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April 15, 2015

Mr. Joseph Kelly
Project Manager
USEPA, Region 5
77 West Jackson Boulevard
LU-9J
Chicago, IL 60604-3590

Subject: **RCRA 3008(h) Administrative Order on Consent (RCRA-05-2010-0012) –
Tecumseh Products Company
First Quarter 2015 Progress Report – MID 005-049-440**

Dear Mr. Kelly:

Pursuant to Section VI of the above referenced Administrative Order on Consent (Consent Order) effective March 29, 2010, TRC Environmental Corporation (TRC), on behalf of the Respondent Tecumseh Products Company (TPC), submits this First Quarter 2015 Progress Report. This report describes activities related to the Consent Order completed by TPC during the first quarter 2015 and planned for completion in the near future. The organization of this document includes, as major headings, the items required under Sections V through VIII of the Consent Order.

V. Project Manager

- The TPC Project Manager is Graham Crockford of TRC.
- The USEPA Project Manager is Joseph Kelly.

VI. Work to be Performed – Remedial Investigation Report and Environmental Indicators Reports

1. A description of activities related to the completion of the Remedial Investigation (RI) Report and the Environmental Indicator (EI) Reports:

- **Investigation Activities**

- **Characterize Releases at or from the Facility** – The findings of source area investigation activities completed through August 2012 are documented in the September 2012 Remedial Investigation and Groundwater Environmental Indicator Report (2012 RI/EI

Report). A Supplemental Groundwater Investigation Workplan was submitted and implemented during the first quarter 2013. A technical memorandum documenting the findings of those investigation activities was submitted as an attachment to the Second Quarter 2013 Progress Report. A passive soil gas (PSG) survey was completed through the central and southern portion of the former TPC building during the third quarter 2013. A Technical Memorandum which summarizes the findings of the 2013 PSG survey was included as an appendix to the First Quarter 2014 Progress Report. In April 2014 a supplemental PSG survey was conducted by TRC to further evaluate certain discrete areas requested by USEPA including the former engineering area, drum storage areas, tank area, areas adjacent to railroad spurs where loading and unloading may have occurred, and the area east/southeast of the southern portion of the building where a number of outbuildings and two hazardous waste storage areas were located. A technical memorandum which summarized the findings of the 2014 PSG survey was submitted to USEPA in June 2014. A source area membrane interface probe (MIP) investigation was conducted between June 2014 and July 2014. MIP data were submitted to USEPA as they became available. TRC submitted the MIP Investigation Report and Workplan for High Resolution Site Characterization on December 31, 2014. The Revised MIP Investigation Report and Workplan for High Resolution Site Characterization was submitted on March 11, 2015 (HRSC Workplan).

- **Define Appropriate Screening Criteria** – Screening criteria are described in detail in the 2012 RI/EI Report and the 2013 Supplement to the Current Human Exposures Under Control Environmental Indicator Report. Screening criteria include:
 - Generic Michigan Department of Environmental Quality (MDEQ) Part 201 Cleanup Criteria;
 - MDEQ Screening levels for the volatilization to indoor air migration pathway, as documented in the 2013 MDEQ *Guidance Document for the Vapor Intrusion Pathway*;
 - MDEQ Rule 57 Surface Water Quality Values; and
 - A site-specific groundwater contact criterion for trichloroethene (TCE) which reflects the 2011 revisions to TCE toxicity data.
- **Define Any Unacceptable Risks to Human Health** – The 2011 Current Human Exposures Under Control Environmental Indicator Report (2011 EI Report) provided the required demonstration of current human exposures to affected media under control. In September 2013 the Supplement to the Current Human Exposures Under Control Environmental Indicator Report (2013 Supplemental EI Report) was prepared and submitted to address USEPA comments (provided between December 2011 and October 2012) and to provide additional data and documentation verifying the 2011 EI Report. USEPA provided comments on the 2013 Supplemental EI Report on January 31,



2014. During the May 2014 project meeting with USEPA, TPC agreed to attempt (contingent on owner agreement) to further verify this assessment at nine residential properties north of the site and one non-residential property east of the site. During the third quarter 2014, TPC was able to complete indoor air sampling (5 total) and/or sub-slab depressurization/ventilation system installation (5 total) at each of the nine residential properties. No indoor air criteria exceedances were found.

Following extended discussion, the owner of the non-residential property east of the site agreed to allow the installation of soil gas sample points at each corner of the main (occupied) building on that property. Soil gas sample points were installed in late September 2014 and the initial sample event was completed in October 2014 as documented in the October 30, 2014 letter report to the property owner. Soil gas sample results from the November 2014 soil gas sample event confirm the initial sample results. A sub-slab soil gas sample point was installed in the northeast corner of the industrial building located south to the TPC site in February 2015 and an initial sample event was completed in March 2015. Sample results (which are pending) will be used to further evaluate the volatilization to indoor air migration pathway at this location.

Based on recent data from soil gas sample point SG-20, TPC plans to verify the current human exposures assessment at four additional residential properties west of the site in 2015. Additionally, results of the vertical profile sampling described in the HRSC Workplan will be used to determine if further verification/assessment of the vapor intrusion potential at additional residential properties downgradient of the site should be completed.

- **Define Any Unacceptable Risks to the Environment** – The potential for unacceptable risk to the environment related to the discharge of affected groundwater to nearby surface water and wetlands was evaluated in the 2012 RI/EI Report. This evaluation includes the use of site-specific mixing zone-based GSI criteria. Additionally, a determination of de minimis effect on surface water was submitted to MDEQ in August 2013. Data collected to date do not indicate an unacceptable risk to the environment. In a letter dated March 26, 2015, USEPA requested a meeting to discuss the submittal of the Supplement to the Groundwater Stabilized Environmental Indicator Report due in July 2015.
- **Determine the Stability of Contaminated Groundwater** – Pursuant to the Consent Order, the 2012 RI/EI Report was submitted in 2012, demonstrating that the migration of all groundwater known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents above acceptable levels was stabilized to remain within any existing areas of contamination as defined by monitoring locations designated at the time of the demonstration. In addition, the 2012 RI/EI Report demonstrated that any discharge of groundwater to surface water was either insignificant or currently



acceptable according to an appropriate interim assessment. Since that time, TPC/TRC has collected monitoring and measurement data as necessary to verify that migration of any contaminated groundwater is stabilized, as required by the Consent Order. In a letter dated March 26, 2015, USEPA requested a meeting to discuss the submittal of the Supplement to the Groundwater Stabilized Environmental Indicator Report due in July 2015.

- **Response and Mitigation Measures** – Response and mitigation measures conducted through 2013 are documented in the 2011 EI Report, the 2012 RI/EI Report, and the 2013 Supplemental EI Report. These measures include:
 - A local groundwater use ordinance;
 - The decommissioning of private wells in the vicinity of affected groundwater;
 - A Declaration of Restrictive Covenant and License Agreement Regarding Environmental Work for the site;
 - Mitigation of on-site indoor air in areas that were occupied or are expected to be occupied in the future, including:
 - Installation of a sub-slab depressurization/ventilation (SSDV) system in S-Building (the office area for the site manager)¹; and
 - Installation of a soil vapor extraction (SVE) system in P-Building. (A technical memorandum describing the operation, maintenance, and performance of the P-Building SVE system through 2014 is included as Appendix A).
 - Monitoring and mitigation of off-site indoor air including:
 - Installation of a SSDV system at one residential property east of the site and five residential properties north of the site;
 - Completion of crawlspace sampling activities at four residential properties east of the site and one residential property north of the site;
 - Completion of indoor air sampling at three residential properties north of the site;
 - Installation of a permeable reactive barrier (PRB) downgradient of the southern source area to address the potential off-site vapor intrusion pathway, by treating shallow groundwater affected with chlorinated volatile organic compounds (CVOCs) before the groundwater migrates off-site; and

¹ At present, the building is no longer occupied by the site manager or any other regular employees. The site owner has disconnected electrical service. Consequently, this SSDV system is not, at present, operating.



- Installation of a perimeter SVE system as described in the November 2013 Workplan to Install a Perimeter Soil Vapor Extraction System.²

■ **Reporting and Summary of Work Completed**

- **Environmental Indicators Report: Current Human Exposures Under Control** – TRC submitted the 2011 EI Report to USEPA on September 29, 2011. USEPA provided TPC with comments regarding the 2011 EI Report on December 5, 2011. TPC responded to USEPA comments on December 19, 2011. On December 28, 2011, USEPA proposed an extension for USEPA to complete the CA-725 Form until December 12, 2012, so that confirmation indoor air/crawlspace sampling data from the residential properties east of the site (610 Mohawk, 704 Mohawk, 502 Mohawk, 505 South Maumee Street, and 507 South Maumee Street) could be evaluated by USEPA. This work was completed as intended during the fourth quarter 2012. However, during an October 29-30, 2012 project meeting, USEPA requested additional work, which TPC set forth in a Technical Memorandum dated December 5, 2012 and Revised December 19, 2012. Those action items included:
 - Table summaries related to the conceptual site model (included in the Fourth Quarter 2012 Quarterly Progress Report); and
 - Four consecutive soil gas sample events at soil gas monitoring locations north and west of the site after SVE system installation (through second quarter 2013), in order to further document the effectiveness of the SVE system.

On March 6, 2013, USEPA extended the date for the Current Human Exposures Demonstration to September 30, 2013 to allow TPC to complete the above described work. Consistent with this extension, the 2013 Supplemental EI Report was submitted to USEPA on September 30, 2013. USEPA provided comments on the 2013 Supplemental EI Report on January 31, 2014. During the May 2014 project meeting with USEPA, TPC agreed to attempt (contingent on owner agreement) to further verify this assessment at nine residential properties north of the site and at one non-residential property east of the site. As described above, initial assessment and/or mitigation was completed at each property in 2014.

