15 - 12/21	12/21/2013	ND (<2.5)	1.3	0.014	12/16/2013	7.08	ND (<0.00025)	0.014	12	130	3.2	35	ND (<0.10)	0.05	0.5	0.15	1.6	12/18/2013	3.1	34		
12/22 - 12/28	12/28/2013	ND (<2.5)	1.3	0.014	12/23/2013	7.22	ND (<0.00025)	0.010	19	210	3.7	40	--	0.46	5.0	0.28	3.1	12/23/2013	3.8	41		
12/29 - 1/4	1/4/2014	ND (<2.5)	1.3	0.014	12/30/2013	6.85	ND (<0.00025)	0.0075	14	150	3.3	36	ND (<0.10)	0.23	2.5	0.21	2.3	12/30/2013	1.9	21		
1/5 - 1/11	1/11/2014	ND (<2.5)	1.3	0.014	1/6/2014	6.91	ND (<0.00025)	0.015	21	230	3.7	41	--	0.17	1.9	0.26	2.9	1/8/2014	2.3	26		
1/12 - 1/18	1/18/2014	ND (<2.5)	1.3	0.014	1/13/2014	7.31	ND (<0.00025)	0.0082	16	180	3.5	40	--	0.25	2.8	0.21	2.4	1/15/2014	4.5	51	0.57	6.5
1/19 - 1/25	1/25/2014	ND (<2.5)	1.3	0.014	1/20/2014	6.72	0.0013	0.036	60	680	5.8	65	--	0.97	11	0.42	4.7	1/22/2014	4.6	52		
1/26 - 2/1	2/1/2014	ND (<2.5)	1.3	0.014	1/27/2014	6.69	ND (<0.00025)	0.0098	15	170	3.8	43	--	0.48	5.4	0.28	3.1	1/29/2014	5.2	58		
2/2 - 2/8	2/8/2014	ND (<2.5)	1.3	0.014	2/3/2014	6.91	ND (<0.00025)	0.020	23	260	4.0	45	--	0.33	3.7	0.13	1.5	2/5/2014	4.6	52		
2/9 - 2/15	2/15/2014	ND (<2.5)	1.3	0.014	2/10/2014	6.98	ND (<0.00025)	0.0047	22	250	3.0	34	--	0.94	11	0.33	3.7	2/12/2014	2.6	29		
2/16 - 2/22	2/22/2014	ND (<2.5)	1.3	0.015	2/17/2014	7.25	ND (<0.00025)	0.0052	22	260	4.2	49	--	1.5	17	0.27	3.1	2/19/2014	9.9	110		
2/23 - 3/1	3/1/2014	ND (<2.5)	1.3	0.015	2/24/2014	7.18	ND (<0.00025)	0.0043	10	120	0.30	3.5	--	0.58	6.8	0.39	4.6	2/26/2014	3.7	43		
3/2 - 3/8	3/8/2014	ND (<2.5)	1.3	0.013	3/3/2014	6.91	ND (<0.00025)	0.0064	16	170	3.8	41	--	0.43	4.6	0.20	2.1	3/5/2014	2.4	26		
3/9 - 3/15	3/15/2014	ND (<2.5)	1.3	0.015	3/10/2014	7.36	ND (<0.00025)	0.0051	54	630	9.8	114	--	1.6	19	0.28	3.3	3/12/2014	3.4	40		
3/16 - 3/22	3/22/2014	ND (<2.5)	1.3	0.015	3/17/2014	6.87	ND (<0.00025)	0.0023	13	150	3.0	36	--	0.19	2.3	0.18	2.1	3/19/2014	1.0	12		
3/23 - 3/29	3/29/2014	ND (<2.5)	1.3	0.015	3/24/2014	6.72	0.00048	0.0059	12	140	3.6	42	--	0.33	3.9	0.18	2.1	3/26/2014	3.7	44		
3/30 - 4/5	4/5/2014	ND (<2.5)	1.3	0.0090	3/31/2014	7.04	ND (<0.00025)	0.012	30	220	5.9	42	ND (<0.10)	0.05	0.36	0.26	1.9	4/4/2014 ¹	NS	NS		
4/6 - 4/12	4/12/2014	ND (<2.5)	1.3	0.0056	4/11/2014	6.61	0.00029	0.0096	15	70	3.4	15	ND (<0.10)	0.05	0.23	0.16	0.7	4/11/2014	3.4	15		
