

# MEMO

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**To:** Nevada Division of Environmental Protection  
Nevada Environmental Response Trust

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**Cc:** Nevada Environmental Response Trust Stakeholders

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**From:** Andrew Harley/Tt

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**Date:** July 20, 2015

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**Subject:** NERT – GWETS Operation Monthly Report – June 2015

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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 June 2015.

### Summary of GWETS Operation

Envirogen Technologies, Inc. (ETI) reports that the GWETS mechanically operated normally in June 2015. The flow rate to the plant averaged approximately 824 gallons per minute (gpm) during June 2015. At the end of the month, the GW-11 Pond volume was 48.4 million gallons (MG), which would allow 9.8 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 0.4 MG from the end of May.

Figure 1 in this report depicts the actual and projected GW-11 pond volumes and additional storage available. The actual pond volumes were higher than the calculated volumes predicted for the reporting period because withdrawals from the pond were reduced during rehabilitation of the Dissolved Air Flootation (DAF) system. Under the predicted operating conditions, pond outflows were projected to exceed inflows by approximately 50 gpm causing a relatively rapid decline in the pond volume. Restrictions during DAF system repairs limited the withdrawals to essentially equal the flow rate from the wells until June 22, 2015 when the DAF was returned to service. Thus, decreases in pond volume during the reporting period were primarily limited to evaporation. However, net evaporation rates did not exceed other inflow volumes resulting from regular plant operation and maintenance. Based on the volume projection graph in Figure 1, GW-11 pond volume will continue to decrease and return to greater than 15 days of available storage in September 2015.

The influent perchlorate concentration to the Fluidized Bed Reactor (FBR) plant averaged 105 mg/L for the month, with a maximum concentration of 110 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. An implementation schedule is presented in more detail under the GWETS Upgrades and Facility Projects section below.

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:** On behalf of the Trust, Tetra Tech continues to evaluate how to repair the northeast leak detection pipe so that the correct depth can be determined for the extraction pump. Tetra Tech is moving forward with a high resolution camera survey of the northeast and northwest detection pipes to be completed during the month of July. The timeline for the repair may be lengthy due to the on-going use of the GW-11 pond.
- On June 8, 2015, the NDEP Bureau of Water Pollution Control (BWPC) directed the Trust to: 1) collect a composite sample from the GW-11 sumps and analyze it for Profile I constituents plus perchlorate, 2) provide a plan to identify the source of leakage in GW-11, and 3) provide a plan that will be enacted to fix the leakage should the rate reach 250 gallons/acre-day and describe how groundwater will be diverted from GW-11 during the repair. The composite sample from the sumps was collected on June 18, 2015 and the analytical results were sent to BWPC on July 7, 2015. A work plan entitled "*GW-11 Pond Liner System Leak Location and Repair Work Plan*" was submitted to BWPC on June 29, 2015. The Profile I analytical data are provided in Table 3.
- **Diversions:** There were no effluent diversions during the month of June.

#### **2. Maintenance**

- Major maintenance that was performed or completed in the month included:

- i. The rehabilitation process on DAF Vessel D551 was completed and the vessel returned to service on June 22, 2015.
  - Preventative Maintenance completed or being performed in the month included:
    - i. ETI repaired the airline feeding the filter press.
    - ii. ETI installed new belts on the Groundwater Treatment Plant (GWTP) compressor and reset the pressure limit switch.
    - iii. ETI changed backflush time for P-101 tanks as a process change to get better performance out of the automatic strainers.
    - iv. The previously removed Raw Water Feed Pump – P102B was repaired by the manufacturer, and ETI will install the pump during the second week of July.
    - v. ETI replaced the belt on Media Return Pump P1401.
    - vi. ETI replaced the air regulator for the feed valves on FBR 8.
    - vii. Ingersoll Rand completed preventative maintenance work on the compressors.
    - viii. The Siemens Central Processing Unit (CPU) for the GWETS was reset and ETI re-entered the FBR setpoints. This did not cause any disruptions with the GWETS.
    - ix. Filter Reject Pump P1701B repairs are complete and the pump is ready for installation and testing.
3. Outstanding maintenance and repairs from the previous month are outlined below:
  - The flow meter on the electron donor tank has been repaired and is back online.
  - ETI continues the rehabilitation process on FBR 6. Rehabilitation on FBR 5 is complete. ETI expects to return these units to operation when the processing of the AP-5 slurry begins in the first quarter of 2016.
  - An air hose remains in place to bypass carbon steel lines that are corroded at the DAF Pressure Tanks and Pressure Pump P551. ETI met with contractors in May and are still waiting 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 as ETI does not deem replacing the regulator as a critical maintenance activity at this time. 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. AP-5 Solids Removal  
Tetra Tech is moving forward with the Phase II AP-5 Solids Removal project. Tetra Tech distributed additional procurement packages to potential bidders and is evaluating submitted