- **Environmental Indicators Report: Groundwater Stabilized** – TRC submitted the 2012 RI/EI Report to USEPA on September 28, 2012. During the October 29-30, 2012 project meeting, USEPA requested the following:

² Operation of the perimeter SVE system began on March 7, 2014, using a rental SVE blower unit. The permanent blower enclosure was installed on July 10, 2014. Preparation of a construction documentation and performance verification report for the perimeter SVE system is underway.



- Additional sample events at monitoring wells where VOC concentration data exhibit relatively high standard deviation.
- Preparation of a workplan to address USEPA comments regarding groundwater stability and remedial investigation activities. The Supplemental Groundwater Investigation Workplan for the Former Tecumseh Products Company Site in Tecumseh, Michigan was submitted and implemented during the first quarter 2013.
- Installation of additional monitoring wells and subsequent monitoring at those locations in accordance with the Supplemental Groundwater Investigation Workplan.

On March 6, 2013, USEPA extended the date for the Remedial Investigation and Groundwater Environmental Indicator Determination to July 31, 2015. This extension allowed TPC to complete eight quarterly sample events prior to the submittal of a Supplement to the 2012 RI/EI Report at monitoring locations which were installed in March 2013.

The January 2014 USEPA comment letter regarding the 2013 Supplemental EI Report extended beyond the scope of current human exposures to provide additional comments on the remedial investigation and on groundwater stability. In 2014, additional on-site and perimeter investigation activities were completed and a HRSC Workplan was prepared to address concerns raised in that comment letter and the subsequent May 2014 project meeting regarding the extent and stability of affected groundwater. Implementation of the HRSC Workplan is scheduled to start in April 2015. As allowed under the Consent Order, TPC has proposed a 90-day extension of the July 2015 deadline. This extension will allow the work outlined in the HRSC Workplan to be completed, to be reported to USEPA, and to be reviewed and discussed with USEPA prior to submittal of the Supplement to the 2012 RI/EI Report.

- **Remedial Investigation Report** – TRC submitted the Remedial Investigation Report with the 2012 RI/EI Report to USEPA on September 28, 2012. As described above, USEPA extended the date for the Remedial Investigation and Groundwater Environmental Indicator Determination to July 31, 2015. In 2014, USEPA requested that additional remedial investigation activities be completed for purposes of HRSC. Work related to this supplemental HRSC is ongoing. As noted above, TPC has proposed a 90-day extension of the July 2015 deadline. This extension will allow the work outlined in the HRSC Workplan to be completed, to be reported to USEPA, and to be reviewed and discussed with USEPA prior to submittal of the Supplement to the 2012 RI/EI Report.



2. A Summary of Activities during the Reporting Period

- January 2015 – Operation and maintenance of the Perimeter SVE system was completed including field measurement of the TCE concentrations to help determine the appropriate timeline for carbon change out.
- January 2015 – Operation and maintenance of the P-Building SVE system was completed including field measurement of TCE concentrations to help determine the appropriate timeline for carbon change out.
- January 2015 – Operation and maintenance of the SSDV system at 704 Mohawk including system repairs to mitigate periodic flow restrictions during extreme cold.
- January 2015 – Vacuum pressure and methane concentrations were measured at all PRB vent locations. Methane concentrations were not measured at the two downgradient soil gas sample points (SG-02 and SG-03R) due to heavy snow cover.
- January 2015 – USEPA provided comments on the HRSC Workplan.
- February 2015 – Operation and maintenance of the Perimeter SVE system was completed including field measurement of the TCE concentrations and collection of exhaust samples for VOCs analysis.
- February 2015 – Operation and maintenance of the P-Building SVE system was completed including flow and pressure measurements at each extraction well, field measurement of TCE concentrations to help determine the appropriate timeline for carbon change out, and collection of exhaust samples for VOCs analysis.
- February 2015 – Vacuum pressure and methane concentrations were measured at all PRB vent locations. Methane concentrations were not measured at the two downgradient soil gas sample points (SG-02 and SG-03R) due to heavy snow cover.
- February 2015 – Installation of a sub-slab soil gas sample point (MHC-01) in the northeast corner of an off-site non-residential building.
- February 2015 – A well survey was completed at monitoring wells MW-32d and MW-34d and PRB wells located near PRB Section 1 were re-surveyed.
- February-March 2015 – The first quarter groundwater sample event was completed, including collection of 36 samples for VOCs analysis. The laboratory report for this sample event is pending.
- March 2015 – The Revised MIP Investigation Report and Workplan for High Resolution Site Characterization was submitted to USEPA. USEPA provided additional comments on March 27, 2015. Review and response to those comments is underway.



- March 2015 – Operation and maintenance of the P-Building SVE system was completed including carbon change out and replacement of worn plumbing through the carbon treatment system.
- March 2015 – Operation and maintenance of the Perimeter SVE system was completed including vacuum and flow measurements at each extraction well and field measurement of the TCE concentrations to help determine the appropriate timeline for carbon change out.
- March 2015 – An initial soil gas sample event was completed at the sub-slab soil gas sample points (MHC-01) installed in February 2015. Analytical results for this sample event are pending.
- March-April 2015 – The first quarter 2015 off-site soil gas sample event was completed,³ including sample collection at the soil gas sample points installed in September 2014 (SG-22, SG-23, SG-24, and SG-25). Analytical results for this sample event are pending.

3. A Summary of Contacts with Representatives of Local Community, Public Interest Groups, or State Government during the Reporting Period

- At the request of one property owner, TRC provided that owner with a copy of the Fourth Quarter 2014 Progress Report.
- TRC communicated with the Tecumseh District Library personnel in order to update the public repository at the Tecumseh District Library in March 2015.
- TRC communicated with the owner of a residential property east of the site regarding the operation and maintenance of the SSDV system.
- TPC communicated with the potential buyer of a residential property north of the site regarding sample data in the vicinity of the property of interest.
- TPC communicated with the owner of a non-residential property east of the site regarding the results of the fourth quarter soil gas sampling event around the perimeter of the building to coordinate installation of a sub-slab soil gas sample point and to coordinate the first quarter soil gas sample event.
- TPC and TRC communicated with the City of Tecumseh regarding the status of the ongoing potential demolition, the proposed sale of the property, and redevelopment options for the site.
- TRC communicated with a site owner to coordinate routine groundwater sampling.

³ Snow cover and persistent cold through early March 2015 caused the first quarter soil gas sampling event to be delayed. Sampling began on March 30, 2015 and was completed on April 1, 2015.



- Throughout the first quarter 2015, TRC communicated with the City of Tecumseh Fire Department regarding fire watch activities to help ensure safe access to the building, as required by the City of Tecumseh.

4. A Summary of Problems and Potential Problems Encountered During the Reporting Period

- No new problems were noted during the fourth quarter 2014.

5. Action Taken to Rectify Problems Identified Above

- No new problems were noted during the fourth quarter 2014.

6. Changes in Personnel During Reporting Period

- No TPC/TRC project personnel have changed.

7. Projected Work for the Next Reporting Period

- Evaluate and report first quarter 2015 groundwater sampling data;
- Evaluate and report first quarter 2015 soil gas sampling data;
- Evaluate and report preliminary results from the off-site sub-slab soil gas sample point installed in February 2015;
- Participate in a conference call with USEPA to resolve outstanding comments regarding the HRSC Workplan;
- Complete off-site high resolution site characterization as proposed in the HRSC Workplan;
- Complete MIP confirmation sampling as proposed in the HRSC Workplan;
- Initiate communications with residential property owners in the vicinity of soil gas sample point SG-20 regarding installation of a SSDV system and/or indoor air sampling;
- Continue routine perimeter SVE system operation and maintenance, including documentation of 2014 activities and completion of carbon change out as needed;
- Continue routine P-Building SVE system operation and maintenance, including completion of carbon change out as needed;
- Complete the regular quarterly SSDV system inspection at the residential property located at 704 Mohawk;
- Complete and evaluate the second quarter 2015 PRB groundwater sample event;
- Complete the second quarter 2015 groundwater sampling event and evaluate sampling results;



- Complete the second quarter 2015 off-site soil gas sample event and evaluate sampling results; and
- Collect gas composition readings at vents installed along the length of the PRB.

VI. Work to be Performed – Final Corrective Measures Proposal

Preparation of the Final Corrective Measures Proposal will be initiated following completion of the Supplement to the RI and Groundwater EI Report.

VI. Work to be Performed – Final Corrective Measures Implementation

Work related to the Final Corrective Measures Implementation will be initiated following USEPA's Final Decision.

VI. Work to be Performed – Establish Public Repository of Information

TPC established a public repository in the City Clerk's office at City Hall in August 2010. To address USEPA comments, the public repository was relocated to the Tecumseh District Library in November 2011. A notice sheet has been posted on the bulletin board at the Tecumseh District Library which lists and briefly describes the documents included in the public repository. TPC updates the public repository as appropriate.

VII. Access

No new access agreements were obtained during the first quarter 2015.

VIII. Cost Estimates and Assurances of Financial Responsibility

In accordance with the Consent Order, TPC submitted an annually updated cost estimate on January 30, 2015. The cost estimate was \$2,052,600. Based on questions from USEPA, clarifications to the cost estimate were submitted on March 2, 2015. In September 2014 a letter of credit for \$2,073,800 was issued; this letter of credit will expire in September 2015, at which time a new letter of credit will be obtained.

Mr. Joseph Kelly
USEPA, Region 5
April 15, 2015
Page 11

If you have any questions regarding this progress report, or the attachments, please contact me at (734) 585-7813, or gcrockford@trcsolutions.com.

