

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

P001159265

<b>FACILITY:</b> Speedway SuperAmerica, LLC (SSA #7207)	<b>SRN / ID:</b> P0011
<b>LOCATION:</b> 3029 E. Kalamazoo St., LANSING	<b>DISTRICT:</b> Lansing
<b>CITY:</b> LANSING	<b>COUNTY:</b> INGHAM
<b>CONTACT:</b> Michael Cox , Project Manager	<b>ACTIVITY DATE:</b> 08/11/2021
<b>STAFF:</b> Michelle Luplow	<b>COMPLIANCE STATUS:</b> Compliance
<b>SUBJECT:</b> Announced, onsite, scheduled inspection to determine compliance with PTI 116-15	<b>SOURCE CLASS:</b> MINOR
<b>RESOLVED COMPLAINTS:</b>	

**Inspected by:** Michelle Luplow

**Speedway Site Contacts:**

Mike Cox, Atlas ATC Project Manager (michael.cox@oneatlas.com)

Dylan Schuberg, Atlas ATC Field Scientist (Dylan.schuberg@oneatlas.com)

Sean Ericksen, Marathon Petroleum (seericksen@marathonpetroleum.com)

**Purpose**

Conduct an announced, onsite, scheduled compliance inspection of Admiral Petroleum's Air Sparge/Soil Vapor Extraction (SVE) remediation system (with catalytic oxidation control), located at an operational gas station (Admiral store #7207), to determine compliance with General PTI No. 116-15. Records indicate this is the first time this site has been inspected. This source is currently owned and operated by Marathon Petroleum.

**Facility Background/Regulatory Discussion**

Remediation activities at this site began in December 2016 and operated through June 13, 2019, at which point, operations have since been put on hold. Michael Cox, Project Manager, said that there are no immediate plans to restart the remediation system. They are currently in negotiations with a third party to complete additional site investigations and corrective actions, and based on those investigations, a decision will be made regarding whether the system should be restarted. One Atlas wishes to keep the permit active until RRD closes the LUST release at the facility.

According to the last report that RRD received (provided by RRD staff, Autumn Henney, attached), the system last operated between January 1, 2019 and June 13, 2019. On June 13, 2019, the Lansing Fire Department suspected a tank overflow, and it was determined that a cap had come off of a monitoring well and the water was being pushed to the ground surface from the active air sparge system. The remediation system was immediately shut down and has remained shut down since June 13, 2019.

**Inspection**

On August 11, 2021 I met with Dylan Schuberg at approximately 9:00 a.m. at the remediation site. The equipment was not operating during the inspection.

## **FG-REMEDATION**

FG-REMEDATION consists of air sparge and soil vapor extraction system with catalytic oxidation control. This General Permit covers sources with total potential VOC or gasoline emissions greater than 10 tons per year and/or total potential BTEX emissions greater than 1 ton per year.

Air is injected into the ground and the soil vapor extraction system pulls the air out of the ground, along with any VOCs/BTEX. This gas stream is then sent to the catalytic oxidizer for control.

There are no Material Limits, Design/Equipment Parameters, Testing/Sampling, or Reporting requirements at this time.

### **Emission Limits & Monitoring/Recordkeeping**

This site is limited to 10.0 tpy each of total VOC and total gasoline, and 1.0 tpy total BTEX on a 12-month rolling basis. For soil remediation, the permittee is required to monitor and record the gas flow rate and the VOC, gasoline and/or BTEX concentrations at the outlet of the soil vapor extraction system using Appendix R-2 of the General PTI. Quarterly monitoring of these parameters is required and monthly and annual records of the total VOC, gasoline or BTEX emissions are required to be kept.

I requested records for the previous 5 years (August 2016 – July 2021). Because the system was not operating after June 13, 2019, records provided covered the period from August 2016 through June 2019. Inlet concentration (pre-control), gas flow rate, lb/hr and ton/month and ton/12-month rolling were provided for total VOCs and total BTEX (see attached). Per the permit application, 98% control efficiency is applied to all calculations. Total VOC during all 12-month rolling periods covered from August 2016 – June 2019 was less than 2 tons per 12-month rolling period. Total BTEX during all 12-month rolling periods covered from August 2016 – June 2019 was less than 1 ton per 12-month rolling period.

M. Cox has been informed that records should be kept in a format similar to Appendix R-2 of the General Permit to Install if they decide to start up the system again.

### **Process/Operational Restrictions & Monitoring/Recordkeeping**

The permittee is required to install maintain and operate the catalytic oxidizer according to the manufacturer's specifications. Proper operation also requires a minimum of 98% reduction of hydrocarbon emissions to the atmosphere and operating the oxidizer at a minimum of 600F at the inlet to the catalyst bed and a maximum space velocity of 40,000/hr. A temperature indication device which continuously displays the operating temperature of the inlet to the catalyst bed of the oxidizer is required to be installed and maintained in accordance with the manufacturer's specifications.

Although not operating, I verified that the catalytic oxidizer has a digital temperature monitoring device. "T1" is used to determine the inlet temperature into the catalytic bed. A snapshot review of the operation and maintenance records in 2019 indicate that the temperature of the inlet to the catalyst bed, T1, was greater than 600F (specifically 330C). M. Cox said that the catalyst did not need to be replaced during the years it operated, and that there were no malfunctions of the control device.

M. Cox has been informed that maintenance records should be made clearer in terms of following manufacturer's recommendations to maintain the catalytic bed, in the event that they determine the system will be operated in the future.

### **Stack/Vent Restrictions**

Exhaust gases are required to be discharged unobstructed vertically upwards to the ambient air at an exit point at least 1.5 times the building height, but not less than 20' above ground level. During the inspection I verified that the stack is greater than 20' from ground level, and appears to be 1.5 times the height of the remediation equipment trailer. I did note, however, that a raincap was on the stack. Mike Cox has been informed that the raincap must be removed if the remediation system is started up again to ensure compliance with the requirement that the stack discharge is unobstructed.

### **Compliance Statement**

At this time it appears that Marathon is in compliance with General PTI 116-15.



**Image 1(Catalytic Oxidizer)** : Control device for remediation.



**Image 2(Exhaust Stack) :** Stack is appropriate height relative to the remediation trailer. Note that stack is obstructed with a raincap.



**Image 3(Temp Monitor) :** Note "T1" is monitor for inlet temperature to catalytic bed.

NAME Michelle Luplow

DATE 9/2/21

SUPERVISOR B.M.



## LEAKING UNDERGROUND STORAGE TANK SUPPLEMENTAL INFORMATION COVER SHEET

**INSTRUCTIONS:** Use this form to submit all supporting documentation requested by the RRD or to voluntarily submit additional information. **NOTE:** Submittal of a Final Assessment Report (FAR) or Closure Report, revised as a result of a DEQ audit, requires use of the FAR or Closure Report cover sheet Form EQP4000 or EQP4452 indicating it is "revised per DEQ audit". Use Form EQP4005 or EQP4004 to submit documentation to demonstrate that conditions identified in an "approval with conditions" audit determination are satisfied. The RRD may comment on supplemental information but only has the authority to audit FARs and Closure Reports. Please submit the completed form and supplemental information to the appropriate RRD District Office.

SITE NAME: <b>Former Speedway LLC #7207</b>		FACILITY ID NUMBER: <b>00009647</b>	
STREET ADDRESS: <b>3029 East Kalamazoo Street</b>			
CITY: <b>Lansing</b>	ZIP: <b>48912-4614</b>	COUNTY: <b>Ingham</b>	
DATE(S) RELEASE(S) DISCOVERED: <b>09/18/1995</b>		CONFIRMED RELEASE NUMBER(S): <b>C-0999-95</b>	
O/O NAME: <b>Speedway LLC</b>		O/O EMAIL ADDRESS: <b>sjkramer@speedway.com</b>	
O/O STREET ADDRESS: <b>P.O. Box 1500</b>	CITY: <b>Springfield</b>	STATE: <b>OH</b>	ZIP: <b>45501</b>
CONTACT PERSON: <b>Samuel J. Kramer</b>	PHONE: <b>937-863-6678</b>	FAX: <b>937-863-6078</b>	

Permission is given for the Department of Environmental Quality to contact the Qualified Consultant:  YES  NO

**SUPPLEMENTAL REPORT INFORMATION: Answer All Questions (DO NOT LEAVE BLANKS)**

1. Site classification (1-4): **2** Previous site classification (1-4): **2** Type of RBCA evaluation:  Tier I  Tier II  Tier III
2. Substance(s) released:  Gasoline  Diesel  Ethanol: **E-10**  **E-85**  Other:
3. Has contamination migrated off-site above Tier 1 Residential RBSLs?  YES  NO  
 If YES, have off-site impacted parties been notified per Section 324.21309a(3) of Part 213?  YES  NO
4. Predominant groundwater flow direction: **Shallow- South** Depth to groundwater: **Avg. 6.27 feet btoc – 12/05/2019**  
**Deep- North**
5. Is mobile NAPL present: Currently?  YES  NO Previously?  YES  NO  
 If present, was it recovered?  YES  NO If recoverable, total gallons recovered since last reported: \_\_\_\_\_ to date: \_\_\_\_\_
6. Is migrating NAPL present:  YES  NO If yes, are actions being taken to stop the NAPL migration?  YES  NO
7. Since last report: cubic yards of soil remediated: **0** gallons of groundwater remediated: **0**  
 Totals to date: cubic yards of soil remediated: **1,043** gallons of groundwater remediated: **71,875**
8. Have toxic or explosive vapors been identified in any confined spaces (basement, sewer, etc.)?  YES  NO
9. Drinking water supply affected? Currently:  YES  NO Previously:  YES  NO  
 Indicate type and # of wells affected:  Private # \_\_\_\_\_  Public Type II/III # \_\_\_\_\_  Municipal # \_\_\_\_\_
10. Has surface water / wetlands been contaminated?  YES  NO
11. Estimated distance and direction from point of release to nearest: Private well: **3,000 ft. E** Municipal well: **500 ft. NE**  
 Surface water/wetland: **800 ft. SE (Cedar River)** Is site within a wellhead protection zone?  YES  NO
12. Type of Report:  Requested Supporting Documentation  Soil or Groundwater Investigation Monitoring **Annual 2019 Status**  
 Corrective Action Plan Monitoring  Operation and Maintenance  Soil Vapor Monitoring  LNAPL Status  
 Other Report: *Please specify:*

**SIGNATURE OF OWNER/OPERATOR (O/O) AND QUALIFIED UST CONSULTANT (QC) SUBMITTING SUPPLEMENTAL REPORT**

	<b>Samuel J. Kramer</b>	<b>04/09/20</b>
O/O or AUTHORIZED REPRESENTATIVE SIGNATURE	PRINT NAME	DATE
	<b>Jenny Roether</b>	<b>04/09/20</b>
QC SIGNATURE*	PRINT NAME	DATE

\* By signing this form I certify that I meet the qualified underground storage tank consultant requirements identified in section 324.21325 of Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

<b>ATC Group Services LLC</b>	<b>2650 Horizon Drive, Suite 110, Grand Rapids, Michigan 49546-7685</b>	
QC COMPANY NAME	QC ADDRESS, CITY, STATE, ZIP	
<b>616-204-6610</b>	<b>616-698-1922</b>	<b>jenny.roether@atcgs.com</b>
QC PHONE	QC FAX NUMBER	QC EMAIL ADDRESS

**RECEIVED**  
**MAY 04 2020** EQP4001(8/2013)



## **ANNUAL 2019 STATUS REPORT**

### **Former Speedway LLC #7207**

**3029 East Kalamazoo Street  
Lansing, Michigan 48912-4614  
Ingham County**

**Facility ID: 00009647  
Confirmed Release No. C-0999-95**

**April 9, 2020**

#### **Prepared for:**

**Speedway LLC  
P.O. Box 1500  
Springfield, Ohio 45501-1500**

#### **Prepared by:**

**ATC Group Services LLC  
2650 Horizon Drive SE, Suite 110  
Grand Rapids, Michigan 49546-7685**

## 1.0 INTRODUCTION AND ACTIVITIES COMPLETED

Speedway LLC (Speedway) has retained ATC Group Services LLC (ATC) to provide environmental services for Former Speedway #7207 (the site) in accordance with Part 213 of Michigan's Natural Resources and Environmental Protection Act (NREPA), 1994 Public Act (P.A.) 451, as amended (Part 213). The site is an operating petroleum retailer and convenience store currently owned by GPM Investments, LLC, and formerly owned by Speedway, and located at 3029 East Kalamazoo Street, Ingham County, Lansing, Michigan. The site general location and layout are presented on **Figures 1 and 2A, Appendix A**, respectively.

The purpose of this report is to document the following activities conducted at the site: (1) groundwater gauging and sampling activities conducted at the site on March 7 and 8, 2019, June 26 and 27, 2019, September 3 and 4, 2019; and December 5, 2019; and (2) remedial activities associated with the operation of a soil vapor extraction (SVE) and air sparge (A/S) system utilizing a catalytic oxidizer (catox) at the site between January 1, 2019 and June 13, 2019.

## 2.0 PROJECT DISCUSSION AND SAMPLING METHODOLOGY

### 2.1 Groundwater Monitoring

On March 7, 2019; June 26, 2019; September 3, 2019; and December 5, 2019; the depth to groundwater in select monitoring wells was measured using either a standard water-level tape that operates through an electrical sensor or an oil/water interface probe. At each monitoring well location, the manhole cover and the well cap were removed, and the well cap was cleaned. After the groundwater level in the well equilibrated with atmospheric pressure, the depth to groundwater was measured. Before use in each well, the water-level tape, and the oil/water interface probe, were decontaminated with a non-phosphate detergent and rinsed with tap water.

### 2.2 Groundwater Sampling

On March 7 and 8, 2019, groundwater samples were collected from the following twenty (20) monitoring, observation, and recovery wells: MW-02, MW-03, MW-06, MW-08R, MW-09D, MW-17, MW-20, MW-22 through MW-26, MW-31, MW-34, MW-37, MW-39, MW-40, OW-B, OW-F, and RW-36. The following monitoring and observation wells were gauged but not sampled: MW-01, MW-04, MW-05, MW-07, MW-11, MW-14D, MW-16D, MW-18, MW-19, MW-21, MW-29, MW-30, MW-33, MW-35, MW-38, OW-B (2014), and OW-E. Observation well OW-D was not gauged or sampled. Monitoring well MW-32 was located beneath a dumpster, monitoring well MW-27 was obstructed with ice, and monitoring well MW-28 was located beneath the remediation trailer; therefore, samples were not collected from these locations. Observation well OW-A was under the influence of the air sparge system; therefore, it was not gauged or sampled.

On June 26 and 27, 2019, groundwater samples were collected from the following twenty (20) monitoring, observation, and recovery wells: MW-02, MW-06, MW-08R, MW-09D, MW-17, MW-20, MW-22 through MW-26, MW-31, MW-32, MW-34, MW-37, MW-39, MW-40, OW-B, OW-F, and RW-36. The following monitoring and observation wells were gauged but not sampled: MW-01, MW-03, MW-04, MW-05, MW-07, MW-11, MW-14D, MW-16D, MW-18, MW-19, MW-21, MW-27, MW-29, MW-30, MW-33, MW-35, OW-A, and OW-B (2014). Observation well OW-D was not gauged or sampled. Monitoring well MW-28 was located beneath the remediation trailer and wells MW-38 and OW-E were located beneath a dumpster; therefore, samples were not collected from these locations.

On September 3 and 4, 2019, groundwater samples were collected from the following twenty-one (21) monitoring, observation, and recovery wells: MW-02, MW-03, MW-06, MW-08R, MW-09D, MW-17, MW-20 through MW-26, MW-31, MW-34, MW-37, MW-39, MW-40, OW-B, OW-F, and RW-36. The following monitoring and observation wells were gauged but not sampled: MW-01, MW-04, MW-05, MW-07, MW-11, MW-14D, MW-16D, MW-18, MW-19, MW-27, MW-29, MW-30, MW-32, MW-33, MW-35, OW-A, and OW-B (2014). Observation well OW-D was not gauged or sampled. Monitoring well MW-28 was located beneath the remediation trailer and wells MW-38 and OW-E were located beneath a dumpster; therefore, samples were not collected from these locations.

On December 5, 2019, groundwater samples were collected from the following nineteen (19) monitoring and observation wells: MW-02, MW-03, MW-06, MW-08R, MW-09D, MW-17, MW-20 through MW-24, MW-26, MW-31, MW-34, MW-37, MW-39, MW-40, OW-B, and OW-F. The following monitoring and observation wells were gauged but not sampled: MW-04, MW-05, MW-07, MW-11, MW-14D, MW-16D, MW-18, MW-19, MW-27, MW-29, MW-30, MW-32, MW-33, MW-35, and OW-A. The following monitoring and observation wells were not gauged or sampled: MW-01, MW-25, OW-B (2014), and OW-D. Monitoring well MW-28 was located beneath the remediation trailer and wells MW-38 and OW-E were located beneath a dumpster; therefore, samples were not collected from these locations. Recovery well RW-36 was obstructed at 4.35 feet below top of casing (btoc); therefore, a sample was not collected from this location.

The locations of the monitoring, observation, and recovery wells are presented on **Figure 2A, Appendix A**.

During each sampling event, the groundwater samples were collected using one dedicated, disposable bailer per monitoring well in accordance with the Part 213 amendments, effective May 1, 2012. At each monitoring well, groundwater sample collection proceeded once three to five casing volumes of groundwater were purged using the disposable bailer.

The groundwater samples were collected into laboratory-provided sample containers, placed into a cooler containing ice, and logged onto a project-specific chain-of-custody form. The groundwater samples were shipped to Pace Analytical Services, LLC (Pace) located in Green Bay, Wisconsin, and analyzed for the presence of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) unleaded gasoline Chemicals of Concern (CoCs): benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl-tert-butyl ether (MTBE), 1,2,4-trimethylbenzene (1,2,4-TMB), 1,3,5-trimethylbenzene (1,3,5-TMB), naphthalene, and 2-methylnaphthalene in accordance with United States Environmental Protection Agency (U.S. EPA) SW-846 Test Method 8260.

Groundwater that was purged during the March 7 and 8, 2019, sampling event was placed into one Michigan Department of Transportation (MDOT)-approved, 55-gallon steel drum and staged on-site pending pick-up and proper disposal. The drum was removed from the site on March 16, 2019.