tank and equipment packages. 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.

## 2. Enhanced Operational Metrics

Tetra Tech and the Trust resolved access to areas where existing pipelines may be located outside of areas covered by the Trust's easements with Basic Environmental at the Seep Well Field and continued to work to resolve access to areas where existing pipelines may be located outside the Trust's lease with the City of Henderson. Surveying and pot hole excavation to confirm pipe locations at the SWF and accessible portions of the AWF were also completed during this period. Equipment installation bids were received from contractors. The total cost forecast indicated a significant cost increase due to additional items and improvements to increase system reliability, compatibility, and future expansion capability as well as higher than expected installation pricing quotes from approved contractors. At the direction of the Trust and NDEP, work continues within the limits of the current budget while the budget increase is analyzed and the budget is amended. Construction activities are scheduled to be released after the budget increase is approved. Phased activation of the operational metrics upgrades will continue through the end of September 2015, with all data available in October, barring any schedule delays.

### **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 July 1, 2015, is attached (Please see 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).

### **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 June.

### **Tetra Tech Activities**

Tetra Tech conducted calls with ETI to review operation of the GWETS on June 4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, and 25<sup>th</sup>. Becki Dano, CEM, performed visits to the GWETS on June 4<sup>th</sup>, 12<sup>th</sup> and 26<sup>th</sup>. 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) <sup>2</sup>	Chromium TR (mg/L) <sup>2</sup>	Chromium(VI) (mg/L) <sup>2,8</sup>
SWF Total Extraction <sup>5</sup>	533 <sup>1</sup>	11	0.000	Future Metric
AWF Total Extraction <sup>5</sup>	287 <sup>1</sup>	162	0.39	Future Metric
IWF Total Extraction <sup>6</sup>	66 <sup>1</sup>	921	7.44	Future Metric
GWTP Effluent <sup>7</sup>	66	866	0.23	ND
GW-11 Influent <sup>4</sup>	812 <sup>3</sup>	Future Metric	Future Metric	Future Metric
GW-11 Effluent/ FBR Influent <sup>7</sup>	812	105	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: Following contractual amendment agreements, ETI will begin collecting analytical samples at the GW-11 influent sample tap.

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) <sup>1</sup>	Chromium TR (lbs/month) <sup>1</sup>
SWF Total Extraction	2,244	0.09
AWF Total Extraction	17,369	41
IWF Total Extraction	22,563	182
GWTP Effluent	21,277	6
GW-11 Influent <sup>2</sup>	Future Metric	Future Metric
GW-11 Effluent/FBR Influent	31,777	8

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: Tetra Tech is currently working with ETI to create sampling plan for the GW-11 influent tap.



Nevada Environmental Response Trust   Groundwater Extraction and Treatment System   Monthly Stakeholder Metrics	
Parameter	Result (mg/L)
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	23
Alkalinity, Total (as CaCO <sub>3</sub> )	23
Aluminum	12
Antimony	0.00071
Arsenic	2.5
Barium	0.076
Beryllium	0.0051
Cadmium	ND
Calcium	650
Chloride	3,700
Chromium	0.80
Copper	ND
Fluoride	14
Iron	280
Lead	ND
Magnesium	510
Manganese	14
Mercury	ND
Nickel	0.48
Nitrate + Nitrate, Total (as N)	ND
Nitrogen, Total (as N)	170
Perchlorate	34
pH, (standard units)	5
Phosphorus, Total	6
Potassium	73
Selenium	0.041
Silver	ND
Sodium	0.48
Sulfate	4,700
Thallium	ND
Total Dissolved Solids	15,000
Zinc	0.033

## Notes:

ND = not detectable above laboratory method detection limit (Cd=0.004 mg/L; Cu=0.10 mg/L; Pb=0.013mg/L; Hg=0.00010 mg/L; NO<sub>3</sub>-NO<sub>2</sub> as N=3.5 mg/L; Ag=0.010 mg/L; Tl=0.50 ug/L).