Sincerely,

TRC Environmental Corporation



Graham Crockford, C.P.G.
Project Manager

Attachments:

Appendix A: 2014 Annual Report for the P-Building Soil Vapor Extraction System

cc: Susan Perdomo, USEPA
Michael Beedle, USEPA
Colleen Olsberg, USEPA
Bhomma Sundar, USEPA
David Petrovski, USEPA
Mario Mangino, USEPA
Daniel Mazur, USEPA
Chris DeWetter, Tecumseh Products Company
Jason Smith, Tecumseh Products Company
Douglas McClure, Conlin, McKenney & Philbrick, PC
Stacy Metz, TRC Environmental Corporation
Dave Roberts, Tecumseh Food, Machinery & Engineering, LLC
Tecumseh District Library – Public Repository
Mary Speer, Resident

Appendix A
2014 Annual Report for the
P-Building Soil Vapor Extraction System

Technical Memorandum

Date: March 10, 2015

To: Jason Smith
Tecumseh Products Company

From: Graham Crockford and Stacy Metz, TRC

cc: Chris DeWetter, Tecumseh Products Company
Douglas McClure, Conlin, McKenney & Philbrick, PC

Project No.: 187156.0001.0000, Phase 2

Subject: 2014 Annual Report for the P-Building Soil Vapor Extraction System
Former Tecumseh Products Company Site in Tecumseh, Michigan
(RCRA-05-2010-0012)

Introduction and Background

Tecumseh Products Company (TPC) retained TRC Environmental Corporation (TRC), to investigate and mitigate soil and groundwater conditions at the former TPC site located in Tecumseh, Michigan. TRC is assisting TPC with the environmental work for the site in accordance with the RCRA Administrative Order on Consent (“AOC”) (RCRA 05-2010-0012).

In 2012, a soil vapor extraction (SVE) system was installed in P-Building as documented in the February 2013 *Full-Scale Soil Vapor Extraction System Construction Documentation Report: P-Building at 100 East Patterson Street; Tecumseh, Michigan* (SVE System CDR). The system layout, including extraction well locations and system piping, is illustrated on Figure 1. This SVE system was designed to extract residual chlorinated volatile organic compounds (CVOCs) from the on-site soil matrix reducing the potential for migration of CVOCs into soil gas and groundwater (i.e., source control).

Summary of System Monitoring and Maintenance Activities

System Monitoring through Remote Telemetry

The SVE system is equipped with remote sensing devices that transmit data (flow, pressure, and temperature) to the system’s programmable logic controller (PLC) within the system control panel. The PLC records the data and triggers alarm conditions if data falls outside of the accepted “normal” limits of the system. Alarm conditions are displayed locally at the

Technical Memorandum

control panel. Additionally, the system is equipped with remote telemetry which functions via a cellular modem. System telemetry is programmed to notify designated project personnel via email if an alarm condition is triggered.

In addition to alarm conditions, the PLC records the following data at 10-minute intervals:

- Flow rate for each of the three 4-inch diameter header pipes as they enter the SVE blower enclosure (inlet lines),
- Total system flow rate (measured between the knock out tank and blower),
- Differential pressure across the air filter, and
- Blower exhaust temperature.

These data are automatically emailed to project personnel daily. Additionally, project personnel may log into the system remotely to view data in real time, and/or to extract logged data. These data are compiled and reviewed regularly. Charts 1 through 4 illustrate quarterly flow data for 2014, Chart 5 illustrates differential pressure across of the air filter over time, Chart 6 illustrates the blower exhaust temperature over time, and Chart 7 illustrates cumulative system flow over time. These charts are used to monitor overall system performance, and help identify system anomalies that may require attention. In summary:

- As noted on Charts 1 through 4, several apparent anomalies in system flow are evident; however, these anomalies can be explained by changes in ambient conditions and/or on-site system maintenance activities. Evaluation of remote flow data did not find any unexplained anomalies requiring further evaluation or repair activities.
- As illustrated on Chart 5, the differential pressure across the air filter ranged from approximately 1.8 to 4.3 inches of water. An increase in differential pressure of approximately 50-percent from the initial range at system start-up of approximately 3.5 to 3.8 inches of water (resulting in a total differential pressure of 5.3 to 5.7 inches of water) will trigger replacement of the air filter. Differential pressure remained below 5 inches of water throughout 2014; therefore, the air filter was not changed.
- As illustrated on Chart 6, the exhaust temperature varies seasonally with ambient air conditions. Exhaust temperatures ranged from approximately 75 degrees Fahrenheit to 140 degrees Fahrenheit.
- As illustrated on Chart 7, approximately 354 million cubic feet (cu ft) of soil gas was extracted with the SVE system in 2014, including 173 million cubic feet from the northern perimeter wells (SVE-01 through SVE-04) and 181 million cu ft from the areas where passive soil gas sampling exhibited relatively higher responses (SVE-05 through SVE-07).

Technical Memorandum

In addition to the ability to monitor routine system data remotely, the system notifies designated staff via email if deactivation of the blower occurs due to any of the following alarm conditions:

- Motor overload,
- High temperature at the exhaust stack,
- High or low vacuum,
- High or high-high water level reached in the knock out tank, or
- High differential pressure across the inlet air filter.

None of these system alarms were triggered in 2014.

Quarterly SVE System Inspections

Quarterly on-site system inspections were conducted to verify the system was operating as expected. Quarterly on-site inspections were conducted on March 5-7, 2014, May 19, 2014, July 14, 2014, and November 12-13, 2014. An operation and maintenance checklist is completed by the field technician during the inspections. At a minimum, quarterly inspections included the following:

- Flow and pressure readings at each extraction well,
- Differential pressure between the air filter inlet and outlet,
- Pressure and temperature at the blower,
- Pressure through the carbon treatment system,
- Visual inspection of the volume of liquids in the knock out tank,
- Visual and auditory inspection of the blower and motor, and
- Visual inspection of system piping, fittings, and supports.

Field activities completed, data collected, and problems noted are documented on an Operation and Maintenance Log for the P-Building SVE system. A copy of this log is provided as Attachment 1. Existing problems and potential problems identified during system inspections are corrected as soon as reasonable.

System Repairs

On July 14, 2014, during the third quarter system inspection, the field technician noted that the riser pipe at extraction well at SVE-01 had been damaged. The damage appeared to be the result of impact and was likely run into by a fork lift or a similar piece of equipment. The valve at the well head was closed immediately and the system was rebalanced. On July 17, 2014, the damaged portion of the riser pipe was removed and replaced. Following repair, the valve at the well was re-opened.

Technical Memorandum

During the fourth quarter system inspection, a tear in the hose between the lead and lag vessels was noted. The field technician verified that the TCE concentration between the lead and lag vessel was non-detect and contacted a subcontractor to perform repairs. Hose repair was completed the same day, including replacement of the section of hose with the tear, shortening the remaining hose connections to remove those portions of hose exhibiting wear, and re-banding all hose connections.

No other significant problems requiring system repair were identified during 2014. See Attachment 1 for additional details.

Operation and Maintenance of the Carbon Treatment System

The carbon treatment system is designed to ensure that carcinogenic VOC emissions remain below 10 pounds per month, as required by Michigan Department of Environmental Quality (MDEQ) Permit-to-Install (PTI) exemption requirements.¹ In order to meet these requirements, operation and maintenance of the carbon treatment system requires that the carbon in the carbon vessels be removed and replaced (i.e., carbon change out) once its absorptive capacity has been reached. To help ensure compliance, the carbon vessels are operated in series. Typically carbon change out is arranged after breakthrough is observed on the lead vessel. As such, the lag vessel is used to maintain acceptable emissions throughout the carbon loading cycle, providing a margin of safety for the time lag between breakthrough on the lead vessel and carbon change out.

Trichloroethene (TCE) is the dominant constituent of concern (COC) removed with the carbon treatment system. Therefore, the timing of carbon change out is determined through regular field measurement of TCE concentrations, and verified through the periodic collection of samples for laboratory analysis. A Draeger® pump equipped with TCE-specific Draeger® tubes for field measurement of TCE is used to monitor TCE concentrations through the treatment process. TCE concentrations are measured at three locations: treatment system influent (sample port after the blower in the SVE skid), between the lead and lag carbon vessels (lead vessel sample port), and system exhaust (lag vessel sample port). The frequency of these field measurements is determined based on historical carbon usage rates for the system. The dates and findings of these measurements are documented in the operation and maintenance log (Attachment 1). As expected, the necessary frequency of these measurements has decreased as TCE concentrations entering the system decreased.

Carbon change out is arranged if the TCE concentration between the lead and lag carbon vessel is greater than or equal to 50-percent of the concentration at the influent of the

¹ There are other MDEQ PTI exemption requirements. However, even untreated SVE system emissions meet those requirements. As documented in the SVE System CDR, the carbon treatment system was installed to reduce carcinogenic VOC emissions to less than 10 pound per month and is monitored to ensure that effect.

Technical Memorandum

carbon treatment system. Carbon change out was completed in April 2014. Since that time, breakthrough has not been observed, and additional carbon change out has not been required.

In addition to field measurement of TCE concentrations, samples were collected for laboratory analysis to confirm field measurements and more accurately quantify the mass of chlorinated compounds removed from the subsurface. Sample events were conducted on March 7, 2014, May 19, 2014, July 14, 2014, and December 4, 2014. During each sample event, samples were collected at the same three locations used for the field measurement of TCE concentrations. As described in the SVE system CDR, each grab sample was collected in a laboratory-supplied certified-clean 1-liter SUMMA[®] sample canister equipped with a barbed fitting. Data from these sample events are summarized in Table 1 and laboratory analytical data are provided in Attachment 2.

Field and laboratory data collected during operation and maintenance of the carbon treatment system were used to evaluate system performance as described below.