4/13 - 4/19	4/19/2014	ND (<2.5)	1.3	0.015	4/14/2014	6.66	ND (<0.00025)	0.028	20	230	4.4	52	ND (<0.10)	0.05	0.59	0.22	2.6	4/16/2014	6.3	74	0.15	1.6
4/20 - 4/26	4/26/2014	ND (<2.5)	1.3	0.014	4/21/2014	6.62	ND (<0.00025)	0.012	15	170	3.5	40	--	0.51	5.9	0.20	2.3	4/23/2014	2.5	29		
4/27 - 5/3	5/3/2014	ND (<2.5)	1.3	0.014	4/28/2014	6.62	ND (<0.00025)	0.012	17	200	3.7	43	--	0.18	2.1	0.16	1.9	4/30/2014	4.9	57		
5/4 - 5/10	5/10/2014	ND (<2.5)	1.3	0.014	5/5/2014	6.77	ND (<0.00025)	0.0074	13	150	2.7	31	--	0.49	5.6	0.14	1.6	5/7/2014	2.8	32		
5/11 - 5/17	5/17/2014	ND (<2.5)	1.3	0.014	5/12/2014	6.62	0.0013	0.0083	26	290	3.9	44	--	1.1	12	0.39	4.4	5/14/2014	3.0	34		
5/18 - 5/24	5/24/2014	ND (<2.5)	1.3	0.014	5/19/2014	7.06	ND (<0.00025)	0.012	15	170	3.3	37	--	0.99	11	0.31	3.5	5/21/2014	3.4	38		
5/25 - 5/31	5/31/2014	ND (<2.5)	1.3	0.014	5/27/2014	6.77	ND (<0.00025)	0.012	23	270	3.4	39	--	0.12	1.4	0.25	2.9	5/28/2014 ²	NS	NS		
6/1 - 6/7	6/7/2014	ND (<2.5)	1.3	0.014	6/2/2014	6.85	ND (<0.00025)	0.010	18	200	3.1	34	--	1.3	14	0.52	5.6	6/4/2014	2.3	25		
6/8 - 6/14	6/14/2014	ND (<2.5)	1.3	0.014	6/9/2014	6.69	ND (<0.00025)	0.0091	13	140	3.0	33	--	0.11	1.2	0.040	0.43	6/11/2014	1.2	13		
6/15 - 6/21	6/21/2014	ND (<2.5)	1.3	0.014	6/16/2014	6.69	ND (<0.00025)	0.016	13	140	3.7	41	--	0.57	6.3	0.16	1.8	6/18/2014	0.86	10		
6/22 - 6/28	6/28/2014	ND (<2.5)	1.3	0.013	6/23/2014	6.71	ND (<0.00025)	0.0062	10	110	2.0	21	--	0.11	1.2	0.070	0.75	6/25/2014	5.4	58		
6/29 - 7/5 ¹	7/5/2014	ND (<2.5)	1.3	0.012	6/30/2014 ¹	6.50	ND (<0.00025)	0.017	29	280	4.8	47	ND (<0.10)	0.05	0.49	0.16	1.6	7/2/2014 ³	4.5	44		
7/6 - 7/12 ²	7/12/2014	ND (<2.5)	1.3	0.012	7/8/2014 ¹	6.77	ND (<0.00025)	0.0089	20	200	3.2	31	--	0.41	4.0	0.23	2.3	7/9/2014 ³	3.4	33	0.24	2.0
7/13 - 7/19	7/19/2014	ND (<2.5)	1.3	0.010	7/15/2014	6.85	ND (<0.00025)	0.020	34	280	8.3	69	ND (<0.10)	0.05	0.41	0.35	2.9	7/16/2014	4.5	37		
7/20 - 7/26	7/26/2014	ND (<2.5)	1.3	0.012	7/21/2014	7.25	ND (<0.00025)	0.020	50	470	9.2	87	--	0.22	2.1	0.56	5.3	7/23/2014	3.7	35		
7/27 - 8/2	8/2/2014	ND (<2.5)	1.3	0.012	7/28/2014	6.65	ND (<0.00025)	0.014	23	220	6.1	57	--	0.25	2.3	0.25	2.3	7/30/2014	5.4	51		
8/3 - 8/9	8/9/2014	ND (<2.5)	1.3	0.013	8/4/2014	6.84	ND (<															