Groundwater that was purged during the June 26 and 27, 2019, sampling event was placed into one MDOT-approved, 55-gallon steel drum and staged on-site pending pick-up and proper disposal. The drum was removed from the site on July 17, 2019.

Groundwater that was purged during the September 3 and 4, 2019, sampling event was placed into one MDOT-approved, 55-gallon steel drum and staged on-site pending pick-up and proper disposal. The drum was removed from the site on September 26, 2019.

Groundwater that was purged during the December 5, 2019, sampling event was placed into one MDOT-approved, 55-gallon steel drum and staged on-site pending pick-up and proper disposal. The drum was removed from the site on December 17, 2019.

The associated waste disposal manifests for the March, June, September, and December 2019, sampling events, are presented in **Appendix D**.

### **2.3 Quality Assurance and Quality Control**

As part of the Quality Assurance and Quality Control (QA/QC) process, field blank and duplicate sample were collected during the groundwater sampling events and included with the samples submitted to Pace. On March 7 and 8, 2019, duplicate sample DUP1 was collected from monitoring well MW-23 and duplicate sample DUP2 was collected from MW-22. On June 26 and 27, 2019, duplicate sample DUP1 was collected from monitoring well MW-24 and duplicate sample DUP2 was collected from MW-39. On September 3 and 4, 2019, duplicate sample DUP1 was collected from monitoring well MW-37 and duplicate sample DUP2 was collected from MW-24. On December 5, 2019, duplicate sample DUPA was collected from monitoring well MW-09D and duplicate sample DUPB was collected from MW-39.

In addition, during each sampling event, a laboratory-provided trip blank was shipped to and from the site in a sample bottle cooler and submitted with the groundwater samples for analysis. The field blank, duplicate, and trip blank samples were analyzed for the presence of the EGLE unleaded gasoline CoCs: BTEX, MTBE, 1,2,4-TMB, 1,3,5-TMB, naphthalene, and 2-methylnaphthalene in accordance with U.S. EPA SW-846 Test Method 8260.

### **2.4 Air Sparge/Soil Vapor Extraction Remediation System**

Installation of a soil vapor extraction (SVE) and air sparge (AS) system commenced in November 2014. Start-up and optimization of the SVE portion of the system occurred on December 27, 2016, and was conducted for the AS portion of the system on September 13, 2017. Details regarding the construction and operation of this remediation system can be found in a report titled, *Leaking Underground Storage Tank, Final Assessment Report*, dated May 14, 2015.

During this reporting period, the SVE/AS remediation system operated between January 1, 2019, and June 13, 2019. On June 13, 2019, ATC received a phone call from the Lansing Fire Department in regards to a suspected tank overflow. After discussions with the fire department, it was determined that the actual situation was that a cap had come off of a monitoring well, and water was being pushed to the ground surface from the active AS system. On that date, the remediation system was immediately shutdown via remote connection. The remediation system has remained shutdown since that time; there are no plans to restart the system.

In general, a system piping and trenching layout that shows the locations of AS and SVE well locations is provided as **Figure 2B, Appendix A**, and an instrumentation diagram depicting primary equipment within the Mobile Treatment Unit (MTU) is provided as **Figure 2C, Appendix A**.

The AS side of the remediation system injects air into the aquifer that becomes process vapor as it contacts petroleum-impacted media during vertical migration. The vapor is routed (passively) through a narrow clay layer via low permeability borings, referred to as Short Circuit Borings, that were installed to perforate the clay around the perimeter of the AS injection area. SVE wells then recover the process vapor for treatment and/or permitted air discharge. The Short Circuit Borings are shown on **Figure 2B, Appendix A**. Also shown on this figure are estimated radius of influence (ROI) circles surrounding each AS and SVE well.

Recovered vapor undergoes water separation through a knock-out tank as water that is sometimes entrained in the recovery piping and/or water vapor (based on relative humidity) condenses as the temperature of the process air drops. The vapor is heated to a temperature greater than 600 degrees Celsius in a catalytic oxidizer to destroy the volatile organic compounds (VOCs) present prior to being emitted. A catalytic oxidizer uses a rare metal surface area to burn/oxidize excess petroleum vapors in the same manner an automobile exhaust does; however, there is no engine in an oxidizer so an air heater heats up the air stream, and is configured to recycle heat when there are petroleum vapors burning on the metal surfaces.

The mass influent calculations, operation, maintenance, and monitoring information collected from the 2019 site visits, 2019 air effluent emissions tracking, and 2019 12-Month Rolling table required by the air permit, are provided in **Tables 2A, 2B, and 2C, Appendix B**, respectively. Laboratory reports for the process air samples collected and identified as “PRE-CATALYST” and “CATOX EFFLUENT” (as indicated in **Tables 2A and 2B**) are provided in **Appendix C**.

Chart 1 and Chart 2 are included as **Tables 2D and 2E, Appendix B**, to depict mass recovered and operational run times from when the system started (December 27, 2016) to when the system was shutdown (June 13, 2019). From January 1, 2019, through June 13, 2019, the system recovered approximately 1,476 pounds of petroleum hydrocarbons (approximately 253 gallons).

#### *Existing Permits*

The following permits have been issued for the remediation system. A “Joint Permit” permitted the installation of the equipment within the floodplain in accordance with Army Corps of Engineers and State of Michigan regulations; this permit expired shortly after the site flooding occurred. There are existing charges associated with the permit on the MiWaters system. The charges are not valid and have been present since surface and groundwater discharge permitting activities were required on the MiWaters system in 2015; however, the MiWaters software code contained errors and programming bugs that did not allow the items to be cancelled/corrected at the time the permit was issued. Administratively, the permit should officially be deactivated and the charges removed.

An air permit was obtained for an initial system design in 2012. Upon notification of modification of the system design, a new permit was issued in 2015. Since the 2012 system was never installed, it has been technically “void” after 18 months without installation or operation. The permit requires administrative removal.

Lansing Township required a permanent building permit for the trailer because its anticipated duration was greater than six months. No other activities are required for construction or decommissioning.

Lansing Board of Water and Light approved the installation of the remediation system. The system was also certified through Chemviron Midwest, Inc. of Wooster, Ohio, by a Nationally Recognized Third Party Testing Laboratory (similar to a UL listing) prior to installation.

A listing of the active and expired permits for the AS/SVE remediation system is listed below. Copies of the Generic Remediation System Air Permit Requirements and the Lansing Township Building Permit are provided in **Appendix E**.

Permit	Status	Date
Joint Permit Floodplain Only (Part 31) 12-33-0063-P v3.0	Expired	04/13/2018
Air General Permit To Install – Remediation	Active	06/13/2012
Air General Permit To Install – Remediation	Active	06/17/2015
Lansing Township Building Permit	Approved	2017
Electrical Permit/Inspection	Approved	2017
Groundwater Discharge Permit (Reinjected On-site/Up-gradient)	Exempt	

### 3.0 PRESENTATION AND ANALYSIS OF RESULTS

#### 3.1 Groundwater Monitoring Results

There are two groundwater bearing zones being monitored at this site, the deep zone and the shallow zone. Active monitoring wells screened in the shallow zone include: MW-01 through MW-07, MW-08R, MW-11, MW-17 through MW-26, MW-28, MW-30, MW-31, MW-32, MW-34, MW-35, MW-37 through MW-40, recovery well RW-36, air sparge well ASW, and observation wells OW-A through OW-F. Active monitoring wells screened in the deep zone include: MW-9D, MW-14D, MW-16D, MW-27, MW-29, and MW-33.

The static groundwater elevation data for the March 7, 2019; June 26, 2019; September 3, 2019; and December 5, 2019; groundwater gauging events in the shallow and deep groundwater bearing zones are presented on **Figures 3A through 3H, Appendix A**, and summarized in **Tables 1A and 1B, Appendix B**.

On March 7, 2019, the depth to groundwater ranged from 5.41 feet btoc at monitoring well MW-30, to 8.20 feet btoc at monitoring well MW-14D. The average depth to groundwater on March 7, 2019 was 6.30 feet btoc, and the apparent direction of groundwater flow in the shallow zone was generally to the southwest. The apparent direction of groundwater flow in the deep zone was generally to the southeast.

On June 26, 2019, the depth to groundwater ranged from 3.28 feet btoc at monitoring well MW-09D, to 6.32 feet btoc at monitoring well MW-14D. The average depth to groundwater on June 26, 2019 was 4.50 feet btoc, and the apparent direction of groundwater flow in the shallow zone was generally to the southwest. The apparent direction of groundwater flow in the deep zone was generally to the south.

On September 3, 2019, the depth to groundwater ranged from 6.49 feet btoc at monitoring well MW-30, to 9.51 feet btoc at monitoring well MW-14D. The average depth to groundwater on September 3, 2019 was 7.45 feet btoc, and the apparent direction of groundwater flow in the shallow zone was generally to the southeast. The apparent direction of groundwater flow in the deep zone was generally to the southeast.

On December 5, 2019, the depth to groundwater ranged from 4.75 feet btoc at monitoring well MW-17, to 18.05 feet btoc at monitoring well MW-20. The average depth to groundwater on December 5, 2019 was 6.27 feet btoc, and the apparent direction of groundwater flow in the shallow zone was generally to the south. The apparent direction of groundwater flow in the deep zone was generally to the north.

On these dates, select site monitoring wells were checked for the presence of mobile light non-aqueous phase liquid (LNAPL). Mobile LNAPL was not present in any of the site wells during these checks.

### 3.2 Groundwater Sampling Results

The laboratory analytical data from the March 7 and 8, 2019; June 26 and 27, 2019; September 3 and 4, 2019; and December 5, 2019; groundwater sampling events is presented on **Figures 4A through 4D, Appendix A**. Groundwater sample analytical results for the on-site and off-site monitoring wells are presented in **Tables 1A and 1B, Appendix B**. The laboratory-provided groundwater analytical reports are presented in **Appendix C**.

On September 4, 2018, the EGLE issued site-specific Volatilization to Indoor Air Criteria (VIAC). These criteria have been used for data evaluation in this report.

A Restrictive Covenant filed for the site on February 12, 2001, states that the property use must remain consistent with the EGLE nonresidential land use category and the installation of any wells and the use of groundwater for any purpose, except for environmental groundwater monitoring and remediation purposes are prohibited. Therefore, Residential Drinking Water Criteria are not applicable for comparison to the analytical results of groundwater samples collected from on-site monitoring wells.

The on-site groundwater analytical data presented in **Table 1A, Appendix B**, is compared to the following EGLE cleanup criteria provided in P.A. 451 (EGLE Operational Memorandum 1, Attachment 1 - Table 1, effective date January 10, 2018, updated June 25, 2018):

- 1) Groundwater Surface Water Interface Criteria (GSI)
- 2) Nonresidential Volatilization to Indoor Air Criteria (VIAC) – Groundwater Not In Contact (GWNIC)

Because the Restrictive Covenant does not apply to off-site properties and right-of-ways, the off-site groundwater analytical data presented in **Table 1B, Appendix B**, is compared to the following EGLE cleanup criteria provided in P.A. 451 (EGLE Operational Memorandum 1, Attachment 1 - Table 1, effective date January 10, 2018, updated June 25, 2018):

- 1) Residential Drinking Water Criteria
- 2) GSI criteria
- 3) Residential VIAC – Groundwater In Contact (GWIC)

Based on the laboratory analytical results from the March 7 and 8, 2019, groundwater sampling event, EGLE unleaded gasoline CoCs were detected at concentrations reported above the applicable cleanup criteria in the groundwater samples collected from monitoring, recovery, and observation wells MW-20, MW-22, MW-23, MW-24, MW-31, MW-39, RW-36, and OW-F. EGLE unleaded gasoline CoCs were not detected at concentrations reported above the applicable cleanup criteria in the samples collected from the remaining on-site and off-site monitoring wells that were selected for sampling.

Based on the laboratory analytical results from the June 26 and 27, 2019, groundwater sampling event, EGLE unleaded gasoline CoCs were detected at concentrations reported above the applicable cleanup criteria in the groundwater samples collected from monitoring and observation wells MW-20, MW-22, MW-23, MW-24, MW-31, MW-39, and OW-F. EGLE unleaded gasoline CoCs were not detected at concentrations reported above the applicable cleanup criteria in the samples collected from the remaining on-site and off-site monitoring wells that were selected for sampling.

Based on the laboratory analytical results from the September 3 and 4, 2019, groundwater sampling event, EGLE unleaded gasoline CoCs were detected at concentrations reported above the applicable cleanup criteria in the groundwater samples collected from monitoring, recovery, and observation wells MW-08R, MW-20, MW-22, MW-23, MW-31, MW-37, MW-39, MW-40, RW-36, and OW-F. In addition, several laboratory detection limits for the groundwater sample collected from monitoring well MW-24 were above EGLE cleanup criteria. EGLE unleaded gasoline CoCs were not detected at concentrations reported above the applicable cleanup criteria in the samples collected from the remaining on-site and off-site monitoring wells that were selected for sampling.

Based on the laboratory analytical results from the December 5, 2019, groundwater sampling event, EGLE unleaded gasoline CoCs were detected at concentrations reported above the applicable cleanup criteria in the groundwater samples collected from monitoring and observation wells MW-22, MW-23, MW-24, MW-31, MW-39, and OW-F. EGLE unleaded gasoline CoCs were not detected at concentrations reported above the applicable cleanup criteria in the samples collected from the remaining on-site and off-site monitoring wells that were selected for sampling.

For the QA/QC samples, the laboratory analytical results of duplicate groundwater samples DUP1 and DUP2 collected on March 7 and 8, 2019, were similar to the analytical results of the groundwater samples collected from the corresponding wells MW-23 and MW-22, respectively.

The laboratory analytical results of duplicate groundwater samples DUP1 and DUP2 collected on June 26 and 27, 2019, were similar to the analytical results of the groundwater samples collected from the corresponding wells MW-24 and MW-39, respectively.

The laboratory analytical results of duplicate groundwater samples DUP1 and DUP2 collected on September 3 and 4, 2019, were similar to the analytical results of the groundwater samples collected from the corresponding wells MW-37 and MW-24, respectively.

The laboratory analytical results of duplicate groundwater samples DUPA and DUPB collected on December 5, 2019, were similar to the analytical results of the groundwater samples collected from the corresponding wells MW-09D and MW-39, respectively.

Analytical results will naturally vary between the sample and the duplicate due to field and laboratory practices, the volume of groundwater removed from the well prior to sample collection, and the use of multiple vials. The laboratory analytical results of the field blank and trip blank samples were below laboratory detection limits for all CoCs. The analytical results for the QA/QC samples are included in the laboratory-provided analytical reports presented in **Appendix C**.

## 4.0 PROPOSED FUTURE ACTIONS

On behalf of Speedway, the following actions will be conducted at the site:

- Conduct groundwater and soil gas sampling in 2020;
- Evaluate and sample select off-site storm sewer structures;
- Obtain off-site access for the installation of a soil gas monitoring point;
- Prepare and record on- and off-site Restrictive Covenants; and
- Evaluate the site for closure.