SVE System Performance Evaluation

Documentation of Compliance with Air Permit Regulations

The SVE system has the potential to emit volatile air contaminants, including carcinogenic volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) into the atmosphere, and therefore may be subject to state and federal air permitting requirements. As documented in the April 2012 *Workplan to Conduct a Pilot Study to Facilitate the Design and Installation of a Full-Scale Soil Vapor Extraction System (Pilot Workplan)*, TRC performed an evaluation, to assess whether the SVE system would require an air emission permit. Based on this assessment:

- The total potential to emit is not greater than 10 tons per year of any HAP or 25 tons per year of any combination of HAPs. Therefore, the SVE system does not meet the definition and requirements of a “Major Source” as defined in 40 CFR 63.2 National Emission Standards for Hazardous Air Pollutants for Source Categories, and consequently is not subject to the federal Site Remediation MACT rules (40 CFR 63 Subpart GGGGG).
- At the state level, the SVE system is subject to Michigan R336.1201 “Permits to Install (PTI)” (Michigan Rule 201). An evaluation of air emission permit requirements completed in accordance with R226.1278a(1)c (Michigan Rule 278a), found that the SVE system is exempt from PTI requirements, as defined in R336.1290 “Permit to Install Exemptions; Emission Units with Limited Emissions” (Michigan Rule 290) as long as the following emission limits are maintained:
 - Controlled emissions of air contaminants are not more than 500 pounds per month.
 - Controlled carcinogenic VOC emissions may not exceed 10 pounds per month.

Technical Memorandum

Upon evaluating the emission concentrations from the SVE system, TCE, a carcinogenic VOC, has by far the highest concentrations of the applicable air contaminants. Since emission limits for carcinogenic VOCs are much lower than those for HAPs and total air contaminants, compliance with PTI exemption requirements is maintained so long as controlled carcinogenic VOC emissions remain below 10 pounds per month.

As documented above, the carbon vessels are operated in series to ensure continual compliance with the PTI exemption requirements. Field measurements of TCE concentrations were completed immediately prior to each carbon change out event. At no point during 2014 did the field measurement of TCE concentrations indicate breakthrough at the lag vessel. These field measurements were verified with laboratory data. As documented in Table 1, the total carcinogenic VOC emissions from the system (measured at the SVE System Exhaust) were less than 1 pound per month.

Evaluation of Source Control and Mass Removal

Measured TCE concentrations prior to carbon treatment were used in combination with cumulative flow volumes to calculate mass removal. As illustrated in Chart 8, the cumulative mass of TCE removed is estimated to be 516 kilograms (161 kilograms in 2014). The SVE system is an efficient and effective means of treating subsurface source areas in the vadose zone. Removal of TCE from the vadose zone prevents those contaminants from entering on-site structures and from migrating off-site laterally in the soil gas or from mixing with the groundwater and migrating off-site in the dissolved phase.

Continued Operation and Maintenance

System operation, maintenance and performance monitoring will continue to be conducted in general accordance with the SVE System CDR through 2015.

Table

Table 1
 Summary of Constituents of Concern in On-Site Mitigation System Exhaust Samples and Calculated Emission Rate
 Former Tecumseh Products Site
 Tecumseh, Michigan

Analyte		Approximate Flow Rate	1,1-Dichloroethane*	1,2-Dichloroethane*	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetra-chloroethene*	1,1,1-Trichloroethane	Tri-chloroethene*	Vinyl Chloride*	Carcinogenic VOC Flow Rate ⁽¹⁾
Units		ACFM	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	lb/mo
Other On-Site Emission Sources												
S-Building SSDV System Exhaust	4/25/2012	43	3.2	<0.40	<0.40	16	1.4	2.7	18	350	<0.40	0.22
Methane Ventilation System Exhaust	4/25/2012	8	15	<0.40	0.64	100	2.3	<0.40	<0.40	6.4	2.4	0.002
Pilot SVE System												
Pilot SVE System Exhaust (Line 1) (48% Make-Up Air) ⁽²⁾	4/25/2012	460	0.95	<0.40	<0.40	9.7	1.1	3.2	6.9	160	<0.40	1.1
	5/2/2012	444	2.5	<0.40	<0.40	9.5	0.97	3.2	7.3	290	<0.40	1.9
Calculated Pilot SVE System Exhaust (Line 1) (No Make-Up Air) ⁽²⁾	4/25/2012	460	1.8	<0.77	<0.77	19	2.1	6.2	13	310	<0.77	2.1
	5/2/2012	444	4.8	<0.77	<0.77	18	1.9	6.2	14	560	<0.77	3.6
Full-Scale SVE System												
Line 1 - SVE System Influent	8/23/2012	401	<1.0	2.3	<1.0	<1.0	<2.0	<1.0	<1.0	13	<1.0	0.08
	11/2/2012	404	<240	<49	<250	<250	<250	43	<180	3,900	<39	23
	11/8/2012	361	<120	<24	<120	<120	<120	17	<91	2,000	<19	10
Line 2 - SVE System Influent	8/23/2012	0	26	<10	<10	2,400	74	85	44	7,200	14	--
	11/2/2012	415	<270	<54	<270	5,400	270	190	<200	18,000	150	108
	11/8/2012	384	130	<24	<120	6,300	340	120	140	15,000	110	83
SVE System Exhaust (No Treatment)	7/26/2012	422	19	5.2	<4.0	1,600	48	84	35	7,900	20	48
	8/8/2012	422	48	<2.4	2.8	2,700	150	140	93	10,000	41	61
Lead Carbon Vessel Influent (Pre-Treatment)	12/3/2012	730	<120	<24	<120	3,700	<120	140	<91	12,000	26	126
	1/3/2013	738	<120	<24	<120	2,300	<120	85	<91	5,900	<19	63
	5/23/2013	725	<120	<24	<120	520	<120	33	<91	2,400	<19	25
	11/14/2013	610	<120	<24	<120	340	<120	100	330	5,000	<19	44
	3/7/2014	756	<120	<24	<120	<120	<120	48	130	2,200	<19	24
	5/19/2014	785	6.4	<1.0	<1.0	85	8.7	39	91	2,600	1.2	30
	7/14/2014	780	7.3	<5.0	<5.0	80	16	69	150	2,300	<5.0	26
12/4/2014	715	11	<2.0	<2.0	76	12	44	140	4,100	<2.0	42	

Notes:

ACFM - actual cubic feet per minute

ppbv - parts per billion by volume

lb/mo - pounds per month

Asterisk * indicates compound is carcinogenic.

1) MDEQ Permit to Install exemption requirements include total hazardous air pollutants, total air contaminants and total carcinogenic volatile organic compounds (VOCs). Total carcinogenic VOC emissions are the limiting requirement for the SVE system.

The limits for total carcinogenic VOC emissions are 20 lb/mo for uncontrolled emissions and 10 lb/mo for controlled emissions.

2) Pilot study exhaust samples collected on April 25, 2012 and May 2, 2012 were collected when system exhaust included approximately 48-percent make-up air. Sample results were used to calculate the exhaust concentration if the system was operated without make-up air.

Table 1
 Summary of Constituents of Concern in On-Site Mitigation System Exhaust Samples and Calculated Emission Rate
 Former Tecumseh Products Site
 Tecumseh, Michigan

Analyte	Approximate Flow Rate	1,1-Dichloroethane*	1,2-Dichloroethane*	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetra-chloroethene*	1,1,1-Trichloroethane	Tri-chloroethene*	Vinyl Chloride*	Carcinogenic VOC Flow Rate ⁽¹⁾	
Units	ACFM	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	lb/mo	
Full-Scale SVE System (continued)												
Between Carbon Vessels (Lead Vessel Effluent / Lag Vessel Influent)	11/8/2012	745	210	<24	<120	6,600	<120	<15	160	2,300	57	26
	12/3/2012	730	<120	<24	<120	3,700	140	<15	<91	12,000	28	124
	1/3/2013	738	<120	<24	<120	3,500	<120	24	<91	2,600	<19	28
	5/23/2013	725	<120	<24	<120	730	<120	<15	<91	<18	<19	0.00
	11/14/2013	610	<120	<24	<120	680	<120	15	340	3,500	<19	30
	3/7/2014	756	<120	<24	<120	170	<120	<15	<91	360	<19	3.9
	5/19/2014	785	<1.0	<1.0	<1.0	3.8	<2.0	2.4	<1.0	<1.0	1.5	0.04
	7/14/2014	780	3.0	<1.0	9.1	36	9.8	<1.0	<1.0	1.3	<1.0	0.04
	12/4/2014	715	4.5	<2.0	<2.0	35	4.9	<2.0	49	910	<2.0	9.3
SVE System Exhaust (Post Treatment)	11/2/2012	819	<2.0	<2.0	<2.0	2.7	<2.0	<2.0	<2.0	30	29	0.51
	11/8/2012	749	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	55	0.28
	1/3/2013	738	33	<1.0	16.0	880	24	<1.0	<1.0	4.1	9.4	0.35
	5/23/2013	725	<120	<24	<120	<120	<120	<15	<91	<18	<19	0.00
	11/14/2013	610	<120	<24	<120	620	<120	<15	<91	29	<19	0.25
	3/7/2014	756	1.0	<1.0	<1.0	5.4	<2.0	<1.0	<1.0	1.5	1.8	0.03
	5/19/2014	785	1.7	<1.0	<1.0	41	3.1	<1.0	2.0	7.8	1.5	0.11
	7/14/2014	780	<1.0	<1.0	<1.0	31	2.1	<1.0	1.9	1.8	<1.0	0.02
	12/4/2014	715	28	<1.0	<1.0	460	29	<1.0	17	1.3	<1.0	0.23

Notes:

ACFM - actual cubic feet per minute

ppbv - parts per billion by volume

lb/mo - pounds per month

Asterisk * indicates compound is carcinogenic.