1: The sample was collected as a composite of each of the four corner leak detection wells on June 18, 2015.

# Figures

## Operational Metrics

Figure 1 - GW-11 Pond Volume Projected vs Actual

Nevada Environmental Response Trust  
 GW-11 Pond Volume  
 Projected v. Actual  
 Update 07/02/2015

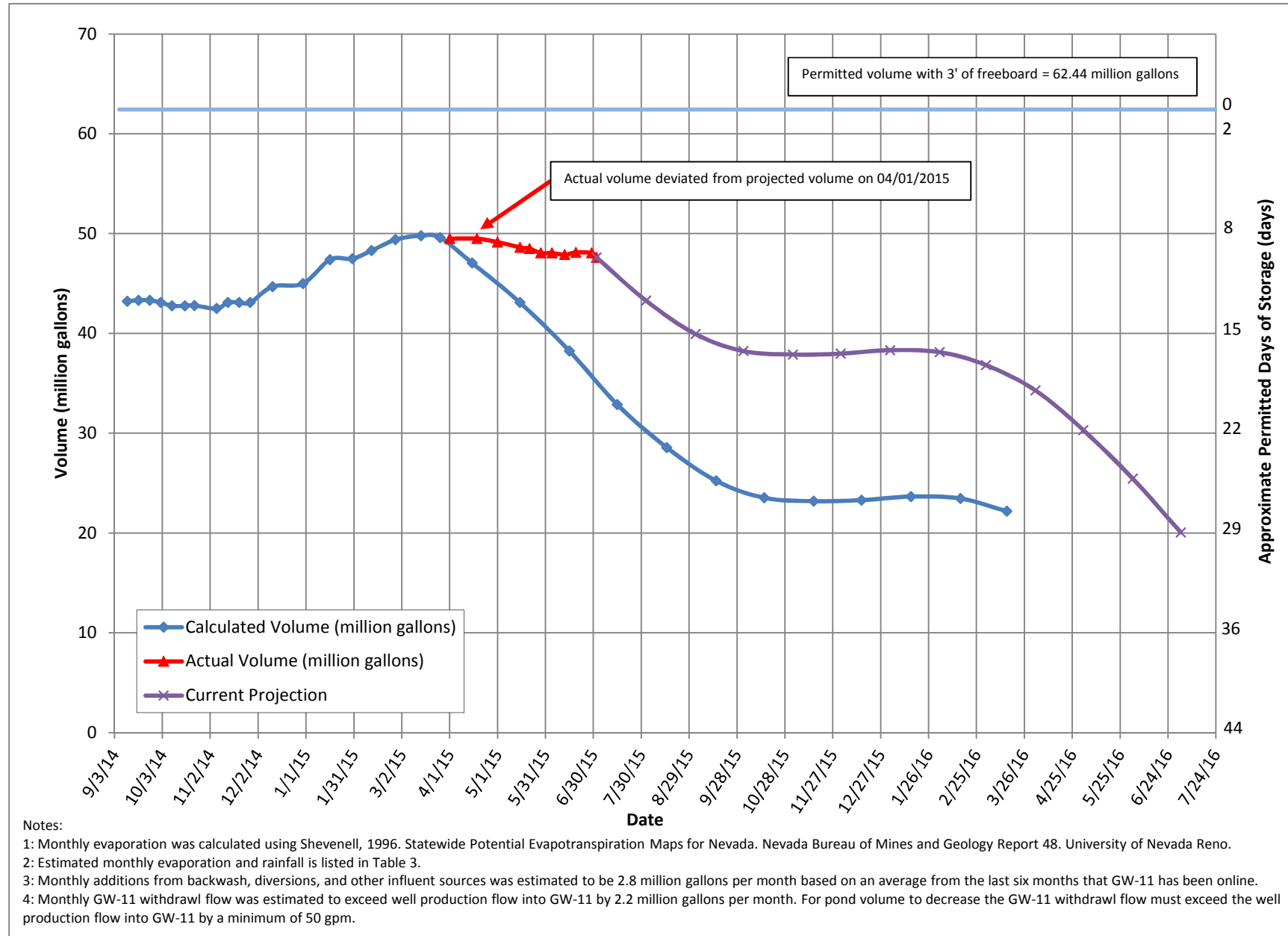
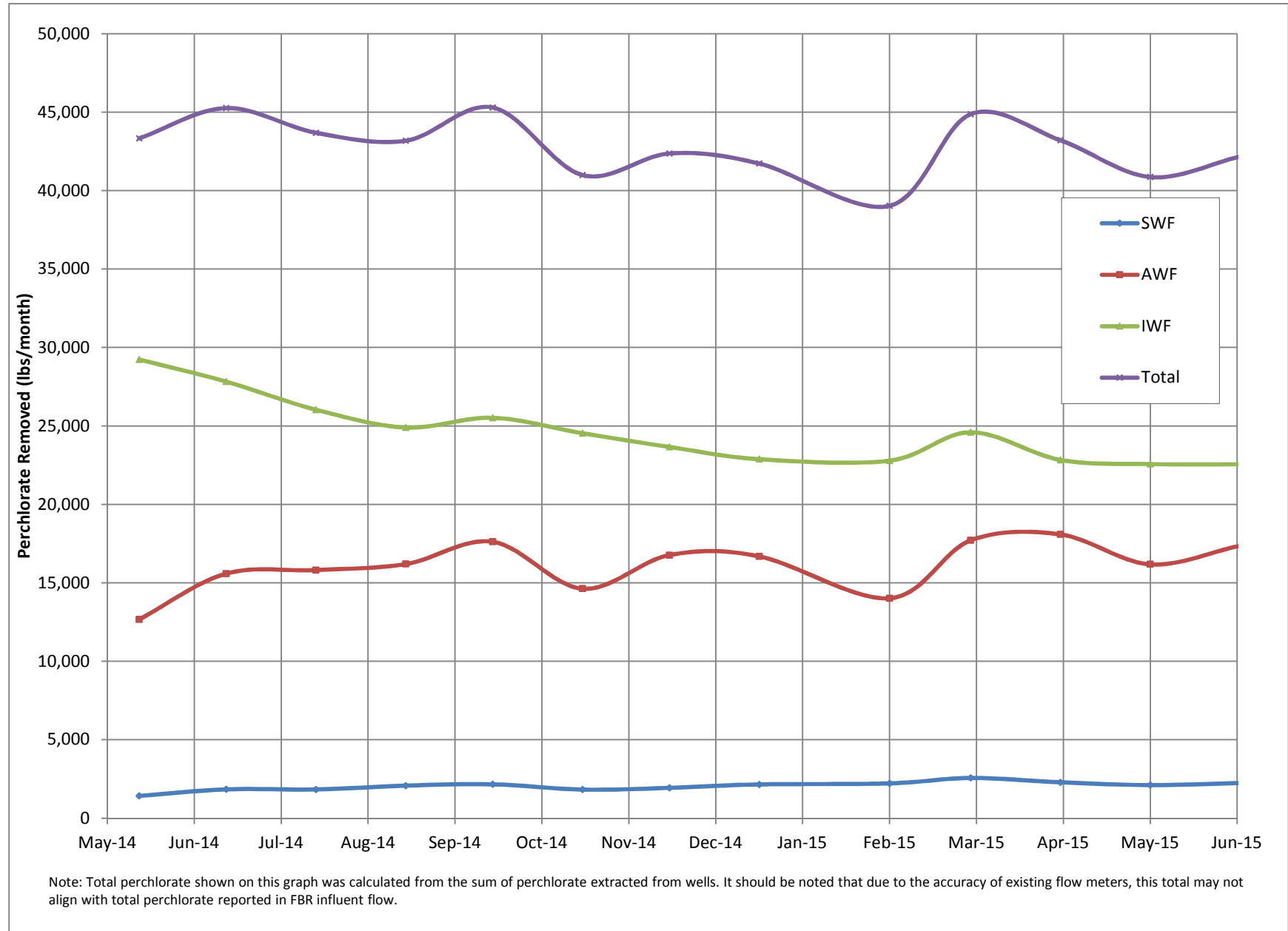