Type	Date	Remark	Created By
O&M Activity	6/13/2019	Hrs: 31,035.66 Time Collected: 0950 " H2O: 4 " Hg: -6.00 Temperature: 150 degrees F SCFM: 310 SVE-1: -4" H2O SCFM: 50 PID: 0 ppm SVE-2: 18 "H2O SCFM: 80 PID: 0 ppm SVE-3: -7 "H2O SCFM: 90 PID: 0 ppm SVE-4: -7" H2O SCFM: 70 PID: 0 ppm Catox Hrs: 21,952.3 Time Collected: 0950 T1: 331 C T2: 326 C T3: 334 C Air Sparge Blower: 9,765.98 Time: 0950 SP-1: 5 SCFM, 7 psi SP-2: 6 SCFM, 7psi SP-3: 5 SCFM, 7 psi SP-4: 5 SCFM, 7 psi SP-5: 2.5 SCFM, 7 psi SP-6: 6 SCFM, 7 psi SP-7: 7 SCFM, 7 psi SP-8: 2.5 SCFM, 7 psi SP-9 : 7 SCFM, 7 psi SP-10: OFF SP-11: 7 SCFM, 7 psi SP-12: OFF SP-13: 5 SCFM, 7 psi SP-14: 2.5 SCFM, 7 psi System Samples: Collected Catox Effluent:1000 Pre-Catalyst:1005	Adam Wrubel
O&M Activity	6/13/2019	1000pm in regards to a suspected tank overflow. After questioning the Fire Marshall, it was found that the actual problem was a monitor well cap had popped off and water was being pushed to surface from the active sparging system. The system was immediately shutdown via remote connection. The system will be left off until water level decreases.	Adam Wrubel
O&M Activity	5/23/2019	Hrs: 30,033.71 Time Collected: 1150 " H2O: 3 " Hg: -5.50 Temperature: 124 degrees F SCFM: 290 SVE-1: -7" H2O SCFM: 60 PID: 0 ppm SVE-2: -19 "H2O SCFM: 60 PID: 0 ppm SVE-3: -3 "H2O SCFM: 25 PID: 0.4 ppm SVE-4: -4" H2O SCFM:55 PID: 0 ppm Catox Hrs: 21,528.3 Time Collected: 1150 T1: 330 C T2: 328 C T3: 331 C Air Sparge Blower: 9,344.56 Time: 1150 SP-1: 5 SCFM, 7 psi SP-2: 6 SCFM, 7psi SP-3: 5 SCFM, 7 psi SP-4: 5 SCFM, 7 psi SP-5: 2.5 SCFM, 7 psi SP-6: 6 SCFM, 7 psi SP-7: 7 SCFM, 7 psi SP-8: 2.5 SCFM, 7 psi SP-9 : 7 SCFM, 7 psi SP-10: OFF SP-11: 7 SCFM, 7 psi SP-12: OFF SP-13: 5 SCFM, 7 psi SP-14: 2.5 SCFM, 7 psi System Samples: Collected Catox Effluent: 1140 Pre-Catalyst:1145	Adam Wrubel
O&M Activity	5/16/2019	SVE Hrs: 30,058.44 Time Collected: 1503 " H2O: 4 " Hg: -5.50 Temperature: 148 degrees F SCFM: 300 SVE-1: -12" H2O SCFM: 100 PID: 13.1 ppm SVE-2: OFF "H2O SCFM: PID: ppm SVE-3: OFF "H2O SCFM: PID: ppm SVE-4: -10" H2O SCFM: 130 PID: 14.7 ppm Catox Hrs: 21,363.7 Time Collected: 1503 T1: 331 C T2: 330 C T3: 343 C Air Sparge Blower: 9,180.29 Time: 1503 SP-1: 5 SCFM, 7 psi SP-2: 6 SCFM, 7psi SP-3: 5 SCFM, 7 psi SP-4: 5 SCFM, 7 psi SP-5: 2.5 SCFM, 7 psi SP-6: 6 SCFM, 7 psi SP-7: 7 SCFM, 7 psi SP-8: 2.5 SCFM, 7 psi SP-9 : 7 SCFM, 7 psi SP-10: OFF SP-11: 7 SCFM, 7 psi SP-12: OFF SP-13: 5 SCFM, 7 psi SP-14: 2.5 SCFM, 7 psi System Samples: Not collected Catox	Adam Wrubel
O&M Activity	5/14/2019	ATC was onsite momentarily to respond to an alarm received late on Friday (5/10) for AWS alarm. ATC did not see any present alarms, but did notice the VCV valve for the Catox had not properly closed. ATC locked the system out and will conduct thorough O&M at next scheduled site visit.	Adam Wrubel
O&M Activity	5/3/2019	SVE Hrs: 30,058.44 Time Collected: 1630 " H2O: 6 " Hg: -5.50 Temperature: 130 degrees F SCFM: 320 SVE-1: -6" H2O SCFM: 60 PID: 0.1 ppm SVE-2: -38 "H2O SCFM: 100 PID: 0 ppm SVE-3: OFF "H2O SCFM: PID: ppm SVE-4: -10" H2O SCFM: 100 PID: 0.5 ppm Catox Hrs: Time Collected: 1630 T1: 330 C T2: 326 C T3: 336 C Air Sparge Blower: 9,011.26 Time: 1630 SP-1: 10 SCFM, 6 psi SP-2: 6 SCFM, 5psi SP-3: 3 SCFM, 6 psi SP-4: 5 SCFM, 6 psi SP-5: 6 SCFM, 6 psi SP-6: 5 SCFM, 6 psi SP-7: 5 SCFM, 6 psi SP-8: 5 SCFM, 6 psi SP-9 : 5 SCFM, 6 psi SP-10: OFF SP-11: 2.5 SCFM, 6 psi SP-12: OFF SP-13: 6 SCFM, 6 psi SP-14: 6 SCFM, 6 psi System Samples: Not collected Catox Effluent: Pre-Catalyst:	Adam Wrubel
O&M Activity	4/17/2019	Hrs: 29,671.68 Time Collected: 1343 " H2O: 10 " Hg: -5.50 Temperature: 125 degrees F SCFM: 320 SVE-1: -8" H2O SCFM: 80 PID: 0.1 ppm SVE-2: -30 "H2O SCFM: 70 PID: 0.2 ppm SVE-3: OFF "H2O SCFM: PID: ppm SVE-4: -10" H2O SCFM: 100 PID: 11.1 ppm Catox Hrs: 20,805.3 Time Collected: 1343 T1: 330 C T2: 332 C T3: 340 C Air Sparge Blower: 8,624.51 Time: 1343 SP-1: 7 SCFM, 5.5 psi SP-2: 6 SCFM, 5psi SP-3: 2.5 SCFM, 5.5 psi SP-4: 7 SCFM, 5.5 psi SP-5: 6 SCFM, 5.5 psi SP-6: 5 SCFM, 5 psi SP-7: 7 SCFM, 5.5 psi SP-8: 5 SCFM, 5.5 psi SP-9 : 5 SCFM, 5.5 psi SP-10: OFF SP-11: 5 SCFM, 5.5 psi SP-12: OFF SP-13: 5 SCFM, 5 psi SP-14: 7 SCFM, 5.5 psi System Samples: Catox Effluent:1400 Pre-Catalyst:	Adam Wrubel

O&M Activity	4/8/2019	Hrs: 29,454.93 Time Collected: 1445 " H2O: 4 " Hg: -5.00 Temperature: 140 degrees F SCFM: 305 SVE-1: -4" H2O SCFM: 60 PID: 38 ppm SVE-2: -18 "H2O SCFM: 60 PID: 8.9 ppm SVE-3: -4 "H2O SCFM: 50 PID: .1 ppm SVE-4: -4" H2O SCFM: 70 PID: 5 ppm Catox Hrs: 20,588.86 Time Collected: 1445 T1: 330 C T2: 328 C T3: 335 C Air Sparge Blower: 8,407.76 Time: 1445 SP-1: 5.5 SCFM, 5.5 psi SP-2: 7 SCFM, 5psi SP-3: 2.5 SCFM, 5.5 psi SP-4: 5 SCFM, 5 psi SP-5: 7 SCFM, 5.5 psi SP-6: 5.5 SCFM, 5 psi SP-7: 2.5 SCFM, 5.5 psi SP-8: 3 SCFM, 5.5 psi SP-9 : 2.5 SCFM, 5.5 psi SP-10: OFF SP-11: 2.5 SCFM, 6 psi SP-12: OFF SP-13: 6.5 SCFM, 5.5	Adam Wrubel
O&M Activity	3/25/2019	arrival (system was left off to schedule assistance with trouble shooting). Inspection revealed that the Catox's VCV valve was not closing completely, but the PLC was recognizing that it was. Falmouth (manufacturer of the catox and VCV valve) said that they recommend sending the unit in for maintenance and upgrade. Other unique abnormalities were noticed as well. The PLC would freeze while logging into the program at times, and would be fine at others. The SVE panel bulb (normally reserved for RUN operation) was illuminated at all times. The SVE VFD at times would read "under voltage", and then be fine at others. Power would be cycled, and all functions would then be normal. ATC checked VFD capacitors, relays, and voltages of various panel components and all tested fine. Despite the VCV not fully closing, it still operated perfectly fine. The system was restarted, and with no alarms or abnormalities, and was left on. Catox Hours: 20,253.3 Time: 1342 Sparge Hours: 8,072.83 Time: 1342 SVE	Adam Wrubel
O&M Activity	3/15/2019	AWSHH float has been intermittently shutting the system down. The float was electrical contacts were disassembled, but could not physically remove the float from the AWS for fear that it would break. Connections in the wiring were traced and checked for faults. None were found. The alarm was cleared and the system was restarted and monitored. The system was running properly during the monitoring and at departure. Catox Hours: 20,212.5 Sparge Hours: 8,038.05 SVE Hours: 28,879.03	Adam Wrubel
O&M Activity	3/11/2019	SVE Hrs: 28,783.09 Time Collected: 1233 " H2O: 8 " Hg: -5.00 Temperature: 86 degrees F SCFM: 310 SVE-1: -6" H2O SCFM: 60 PID: 327.3 ppm SVE-2: -40 "H2O SCFM: 80 PID: 62.3 ppm SVE-3: -2 "H2O SCFM: 25 PID: 5.7 ppm SVE-4: -4" H2O SCFM: 40 PID: 2.6 ppm Catox Hrs: 20,125.2 Time Collected: 1233 T1: 330 C T2: 370 C T3: 380 C Air Sparge Blower: 7,952.70 Time: 1233 SP-1: 7 SCFM, 5 psi SP-2: 8 SCFM, 5.5 psi SP-3: 6 SCFM, 5.5 psi SP-4: 5.5 SCFM, 5 psi SP-5: 5 SCFM, 5.5 psi SP-6: 2.5 SCFM, 5.5 psi SP-7: 5 SCFM, 5.5 psi SP-8: 5 SCFM, 5.5 psi SP-9 : 5 SCFM, 5.5 psi SP-10: OFF SP-11: 2.5 SCFM, 5.5 psi SP-12: OFF SP-13: 8 SCFM, 5 psi SP-14: 5.5 SCFM, 5.5 psi Sparge Points SP-12 and SP-10 were turned off. Sparge Points SP-5 and SP-6 were turned on.	Adam Wrubel
O&M Activity	3/5/2019	Inspections and Investigations) regarding the discharge of groundwater from an onsite monitoring well onto the pavement surface at the site. ATC explained that the cause of the issue was related to a start-up fault with the air sparge portion of the onsite remediation system. ATC explained that the fault has been remedied and there should be no further occurrence of this issue. Mr. Brown's concerns were satisfied in that the discharge from the monitoring well was verified as groundwater and not gasoline. Mr. Brown had no further requests of ATC or Speedway in the matter.	Michael Cox

O&M Activity	3/4/2019	System was off at arrival due to AWS HH. Alarm was cleared and system restarted. SVE Hrs: 28,615.14 Time Collected: 1136 " H2O: 10 " Hg: -5.00 Temperature: 110 degrees F SCFM: 320 SVE-1: -2" H2O SCFM: 60 PID: ppm SVE-2: -60 "H2O SCFM: 90 PID: ppm SVE-3: -2 "H2O SCFM: 60 PID: ppm SVE-4: -2" H2O SCFM: 80 PID: ppm Catox Hrs: 19,957.2 Time Collected: 1136 T1: 330 C T2: 347 C T3: 353 C Air Sparge Blower: 7,785.30 Time: 1136 SP-1: 5 SCFM, 5 psi SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5 psi SP-4: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5 psi SP-13: 5 SCFM, 5 psi SP-14: 5 SCFM, 5 psi After restart, while SVE/Catox was ramping up, ATC left momentarily to pick up supplies at hardware store. At arrival from hardware store, LBWL, Consumer's Energy, and Lansing Operations and Maintenance were onsite. A monitor well j-plug had popped off from the sparge pressure, and was bubbling over the well cover, onto asphalt and out to storm sewer. The store manager was unsure of what it was and had called Consumer's Energy suspecting it was a gas leak. ATC shut off sparge and bubbling stopped. Once ATC explained the system, LBWL and Consumer's Energy left satisfied that there was no problem.	Adam Wrubel
O&M Activity	2/27/2019	SVE Hrs: 28,496.15 Time Collected: 1236 " H2O: 10 " Hg: -5.00 Temperature: 85 degrees F SCFM: 320 SVE-1: -2" H2O SCFM: 60 PID: 0.3 ppm SVE-2: -60 "H2O SCFM: 90 PID: 0 ppm SVE-3: -2 "H2O SCFM: 60 PID: 22 ppm SVE-4: -2" H2O SCFM: 80 PID: 0.3 ppm Catox Hrs: 19,904.8 Time Collected: 1236 T1: 330 C T2: 331 C T3: 338 C Pre-Catalyst: 6.5 ppm Catox Effluent: 0 ppm Samples: Collected Catox Effluent: 1200 Pre-Catalyst: 1205 Air Sparge Blower: 7,734.77 Time: 1236 SP-1: 5 SCFM, 5 psi SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5 psi SP-4: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5 psi SP-13: 5	Adam Wrubel
O&M Activity	2/14/2019	SVE Hrs: 28,185.61 Time Collected: 1405 " H2O: 10 " Hg: -5.00 Temperature: 75 degrees F SCFM: 320 SVE-1: -2" H2O SCFM: 60 PID: *ppm SVE-2: -60 "H2O SCFM: 90 PID: *ppm SVE-3: -2 "H2O SCFM: 60 PID: *ppm SVE-4: -2" H2O SCFM: 80 PID: *ppm Catox Hrs: 19,594.3 Time Collected: 1405 T1: 330 C T2: 376 C T3: 409 C Pre-Catalyst: *ppm Catox Effluent: * ppm Samples: Not Collected Catox Effluent: * Pre-Catalyst: * Air Sparge Blower: 7424.23 Time: 1405 SP-1: 5 SCFM, 5 psi SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5 psi SP-4: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5 psi SP-13: 5 SCFM, 5 psi	Adam Wrubel
O&M Activity	2/7/2019	that precipitate build up had clogged the elbow of the AWS line connected to the AWS transfer pump. With the current configuration, ATC was unable to clear the clog. ATC will return for another visit with equipment capable of clearing the clog, and the AWS. The system was left off. Catox Hours: 19,592.8 Sparge Hours: 7,422.79 SVE Hours: 28,018.73 Time: 1511	Adam Wrubel
O&M Activity	1/31/2019	Hrs: 27,850.17 Time Collected: 1440 " H2O: 10 " Hg: -5.00 Temperature: 100 degrees F SCFM: 320 SVE-1: -4" H2O SCFM: 50 PID: *ppm SVE-2: -60 "H2O SCFM: 130 PID: *ppm SVE-3: -2 "H2O SCFM: 40 PID: *ppm SVE-4: -5" H2O SCFM: 70 PID: *ppm Catox Hrs: 19,437.1 Time Collected: 1440 T1: 330 C T2: 331 C T3: 337 C Pre-Catalyst: *ppm Catox Effluent: * ppm Samples: Not Collected Catox Effluent: * Pre-Catalyst: * Air Sparge Blower: 7,268.91 Time: 1440 SP-1: 5 SCFM, 5 psi SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5 psi SP-4: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5 psi SP-13: 5 SCFM, 5 psi SP-14: 5 SCFM, 5	Adam Wrubel

O&M Activity	1/18/2019	SVE Hrs: 27,536.66 Time Collected: 1309 " H2O: 10 " Hg: -5.00 Temperature: 90 degrees F SCFM: 310 SVE-1: -4" H2O SCFM: 30 PID: *ppm SVE-2: -62 "H2O SCFM: 140 PID: *ppm SVE-3: -2 "H2O SCFM: 30 PID: *ppm SVE-4: -5" H2O SCFM: 60 PID: *ppm Catox Hrs: 19,123.6 Time Collected: 1309 T1: 330 C T2: 342 C T3: 353 C Pre-Catalyst: *ppm Catox Effluent: * ppm Samples: Not Collected Catox Effluent: * Pre-Catalyst: * Air Sparge Blower: 6,955.40 Time: 1309 SP-1: 2.5 SCFM, 5 psi SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5.5 psi SP-4: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5.5 psi SP-12: 5 SCFM, 5 psi SP-13: 5 SCFM, 5 psi SP-14: 5 SCFM, 5 psi Field Pressures: MW-39: 1.35" H2O VP-1 (3-3.5'): 0.25" H2O VP-1 (6-6.5'): 0.51" H2O VPSS-2: 0" H2O VPSS-1: 0" H2O *PID Battery failed	Adam Wrubel
O&M Activity	1/8/2019	Hrs: 27,298.19 Time Collected: 1440 " H2O: 10 " Hg: -5.00 Temperature: 100 degrees F SCFM: 320 SVE-1: -6" H2O SCFM: 70 PID: ppm SVE-2: -48 "H2O SCFM: 70 PID: ppm SVE-3: -4 "H2O SCFM: 50 PID: ppm SVE-4: -6" H2O SCFM: 70 PID: ppm Catox Hrs: 18,885.1 Time Collected: 1440 T1: 330 C T2: 335 C T3: 343 C Pre-Catalyst: ppm Catox Effluent: ppm Samples: Collected Catox Effluent: 1700 Pre-Catalyst: 1705 Air Sparge Blower: 6,716.95 Time: 1440 SP-2: 5 SCFM, 2.5 psi SP-3: 5.5 SCFM, 2.5 psi SP-4: 5 SCFM, 2.5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 2.5 psi SP-11: 5.5 SCFM, 2.5 psi SP-12: 5 SCFM, 2.5 psi SP-13: 5 SCFM, 5 psi SP-14: 5	Adam Wrubel
O&M Activity	12/18/2018	SVE Hrs: 26,797.91 Time Collected: 1811 " H2O: 10 " Hg: -4.00 Temperature: 80 degrees F SCFM: 300 SVE-1: -5" H2O SCFM: 60 PID: ppm SVE-2: -27 "H2O SCFM: 60 PID: ppm SVE-3: -1 "H2O SCFM: 60 PID: ppm SVE-4: -4" H2O SCFM: 60 PID: ppm Catox Hrs: 18,384.7 Time Collected: 1811 T1: 330 C T2: 347 C T3: 352 C Pre-Catalyst: ppm Catox Effluent: ppm Samples: Collected Catox Effluent: 1930 Pre-Catalyst: 1935 Air Sparge Blower: 6,216.65 Time: 1811 SP-13 was turned on SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5.5 psi SP-7: 5SCFM, 5 psi SP-8: 5 SCFM, 5.25 psi SP-9 : 5 SCFM, 5.5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5.5 psi SP-13: 5 SCFM, 5 psi SP-14: 5 SCFM, 5 psi	Adam Wrubel
O&M Activity	12/10/2018	SVE Hrs: 26,600.63 Time Collected: 1254 " H2O: 12 " Hg: -4.00 Temperature: 94 degrees F SCFM: 320 SVE-1: -5" H2O SCFM: 50 PID: 0ppm SVE-2: -34 "H2O SCFM: 68 PID: 0.3 ppm SVE-3: -4.0 "H2O SCFM: 52 PID: 4.0 ppm SVE-4: -5" H2O SCFM: 70 PID: 0.9 ppm Catox Hrs: 18,187.6 Time Collected: 1254 T1: 330 C T2: 330 C T3: 336 C Pre-Catalyst: 5.4 ppm Catox Effluent: 0 ppm Samples: Not Collected Catox Effluent: Pre-Catalyst: Air Sparge Blower: 6,019.52 Time: 1254 SP-2: 5 SCFM, 5 psi SP-3: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5 psi SP-14: 5 SCFM, 5 psi	Adam Wrubel
O&M Activity	11/19/2018	SVE Hrs: 26,100.88 Time Collected: 1709 " H2O: 12 " Hg: -4.00 Temperature: 90 degrees F SCFM: 320 SVE-1: -5" H2O SCFM: 50 PID: 0ppm SVE-2: -34 "H2O SCFM: 70 PID: 0.4 ppm SVE-3: -4.0 "H2O SCFM: 50 PID: 7.0 ppm SVE-4: -5" H2O SCFM: 70 PID: 0.5 ppm Catox Hrs: 17,687.8 Time Collected: 1709 T1: 330 C T2: 331 C T3: 338 C Pre-Catalyst: 6.7 ppm Catox Effluent: 0 ppm Samples: Not Collected Catox Effluent: Pre-Catalyst: Air Sparge Blower: 5,519.78 Time: 1709 SP-2: 5 SCFM, 4.5 psi SP-3: 5 SCFM, 5 psi SP-7: 5 SCFM, 5 psi SP-8: 5 SCFM, 5 psi SP-9 : 5 SCFM, 5 psi SP-10: 5 SCFM, 5 psi SP-11: 5 SCFM, 5 psi SP-12: 5 SCFM, 5	Adam Wrubel
O&M Activity	11/9/2018	SVE Hrs: 25,856.56 Time Collected: 1250 " H2O: 10 " Hg: -3.25 Temperature: 75 degrees F SCFM: 305 SVE-1: -7" H2O SCFM: 80 PID: 0.2ppm SVE-2: -30 "H2O SCFM: 40 PID: 0 ppm SVE-3: -4.0 "H2O SCFM: 60 PID: 2.9 ppm SVE-4: -5" H2O SCFM: 65 PID: 1.8 ppm Catox Hrs: 17,443.5 Time Collected: 1250 T1: 330 C T2: 331 C T3: 338 C Pre-Catalyst: 2.4 ppm Catox Effluent: 0 ppm Samples: Collected Catox Effluent: 1245 Pre-Catalyst: 1250 Air Sparge Blower: 5,275.45 Time: 1250 AS-2: 2.5 SCFM, 4.5 psi AS-7: 2.5 SCFM, 5 psi AS-8: 5 SCFM, 5 psi AS-9 : 5 SCFM, 5 psi AS-10: 5 SCFM, 5 psi AS-11: 5 SCFM, 5 psi AS-12: 5 SCFM, 5 psi	Adam Wrubel