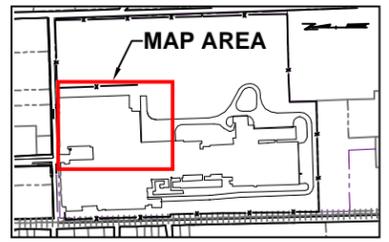
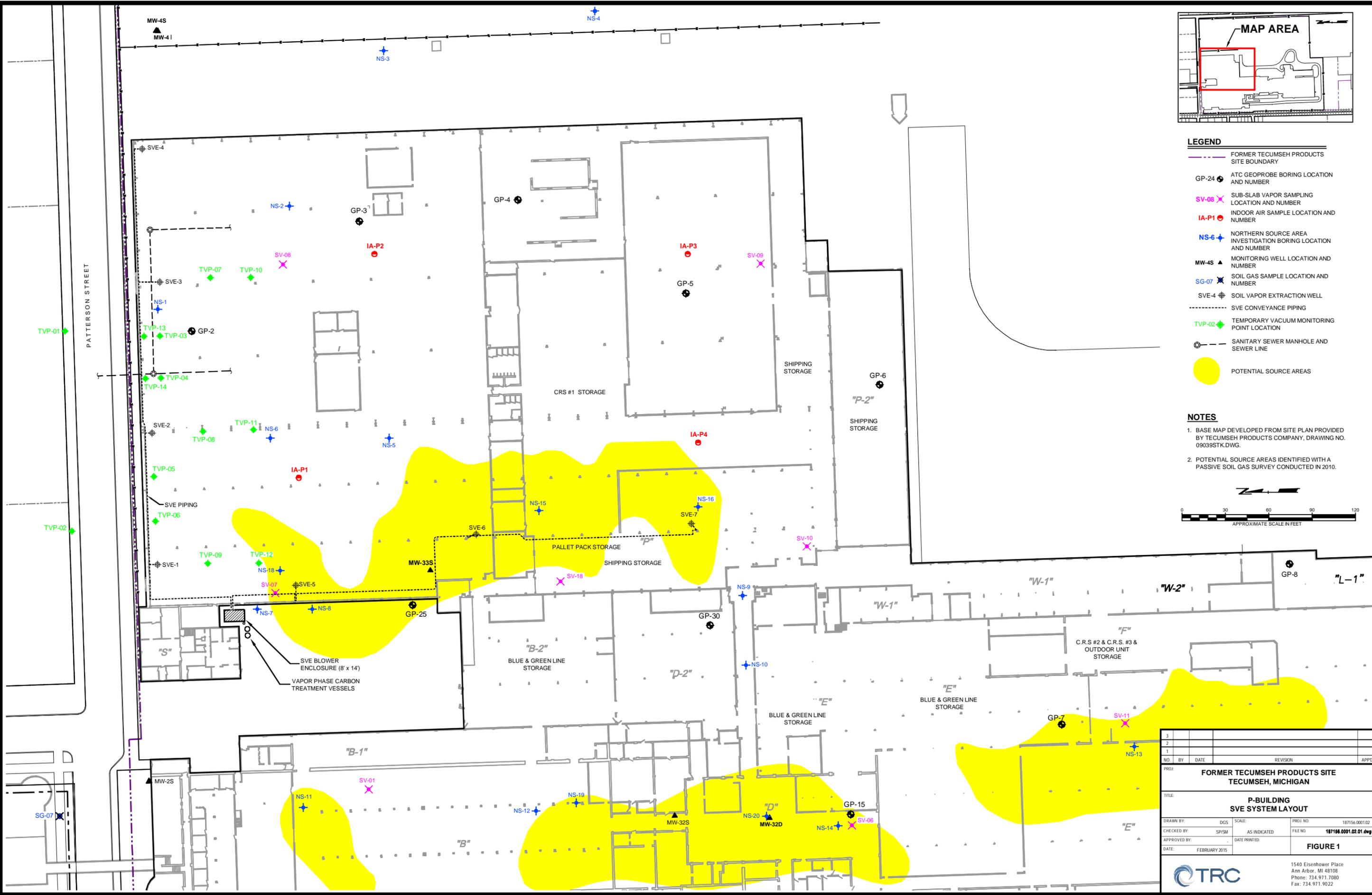
1) MDEQ Permit to Install exemption requirements include total hazardous air pollutants, total air contaminants and total carcinogenic volatile organic compounds (VOCs). Total carcinogenic VOC emissions are the limiting requirement for the SVE system.

The limits for total carcinogenic VOC emissions are 20 lb/mo for uncontrolled emissions and 10 lb/mo for controlled emissions.

2) Pilot study exhaust samples collected on April 25, 2012 and May 2, 2012 were collected when system exhaust included approximately 48-percent make-up air. Sample results were used to calculate the exhaust concentration if the system was operated without make-up air.

Figure

Drawing Title: SVE System Layout
 Drawing No.: 187156.0001.02.01.dwg
 Date: February 17, 2015
 Time: 1:58 PM
 Author: J. Stroh
 Checker: J. Stroh
 Designer: J. Stroh
 Project: Former Tecumseh Products Site, 1540 Eisenhower Blvd, Ann Arbor, MI 48108
 Client: TRC Environmental Services, LLC
 Scale: AS INDICATED
 File No.: 187156.0001.02.01.dwg
 Date Printed: February 17, 2015
 Figure 1



- LEGEND**
- FORMER TECUMSEH PRODUCTS SITE BOUNDARY
 - GP-24 ATC GEOPROBE BORING LOCATION AND NUMBER
 - SV-08 SUB-SLAB VAPOR SAMPLING LOCATION AND NUMBER
 - IA-P1 INDOOR AIR SAMPLE LOCATION AND NUMBER
 - NS-6 NORTHERN SOURCE AREA INVESTIGATION BORING LOCATION AND NUMBER
 - MW-4S MONITORING WELL LOCATION AND NUMBER
 - SG-07 SOIL GAS SAMPLE LOCATION AND NUMBER
 - SVE-4 SOIL VAPOR EXTRACTION WELL
 - SVE CONVEYANCE PIPING
 - TVP-02 TEMPORARY VACUUM MONITORING POINT LOCATION
 - SANITARY SEWER MANHOLE AND SEWER LINE
 - POTENTIAL SOURCE AREAS

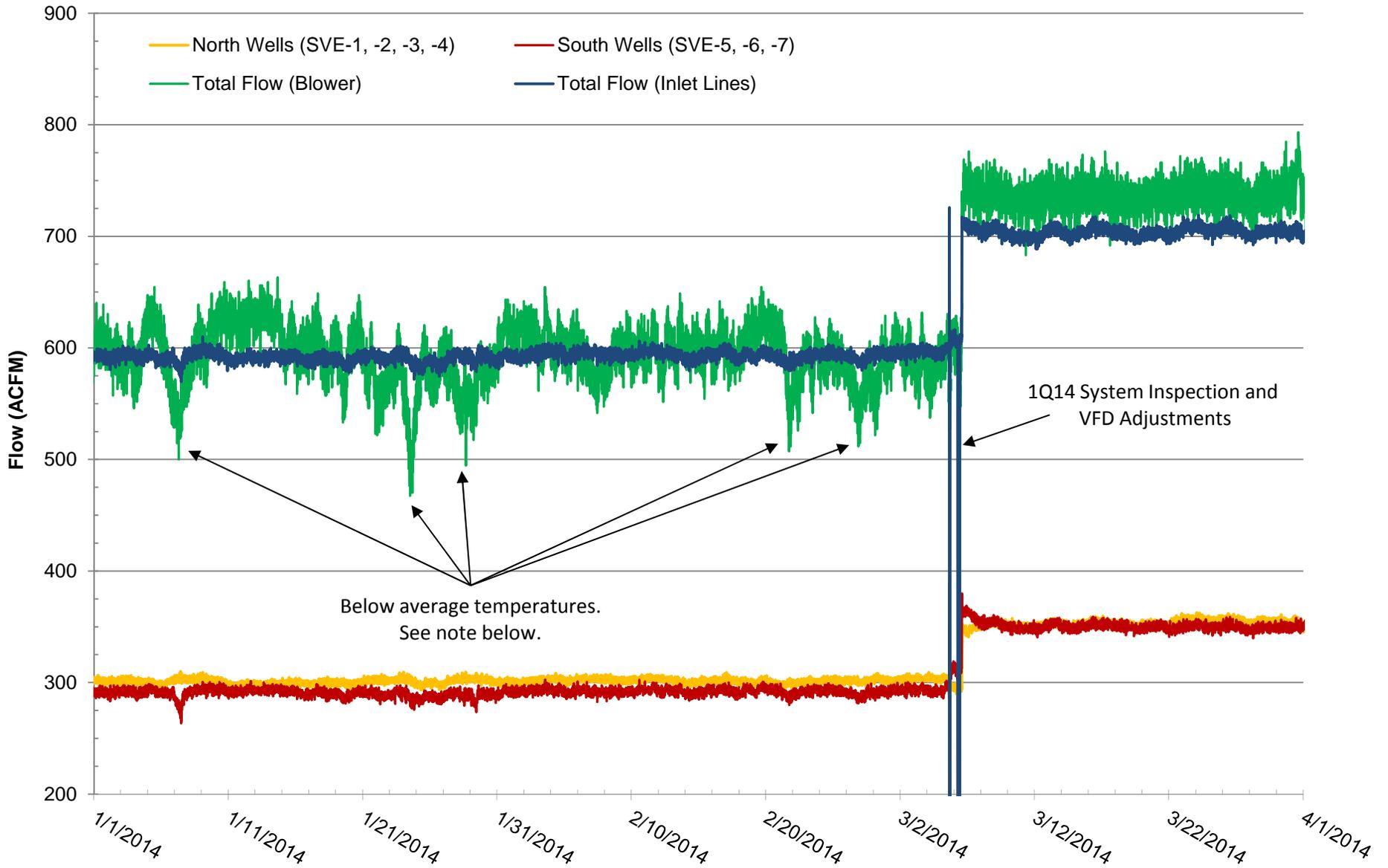
- NOTES**
1. BASE MAP DEVELOPED FROM SITE PLAN PROVIDED BY TECUMSEH PRODUCTS COMPANY, DRAWING NO. 09039STK.DWG.
 2. POTENTIAL SOURCE AREAS IDENTIFIED WITH A PASSIVE SOIL GAS SURVEY CONDUCTED IN 2010.