Attachment B

Equipment Tracking Form

Sub-System	P&ID	Description	Status ¹	Checked	Notes
Main Plant Equipment					
Seep Wells and Lift Station 1					
1.01		Seep Well Field, 9 wells	Running	X	All 9 wells in operation
1.02		Lift Station 1 Lift Pump A	Running	X	
1.03		Lift Station 1 Lift Pump B	Standby	X	
1.04		Area in and around Lift Station 1	Running	X	
2 Athens Road Wells and Lift Station 3					
2.01		Athens Road Well Field, 9 wells	Running	X	
2.02		Lift Station 3 Lift Pump A	Standby	X	
2.03		Lift Station 3 Lift Pump B	Running	X	
2.04		Area in and around Lift Station 3	Running	X	
3 Lift Station 2 and Transmission Pipelines					
3.01		Influent Pipeline	In operation	X	
3.02		Effluent Pipeline	Running	X	
3.03		Lift Station 2 Lift Pump A	Running	X	
3.04		Lift Station 2 Lift Pump B	Standby	X	
3.05		Area in and around Lift Station 2	Running	X	
4 Interceptor Wells and Cr Treatment Plant					
4.01		IWF Well Field, 30 wells	Running	X	repaired leak on sample tap for I-Z
4.02		Ferrous Sulfate Feed System	Running	X	
4.03		Polymer Feed System	Running	X	
4.04		Clarifier	In operation	X	
4.05		Filter Press	Running	X	
4.06		GWTP Effluent Tank	In operation	X	
4.07		Interceptor Booster Pump A	Standby	X	
4.08		Interceptor Booster Pump B	Running	X	
4.09		Area In And Around GWTP	Running	X	temporary sump installed until permanent pump can be
5 Equalization Area and GW-11 Pond					
5.01	PID10A	Pond GW-11	In operation	X	
5.02	PID10A	Pond Water Pump - P101A	Off	X	
5.03	PID10A	Pond Water Pump - P101B	Off	X	
5.04	PID10A	Equalization Tanks	In operation	X	
5.05	PID10A	Area in and Around EQ	In operation	X	Still in process of diagnosing communication issues
5.06	PID10A	Raw Water Feed Pump - P102A	Standby	X	
5.07	PID10A	Raw Water Feed Pump - P102B	Running	X	

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5.08	PID10B	Carbon Absorber - LGAC 201A	Running	X	
5.09	PID10B	Carbon Absorber - LGAC 201B	Running	X	
5.10	PID10B	Carbon Absorber - LGAC 201C	Running	X	Man Way leaking from aroups seal. Outside contractor scheduled

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6		First Stage FBRs A, 1 & 2			
6.01	PID14	FBR A	Running	X	
6.02	PID14	Separator Tank - 1401	Running	X	
6.03	PID14	Media Return Pump - P 1401	Running	X	
6.04	PID14	P1401A	Standby	X	
6.05	PID01A	P1401B	Running	X	
6.06	PID01A	FBR 1	Running	X	
6.07	PID02A	FBR 2	Running	X	
6.08	PID01A	First Stage Separator Tank - T2011	Running	X	
6.09	PID01A	Media Return Pump - P2011	Running	X	
6.10	PID01A	First Stage FBR Pump - P1011	Standby	X	
6.11	PID01A	First Stage FBR Pump - P1012	Running	X	
6.12	PID01A	First Stage FRB Pump - P101A	Running	X	
6.13	PID07A	FBR A pH Feed Pump - P71A	Standby	X	
6.14	PID07A	FBR 1 pH Feed Pump - P711	Standby	X	
6.15	PID07A	FBR 2 pH Feed Pump - P712	Standby	X	
6.16	PID07A	FBR A Nutrient (Urea) Feed Pump - P72A	Off	X	
6.17	PID07A	FBR 1 Nutrient (Urea) Feed Pump - P721	Off	X	
6.18	PID07A	FBR 2 Nutrient (Urea) Feed Pump - P722	Off	X	
6.19	PID15	FBR A Nutrient (Phos Acid) Feed Pump - P1520A	Running	X	Pump running in hand until I/O card can be replaced.
6.20	PID15	FBR 1 Nutrient (Phos Acid) Feed Pump - P1521	Running	X	
6.21	PID15	FBR 2 Nutrient (Phos Acid) Feed Pump - P1522	Running	X	
6.22	PID07B	FBR A Electron Donor Assembly Pump - P73A	Running	X	
6.23	PID07B	FBR 1 Electron Donor Assembly Pump - P731	Running	X	
6.24	PID07B	FBR 2 Electron Donor Assembly Pump - P732	Running	X	
7		First Stage FBRs 3 & 4			
7.01	PID01B	FBR 3	Off	X	
7.02	PID01B	FBR 4	Off	X	Feed valve mounting bracket being ordered
7.03	PID02B	First Stage Separator Tank - T2012	Off	X	
7.04	PID01B	Media Return Pump - P2012	Off	X	
7.05	PID01B	First Stage FBR Pump - P1013	Off	X	
7.06	PID01B	First Stage FRB Pump - P1014	Off	X	
7.07	PID01B	First Stage FBR Pump - P102A	Off	X	
7.08	PID07A	FBR 3 pH Feed Pump - P713	Off	X	
7.09	PID07A	FBR 4 pH Feed Pump - P714	Off	X	
7.10	PID07A	FBR 3 Nutrient (Urea) Feed Pump - P723	Off	X	
7.11	PID07A	FBR 4 Nutrient (Urea) Feed Pump - P 724	Off	X	
7.12	PID15	FBR 3 Nutrient (Phos Acid) Feed Pump - P1523	Off	X	