O&M Activity	10/31/2018	SVE Hrs: 25,639.26 Time Collected: 1231 " H2O: 12 " Hg: -3.25 Temperature: 90 degrees F SCFM: 315 SVE-1: -7" H2O SCFM: 75 PID: 118ppm SVE-2: -26 "H2O SCFM: 55 PID: 158.2 ppm SVE-3: -4 "H2O SCFM: 60 PID: 3.3 ppm SVE-4: -6" H2O SCFM: 65 PID: 74.7 ppm Catox Hrs: 17,226.3 Time Collected: 1231 T1: 330 C T2: 366 C T3: 369 C Pre-Catalyst: 87.4 ppm Catox Effluent: 2.4 ppm Samples: Not Collected Catox Effluent: Pre-Catalyst: Air Sparge Blower: 5,058.21 Time: 1231 AS-2: 2.5 SCFM, 4.5 psi AS-3: 2.5 SCFM, 5 psi AS-8: 2.5 SCFM, 5 psi AS-9 : 2.5 SCFM, 5 psi AS-10: 5 SCFM, 4.5 psi AS-11: 2.5 SCFM, 5 psi AS-12: 5 SCFM, 4.5	Adam Wrubel
O&M Activity	10/18/2018	check:  SVE Hrs: 25,327.74 Time Collected: 1300 " H2O: 10 " Hg: -3.25 Temperature: 82 degrees F SCFM: 305  SVE-1: -6" H2O SCFM: 60 PID: 0.7ppm  SVE-2: -32 "H2O SCFM: 70 PID: 51.2 ppm  SVE-3: -4.0 "H2O SCFM: 23 PID: 2.6 ppm  SVE-4: -4" H2O SCFM: 50 PID: 0.8 ppm  Catox Hrs: 16,998.1 Time Collected: 1300 T1: 331 C T2: 338 C T3: 348 C  Pre-Catalyst: 22.4 ppm Catox Effluent: 0.4 ppm  Samples: Collected Catox Effluent: 1300 Pre-Catalyst: 1305  Air Sparge Blower: 4,831.98 Time: 1300  AS-2 was turned on.  AS-2: 2.5 SCFM, 4.5 psi AS-3: 2.5 SCFM, 5 psi AS-8: 2.5 SCFM, 5 psi AS-9 : 2.5 SCFM, 5 psi AS-10: 2.5 SCFM, 4.5 psi AS-11: 2.5 SCFM, 5 psi AS-12: 2.5 SCFM, 5	Adam Wrubel
O&M Activity	9/18/2018	check:  SVE Hrs: 24,608.55 Time Collected: 1352 " H2O: 10 " Hg: -3.25 Temperature: 130 degrees F SCFM: 300  SVE-1: -4" H2O SCFM: 30 PID: 4.7ppm  SVE-2: -26 "H2O SCFM: 70 PID: 2.2 ppm  SVE-3: -6.0 "H2O SCFM: 70 PID: 0 ppm  SVE-4: -4" H2O SCFM: 60 PID: 1.5 ppm  Catox Hrs: 16,279.0 Time Collected: 1352 T1: 330 C T2: 331 C T3: 337 C  Pre-Catalyst: 4.1 ppm Catox Effluent: 0 ppm  Samples: Collected Catox Effluent: 1600 Pre-Catalyst: 1605  Air Sparge Blower: 4,112.80 Time: 1352  AS-14 was turned on.  AS-3: 2.5 SCFM, 4.5 psi AS-8: 2.5 SCFM, 4.5 psi AS-9 : 2.5 SCFM, 4.5 psi AS-10: 2.5 SCFM, 4.5 psi AS-11: 2.5 SCFM, 4.5 psi AS-12: 2.5 SCFM, 4.5	Adam Wrubel
O&M Activity	9/7/2018	ATC was onsite to replace Air Sparge 70amp breaker, and restart system.  The system was off at arrival due to PH MON alarm.   The system was running upon departure.  Time:0949 Hours: Catox : 16,010.9 Sparge: 3,844.77 SVE: 24,340.53 	Adam Wrubel
O&M Activity	8/31/2018	check:  SVE Hrs: 24,174.69 Time Collected: 1152 " H2O:  " Hg: -3.25 Temperature: 100 degrees F SCFM: 320  SVE-1: -4" H2O SCFM: 50 PID: 0.7ppm  SVE-2: -24 "H2O SCFM: 60 PID: 46.1ppm  SVE-3: -6.0 "H2O SCFM: 60 PID: 23.4ppm  SVE-4: -4" H2O SCFM: 60 PID: 7.8 ppm  Air Sparge Blower: 3,720.94 Time: 1152   Catox Hrs: 15,885.1 Time Collected: 1152 T1: 330 C T2: 331 C T3: 342 C  Pre-Catalyst: 14.8 ppm Catox Effluent: 0.3 ppm  Samples: Collected Catox Effluent: 1130 Pre-Catalyst: 1135  AS-8 and AS-3 were turned on.  AS-3: 2.5 SCFM, 5 psi AS-8: 2.5 SCFM, 4.5 psi AS-9 : 2.5 SCFM, 5 psi AS-10: 2.5 SCFM, 4.5 psi AS-11: 2.5 SCFM, 4.5	Adam Wrubel
O&M Activity	8/28/2018	installed new phase monitor switches, and completed more trouble shooting and testing of components. The system was restarted and left to run. Once conditions and readings stabilize, ATC will return to collect a sample and system readings.  SVE Hrs: 24,106.66 Time Collected: 1545 SCFM: 320   Air Sparge Blower: 3,652.96 Time: 1545   Catox Hrs: 15,817.2 Time Collected: 1545  	Adam Wrubel
O&M Activity	8/16/2018	down. ATC will return to the site next week to repair and restart the system after the parts arrive.	Michael Cox
O&M Activity	8/10/2018	troubleshoot and diagnose the PH MON alarm received prior to arrival. After inspection, it was found that 3, phase selection relays are not operating, and is more than likely the cause of the alarm. ATC is in correspondence with vendors and specialists to definitively diagnose the cause, and gain costs for replacement relays.  The system was left off until costs are collected.	Adam Wrubel

O&M Activity	7/30/2018	check:  SVE Hrs: 23,411.57 Time Collected: 1440 " H2O: 12 Hg: -3.25 Temperature: 118 degrees F SCFM: 320  SVE-1: -4" H2O  SCFM: 40 PID: 0.2ppm  SVE-2: -18 "H2O SCFM: 40 PID: 2.3ppm  SVE-3: -4.0 "H2O SCFM: 60 PID: 3.3ppm  SVE-4: -10" H2O SCFM: 80 PID: 28.0 ppm  Air Sparge Blower: 3,529.63 Time: 1405   Catox Hrs: 15,258.1 Time Collected: 1424 T1: 330 C T2: 333 C T3: 344 C  Pre-Catalyst: 11.6ppm Catox Effluent: 0.4ppm  Samples: Collected Catox Effluent: 1430 Pre-Catalyst: 1435  SVE-3 and SVE-4 lines were cleared utilizing both compressed air and vacuum and are now operational.  The air sparge and heat exchanger were both started. Only 4 air sparge points were turned. They are as follows:  AS-9 : 2.5 SCFM, 5	Adam Wrubel
O&M Activity	6/22/2018	compliance samples.  Samples: Catox Effluent: 1230 Precatalyst: 1240	Adam Wrubel
O&M Activity	6/21/2018	check: Prior to start up, any precautionary measures taken during the short term shutdown were addressed so that startup could take place.  SVE Hrs: 22,476.49 Time Collected: 1532 " H2O: 8 " Hg: -3.0 Temperature: 126 degrees F  SCFM: 240  SVE-1: -12" H2O  SCFM: 140 PID: - ppm  SVE-2: -40 "H2O SCFM: 70 PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -22" H2O SCFM: 150 PID: - ppm  Air Sparge Blower: OFF Time:    Catox Hrs: 14,323.2 Time Collected: 1532 T1: 331 C T2: 340 C T3: 344 C  Pre-Catalyst: ppm Catox Effluent: ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:  SVE-3 and SVE-4 are showing signs of high vacuum with no flow which may be caused from the wells being flooded. Since the entire site	Adam Wrubel
O&M Activity	6/21/2018	about not receiving the correctly addressed power bill for the installed system onsite. During the restoration of the power on May 17th, the bill defaulted to the current site address rather than ATC offices. The bill address was corrected, and the amount due will be added to the following July bill and will be paid after it is received.	Adam Wrubel
O&M Activity	5/31/2018	damaged electrical transformer. In conjunction with the transformer replacement, Neiboer replaced any wire running to or from the transformer as well.   The old transformer was placed within the system enclosure and will be picked up by CMI at a later date for storage and testing.  Once fully connected and replaced, the transformer/system was tested. All tested components were functional.	Adam Wrubel
O&M Activity	3/12/2018	ATC was onsite to remove carbon vessel from the system trailer to prevent freezing. ATC also prepared the system for an indefinite shutdown.	Adam Wrubel

O&M Activity	3/8/2018	remediation enclosure, trailer, and its components during the flooding of the nearby Red Cedar River. The river had flooded to near record levels in the last week of February.  The flood waters reached the remediation trailer and had covered the floor approximately 6 inches above it. Components that may have been affected by the flooding include: AWS transfer pump, Heat exchanger blower, Catox combustion chamber, electrical power transformer, AS blower muffler.  Prior to the flooding, the power to the remediation trailer was disconnected by the Lansing Board of Water and Light as a preventative measure. Temperatures during the flooding were approximately 50-60 degrees F. Since disconnection, temperatures have dropped, and now hover just above freezing during the day, and in the low 20a??s at night. Without power, some other components may be affected by the temperatures. A 200# water treatment carbon vessel is installed inside the trailer and may have been damaged due to the temperature drop. In the interim, before inspections of the electrical components, a small space heater was placed above the floor to prevent any further damage to components. Power was allowed to be used from the facility store under permission of Shawn McFarlene (regional environmental manager) via extension cord from an external outlet.Once the remediation trailer has been warmed, a further assessment of the vessel can be done for damages. The component at that point will be removed and stored.  Before the system is restarted and operation of the system continues, a thorough assessment of the transformer and the remediation system	Adam Wrubel
O&M Activity	2/21/2018	ATC was onsite to shut system down, and remove any equipment or materials that could be salvaged prior to flooding. ATC met LBWL onsite and oversaw the "cutting" of incoming lines. After the "cutting", power is completely removed from any equipment that may potentially see flooding.	Adam Wrubel
O&M Activity	2/16/2018	check:  SVE Hrs: 22,349.59 Time Collected: 1337 " H2O: 11 " Hg: -2.75 Temperature: 70 degrees F 310 SCFM  SVE-1: -32" H2O  SCFM: 40 PID: - ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -22" H2O SCFM: 150 PID: - ppm  Air Sparge Blower: 3,407.44 Time: 1337  A/S-3: 5 psi , 1-2 scfm A/S-4: 5 psi , 5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5.5 psi , 2.5 scfm A/S-9: 5.5 psi , 5 scfm A/S-10: off A/S-11: 5 psi , 5 scfm A/S-12: off A/S-13: 5 psi , 2.5 scfm A/S-14: 5 psi , 2.5 scfm  Catox Hrs: 14,197.6 Time Collected: 1337 T1: 330 C T2: 333 C T3: 341 C  Pre-Catalyst: ppm Catox Effluent: ppm  Samples: Not Collected Catox	Adam Wrubel
O&M Activity	2/7/2018	check:  SVE Hrs: 22,130.86 Time Collected: 1053 " H2O: 12 " Hg: -2.75 Temperature: 50 degrees F 300 SCFM  SVE-1: -34" H2O  SCFM: 40 PID: 0 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -24" H2O SCFM: 155 PID: 49.2  Air Sparge Blower: 3,188.70 Time: 1053 A/S-3: 5 psi , 1-2 scfm A/S-4: 5 psi , 5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5.5 psi , 2.5 scfm A/S-9: 5.5 psi , 5 scfm A/S-10: off A/S-11: 5 psi , 5 scfm A/S-12: off A/S-13: 5 psi , 2.5 scfm A/S-14: 5 psi , 2.5 scfm  Catox Hrs: 13,978.8 Time Collected: 1053 T1: 330 C T2: 341 C T3: 348 C  Pre-Catalyst: 37 ppm Catox Effluent: 0.5 ppm  Samples: Not Collected Catox	Adam Wrubel
O&M Activity	1/25/2018	check:  SVE Hrs: 21,821.31 Time Collected: 1319 " H2O: 12 " Hg: -2.75 Temperature: 70 degrees F 310 SCFM  SVE-1: -27" H2O  SCFM: 30 PID: 0 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -21" H2O SCFM: 160 PID: 14.6  Air Sparge Blower: 2,879.15 Time: 1319 A/S-4: 5 psi , 3 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5.5 psi , 3 scfm A/S-9: 5.5 psi , 5 scfm A/S-10: off A/S-11: 5.5 psi , 5 scfm A/S-12: off A/S-13: 5 psi , 2.5 scfm A/S-14: 5 psi , 2.5 scfm  Catox Hrs: 13,669.3 Time Collected: 1319 T1: 330 C T2: 344 C T3: 343 C  Pre-Catalyst: 17.2 ppm Catox Effluent:	Adam Wrubel

O&M Activity	1/17/2018	check:  SVE Hrs: 21,627.85 Time Collected: 1152 " H2O: 12 " Hg: -2.75 Temperature: 60 degrees F 310 SCFM  SVE-1: -27" H2O  SCFM: 50 PID: 0.1 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -21" H2O SCFM: 170 PID: 15.7  Air Sparge Blower: 2,685.70 Time: 1152 A/S-4: 5 psi , 5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5 psi , 5 scfm A/S-9: 5 psi , 6 scfm A/S-10: off A/S-11: 5.5 psi , 5 scfm A/S-12: off A/S-13: 5 psi , 2.5 scfm A/S-14: 5 psi , 2.5 scfm  Catox Hrs: 13,475.8 Time Collected: 1152 T1: 330 C T2: 342 C T3: 343 C  Pre-Catalyst: 17.5 ppm Catox Effluent: 0 ppm  Samples:	Adam Wrubel
O&M Activity	1/8/2018	check:  SVE Hrs: 21,410.54 Time Collected: 1033 " H2O: 12 " Hg: -2.75 Temperature: 60 degrees F 310 SCFM  SVE-1: -27" H2O  SCFM: 20 PID: 1.3 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -21" H2O SCFM: 160 PID: 15.5  Air Sparge Blower: 2,468.39 Time: 1033 A/S-4: 4.5 psi , 5 scfm A/S-7: 4.5 psi , 2.5 scfm A/S-8: 5 psi , 5 scfm A/S-9: 5 psi , 6 scfm A/S-10: off A/S-11: 5 psi , 6 scfm A/S-12: off A/S-14: 4.5 psi , 2.5 scfm  Catox Hrs: 13,258.5 Time Collected: 1033 T1: 330 C T2: 340 C T3: 346 C  Pre-Catalyst: 30ppm Catox Effluent: 0.3ppm  Samples: Not Collected Catox	Adam Wrubel
O&M Activity	12/27/2017	check:  SVE Hrs: 21,124.76 Time Collected: 1248 " H2O: 12 " Hg: -2.75 Temperature: 60 degrees F 310 SCFM  SVE-1: -27" H2O  SCFM: 20 PID: 0.2 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -21" H2O SCFM: 120 PID: 16.5  Air Sparge Blower: 2,182.91 Time: 1248 A/S-4: 5 psi , 2.5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5 psi , 2.5 scfm A/S-9: 5 psi , 2.5 scfm A/S-10: 5 psi , 2.5 scfm A/S-11: 5 psi , 2.5 scfm A/S-12: 5 psi , 2.5 scfm  Catox Hrs: 12,972.8 Time Collected: 1248 T1: 330 C T2: 368 C T3: 368 C  Pre-Catalyst: ppm Catox Effluent: ppm  Samples: Collected Catox Effluent:	Adam Wrubel
O&M Activity	12/21/2017	check:  SVE Hrs: 21,003.63 Time Collected: 1130 " H2O: 12 " Hg: -2.75 Temperature: 66 degrees F 310 SCFM  SVE-1: -28" H2O  SCFM: 20 PID: 0.1 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -21" H2O SCFM: 120 PID: 16  Air Sparge Blower: 2,061.81 Time: 1130 A/S-4: 5 psi , 2.5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5 psi , 2.5 scfm A/S-9: 5 psi , 2.5 scfm A/S-10: 5 psi , 2.5 scfm A/S-11: 5 psi , 2.5 scfm A/S-12: 5 psi , 2.5 scfm  Catox Hrs: 12,851.7 Time Collected: 1130 T1: 330 C T2: 356 C T3: 358 C  Pre-Catalyst: 24 ppm Catox Effluent: 0.1 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.07" H2O, 6.18'	Adam Wrubel
O&M Activity	12/12/2017	check:  SVE Hrs: 20,787.63 Time Collected: 1137 " H2O: 12 " Hg: -2.75 Temperature: 52 degrees F 305 SCFM  SVE-1: -34" H2O  SCFM: 23 PID: 0.1 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -24" H2O SCFM: 140 PID: 16  Air Sparge Blower: 1,845.81 Time: 1137 A/S-4: 5 psi , 2.5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5 psi , 2.5 scfm A/S-9: 5 psi , 2.5 scfm A/S-10: 5 psi , 2.5 scfm A/S-11: 5 psi , 2.5 scfm A/S-12: 5 psi , 2.5 scfm  Catox Hrs: 12,635.7 Time Collected: 1137 T1: 330 C T2: 331 C T3: 341 C  Pre-Catalyst: 20.6 ppm Catox Effluent: 0.2 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.08" H2O, 6.13'	Adam Wrubel
O&M Activity	12/6/2017	ATC gathered materials and replaced the door for the system enclosure that had been broken the previous visit by the wind. The gate hinges were modified, repaired, and strengthened. The gate is now operational.	Adam Wrubel