NO.		BY		DATE		REVISION		APPD.	
PROJECT: FORMER TECUMSEH PRODUCTS SITE TECUMSEH, MICHIGAN									
TITLE: P-BUILDING SVE SYSTEM LAYOUT									
DRAWN BY:		DGS		SCALE:		AS INDICATED		PROJ. NO. 187156.0001.02	
CHECKED BY:		SPISM		DATE PRINTED:		FEBRUARY 2015		FILE NO. 187156.0001.02.01.dwg	
APPROVED BY:				DATE:		FEBRUARY 2015		FIGURE 1	
					1540 Eisenhower Place Ann Arbor, MI 48108 Phone: 734.971.7080 Fax: 734.971.9022				

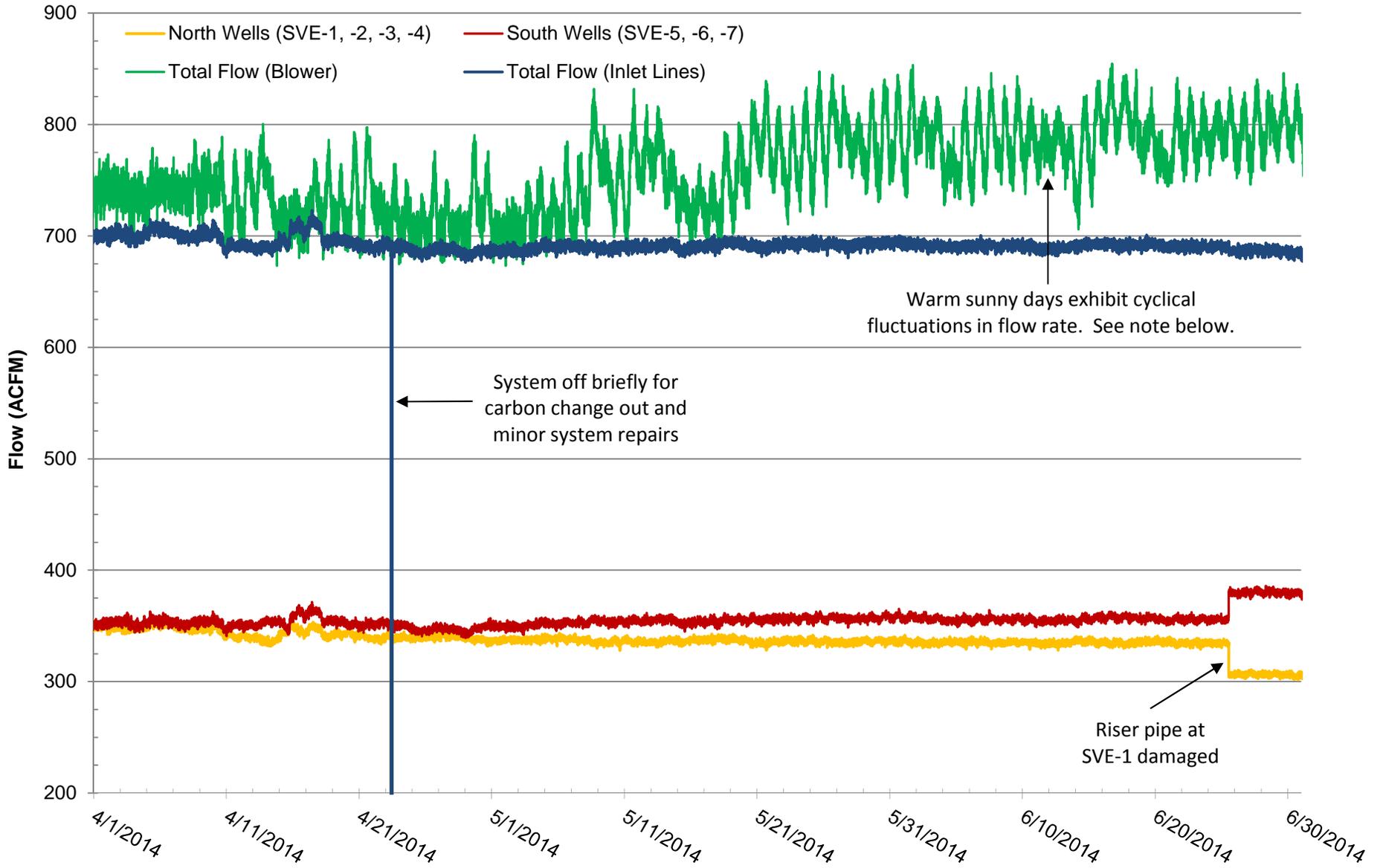
Charts

Chart 1 - SVE System Flow Measurements 1st Quarter 2014



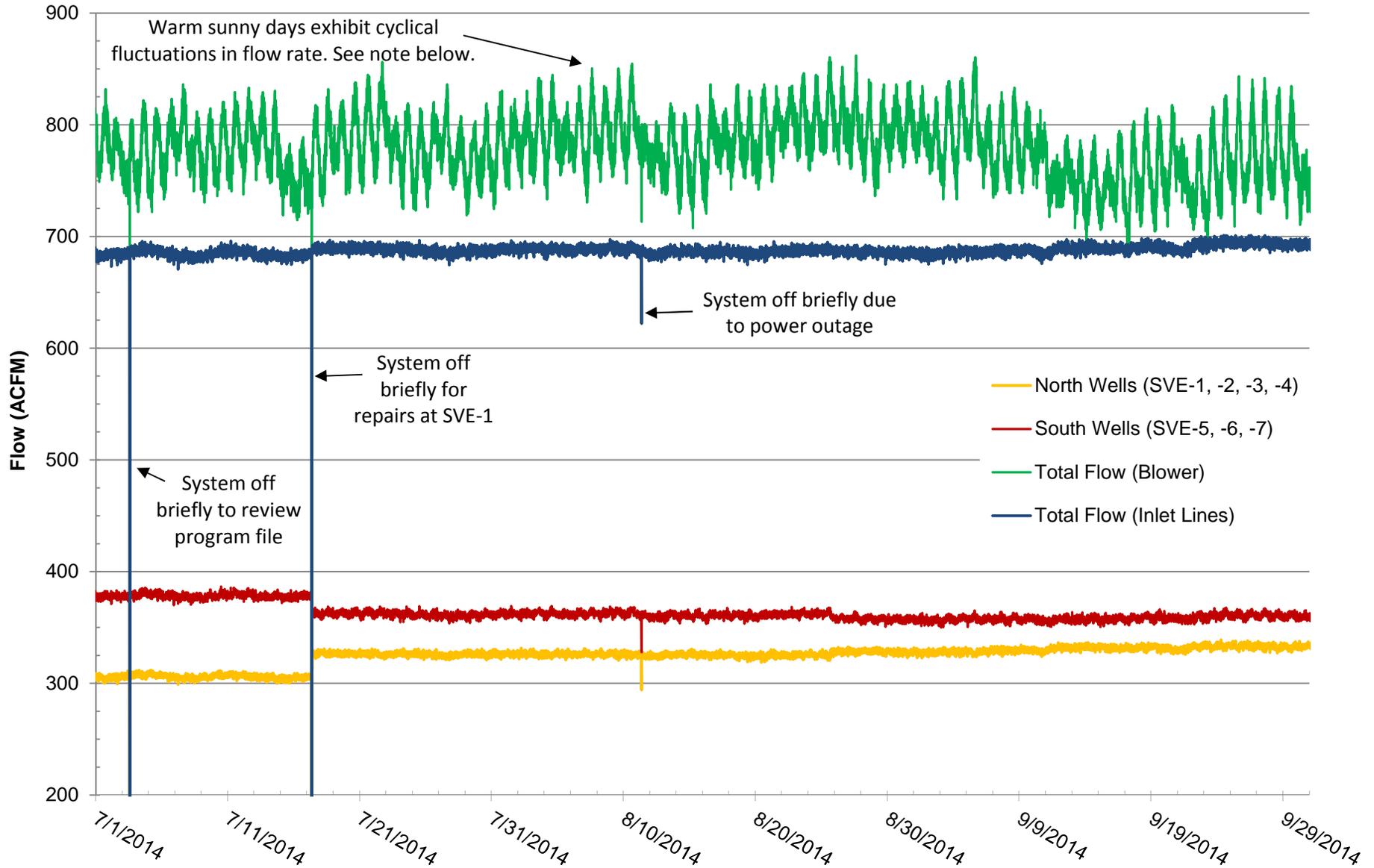
Note: System flow rate measurements do not account for changes in air density with changes in temperature. Constant subsurface temperatures result in stable inlet flow rates, but flow rates at the blower reflect changes in ambient air temperature.