Figure 2 - Historical Perchlorate Mass Flux



# Attachment A

NPDES Tracking Sheet (Prepared by ENVIRON)



# Attachment B

## Equipment Tracking Form

Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
		<b><u>Main Plant Equipment</u></b>				
<b>1</b>		<b>Seep Wells and Lift Station 1</b>				
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			
<b>2</b>		<b>Athens Road Wells and Lift Station 3</b>				
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			
<b>3</b>		<b>Lift Station 2 and Transmission Pipelines</b>				
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			
<b>4</b>		<b>Interceptor Wells and Cr Treatment Plant</b>				
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		3	ETI repaired airline feeding the filter press.
4.06		GWTP Effluent Tank	In operation			
4.07		Interceptor Booster Pump A	Running			
4.08		Interceptor Booster Pump B	Standby			
4.09		Area In And Around GWTP	Running		3	ETI installed the belts on the GWTP compressor and reset the pressure limit switch.

<sup>1</sup>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 <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>5</b>		<b>Equalization Area and GW-11 Pond</b>				
5.01	PID10A	Pond GW-11	In operation			
5.02	PID10A	Pond Water Pump - P101A	Standby		4	The valve handle is broken. ETI has ordered a new valve.
5.03	PID10A	Pond Water Pump - P101B	Running			
5.04	PID10A	Equalization Tanks	In operation			
5.05	PID10A	Area in and Around EQ	In operation		3	ETI changed backflush times for P-101's. This was a process change to get better performance out of the filters.
5.06	PID10A	Raw Water Feed Pump - P102A	Running			
5.07	PID10A	Raw Water Feed Pump - P102B	Maintenance		3	The pump has been repaired and ETI will install the pump the second week of July.
5.08	PID10B	Carbon Absorber - LGAC 201A	Running			
5.09	PID10B	Carbon Absorber - LGAC 201B	Running			
5.10	PID10B	Carbon Absorber - LGAC 201C	Running			
<b>6</b>		<b>First Stage FBRs A, 1 &amp; 2</b>				
6.01	PID14	FBR A	Running			
6.02	PID14	Separator Tank - 1401	Running			
6.03	PID14	Media Return Pump - P 1401	Running		3	ETI replaced the belt on the pump.
6.04	PID14	P1401A	Running			
6.05	PID01A	P1401B	Standby			
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			

<sup>1</sup>Status Codes

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
6.19	PID15	<i>FBR A Nutrient (Phos Acid) Feed Pump - P1520A</i>	Running			
6.20	PID15	<i>FBR 1 Nutrient (Phos Acid) Feed Pump - P1521</i>	Running			
6.21	PID15	<i>FBR 2 Nutrient (Phos Acid) Feed Pump - P1522</i>	Running			
6.22	PID07B	<i>FBR A Electron Donor Assembly Pump - P73A</i>	Running			
6.23	PID07B	<i>FBR 1 Electron Donor Assembly Pump - P731</i>	Running			
6.24	PID07B	<i>FBR 2 Electron Donor Assembly Pump - P732</i>	Running			

<sup>1</sup>Status Codes

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>7</b>		<b>First Stage FBRs 3 &amp; 4</b>				
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			
<b>8</b>		<b>Second Stage FBRs 5 &amp; 6</b>				
8.01	PID03A	FBR 5	Off			
8.02	PID03A	FBR 6	Off		4	ETI continues to transfer carbon out of the bottom of the FBR.
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			

<sup>1</sup>Status Codes

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>9</b>		<b>Second Stage FBRs 7 &amp; 8</b>				
9.01	PID03B	FBR 7	Running			
9.02	PID03B	FBR 8	Running		3	ETI replaced the air regulator for the feed valves.
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			
<b>10</b>		<b>Aeration and DAF System</b>				
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 is waiting for a quote for the isolation valves installation. Isolation valves need to be added to isolate the air going to the DAF pressure tanks.
10.11	PID05	DAF Vessel - D501	Running			
10.12	PID05	DAF Pressure Pump - P501	Running			
10.13	PID05	DAF Float Pump - P502	Running			
10.14	PID05	DAF Vessel - D551	Running			The DAF vessel rehab was completed and the vessel was put back online on June 22, 2015.