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7.13	PID15	<i>FBR 4 Nutrient (Phos Acid) Feed Pump - P1524</i>	Off	X	
7.14	PID07B	<i>FBR 3 Electron Donor Assembly Pump - P733</i>	Off	X	
7.15	PID07B	<i>FBR 4 Electron Donor Assembly Pump - P734</i>	Off	X	

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7 Second Stage FBRs 5 & 6					
8.01	PID03A	FBR 5	Off	X	Replacing a few broken straps. All laterals and nozzles are
8.02	PID03A	FBR 6	Off	X	
8.03	PID03C	Second Stage Separator Tank - T3011	Off	X	
8.04	PID03A	Media Return Pump - P3011	Off	X	
8.05	PID03A	Second Stage FBR Pump - P3015	Off	X	
8.06	PID03A	Second Stage FBR Pump - P3016	Off	X	
8.07	PID03A	Second Stage FBR Pump - P301A	Off	X	
8.08	PID07A	FBR 5 pH Feed Pump - P715	Off	X	
8.09	PID07A	FBR 6 pH Feed Pump - P716	Off	X	
8.1	PID07A	FBR 5 Nutrient (Urea) Feed Pump - P725	Off	X	
8.11	PID07A	FBR 6 Nutrient (Urea) Feed Pump - P726	Off	X	
8.12	PID07B	FBR 5 Electron Donor Assembly Pump - P735	Off	X	
8.13	PID07B	FBR 6 Electron Donor Assembly Pump - P736	Off	X	
9 Second Stage FBRs 7 & 8					
9.01	PID03B	FBR 7	Running	X	
9.02	PID03B	FBR 8	Running	X	
9.03	PID03D	Second Stage Separator Tank - T3012	Running	X	
9.04	PID03B	Media Return Pump - P3012	Running	X	
9.05	PID03B	Second Stage FBR Pump - P3017	Standby	X	
9.06	PID03B	Second Stage FBR Pump - P3018	Running	X	
9.07	PID03B	Second Stage FBR Pump - P302A	Running	X	
9.08	PID07A	FBR 7 pH Feed Pump - P717	Standby	X	
9.09	PID07A	FBR 8 pH Feed Pump - P718	Standby	X	
9.10	PID07A	FBR 7 Nutrient (Urea) Feed Pump - P727	Off	X	
9.11	PID07A	FBR 8 Nutrient (Urea) Feed Pump - P728	Off	X	
9.12	PID07B	FBR 7 Electron Donor Assembly Pump - P737	Running	X	
9.13	PID07B	FBR 8 Electron Donor Assembly Pump - P738	Running	X	