O&M Activity	12/5/2017	addition to the oversight of Ludington Electric during panel modifications. Once the modifications had been completed, the system was restarted.  SVE Hrs: 20,621.99 Time Collected: 1357 " H2O: 12 " Hg: -2.75 Temperature: 70 degrees F 310 SCFM  SVE-1: -34" H2O  SCFM: 23 PID: 0.6 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF "H2O SCFM:  PID: ppm  SVE-4: -24" H2O SCFM: 120 PID: 14.4  Air Sparge Blower: 1,680.16 Time: 1357 A/S-4: 5.5 psi , 2.5 scfm A/S-7: 5.5 psi , 2.5 scfm A/S-8: 5.5 psi , 2.5 scfm A/S-9: 5 psi , 2.5 scfm A/S-10: 5 psi , 2.5 scfm A/S-11: 5 psi , 2.5 scfm A/S-12: 5 psi , 2.5 scfm  Catox Hrs: 12,470.0 Time Collected: 1357 T1: 330 C T2: 336 C T3: 341 C  Pre-Catalyst: 13.8 ppm Catox Effluent: 0.3 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.08" H2O, 6.18'	Adam Wrubel
O&M Activity	11/29/2017	electrician (Ludington Electric) through CMI to install panel lights and component meters. Prior to shutdown, the system was sampled.   Some of the upgrades were incorrectly sized by the vendor supplying them and will be installed at a later date.  ATC mobilized back to site to re-start system, but upon attempted restart, it was found that the partial installation was preventing the system from starting. The system was left off until Ludington could finish the installation.  	Adam Wrubel
O&M Activity	11/27/2017	check.  SVE Hrs: 20,407.14 Time Collected: 1405 " H2O: 18 " Hg: -2.75 Temperature: 80 degrees F 330 SCFM  SVE-1: -32" H2O  SCFM: 50 PID: 2.0 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -2"H2O SCFM: 23 PID: 6 ppm  SVE-4: -30" H2O SCFM: 140 PID: 40  Air Sparge Blower: 1,612.75 Time: 1524 A/S-4: 5.5 psi , 2.5 scfm A/S-7: 5.5 psi , 2.5 scfm A/S-8: 5.5 psi , 2.5 scfm A/S-9: 6 psi , 4 scfm A/S-10: 5.5 psi , 4 scfm A/S-11: 6 psi , 4 scfm A/S-12: 6 psi , 4 scfm  Catox Hrs: 12,264.3 Time Collected: 1405 T1: 330 C T2: 337 C T3: 341 C  Pre-Catalyst: ppm Catox Effluent: ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.25" H2O, 4.62' DTW MW-39: +13" H2O, well was bubbling  SYSTEM WAS OFF AT	Adam Wrubel
O&M Activity	11/14/2017	check.  SVE Hrs: 20095.8 Time Collected: 1445 " H2O: 18 " Hg: -2.75 Temperature: 98 degrees F 340 SCFM  SVE-1: -33" H2O  SCFM:  PID: 0.5 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -4"H2O SCFM:  PID: 4.5 ppm  SVE-4: -20" H2O SCFM:  PID: 23.5  Air Sparge Blower: 1,425.33 Time: 1445 A/S-4: 5 psi , 2.5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5.25 psi , 3 scfm A/S-9: 5 psi , 5 scfm A/S-10: 5 psi , 4 scfm A/S-11: 5.25 psi , 5 scfm A/S-12: 5 psi , 5 scfm  Catox Hrs: 12,075.1 Time Collected: 1445 T1: 330 C T2: 342 C T3: 345 C  Pre-Catalyst: 36.1 ppm Catox Effluent: 0.9 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.13" H2O, 6.23'	Adam Wrubel
O&M Activity	11/9/2017	check.  SVE Hrs: 19,973.8 Time Collected: 1245 " H2O: 18 " Hg: -2.75 Temperature: 90 degrees F 340 SCFM  SVE-1: -32" H2O  SCFM: 23 PID: 2.4 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -2"H2O SCFM: 50 PID: 8.4ppm  SVE-4: -20" H2O SCFM: 130 PID: 12.7  Air Sparge Blower: 1,03.33 Time: 1245 A/S-4: 5.5 psi , 2.5 scfm A/S-7: 5 psi , 2.5 scfm A/S-8: 5.5 psi , 3 scfm A/S-9: 5.5 psi , 4 scfm A/S-10: 5 psi , 4 scfm A/S-11: 5 psi , 5 scfm A/S-12: 5 psi , 5 scfm  Catox Hrs: 11,953.1 Time Collected: 1005 T1: 330 C T2: 339 C T3: 344 C  Pre-Catalyst: 28.7 ppm Catox Effluent: 0.3 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.08" H2O, 5.92'	Adam Wrubel

O&M Activity	11/1/2017	check.  SVE Hrs: 19,778.11 Time Collected: 1005 " H2O: 18 " Hg: -2.75 Temperature: 91 degrees F 340 SCFM  SVE-1: -4" H2O  SCFM: 80 PID: 14 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -4"H2O SCFM: 50 PID: 49ppm  SVE-4: -8" H2O SCFM: 100 PID: 91 ppm  Air Sparge Blower: 1107.63 @1005 A/S-4: 5.5 psi , 2.5 scfm A/S-7: 4.75 psi , 5 scfm A/S-8: 5.5 psi , 5 scfm A/S-9: 5 psi , 5 scfm A/S-10: 5 psi , 5 scfm A/S-11: 5.5 psi , 5 scfm A/S-12: 5.5 psi , 5 scfm  Catox Hrs: 11,757.4 Time Collected: 1005 T1: 330 C T2: 351 C T3: 353 C  Pre-Catalyst: 95 ppm Catox Effluent: 0.1 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.05" H2O, 6.21'	Adam Wrubel
O&M Activity	10/26/2017	check.  SVE Hrs: 19,636.11 Time Collected: 1203 " H2O: 10 " Hg: -2.75 Temperature: 86 degrees F 340 SCFM  SVE-1: -4" H2O  SCFM: 80 PID: 18 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -4"H2O SCFM: 50 PID: 55ppm  SVE-4: -8" H2O SCFM: 100 PID: 95ppm  Air Sparge Blower: 965.63 @1203 A/S-7: 4.75 psi , 5 scfm A/S-8: 5 psi , 5 scfm A/S-9: 5 psi , 5 scfm A/S-10: 5 psi , 5 scfm A/S-11: 5 psi , 5 scfm A/S-12: 5 psi , 5 scfm  Catox Hrs: 11,615.4 Time Collected: 1203 T1: 330 C T2: 346 C T3: 350 C  Pre-Catalyst: 90 ppm Catox Effluent: 0.2 ppm  Samples: Collected Catox Effluent: 1200 Pre-Catalyst: 1210  OW-B (2014): -0.05" H2O, 6.52' DTW MW-39: -" H2O, 6.81'	Adam Wrubel
O&M Activity	10/18/2017	check.  SVE Hrs: 19,446.75 Time Collected: 1442 " H2O: 12 " Hg: -2.75 Temperature: 118 degrees F 300 SCFM  SVE-1: -8" H2O  SCFM: 60 PID: 93 ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: -5"H2O SCFM: 60 PID: 31  SVE-4: -13" H2O SCFM: 110 PID: 113ppm  Air Sparge Blower: 776.27 @1442 A/S-7: 4.5 psi , 5 scfm A/S-8: 4.5 psi , 2.5 scfm A/S-9: 4.5 psi , 5 scfm A/S-10: 4.5 psi , 5 scfm A/S-11: 4.5 psi , 5 scfm A/S-12:4.5 psi , 5 scfm  Catox Hrs: 11,426.1 Time Collected: 1441 T1: 330 C T2: 355 C T3: 356 C  Pre-Catalyst: 1ppm Catox Effluent: 121 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.76" H2O, 6.93' DTW MW-39: -0.10" H2O, 7.23'	Adam Wrubel
O&M Activity	10/12/2017	check.  SVE Hrs: 19,297.55 Time Collected: 0930 " H2O: 14 " Hg: -2.75 Temperature: 88 degrees F 315 SCFM  SVE-1: 10" H2O  SCFM: 120 PID: ppm  SVE-2: OFF SCFM:  PID: ppm  SVE-3: OFF SCFM:  PID:   SVE-4: -14" H2O SCFM: 110 PID:   Air Sparge Blower: 627.08 @0930 A/S-7: 4.5 psi , 5 scfm A/S-9: 4.5 psi , 5 scfm A/S-10: 4.5 psi , 5 scfm A/S-11: 4.5 psi , 5 scfm A/S-12:4.5 psi , 5 scfm  Catox Hrs: 11,276.9 Time Collected: 0930 T1: 330 C T2: 372 C T3: 377 C  Pre-Catalyst: - ppm Catox Effluent: - ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -0.05"	Adam Wrubel
O&M Activity	10/3/2017	check.  SVE Hrs: 19,085.23 Time Collected: 1310 " H2O: 11 " Hg: -2.75 Temperature: 104 degrees F 300 SCFM  SVE-1: OFF " H2O  SCFM:  PID: ppm  SVE-2: -16" H2O SCFM: 25 PID: 150 ppm  SVE-3: -4" H2O SCFM: 60 PID: 183 ppm  SVE-4: -13" H2O SCFM: 70 PID: 108 ppm  A/S Blower: 414.78 @1310 A/S-7: 4.5 psi , 1 scfm A/S-9: 4.5 psi , 5 scfm A/S-10: 4.5 psi , 5 scfm A/S-11: 4.5 psi , 5 scfm A/S-12:4.5 psi , 5 scfm  Catox Hrs: 11,064.5 Time Collected: 1310 T1: 330 C T2: 366 C T3: 368 C  Pre-Catalyst: 174 ppm Catox Effluent: 1.3 ppm  Samples: Not Collected Catox Effluent:  Pre-Catalyst:   OW-B (2014): -	Adam Wrubel
O&M Activity	9/26/2017	requirements per ATC. Arrived on site, went over what work needed to be done with on site ATC personnel. Installed a process room temperature switch, a sparge blower pressure switch, and a heat exchanger discharge temp switch. Ran each with explosion proof conduit into the control room to be wired in to the EOS at a later date. Completed the install.  	Heidi Polcsik

O&M Activity	9/26/2017	check.   SVE Hrs: 18,916.53 Time Collected: 1109 " H2O: 10 " Hg: -2.75 Temperature: 114 degrees F 260 SCFM  Catox Hrs: 10,937.2 Time Collected: 1109 T1: 330 C T2: 393 C T3: 396 C  SVE-1: OFF " H2O  SCFM:  PID: ppm  SVE-2: -18" H2O SCFM: 25 PID: 247 ppm  SVE-3: -6" H2O SCFM: 25 PID: 344 ppm  SVE-4: -10" H2O SCFM: 50 PID: 134 ppm  Pre-Catalyst: ppm Catox Effluent: ppm  Samples: Collected Catox Effluent: 1300 Pre-Catalyst: 1305   OW-B (2014): -0.08" H2O, 8.04' DTW MW-39: -0.04" H2O, 8.09' DTW  A/S Blower: 177.60 @1640 A/S-10: 4 psi , 5 scfm A/S-11: 4.5 psi , 5	Adam Wrubel
O&M Activity	9/21/2017	check.   SVE Hrs: 18,802.07 Time Collected: 1640 " H2O: 12 " Hg: -2.75 Temperature: 125 degrees F 290 SCFM  Catox Hrs: 10,822.7 Time Collected: 1640 T1: 330 C T2: 386 C T3: 386 C  SVE-1: OFF " H2O  SCFM:  PID: ppm  SVE-2: -28" H2O SCFM: 60 PID: 257 ppm  SVE-3: -6" H2O SCFM: 65 PID: 172 ppm  SVE-4: -10" H2O SCFM: 70 PID: 78 ppm  Pre-Catalyst: 140 ppm Catox Effluent: 7 ppm  Samples: Not Collected   OW-B (2014): -0.12" H2O, 7.82' DTW MW-39: -0.08" H2O, 8.05' DTW  A/S Blower: 177.60	Adam Wrubel
O&M Activity	9/15/2017	check.   SVE Hrs: 18,654.12 Time Collected: 1245 " H2O: 15 " Hg: -2.75 Temperature: 112 degrees F 320 SCFM  Catox Hrs: 10,674.8 Time Collected: 1245 T1: 330 C T2: 377 C T3: 377 C  SVE-1: " H2O  SCFM:  PID: 14.5 ppm  SVE-2: " H2O SCFM:  PID: 247 ppm  SVE-3: " H2O SCFM:  PID: 260 ppm  SVE-4: " H2O SCFM:  PID: 146 ppm  Pre-Catalyst: 196 ppm Catox Effluent: 1.3 ppm  Samples: Not Collected   OW-B (2014): -0.30" H2O, 7.74' DTW MW-39: -0.10" H2O, 7.95' DTW  A/S Blower: 29.65 @1245 A/S-10: 4 psi , 2.5	Adam Wrubel
O&M Activity	9/14/2017	check.   SVE Hrs: 18,630.88 Time Collected: 1328 " H2O: 12 " Hg: 2.75 Temperature: 106 degrees F 320 SCFM  Catox Hrs: 10,651.5 Time Collected: 1328 T1: 330 C T2: 381 C T3: 378 C  SVE-1: -4 " H2O  SCFM: 25 PID: ppm  SVE-2: -22" H2O SCFM: 50 PID: ppm  SVE-3: -4" H2O SCFM: 60 PID: ppm  SVE-4: -10" H2O SCFM: 70 PID: ppm  Pre-Catalyst: - ppm Catox Effluent: - ppm  Samples: Not Collected   OW-B (2014): -0.10" H2O, 7.70' DTW MW-39: -0.09"	Adam Wrubel
O&M Activity	9/13/2017	check.   A/S portion of the system was started. After minimal running time, concentrations became too high, and the catox reached high temperature shutdown. The Sparge portion was restricted to only A/S-12, and left to run overnight.  SVE Hrs: 18,604.02 Time Collected: 1043 " H2O: 10 " Hg: 2.75 Temperature: 100 degrees F 200 SCFM  Catox Hrs: 10,625.9 Time Collected: 1043 T1: 331 C T2: 353 C T3: 356 C  SVE-1:  SCFM:  PID: 130 ppm  SVE-2: " H2O SCFM: - PID: 570 ppm  SVE-3: " H2O SCFM: - PID: 450 ppm  SVE-4: " H2O SCFM: - PID: 400 ppm  Pre-Catalyst: - ppm Catox Effluent: 0 ppm  Samples: Not Collected   OW-B (2014): -0.6" H2O, 7.61' DTW MW-39: -0.07"	Adam Wrubel
O&M Activity	9/9/2017	check.   SVE Hrs: 18,507.83 Time Collected: 1035 " H2O: 10 " Hg: 4.5 Temperature: 120 degrees F 220 SCFM  Catox Hrs: 10,529.7 Time Collected: 1035 T1: 330 C T2: 361 C T3: 368 C  SVE-1: -5 " H2O  SCFM: 50 PID: 1.3 ppm  SVE-2: -58" H2O SCFM: - PID: 301 ppm  Pre-Catalyst: 261 ppm Catox Effluent: 0 ppm  Samples: Not Collected   OW-B (2014): -0.6" H2O, 7.61' DTW MW-39: -0.07" H2O, 7.84' DTW	Adam Wrubel