<sup>1</sup>Status Codes

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
10.15	PID05	DAF Pressure Pump - P551	Running		4	ETI is waiting for a quote for the isolation valves installation. Isolation valves need to be added to isolate the air going to the DAF pressure tanks.
10.16	PID05	DAF Float Pump - P552	Running			ETI installed spray downs for sludge box.
10.17	PID05	Screw Conveyer Drive	Standby			
10.18	PID05	Skimmer Drive	Running			

<sup>1</sup>Status Codes

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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 <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>11</b>		<b>Pumping System (Old Effluent)</b>				
11.01	PID06	Effluent Tank 601	In operation			
11.02	PID06	Effluent Pump - P601	Running			
11.03	PID06	Effluent Pump - P602	Running			
<b>12</b>		<b>Sand Filter System</b>				
12.01	PID17	Sand Filter	Running			
12.02	PID17	Filter Reject Tank	In operation			
12.03	PID17	Filter Reject Pump - P1701A	Standby			
12.04	PID17	Filter Reject Pump - P1701B	Running		3	ETI installed the pump and it is back online.
<b>13</b>		<b>Effluent Tank and Pumping</b>				
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	The valve to be replaced was part of an old system and a replacement has been received. Because the piping is blind flanged off, the need for the new valve is low priority and there is no risk present with the current layout.
<b>14</b>		<b>Solids Collection and Pressing System</b>				
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			

<sup>1</sup>Status Codes

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Sub-System	P&ID	Description	Status <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>Chemical Systems</b>						
<b>15</b>		<b>Electron Donor System</b>				
15.01	PID07B	<i>Electron Donor Tank</i>	In operation		3	ETI installed new transmitter and core and the meter is back online
15.02	PID07B	<i>Booster Pump P739A</i>	Running			
15.03	PID07B	<i>Booster Pump P739B</i>	Standby			
<b>17</b>	PID07C	<b>Micro Nutrient System</b>	In operation			
<b>18</b>	PID07C	<b>Hydrogen Peroxide System</b>	In operation			
<b>19</b>	PID07C	<b>De-Foam System</b>	In operation			
<b>20</b>	PID15	<b>Nutrient (Phosphoric Acid) System</b> (Tank only - pumps included in FBRs)	In operation			
<b>21</b>	PID07A	<b>Nutrient (Urea) System</b> (Tank only - pumps included in FBRs)	In operation			
<b>22</b>	PID07A	<b>pH System</b> (Tank and effluent pH feed pump only - other pumps included in FBRs)	In operation			
<b>23</b>	PID07C	<b>Ferric Chloride System</b>	In operation			
<b>24</b>	PID07B	<b>Polymer Systems - DAF</b>	In operation			
<b>25</b>	PID09	<b>Polymer System - Solids Dewatering</b> (2 tanks, 2 centrifugal pumps, mixer, volumetric feeder)	In operation			
<b>Utility Systems</b>						
<b>26</b>		<b>Compressed Air System</b>				
26.01	PID08	<i>West Compressor</i>	Running		4	Ingersoll Rand completed PM work on compressors.
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	Received regulator. Waiting for plant shut down to replace as well as additional parts. New valve and piping also built to replace 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			
<b>27</b>	PID16	<b>Oxygen System</b>	In operation			
<b>28</b>		<b>GWETS Plant Controls/ Siemens Controls</b>	In operation		2	CPU had to be reset and setpoint re-entered by ETI.

<sup>1</sup>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 <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
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			

<sup>1</sup>Status Codes

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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 <sup>1</sup>	Checked	Criticality <sup>2</sup>	Notes
<b>Miscellaneous Systems</b>						
33		Operations Office/Network	In operation			
34		Laboratory Analyzers	In operation			
35		Security Systems	In operation			
<b>Shelf Spares</b>						
		Media Return Pump Rebuild Kit	In stock			ETI ordered new disks for the 3" Penn Valley pumps.
		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			

<sup>1</sup> 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

<sup>1</sup> 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

<sup>1</sup> 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