Chart 2 - SVE System Flow Measurements 2nd Quarter 2014



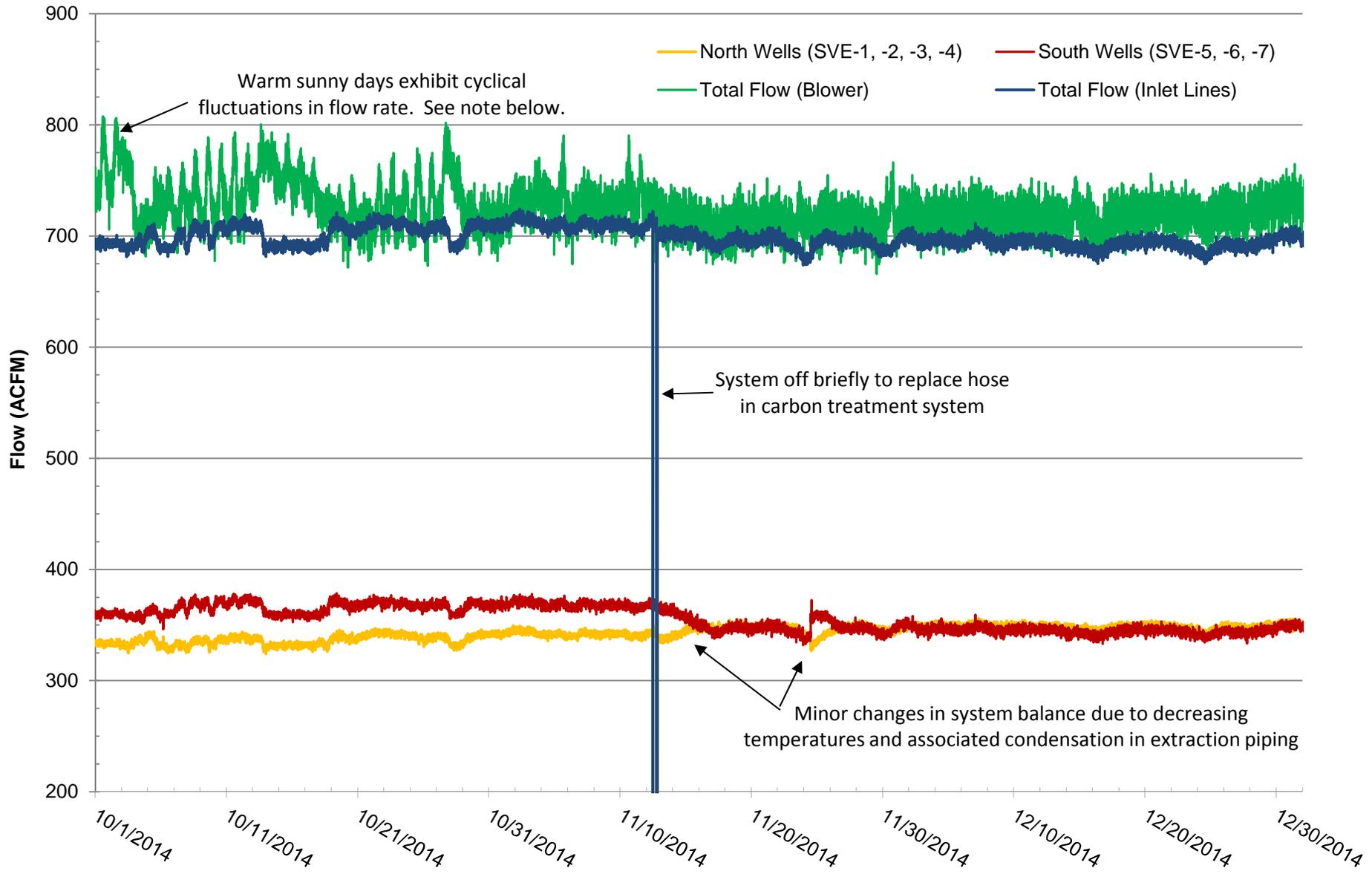
Note: System flow rate measurements do not account for changes in air density with changes in temperature. Constant subsurface temperatures result in stable inlet flow rates, but flow rates at the blower reflect changes in ambient air temperature.

Chart 3 - SVE System Flow Measurements 3rd Quarter 2014



Note: System flow rate measurements do not account for changes in air density with changes in temperature. Constant subsurface temperatures result in stable inlet flow rates, but flow rates at the blower reflect changes in ambient air temperature.

Chart 4 - SVE System Flow Measurements 4th Quarter 2014



Note: System flow rate measurements do not account for changes in air density with changes in temperature. Constant subsurface temperatures result in stable inlet flow rates, but flow rates at the blower reflect changes in ambient air temperature.

Chart 5 - Differential Pressure Across Air Filter January 2014 through December 2014