O&M Activity	8/29/2017	check.   SVE Hrs: 18,243.83 Time Collected: 1027 " H2O: 10 " Hg: 4.5 Temperature: 120 degrees F 225 SCFM  Catox Hrs: 10,265.7 Time Collected: 1027 T1: 330 C T2: 374 C T3: 378 C  SVE-1: -5 " H2O  SCFM: 50 PID: 2.4 ppm  SVE-2: -58" H2O SCFM: - PID: 324 ppm  Pre-Catalyst: 27 ppm Catox Effluent: 1 ppm  Samples: Not Collected Pre-Catalyst: 270.7 Catox Effluent: 0.8  OW-B (2014): -0.62" H2O, 7.44' DTW MW-39: -0.08" H2O, 7.71' DTW	Adam Wrubel
O&M Activity	8/24/2017	check.   SVE Hrs: 18,126.30 Time Collected: 1254 " H2O: 9 " Hg: 3.5 Temperature: 104 degrees F 180 SCFM  Catox Hrs: 10,148.1 Time Collected: 1254 T1: 330 C T2: 411 C T3: 438 C  SVE-1: -5 " H2O  SCFM: 50 PID: 12 ppm  SVE-2: -46" H2O SCFM: - PID: 619 ppm  Pre-Catalyst: 523 ppm Catox Effluent: 1 ppm  Samples: Not Collected Pre-Catalyst:  Catox Effluent:   OW-B (2014): -0.52" H2O, 7.38' DTW MW-39: -0.07" H2O,	Adam Wrubel
O&M Activity	8/22/2017	check.   SVE Hrs: 18,074.46 Time Collected: 0905 " H2O: 10 " Hg: 3.5 Temperature: 110 degrees F 170 SCFM  Catox Hrs: 10,096.6 Time Collected: 0905 T1: 330 C T2: 402 C T3: 427 C  SVE-1: 6 " H2O  SCFM:  PID: 9 ppm  SVE-2: -60" H2O SCFM: - PID: 987 ppm  Pre-Catalyst: 771 ppm Catox Effluent: 1.3 ppm  Samples: Not Collected Pre-Catalyst:  Catox	Adam Wrubel
O&M Activity	8/10/2017	exchanger and measure for future conduit. The system was operating on arrival. Installed duct work on heat exchanger to vent air flow outside the system, had to cut a hole through the side of the system and was able to go through the wall between studs. Installed movable blade louvers on the outside of the system. While on site, measured for conduit runs to take care of temperature and pressure alarms. The system was operating on departure.	Heidi Polcsik
O&M Activity	8/9/2017	check.   SVE Hrs: 17,767.96 Time Collected: 1433 " H2O: 2 " Hg: 4.5 Temperature: 130 degrees F 100 SCFM  Catox Hrs: 9,936.3 Time Collected: 1433 T1: 356 C T2: 443 C T3: 450 C  SVE-1: off " H2O  SCFM:  PID: ppm  SVE-2: -60" H2O SCFM: - PID: 390 ppm  Pre-Catalyst: 343 ppm Catox Effluent: 1.1 ppm  Samples: Collected Pre-Catalyst: 1420 Catox Effluent: 1415  OW-B (2014): -0.35" H2O, 7.18' DTW MW-39: -0.05" H2O, 7.42' DTW  ATC installed a 200# carbon vessel for injection of collected condensate. The vessel was placed, plumbed, and secured. It will not be fully operational until some fittings are received from vendor.	Adam Wrubel
O&M Activity	8/2/2017	check.   SVE Hrs: 17,603.84 Time Collected: 1828 " H2O: 4 " Hg: 4.5 Temperature: 130 degrees F 100 SCFM  Catox Hrs: 9,772.2 Time Collected: 1828 T1: 337 C T2: 415 C T3: 419 C  SVE-1: off " H2O  SCFM:  PID: ppm  SVE-2: -60" H2O SCFM: - PID: 260 ppm  Pre-Catalyst: 352 ppm Catox Effluent: 0.5 ppm  Samples: Not Collected Pre-Catalyst:  Catox	Adam Wrubel
O&M Activity	7/28/2017	check.   SVE Hrs: 17,479.90 Time Collected: 1430 " H2O: 4 Temperature: 133 degrees F 100 SCFM  Catox Hrs: 9,648.3 Time Collected: 1430 T1: 331 C T2: 378 C T3: 381 C  SVE-1: off " H2O  SCFM:  PID: ppm  SVE-2: -60" H2O SCFM: - PID: 322 ppm  Pre-Catalyst: 318 ppm Catox Effluent: 0.4 ppm  Samples: Not Collected Pre-Catalyst:  Catox Effluent:   OW-B (2014) DTW: 6.85', -1.0" H2O MW-39 DTW: 6.90',	Adam Wrubel
O&M Activity	7/20/2017	check.   SVE Hrs: 17,289.23 Time Collected: 1550 " H2O: 16 Temperature: 140 degrees F 300 SCFM  Catox Hrs: 9,457.6 Time Collected: 1550 T1: 33 C T2: 419 C T3: 438 C  SVE-1: -4 " H2O  SCFM:  PID: 2.6 ppm  SVE-2: -60" H2O SCFM: - PID: 725 ppm  Pre-Catalyst: 440 ppm Catox Effluent: 1.4 ppm  Samples: Not Collected Pre-Catalyst:  Catox Effluent:   gauging equipment in use	Adam Wrubel

O&M Activity	7/14/2017	check.   SVE Hrs: 17,142.46 Time Collected: 1304 " H2O: 8 Temperature: 120 degrees F 170 SCFM  Catox Hrs: 9,363.8 Time Collected: 1304 T1: 331 C T2: 394 C T3: 429 C  SVE-1: -6 " H2O  SCFM: 70 PID: 13 ppm  SVE-2: -60" H2O SCFM: - PID: 573 ppm  Pre-Catalyst: 564 ppm  Catox Effluent: 1.5 ppm  Samples: Collected Pre-Catalyst: 1310 Catox Effluent: 1320  OW-B(2014) 1.2"H2O DTW:6.34' MW-39 0"H2O	Adam Wrubel
O&M Activity	6/27/2017	check.   SVE Hrs: 16,733.99 Time Collected: 1235 " H2O: 10 Temperature: 120 degrees F 220 SCFM  Catox Hrs: 8,955.7 Time Collected: 1235 T1: 338 C T2: 424 C T3: 426 C  SVE-1: -6 " H2O SCFM: 70 PID: 105 ppm  SVE-2: -41" H2O SCFM: - PID: 1037 ppm  Pre-Catalyst: 703 ppm  Catox Effluent: 0 ppm  Samples: Not Collected Pre-Catalyst:  Catox	Adam Wrubel
O&M Activity	6/20/2017	had shut down due to AWS HH. A 55 gal drum will be arranged to be brought to the site in order to drain the AWS and restart the system. The system will be left off in the mean time.  Blower Hrs: 16,568.21 @ 1448 Catox Hrs: 8,955.5 @ 1448	Adam Wrubel
O&M Activity	6/14/2017	check.   SVE Hrs: 16,419.40 Time Collected: 0958 " H2O: 12 Temperature: 120 degrees F 250 SCFM  Catox Hrs: 8,817.7 Time Collected: 0958 T1: 379 C T2: 478 C T3: 417 C  SVE-1: -6 " H2O SCFM: 65 PID: 0.9 ppm  SVE-2: -57" H2O SCFM: - PID: 658 ppm  Pre-Catalyst: 468 ppm  Catox Effluent: 0.3 ppm  Samples: Collected Pre-Catalyst: 1010 Catox Effluent: 1000  OW-B (2014) DTW: 6.31' OW-B (2014) pressure: 1.6 " H2O  MW-39 DTW: 6.51' MW-39 pressure: 2.1 " H2O	Adam Wrubel
O&M Activity	6/5/2017	check.   SVE Hrs: 16,208.65 Time Collected: 1515 " H2O: 10 Temperature: 115 degrees F 220 SCFM  Catox Hrs: 8,607.0 Time Collected: 1515 T1: 331 C T2: 400 C T3: 402 C  SVE-1: -7 " H2O SCFM: 70 PID: 2.9 ppm  SVE-2: -57" H2O SCFM: 120 PID: 548 ppm  Pre-Catalyst: 337 ppm  Catox Effluent: 1.1 ppm  Samples: Not Collected Pre-Catalyst:  Catox Effluent:  OW-B (2014) DTW: 5.80' OW-B (2014) pressure: - " H2O  MW-39 DTW: 6.07' MW-39 pressure: - " H2O  	Adam Wrubel
O&M Activity	6/2/2017	check.   SVE Hrs: 16,131.09 Time Collected: 0937 " H2O: 9 Temperature: 105 degrees F 200 SCFM  Catox Hrs: 8,529.5 Time Collected: 0937 T1: 330 C T2: 391 C T3: 393 C  SVE-1: -6 " H2O SCFM: 70 PID: 0.3 ppm  SVE-2: -40" H2O SCFM: - PID: 490 ppm  Pre-Catalyst: 317 ppm  Catox Effluent: 0 ppm  Samples: Not Collected Pre-Catalyst:  Catox	Adam Wrubel
O&M Activity	5/25/2017	check.   SVE Hrs: 15,942.04 Time Collected: 1234 " H2O: 11 Temperature: 90 degrees F 180 SCFM  Catox Hrs: 8,340.4 Time Collected: 1234 T1: 331 C T2: 400 C T3: 421 C  SVE-1: -10 " H2O SCFM: 80 PID: 1.5 ppm  SVE-2: -32" H2O SCFM: 80 PID: 610 ppm  Pre-Catalyst: 438 ppm  Catox Effluent: 0.4 ppm  Samples: Not Collected Pre-Catalyst:  Catox Effluent:  OW-B (2014) DTW: 5.42' OW-B (2014) pressure: 1.4" H2O  MW-39 DTW: 5.12' MW-39 pressure: 2.0" H2O  2.5" Brass ball valve was installed between VCV valve and SVE blower for regulating	Adam Wrubel
O&M Activity	5/16/2017	check.   SVE Hrs: 15,724.90 Time Collected: 1037 " H2O: 10 Temperature: 90 degrees F  Catox Hrs: 8,122.6 Time Collected: 1037 T1: 330 C T2: 384 C T3: 389 C  SVE-1: -10 " H2O SCFM: 80 PID: 1.1 ppm  SVE-2: -32" H2O SCFM: 80 PID: 438 ppm  Pre-Catalyst: 282 ppm  Catox Effluent: 3.1 ppm  Samples: Pre-Catalyst: 1110 Catox Effluent: 1100	Adam Wrubel
O&M Activity	5/12/2017	check.   SVE Hrs: 15,627.74 Time Collected: 0936 " H2O: 10 Temperature: 89 degrees F  Catox Hrs: 8,025.6 Time Collected: 0936 T1: C T2: C T3: C  SVE-1: -7 " H2O SCFM: 90 PID: 3.8 ppm  SVE-2: -36" H2O SCFM: 80 PID: 706 ppm  Pre-Catalyst: 445 ppm  Catox Effluent: 0 ppm	Adam Wrubel

O&M Activity	5/2/2017	check.  The system was off at arrival due to a AWS HHL alarm. The AWS tank was emptied into a 55gal drum and the water was sampled for possible injection.   It was determined that along with a higher than normal water levels, and a buildup of condensation, that water was being collected and transported to the AWS.   SVE Hrs: 15,289.57 Time Collected: 1042 " H2O: 10 Temperature: 90 degrees F  Catox Hrs: 7,980.2 Time Collected: 1042 T1: 330 C T2: 402 C T3: 400 C  SVE-1: -7 " H2O SCFM: 80 PID: 0.3 ppm  SVE-2: -36" H2O SCFM: 80 PID: 496 ppm  Pre-Catalyst: 358 ppm Catox	Adam Wrubel
O&M Activity	4/27/2017	check.   Flow rates and concentrations have drastically reduced over that last few weeks. Trouble shooting deduced that the SVE wells/lines were full of water. It was determined that along with a higher than normal water levels, and a buildup of condensation, that the lines were filling up with water.   Compressed air was used to clear the SVE lines and the system was restarted utilizing only 1 of the 4 SVE lines (SVE-2).  SVE Hrs: 15,272.18 Time Collected: 1400 SCFM: 120 " H2O: 6 Temperature: 100 degrees F  Catox Hrs: 7968.2 Time Collected: 1400 T1: 332 C T2: 421 C T3: 415 C  SVE-2: -60 "	Adam Wrubel
O&M Activity	4/26/2017	The valve will be a failsafe against loss of vacuum. Upon installation, it was found that the piping of the blower inlet and outlet was bushed to 2.5' rather than 2". The materials collected will have to be exchanged and installed at a later visit.	Adam Wrubel
O&M Activity	4/19/2017	check.  Time Collected: 1116 Catox: 7,776.1 hrs. T1: 330 degrees C T2: 329 degrees C T3: 335 degrees C  Catox Effluent: 0 ppm Pre-Catalyst: 1.3 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 15,077.46 hrs. 2.5" Hg 19" H2O 84 degree F 125 SCFM  K/O Tank: 2.5" Hg  SVE-1 130 SCFM 1.4 ppm SVE-2 25 SCFM 2.5 ppm SVE-3 25 SCFM 2.0 ppm SVE-4 25 SCFM 1.9 ppm	Adam Wrubel
O&M Activity	4/14/2017	check.  Time Collected: 1315 Catox: 7,658.1.0 hrs. T1: 330 degrees C T2: 340 degrees C T3: 347 degrees C  Catox Effluent: 0 ppm Pre-Catalyst: 67 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 14,959.46 hrs. 2.5" Hg 19" H2O 84 degree F 125 SCFM  K/O Tank: 2.5" Hg  SVE-1 125 SCFM 4.1 ppm SVE-2 25 SCFM 613 ppm SVE-3 25 SCFM 7.4 ppm SVE-4 25 SCFM 17.9 ppm	Adam Wrubel
O&M Activity	3/29/2017	check.  The system was off at arrival, no alarms were present. After inspection, it was found that the battery backup for the system PLC had failed. It was removed and replaced. The system was the restarted.  Time Collected: 0930 Catox: 7,272.0 hrs. T1: 330 degrees C T2: 392 degrees C T3: 395 degrees C  Catox Effluent: 0.4 ppm Pre-Catalyst: 283 ppm   Samples: Collected Catox Effluent: 1200 Pre-Catalyst: 1210  SVE Blower: 14,573.35 hrs. 2.5" Hg 19" H2O 84 degree F 310 SCFM  K/O Tank: 2.5" Hg  SVE-1 120 SCFM 3.6 ppm SVE-2 25 SCFM 1112 ppm SVE-3 25 SCFM 23 ppm SVE-4 25 SCFM 17 ppm	Adam Wrubel
O&M Activity	3/21/2017	check.  Time Collected: 0955 Catox: 7,180.7 hrs. T1: 330 degrees C T2: 400 degrees C T3: 400 degrees C  Catox Effluent: 1 ppm Pre-Catalyst: 315 ppm   Samples: Collected Catox Effluent: 1030 Pre-Catalyst: 1040  SVE Blower: 14,382.10 hrs. 17" H2O 72 degree F 320 SCFM  K/O Tank: 2.5" Hg  SVE-1 125 SCFM 13.6ppm SVE-2 25 SCFM 1140 ppm SVE-3 25 SCFM 9.8ppm SVE-4 25 SCFM 36.3ppm  Surrounding well Vacuum readings:  MW-39: 3.0 "H2O DTW:5.87   OW-B (2014): 1 "H2O DTW: 5.59 	Adam Wrubel

O&M Activity	3/20/2017	were responding and operating correctly after system upgrades. SVE lines were opened at such a rate as to gain the best recovery while still remaining in permit and operational compliance. The system was left in operation at the end of the day and another site visit will be conducted this week.  Time Collected: 1035 Sparge Blower Hrs: 2.68 SVE Blower Hrs: 14,358.54 Catox Hrs: 7,157.4  T1: 331 T2: 415 T3: 411	Adam Wrubel
O&M Activity	3/16/2017	3/16/2017-3/17/2017: ATC was onsite for subcontractor oversight of RJS Electric, Tempest, and Clean Harbors. The vacuum blower was upgraded with a vacuum transmitter, VFD, and programming.   3/16/2017 consisted of disassembly and relocation of currently installed components to make way for upgrades. 3/17/2017 consisted of programming and operational control testing.	Adam Wrubel
O&M Activity	3/1/2017	3/1/2017: ATC was onsite to verify Vacuum Blower specifications for Clean Harbors upcoming VFD upgrade.	Adam Wrubel
O&M Activity	1/12/2017	check.  Time Collected: 0921 Catox: 7,152.1 hrs. T1: 330 degrees C T2: 352 degrees C T3: 354 degrees C  Catox Effluent: 0.1 ppm Pre-Catalyst: 122.1 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 14,284.60 hrs. 10" H2O 180 degree F 200 SCFM  K/O Tank: 8.5" Hg  SVE-1 >170 SCFM >100" H2O  Surrounding well Vacuum readings: VPSS-1: 0 "H2O VPSS-2: 0 "H2O VP-1 (3-3.5'): 0.7 "H2O VP-1 (6.7-7'): 1.0 "H2O MW-39: 0.10 "H2O MW-38: 0 "H2O OW-B: 1.8 "H2O   DTW readings: (ft) MW-39: 5.96 MW-38: 5.94 OW-B: 5.72   The system was shut down due to high amperage of the SVE vacuum blower. Fluctuations in the site's surface surroundings is causing a change in expected vacuum and flow conditions. instillation of a VFD is proposed to automatically fluctuate the blower's frequency to stay within set parameters, regulating its amp draw according to surface conditions at that time. A vacuum transmitter is also proposed to regulate vacuum pressures during these same fluctuations in	Adam Wrubel
O&M Activity	1/11/2017	check.  Time Collected: 1026 Catox: 7,129.1 hrs. T1: 330 degrees C T2: 360 degrees C T3: 361 degrees C  Catox Effluent: 0.1 ppm Pre-Catalyst: 140.9 ppm   Samples: Collected Catox Effluent: 1045 Pre-Catalyst: 1050  SVE Blower: 14,261.66 hrs. 30" H2O 140 degree F 365 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -47" H2O  Surrounding well Vacuum readings: VPSS-1: 0 "H2O VPSS-2: 0 "H2O VP-1 (3-3.5'): 0.24 "H2O VP-1 (6.7-7'): 0.30 "H2O MW-39: unreadable "H2O MW-38: 1.2 "H2O MW-2: 0 "H2O MW-28: 0 "H2O OW-B: 3.8 "H2O   DTW readings: (ft) MW-39: 6.20 MW-38: 6.12 MW-2: 5.98 MW-28: 6.30 OW-B: 5.88 OW-D: 6.42	Adam Wrubel
O&M Activity	1/10/2017	check.  Time Collected: 1002 Catox: 7,104.7 hrs. T1: 330 degrees C T2: 363 degrees C T3: 364 degrees C  Catox Effluent: 0 ppm Pre-Catalyst: 152.8 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 14,237.26 hrs. 30" H2O 121 degree F 365 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -49" H2O  	Adam Wrubel
O&M Activity	1/6/2017	check.  Time Collected: 1302 Catox: 7,011.7 hrs. T1: 330 degrees C T2: 354 degrees C T3: 356 degrees C  Catox Effluent: 0.1 ppm Pre-Catalyst: 88.7 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 14,144.26 hrs. 30" H2O 121 degree F 380 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -49" H2O  	Adam Wrubel