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10		Aeration and DAF System			
10.01	PID04	Aeration Tank	In operation	X	
10.02	PID04	Aeration Blower - B401	Running	X	
10.03	PID04	Biofilter	In operation	X	
10.04	PID04	Nutrient Solution	Running	X	
10.05	PID04	Biofilter Sump	Running	X	
10.06	PID04	Nutrient Pump - P401	Running	X	
10.07	PID04	Biofilter Sump Pump - P402A	Standby	X	
10.08	PID04	Biofilter Sump Pump - P402B	Off	X	Only one pump in place
10.09	PID04	Biofilter Blower	Running	X	
10.10	PID05	DAF Pressure Tanks	In operation	X	Airhose in place to bypass carbon steel lines that are corrodid.
10.11	PID05	DAF Vessel - D501	Running	X	
10.12	PID05	DAF Pressure Pump - P501	Running	X	
10.13	PID05	DAF Float Pump - P502	Running	X	
10.14	PID05	DAF Vessel - D551	Standby	X	
10.15	PID05	DAF Pressure Pump - P551	Running	X	Bypassing steel arilines with hose feeding the pressure tank.
10.16	PID05	DAF Float Pump - P552	Running	X	
10.17	PID05	Screw Conveyer Drive	Standby	X	
10.18	PID05	Skimmer Drive	Running	X	
11		Pumping System (Old Effluent)			
11.01	PID06	Effluent Tank 601	In operation	X	
11.02	PID06	Effluent Pump - P601	Maintenance	X	New seal arrived. Plan for installation in Dec.
11.03	PID06	Effluent Pump - P602	Running	X	
12		Sand Filter System			
12.01	PID17	Sand Filter	Running	X	
12.02	PID17	Filter Reject Tank	In operation	X	Received positioner.
12.03	PID17	Filter Reject Pump - P1701A	Running	X	
12.04	PID17	Filter Reject Pump - P1701B	Standby	X	
13		Effluent Tank and Pumping			
13.01	PID10C	UV Effluent Tank	Running	X	New piping for overflow to split the discharge to ISEP and PDM
13.02	PID10C	Effluent Booster Pump - P1302A	Running	X	
13.03	PID10C	Effluent Booster Pump - P1302B	Standby	X	

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14		Solids Collection and Pressing System			
14.01	PID16	Sludge Storage Tank	In operation	X	
14.02	PID16	Solids Storage Effluent Pump - P1601	Running	X	
14.03	PID16	Solids Cond. Tank	In operation	X	
14.04	PID09	Sludge Mixer	Running	X	
14.05	PID09	Filter Press Pump - P901	Running	X	
14.06	PID09	Filter Press Pump - P902	Standby	X	Received rebuild kits. Repairs planned to be made week of 11/23
14.07	PID09	West Press	Running	X	
14.08	PID09	East Press	Standby	X	Flushing press with water
14.09	PID09	Filtrate Tank	In operation	X	
14.10	PID09	Filtrate Tank Effluent (recycle) Pump - P903	Running	X	Repaired seal water line.
		Chemical Systems			
15		Electron Donor System			
15.01	PID07B	Electron Donor Tank	In operation	X	
15.02	PID07B	Booster Pump P739A	Standby	X	
15.03	PID07B	Booster Pump P739B	Running	X	
17	PID07C	Micro Nutrient System	In operation	X	New feed line needs to be installed.
18	PID07C	Hydrogen Peroxide System	In operation	X	
19	PID07C	De-Foam System	In operation	X	
20	PID15	Nutrient (Phosphoric Acid) System (Tank only - pumps included in FBRs)	In operation	X	
21	PID07A	Nutrient (Urea) System (Tank only - pumps included in FBRs)	In operation	X	
22	PID07A	pH System (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation	X	
23	PID07C	Ferric Chloride System	In operation	X	
24	PID07B	Polymer Systems - DAF	In operation	X	New pump heads on order
25	PID09	Polymer System - Solids Dewatering (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation	X	

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Utility Systems					
26		Compressed Air System			
26.01	PID08	West Compressor	Running	X	Oil filled. Service set up for next week.
26.02	PID08	East Compressor	Running	X	new controller to be installed by Ingersoll Rand in the next two weeks
26.03	PID08	O2 Compressor	Running	X	
26.04	PID08	Compressed Air Receiver Tank	In operation	X	
26.05	PID08	Air Dryer	Running	X	
26.06	PID08	Oil Removal Filter	In operation	X	
26.07	PID08	Particulate Filter	In operation	X	
27	PID16	Oxygen System	In operation	X	
28		GWETS Plant Controls/ Siemens Controls	In operation	X	New computer received and online.
29		Well Control System/ Allen Bradley Controls	In operation	X	
30		MCC FBR Pad	In operation	X	Panel view installed and operational.
31		MCC in D-1	In operation	X	
32		MCC in EQ area	In operation	X	
Miscellaneous Systems					
33		Operations Office/Network	In operation	X	
34		Laboratory Analyzers	In operation	X	
35		Security Systems	In operation	X	
Shelf Spares					
		Media Return Pump Rebuild Kit	In stock	X	received belts
		pH Feed Pump	In stock	X	
		Nutrient Feed Pump	In stock	X	
		Electron Donor Feed Pump	In stock	X	
		Phosphoric Acid Feed Pump	In stock	X	
		Interceptor Well Pumps (4 each)	In stock	X	
		Seep Well Pump (1 each, same as Athens so total of 2)	In stock	X	
		Athens Road Well Pump (1 each, same as Seep so total of 2)	In stock	X	

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