O&M Activity	1/5/2017	check.  Time Collected: 1131 Catox: 6,986.2 hrs. T1: 330 degrees C T2: 359 degrees C T3: 360 degrees C  Catox Effluent: 0 ppm Pre-Catalyst: 96 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 14,118.73 hrs. 30" H2O 125 degree F 380 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -46" H2O  Surrounding well Vacuum readings: VPSS-1: 0 "H2O VPSS-2: 0 "H2O VP-1 (3-3.5'): 0.18 "H2O VP-1 (6.7-7'): 0.23 "H2O MW-39: 0.12 "H2O MW-38: 0 "H2O MW-2: 0 "H2O MW-28: 0 "H2O OW-B: 3 "H2O   DTW readings: (ft) MW-39: 5.97 MW-38:	Adam Wrubel
O&M Activity	1/4/2017	check.  Time Collected: 1123 Catox: 6,962.1 hrs. T1: 330 degrees C T2: 366 degrees C T3: 366 degrees C  Catox Effluent: 0.2 ppm Pre-Catalyst: 119.5 ppm   Samples: Collected Catox Effluent: 1130 Pre-Catalyst: 1135  SVE Blower: 14,094.6 hrs. 30" H2O 120 degree F 375 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -46" H2O  Surrounding well Vacuum readings: VPSS-1: 0 "H2O VPSS-2: 0 "H2O VP-1 (3-3.5'): 0.21 "H2O VP-1 (6.7-7'): 0.30 "H2O MW-39: 0.19 "H2O MW-38: 3.5 "H2O MW-2: 0 "H2O MW-28: 0 "H2O	Adam Wrubel
O&M Activity	12/30/2016	check.  Time Collected: 0909 Catox: 6,839.8 hrs. T1: 330 degrees C T2: 371 degrees C T3: 370 degrees C  Catox Effluent: 0.3 ppm Pre-Catalyst: 169.7 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 13,972.37 hrs. 30" H2O 120 degree F 375 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -46" H2O  	Adam Wrubel
O&M Activity	12/28/2016	check.  Time Collected: 1521 Catox: 6,798.0 hrs. T1: 330 degrees C T2: 391 degrees C T3: 386 degrees C  Catox Effluent: 0.3 ppm Pre-Catalyst: 228.1 ppm   Samples: Not Collected Catox Effluent:  Pre-Catalyst:   SVE Blower: 13,930.55 hrs. 30" H2O 125 degree F 380 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM -46" H2O  Surrounding well Vacuum readings: VPSS-1: 0 "H2O VPSS-2: 0 "H2O VP-1 (3-3.5'): 0.39 "H2O VP-1 (6.7-7'): 0.49 "H2O MW-39: 0.37 "H2O MW-38: 4.3 "H2O MW-2: 0 "H2O MW-28: 0 "H2O  	Adam Wrubel
O&M Activity	12/27/2016	components. SVE wells were configured for initial optimal recovery while still regarding permit compliance. The system was started and samples were collected. The system will remain running unless otherwise directed or problems arise.  Catox: 6,770.6 hrs. T1: 330 degrees C T2: 391 degrees C T3: 382 degrees C  Catox Effluent: 0.5 ppm Pre-Catalyst: 177.4 ppm   Samples:  Catox Effluent: 1145 Pre-Catalyst: 1155  SVE Blower: 13,903.17 hrs. 30" H2O 100 degree F 375 SCFM  K/O Tank: 5" Hg  SVE-1 >230 SCFM  	Adam Wrubel
O&M Activity	12/13/2016	12/13/16: ATC was onsite for System O&M.  ATC continued system Catox trouble shooting and optimization. After corresponding with manufacturer, the system was optimized for continued run time. The system was sampled for efficiency and pending results.	Adam Wrubel

O&M Activity	12/9/2016	The wipe test was negative for lead fouling. ATC added more ceramic beads in catox, filling it to the proper level. Almost 3? or ? of a gallon of beads were added.   After bead replacement, ATC started up the catox, and then SVE. The catox rose in temperature, and proceeded to rise in temperature until it was shut down by the preset temp shut off for T2, while the SVE continued to run. During pre-startup testing, The catox bypass switch was inadvertently switched on. It was turned off, and after the unit cooled, the catox was restarted. The catox once again heated up, this time reaching high level alarm for T1 and shutting down. Once again, the unit was let cool, and the unit manufacturer, Falmouth, was contacted to trouble shoot. The initial settings for the flow had the dilution valve completely open, along with 1 sve well completely open, and one that was half open. The pressure for the blower was around 60?H2O. Falmouth said this was too much for the Falco 300, so we restricted it back down to just below 40? per Falmouth recommendations (close to 300 cfm). The catox was started, then sve again. Once again after warm up, the catox shutdown due to T1 high level alarm. From further conversations with Falmouth, it was determined that the incoming concentrations and flow are still too high, and more flow restrictions were needed in order for the unit to run continuously (the calculations come out to around 1,350 ppm). By this time it	Adam Wrubel
O&M Activity	12/7/2016	ATC was onsite to meet Speedway environmental representative for audit of newly installed system and its components.	Adam Wrubel
O&M Activity	11/21/2016	Chemviron Midwest (Joe Ward) was on site to finish installing the heat trace. Completed installing the foam insulation over the heat trace on the sparge lines. Informed ATC that the heat trace on the system was completed.	Heidi Polcsik
O&M Activity	11/17/2016	was not operating on arrival. Installed heat trace and tested all SVE and sparge lines (4- SVE/ 12 - Sparge). Insulated all 4 SVE lines. Insulated 9 of the 12 sparge lines. Ran out of supplies to finish the lines, will return in day or two to finish. Replaced bag GFCI plug outside the system that powers the heat trace. The system was not operating on departure.  	Heidi Polcsik
O&M Activity	11/14/2016	ATC contacted the Lansing Board of Water and Light to correct the BILL TO information on the newly installed electrical connection for the remediation system. LBWL responded in an email they will update the BILL TO information to ATC Group Services LLC at 4519 Broadmoor Ave, Grand Rapids, Michigan.	Roy Hoin
O&M Activity	11/8/2016	continued operation of the system.  Sample results indicated an 85% treatment efficiency through the cat-ox. The permit requirement is 95%. Tim Rombach (ATC) recommended catalyst bead inspection (top off if necessary) and lead wipe test.	Adam Wrubel
O&M Activity	11/3/2016	ATC was onsite with CMI for continued Pre-Startup Checklist. Various checklist items were addressed and others noted for updates.	Adam Wrubel
O&M Activity	11/3/2016	Chemviron Midwest (Joe Ward) was on site to assist ATC personnel with system check and start-up. The system was not operating on arrival. Arrived on site, went over Health and Safety with ATC personnel. Started test running and correcting any issues with system. Follow up visits may be needed for other issues. The system was not operating on departure per ATC.   	Heidi Polcsik
O&M Activity	10/31/2016	not operating on arrival, it has yet to be started up. Continued updating system to ATC specs. Ran a test on Catox alarms. Cleaned out AWS discharge. Completed the list of requested updates. The system was not operating on departure.	Heidi Polcsik
O&M Activity	10/28/2016	system. The system was not operating on arrival. The system needs some updates requested by ATC before a start up can happen. Upon arrival, went through the system and started making updates throughout that were requested by ATC. Will return the beginning of next week to finish off the list of items requested. The system was not operating on departure.	Heidi Polcsik

O&M Activity	10/25/2016	startup Checklist.  Some P&ID discrepancies and recommendations were made and will need to be rectified/fixed before startup. Some amperages of components, alarms, and temp settings were checked. A list put together by both ATC and Chemviron of items that need to be addressed. Both lists were to be compiled into a master list by ATC and will be sent out to all parties when completed.  The system was momentarily started and ran for a while.The sparge portion was only ran for minutes and was bringing in vapors exceeding 400ppm prior to Catox. Vapors were still high without running the sparge, and for the initial weeks, the system will probably run this way.  Once the line items are addressed, there will be another day when the Shakedown can continue some testing on the wells out in the field can	Adam Wrubel
O&M Activity	10/11/2016	ATC also met onsite with LBWL for installation of new electrical meter #151778, serial tag #0092433.	Adam Wrubel
O&M Activity	10/5/2016	Chemviron installed SVE flowmeters, and took measurements for piping and flowmeters installation for catox. ATC and CMI tried to solidify and secure scheduling for shakedown and start-up.	Adam Wrubel
O&M Activity	9/28/2016	Arrived on site, unlocked fenced-in area around the system. Went over the project with Ludington Electric, then assisted with the install of the power disconnect. Had to mount a lock box outside the fence so that for short term the utility workers can access the disconnect and globe. Ludington Electric set up the inspection of the install for tomorrow September 29th. The will contact CMI when the inspection is done.  	Heidi Polcsik
O&M Activity	9/8/2016	remediation trailer were strapped down per permit requirement, piping finished for SVE and Sparge exterior lines. Final fence pieces were installed and gate reinforced. Wire was pulled for Catox and transformer and left for electrician to finish final connections.	Adam Wrubel
O&M Activity	8/31/2016	Chemviron for installation of Air Sparge system fencing as well as trailer and catox placement. Concrete and asphalt was cut, holes bored for fence posts, concrete poured, trailer and catox placed. Remaining items will be addressed at a later scheduled date.	Adam Wrubel
O&M Activity	8/31/2016	unloaded 7 drums. Met with Adam (ATC) to go over the job/site for potential future site visits.	Heidi Polcsik
O&M Activity	8/29/2016	company while scanning for utilities. Arrived on site, took pictures of the site and collected measurements. Once the Bloodhound Tech arrived, confirmed with him the area that needed to be scanned. Bloodhound completed the utility locating scan. Left the site. Will forward pictures and measurements to Jeff Mills (CMI) for system placement.	Heidi Polcsik
O&M Activity	7/19/2016	on site, took measurements and photos of the site. Checked in with CMI's main office to go over information. Will return to site at a later date for install of system.	Heidi Polcsik

**Table 2A. Influent Calculations**  
**Former Speedway #7207**  
**3029 East Kalamazoo Street**  
**Lansing, Michigan**  
**Facility ID No. 0009647; SRN: P0011**

DATE	TIME	HOURLY METER (HRS)	INTERVAL RUN TIME (HRS)	SVE BLOWER (SCFM)	PRE-CATALYST THC-g CONC. (UG/L)	THC-g EMISSION RATE (LBS/HR)	THC-g RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT THC's (LBS)	INFLUENT THC's PER MONTH (LBS)	BTEX (UG/L)	BTEX RECOVERY RATE (LBS/HR)	BTEX RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT BTEX (LBS)	INFLUENT BTEX PER MONTH (LBS)	REMARKS
Data history begins on 20161108		13,899	0												
12/27/16	12:21 PM	13,903.17	4	375	3,290	4.612	18.4	18.4		47	0.066	0.3	0.3		AW Sampling
12/28/16	03:21 PM	13,930.55	27	380	3,290	4.673	126.3	145		47	0.067	1.8	2.1		
12/30/16	09:09 AM	13,972.37	42	375	3,290	4.612	195.4	340		47	0.066	2.8	4.9		
12/31/16	11:59 PM	14,011.22	39	375	3,290	4.612	179.2	519	519	47	0.066	2.6	7.4	7.4	
01/01/17	12:00 AM	14,011.23	0	375	3,290	4.612	0.0	519		47	0.066	0.0	7.4		
01/04/17	11:23 AM	14,094.60	83	375	3,290	4.612	384.5	904		47	0.066	5.5	12.9		AW Sampling
01/05/17	11:31 AM	14,118.73	24	380	3,290	4.673	111.3	1015		47	0.067	1.6	14.5		
01/06/17	11:00 AM	14,144.26	26	380	3,290	4.673	119.3	1134		47	0.067	1.7	16.2		
01/10/17	11:00 AM	14,237.26	93	365	3,290	4.489	434.6	1569		47	0.064	6.2	22.5		
01/11/17	11:00 AM	14,261.66	24	365	826	1.127	109.5	1679		14	0.019	1.6	24.0		AW Sampling
01/12/17	10:00 AM	14,284.60	23	365	826	1.127	25.9	1704	1185	13.6	0.019	0.4	24.5	17	Shutdown. High Amp.
03/17/17	08:35 AM	14,284.61	0	365	826	1.127	0.0	1704		13.6	0.019	0.0	24.5		VFD Install
03/20/17	10:35 AM	14,358.54	74	320	7,210	8.624	83.3	1788		61.6	0.074	1.4	25.8		Restart. Carried up from following day (<24 hrs)
03/21/17	09:55 AM	14,382.10	24	320	7,210	8.624	203.2	1991		61.6	0.074	1.7	27.6		AW Sampling
03/29/17	09:30 AM	14,573.35	191	310	4,180	4.844	1649.4	3640		21.3	0.025	14.1	41.7		
03/31/17	11:59 PM	14,635.85	63	310	4,180	4.844	302.7	3943	2239	21.3	0.025	1.5	43.2	19	
04/01/17	12:00 AM	14,635.86	0	310	4,180	4.844	0.0	3943		21.3	0.025	0.0	43.2		
04/07/17	10:35 AM	14,721.00	85	220	57	0.047	412.4	4356		0.6	0.000	2.1	45.3		DR Sampling
04/14/17	01:15 PM	14,959.46	238	125	57	0.027	11.1	4367		0.6	0.000	0.1	45.4		
04/19/17	11:16 AM	15,077.46	118	125	57	0.027	3.1	4370		0.6	0.000	0.0	45.4		
04/27/17	02:00 PM	15,272.18	195	120	57	0.025	5.2	4375		0.6	0.000	0.1	45.5		
04/30/17	11:59 PM	15,354.18	82	120	57	0.025	2.1	4377	434	0.6	0.000	0.0	45.5	2	
05/01/17	12:00 AM	15,354.19	0	120	57	0.025	0.0	4377		0.6	0.000	0.0	45.5		
05/12/17	09:36 AM	15,627.74	274	125	57	0.027	7.0	4384		0.6	0.000	0.1	45.6		
05/16/17	10:37 AM	15,724.90	97	125	2,040	0.953	2.6	4387		11.5	0.005	0.0	45.6		AW Sampling
05/25/17	12:34 PM	15,942.04	217	180	2,040	1.373	207.0	4594		11.5	0.008	1.2	46.8		
05/31/17	11:59 PM	16,097.54	156	180	2,040	1.373	213.4	4807	430	11.5	0.008	1.2	48.0	2	
06/01/17	12:00 AM	16,097.55	0	180	2,040	1.373	0.0	4807		11.5	0.008	0.0	48.0		
06/02/17	09:37 AM	16,131.09	34	200	2,040	1.525	46.0	4853		11.5	0.009	0.3	48.3		
06/05/17	03:15 PM	16,208.65	78	220	2,040	1.678	118.3	4971		11.5	0.009	0.7	48.9		
06/14/17	09:58 AM	16,419.40	211	250	4,430	4.140	353.6	5325		33.0	0.031	2.0	50.9		AW Sampling
06/27/17	12:35 PM	16,733.99	315	220	4,430	3.643	1302.4	6627		33.0	0.027	9.7	60.6		
06/30/17	11:59 PM	16,817.49	84	220	4,430	3.643	304.2	6931	2124	33.0	0.027	2.3	62.9	15	
07/01/17	12:00 AM	16,817.50	0	220	4,430	3.643	0.0	6931		33.0	0.027	0.0	62.9		
07/14/17	01:04 PM	17,142.46	325	170	4,180	2.656	1183.8	8115		25.2	0.016	8.8	71.7		AW Sampling
07/20/17	03:50 PM	17,289.23	147	300	4,180	4.687	389.9	8505		25.2	0.028	2.3	74.0		
07/28/17	02:30 PM	17,479.90	191	100	4,180	1.562	893.8	9399		25.2	0.009	5.4	79.4		
07/31/17	11:59 PM	17,561.40	82	100	4,180	1.562	127.3	9526	2595	25.2	0.009	0.8	80.2	17	
08/01/17	12:00 AM	17,561.41	0	100	4,180	1.562	0.0	9526		25.2	0.009	0.0	80.2		
08/02/17	06:28 PM	17,603.84	42	100	4,180	1.562	66.3	9593		25.2	0.009	0.4	80.6		
08/09/17	02:33 PM	17,767.96	164	100	3,090	1.155	256.4	9849		15.3	0.006	1.5	82.1		AW Sampling
08/22/17	09:05 AM	18,074.46	307	170	3,090	1.964	354.0	10203		15.3	0.010	1.8	83.9		
08/24/17	12:54 PM	18,126.30	52	180	3,090	2.079	101.8	10305		15.3	0.010	0.5	84.4		
08/29/17	10:27 AM	18,243.83	118	225	3,090	2.599	244.4	10549		15.3	0.013	1.2	85.6		
08/30/17	11:59 PM	18,257.33	14	225	3,090	2.599	35.1	10584	1058	15.3	0.013	0.2	85.8	6	
09/01/17	12:00 AM	18,257.34	0	225	3,090	2.599	0.0	10584		15.3	0.013	0.0	85.8		
09/09/17	10:35 AM	18,507.83	250	220	3,090	2.541	651.0	11235		15.3	0.013	3.2	89.0		
09/13/17	10:43 AM	18,604.03	96	200	3,090	2.310	244.5	11480		15.3	0.011	1.2	90.2		
09/14/17	01:28 PM	18,630.88	27	320	3,090	3.696	62.0	11542		15.3	0.018	0.3	90.5		
09/15/17	12:45 PM	18,654.12	23	320	3,090	3.696	85.9	11628		15.3	0.018	0.4	90.9		
09/21/17	04:40 PM	18,802.07	148	290	3,090	3.350	546.8	12175		15.3	0.017	2.7	93.7		
09/26/17	11:09 AM	18,916.53	114	260	543	0.528	383.4	12558		17.2	0.017	1.9	95.6		AW Sampling
09/28/17	03:30 PM	18,967.57	51	260	543	0.528	26.9	12585		17.2	0.017	0.9	96.4		

DATE	TIME	HOURLY METER (HRS)	INTERVAL RUN TIME (HRS)	SVE BLOWER (SCFM)	PRE-CATALYST THC-g CONC. (UG/L)	THC-g EMISSION RATE (LBS/HR)	THC-g RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT THC's (LBS)	INFLUENT THC's PER MONTH (LBS)	BTEX (UG/L)	BTEX RECOVERY RATE (LBS/HR)	BTEX RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT BTEX (LBS)	INFLUENT BTEX PER MONTH (LBS)	REMARKS
09/30/17	11:59 PM	19,048.07	81	260	543	0.528	42.5	12627	2043	17.2	0.017	1.3	97.8	12	
10/01/17	12:00 AM	19,048.08	0	260	543	0.528	0.0	12627		17.2	0.017	0.0	97.8		
10/03/17	01:10 PM	19,085.23	37	300	543	0.609	19.6	12647		17.2	0.019	0.6	98.4		
10/12/17	09:30 AM	19,297.55	212	315	543	0.639	129.3	12776		17.2	0.020	4.1	102.5		
10/18/17	02:42 PM	19,446.75	149	300	543	0.609	95.4	12872		17.2	0.019	3.0	105.5		
10/26/17	12:03 PM	19,636.11	189	340	755	0.960	115.3	12987		5.0	0.006	3.7	109.1		AW Sampling
10/31/17	11:59 PM	19,768.11	132	340	755	0.960	126.7	13114	486	5.0	0.006	0.8	110.0	24	
11/01/17	12:00 AM	19,768.11	0	340	755	0.960	0.0	13114		5.0	0.006	0.0	110.0		
11/09/17	12:45 PM	19,973.80	206	340	755	0.960	197.4	13311		5.0	0.006	1.3	111.3		
11/14/17	02:45 PM	20,095.80	122	340	755	0.960	117.1	13428		5.0	0.006	0.8	112.1		
11/27/17	02:05 PM	20,407.14	311	330	755	0.931	298.7	13727		5.0	0.006	2.0	114.1		
11/29/17	09:41 AM	20,450.73	44	330	50	0.062	40.6	13767		0.2	0.000	0.3	114.4		AW Sampling
11/30/17	11:59 PM	20,465.98	15	330	50	0.062	0.9	13768	655	0.2	0.000	0.0	114.4	4.4	
12/01/17	12:00 AM	20,465.99	0	330	50	0.062	0.0	13768		0.2	0.000	0.0	114.4		
12/05/17	01:57 PM	20,621.99	156	310	50	0.058	9.7	13778		0.2	0.000	0.0	114.4		Ludington-Panel mods
12/12/17	11:37 AM	20,787.63	166	305	50	0.057	9.6	13788		0.2	0.000	0.0	114.4		
12/21/17	11:30 AM	21,003.63	216	310	50	0.058	12.4	13800		0.2	0.000	0.1	114.5		
12/25/17	04:44 PM	21,105.48	102	310	50	0.058	5.9	13806		0.2	0.000	0.0	114.5		
12/27/17	12:48 PM	21,124.76	19	310	93	0.108	1.1	13807		0.6	0.001	0.0	114.5		AW Sampling
12/31/17	11:59 PM	21,232.01	107	310	93	0.108	11.6	13819	50	0.6	0.001	0.1	114.6	0.3	
01/01/18	12:00 AM	21,232.02	0	310	93	0.108	0.0	13819		0.6	0.001	0.0	114.6		
01/08/18	10:33 AM	21,410.54	179	310	93	0.108	19.3	13838		0.6	0.001	0.1	114.7		
01/17/18	11:52 AM	21,627.85	217	310	93	0.108	23.5	13861		0.6	0.001	0.2	114.9		
01/25/18	01:19 PM	21,821.31	193	310	56	0.064	20.9	13882		2.0	0.002	0.1	115.0		Sampling
01/31/18	11:59 PM	21,976.06	155	310	56	0.064	10.0	13892	74	2.0	0.002	0.4	115.4	0.8	
02/01/18	12:00 AM	21,976.07	0	310	56	0.064	0.0	13892		2.0	0.002	0.0	115.4		
02/07/18	10:53 AM	22,130.86	155	300	56	0.062	10.0	13902		2.0	0.002	0.4	115.7		
02/16/18	01:37 PM	22,349.59	219	310	56	0.064	13.6	13916		2.0	0.002	0.5	116.2		
02/21/18	03:30 PM	22,471.80	122	310	56	0.064	7.9	13924	31	2.0	0.002	0.3	116.5	0.8	Flood. Unable to sample before shutdown
06/21/18	03:32 PM	22,471.81	0	240	41	0.037	0.0	13924		0.0	0.000	0.0	116.5		
06/22/18	12:30 PM	22,492.81	21	240	41	0.037	0.8	13925		0.0	0.000	0.0	116.5		Sampling
06/30/18	11:59 PM	22,696.31	204	240	41	0.037	7.5	13932	8	0.0	0.000	0.0	116.5	0.0	
07/01/18	12:00 AM	22,696.31	0	240	41	0.037	0.0	13932		0.0	0.000	0.0	116.5		
07/30/18	02:24 PM	23,411.57	715	320	63	0.075	26.2	13958		0.0	0.000	0.0	116.5		Sampling
07/31/18	11:59 PM	23,421.07	10	320	63	0.075	0.7	13959	27	0.0	0.000	0.0	116.5	0.0	
08/01/18	12:00 AM	23,421.08	0	320	63	0.075	0.0	13959		0.0	0.000	0.0	116.5		
08/04/18	05:15 PM	23,510.33	89	320	63	0.075	6.7	13966		0.0	0.000	0.0	116.5		Alarm. Phase Monitor.
08/28/18	03:45 PM	24,106.66	0	320	63	0.075	0.0	13966		0.0	0.000	0.0	116.5		Restart.
08/31/18	11:52 AM	24,174.69	68	320	468	0.560	5.1	13971		22.2	0.027	0.0	116.5		Sampling
08/31/18	11:59 PM	24,186.69	12	320	468	0.560	6.7	13978	19	22.2	0.027	0.3	116.9	0.3	
09/01/18	12:00 AM	24,186.70	0	320	468	0.560	0.0	13978		22.2	0.027	0.0	116.9		
09/05/18	03:52 PM	24,298.50	112	320	468	0.560	62.6	14040		22.2	0.027	3.0	119.8		Alarm. Phase Monitor.
09/07/18	09:49 AM	24,340.53	0	300	468	0.525	0.0	14040		22.2	0.025	0.0	119.8		Restart. Carried up from following week.
09/18/18	01:52 PM	24,608.55	268	300	15	0.016	140.7	14181		0.0	0.000	6.7	126.5		Sampling
09/30/18	03:30 PM	24,898.30	290	300	15	0.016	4.7	14185	208	0.0	0.000	0.0	126.5	9.7	
10/01/18	12:00 AM	24,898.31	0	300	15	0.016	0.0	14185		0.0	0.000	0.0	126.5		
10/18/18	01:00 PM	25,327.74	429	305	153	0.174	7.0	14193		0.2	0.000	0.0	126.5		Sampling
10/31/18	12:31 PM	25,639.26	312	315	153	0.180	54.3	14247		0.2	0.000	0.1	126.6		
10/31/18	11:59 PM	25,650.76	12	315	153	0.180	2.1	14249	63	0.2	0.000	0.0	126.6	0.1	
11/01/18	12:00 AM	25,650.77	0	315	153	0.180	0.0	14249		0.2	0.000	0.0	126.6		
11/09/18	12:50 PM	25,856.56	206	305	10	0.012	37.1	14286		2.2	0.003	0.1	126.7		Sampling
11/19/18	05:09 PM	26,100.88	244	320	10	0.012	2.8	14289		2.2	0.003	0.6	127.3		
11/30/18	11:59 PM	26,371.68	271	320	10	0.012	3.3	14292	43	2.2	0.003	0.7	128.0	1.4	
12/01/18	12:00 AM	26,371.69	0	320	10	0.012	0.0	14292		2.2	0.003	0.0	128.0		
12/10/18	12:54 PM	26,600.63	229	320	10	0.012	2.8	14295		2.2	0.003	0.6	128.6		
12/18/18	06:11 PM	26,797.91	197	300	223	0.250	2.4	14297		0.0	0.000	0.5	129.2		Sampling
12/31/18	11:59 PM	27,115.71	318	300	223	0.250	79.5	14377	85	0.0	0.000	0.0	129.2	1.2	
01/01/19	12:00 AM	27,115.72	0	300	223	0.250	0.0	14377		0.0	0.000	0.0	129.2		
01/08/19	02:40 PM	27,298.19	182	320	84	0.100	45.6	14422		0.0	0.000	0.0	129.2		Sampling
01/18/19	01:09 PM	27,536.66	238	310	84	0.097	23.8	14446		0.0	0.000	0.0	129.2		

DATE	TIME	HOUR METER (HRS)	INTERVAL RUN TIME (HRS)	SVE BLOWER (SCFM)	PRE-CATALYST THC-g CONC. (UG/L)	THC-g EMISSION RATE (LBS/HR)	THC-g RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT THC's (LBS)	INFLUENT THC's PER MONTH (LBS)	BTEX (UG/L)	BTEX RECOVERY RATE (LBS/HR)	BTEX RECOVERED (LBS)	TOTAL CUMULATIVE INFLUENT BTEX (LBS)	INFLUENT BTEX PER MONTH (LBS)	REMARKS
01/31/19	02:40 PM	27,850.17	314	320	84	0.100	30.3	14477		0.0	0.000	0.0	129.2		
01/31/19	11:59 PM	27,859.42	9	320	84	0.100	0.9	14478	101	0.0	0.000	0.0	129.2	0.0	
02/01/19	12:00 AM	27,859.43	0	320	84	0.100	0.0	14478		0.0	0.000	0.0	129.2		
02/07/19	02:00 PM	28,018.73	159	320	84	0.100	15.9	14493		0.0	0.000	0.0	129.2		Alarm. AWS High Level.
02/14/19	01:09 PM	28,185.61	0	320	84	0.100	0.0	14493		0.0	0.000	0.0	129.2		Restart.
02/27/19	12:36 PM	28,496.15	311	310	6	0.007	31.0	14524		0.0	0.000	0.0	129.2		Sampling
02/28/19	11:59 PM	28,531.75	36	310	6	0.007	0.3	14525	47	0.0	0.000	0.0	129.2	0.0	
03/01/19	12:00 AM	28,531.76	0	320	6	0.007	0.0	14525		0.0	0.000	0.0	129.2		
03/04/19	02:00 PM	28,615.14	83	320	6	0.007	0.6	14525		0.0	0.000	0.0	129.2		
03/11/19	01:09 PM	28,783.09	168	310	1,580	1.831	1.3	14527		0.0	0.000	0.0	129.2		Sampling
03/15/19	02:07 AM	28,879.03	96	310	1,580	1.831	175.7	14702		0.0	0.000	0.0	129.2		Alarm. AWS. Restart.
03/17/19	01:00 AM	28,926.03	47	310	1,580	1.831	86.1	14788		0.0	0.000	0.0	129.2		Alarm. AWS.
03/25/19	01:42 PM	29,119.67	0	310	1,580	1.831	0.0	14788		0.0	0.000	0.0	129.2		Restart.
03/31/19	11:59 PM	29,273.67	154	310	1,580	1.831	281.5	15070	545	0.0	0.000	0.0	129.2	0.0	
04/01/19	12:00 AM	29,273.68	0	310	1,580	1.831	0.0	15070		0.0	0.000	0.0	129.2		
04/08/19	02:45 PM	29,454.93	181	320	1,580	1.890	331.8	15402		0.0	0.000	0.0	129.2		
04/17/19	01:43PM	29,671.68	217	320	37	0.044	409.6	15811		2.4	0.003	0.0	129.2		Sampling
04/30/19	11:59 PM	29,992.95	321	320	37	0.044	14.2	15825	756	2.4	0.003	0.9	130.1	0.9	
05/01/19	12:00 AM	29,992.96	0	320	37	0.044	0.0	15825		2.4	0.003	0.0	130.1		
05/03/19	16:30 PM	30,058.44	65	320	37	0.044	2.9	15828		2.4	0.003	0.2	130.3		
05/16/19	15:03 PM	30,369.01	311	300	37	0.041	13.7	15842		2.4	0.003	0.9	131.2		
05/23/19	11:50 AM	30,533.71	165	290	8	0.008	6.8	15849		0.3	0.000	0.4	131.6		Sampling
05/31/19	11:59 PM	30,737.86	204	290	8	0.008	1.7	15851	25	0.3	0.000	0.1	131.7	1.6	
06/01/19	12:00 AM	30,737.87	0	290	8	0.008	0.0	15851		0.3	0.000	0.0	131.7		
06/13/19	09:50 AM	31,035.66	298	310	2	0.002	2.5	15853		0.0	0.000	0.1	131.8		Sampling
06/13/19	10:00 PM	31,047.49	12	310	2	0.002	0.0	15853	2	0.0	0.000	0.0	131.8	0.1	System Remote shutdown

Notes: SRN = Michigan State Registration Number (Air Quality)

Blue = Entered, Black = Calculated, Red = Carried from previous entry, -- = Data not collected.

SVE = Soil Vapor Extraction, AWS = Air-Water Separator, SCFM = Standard Cubic Feet Per Minute, ug/l = micrograms per liter, lbs/hr - pounds per hour

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes; THC-g/TPH = Total Petroleum Hydrocarbons-Gasoline Range

**Table 2C. 12-Month Rolling Permit Compliance  
Former Speedway #7207  
3029 East Kalamazoo Street  
Lansing, Michigan  
Facility ID No. 0009647; SRN: P0011**

Date	SVE Hours	Air Sparge Hours	Average SCFM	Recovered		Emitted				System Efficiency* (%)
				TPH/THC	BTEX	TPH/THC		BTEX		
				(lbs)	(lbs)	(lbs)	(tons)	(lbs)	(tons)	
Nov-16	< 1	0.0	0	0	0.00	0.00	0.000	0.000	0.000	--
Dec-16	112.1	0.0	376	519	7.43	0.00	0.000	0.000	0.000	100.00
Jan-17	273.4	0.0	372	1,185	17.02	0.14	0.000	0.000	0.000	99.99
Feb-17	0.0	0.0	0	0	0.00	0.00	0.000	0.000	0.000	--
Mar-17	351.2	0.0	325	2,239	18.74	0.46	0.000	0.000	0.000	99.98
Apr-17	718.3	0.0	170	434	2.32	0.36	0.000	0.002	0.000	99.92
May-17	743.4	0.0	146	430	2.47	2.07	0.001	0.040	0.000	99.52
Jun-17	719.9	0.0	215	2,124	14.88	4.94	0.002	0.066	0.000	99.77
Jul-17	743.9	0.0	178	2,595	17.31	4.17	0.002	0.037	0.000	99.84
Aug-17	695.9	0.0	157	1,058	5.59	1.84	0.001	0.012	0.000	99.83
Sep-17	790.7	297.1	262	2,043	11.98	3.55	0.002	0.351	0.000	99.83
Oct-17	720.0	668.5	309	486	24.21	4.05	0.002	2.078	0.001	99.17
Nov-17	697.9	689.5	335	655	4.37	2.60	0.001	0.061	0.000	99.60
Dec-17	766.0	527.8	312	50	0.25	1.04	0.001	1.464	0.001	97.93
Jan-18	744.0	696.3	310	74	0.77	0.89	0.000	0.014	0.000	98.79
Feb-18	495.7	650.43	308	31	0.77	0.65	0.000	0.008	0.000	97.95
Mar-18	0.0	0	0	0	0.00	0.00	0.000	0.000	0.000	--
Apr-18	0.0	0	0	0	0.00	0.00	0.000	0.000	0.000	--
May-18	0.0	0	0	0	0.00	0.00	0.000	0.000	0.000	--
Jun-18	224.5	0	240	8	0.01	0.00	0.000	0.004	0.000	100.00
Jul-18	724.8	10	293	27	0.03	0.62	0.000	0.012	0.000	97.71
Aug-18	765.6	203.31	320	19	0.33	0.28	0.000	0.005	0.000	98.48
Sep-18	711.6	669.61	308	208	9.65	0.81	0.000	0.010	0.000	99.61
Oct-18	752.4	667.16	309	63	0.08	1.98	0.001	0.013	0.000	96.88
Nov-18	720.9	720.87	315	43	1.40	0.97	0.000	0.005	0.000	97.74
Dec-18	744.0	743.87	310	85	1.15	2.20	0.001	0.009	0.000	97.40
Jan-19	743.7	743.71	314	101	0.01	1.75	0.001	0.004	0.000	98.26
Feb-19	672.3	720.87	316	47	0.00	0.63	0.000	0.000	0.000	98.67
Mar-19	741.9	743.87	313	545	0.00	5.11	0.003	0.002	0.000	99.06
Apr-19	398.0	398	311	756	0.00	6.91	0.003	0.000	0.000	99.09
May-19	538.0	538	311	25	0.00	3.00	0.002	0.001	0.000	88.04
Jun-19	321.3	321.3	313	2.5	0.00	0.13	0.000	0.002	0.000	94.56
<b>Total per Year (12-month rolling)</b>				1,929	13	24.4	0.012	0.067	0.000	

Notes: SVE = Soil Vapor Extraction, SCFM = Standard Cubic Feet Per Minute, lbs = pounds, \* = Based on TPH, BTEX = Benzene, Toluene, Ethylbenzene, Xylenes; THC-g/TPH = Total petroleum HydroCarbons-Gasoline Range

Gasoline Specific Gravity	0.70	Water:	8.34 lbs/gal
	1,929 lbs		gal
		=	330 gallons gasoline
	5.84 lbs		

**MAINTENANCE**

**WARNING: Hazardous voltage can cause severe or fatal injury. Electrical work should be performed by qualified personnel only. This equipment has multiple sources of electric supply. Follow lock out / tag out safety procedures.**



**Catalyst level check**  
Follow instructions in previous section for checking catalyst level and topping off. Level must be checked several times following replacement.

**VCV filter**  
Turn the unit off before inspecting the filter. Element should be checked if the unit is operated in dusty conditions more frequently. The filter has a replacement element (Solberg part #231P). The filter is washable with mild detergent. Rinse well.

**VCV**  
The VCV should be returned to Falmouth Products every three years for cleaning, inspection, and adjustment.

**Gauges**  
Check vacuum and pressure gauges frequently for unusual readings. Obstructions on the vacuum or pressure sides of the blower result in high vacuum and/or pressure readings. For example: a clogged blower filter will result in high vacuum readings.

**Flame Arrestor/Inlet Pressure**  
Inlet pressure should be monitored monthly. High inlet pressure may indicate an obstructed flame arrestor or excessive flow. Inspect flame arrestor for obstructions. Contact Falmouth Products for cleaning procedure.

**Cold weather**  
In cold climates heat tape and insulate all exposed inlet vapor lines and water knockout tank. The VCV has its own heater, and it is not necessary to insulate it.

**Electrical Ground bar and grounding connections**  
Ground bar and connections should be inspected and replaced if corroded or damaged. Check grounds in the following locations:

- Circuit breaker box or service panel
- FALCO main electrical enclosure ground bars (two)
- Ground lugs (Heater conduit body, VCV conduit body, and pressure switch)
- Ancillary or optional equipment enclosure grounds (various)

**Heater and Blower electrical connection (control panel)**  
All Line/Load electrical connections should be inspected and tightened.

**Heater electrical connection (distribution block in heater conduit body)**  
EVERY 3 YEARS

**Pressure switch low pressure port**  
QUARTERLY

**Water knockout**  
WEEKLY

Water knockouts can be purchased separately from Falmouth Products. The system should be shut down and water accumulations drained during every site visit. Do not run water into the oxidizer. Site check intervals should not exceed the time it takes to fill the water knockout unless some provision is made to shut down the system automatically (high level switch).