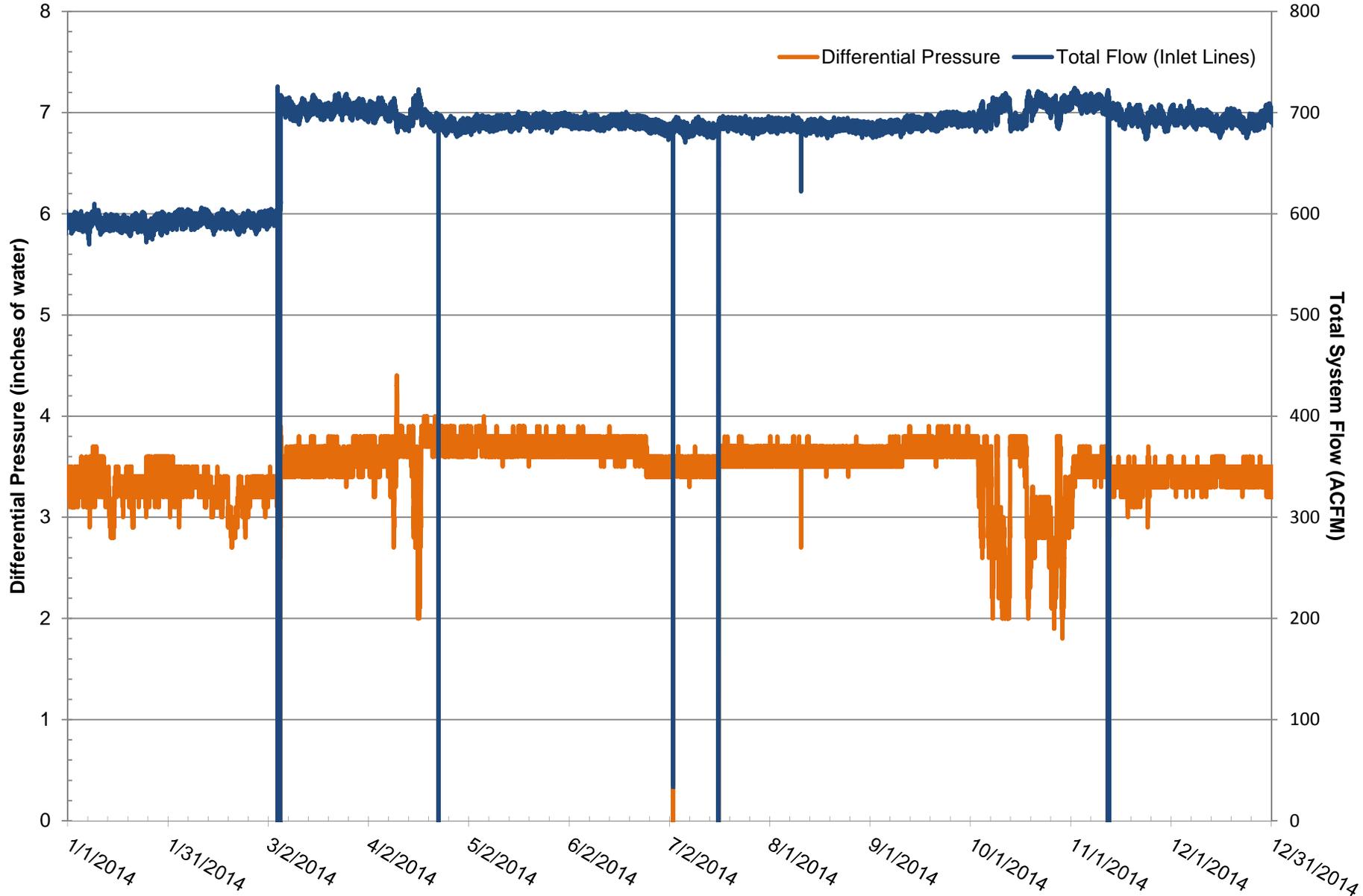


Chart 6 - Exhaust Temperature January 2014 through December 2014

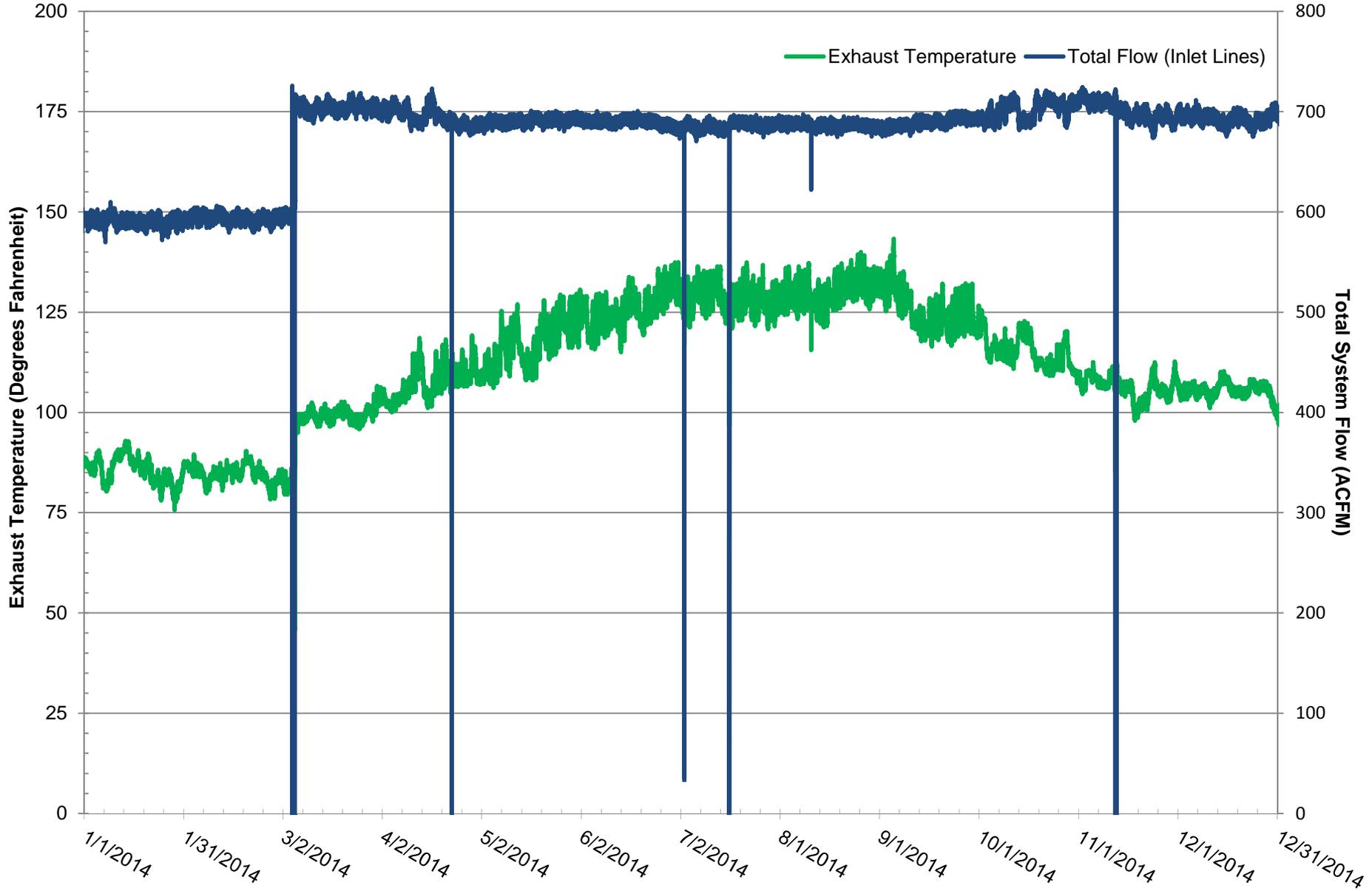


Chart 7 - Cumulative Volume Removed through 2014

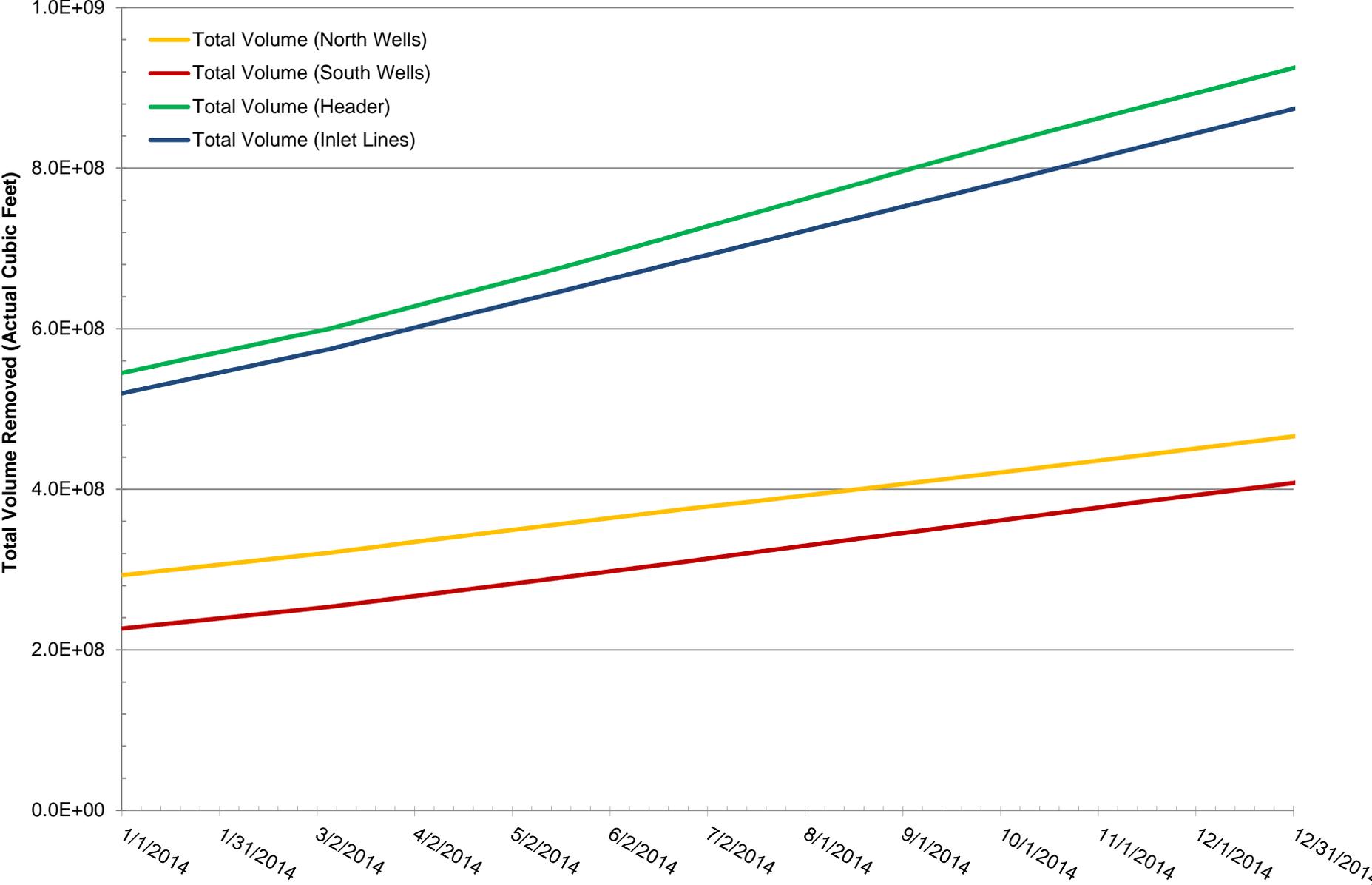
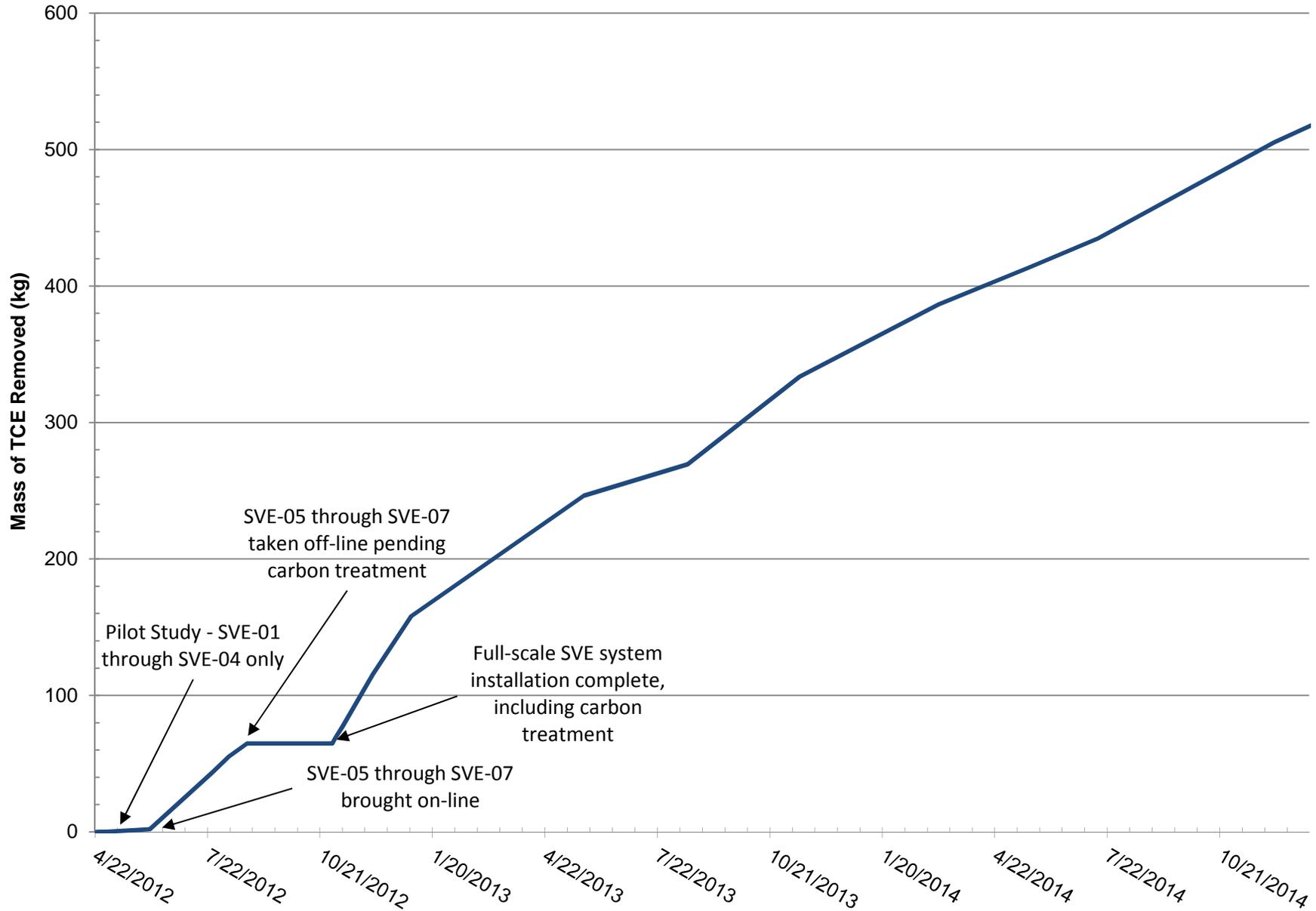


Chart 8 - Cumulative Mass of TCE Removed System Start-Up through December 2014



Attachment 1
Operation and Maintenance Log

P-Building Soil Vapor Extraction System Operation and Maintenance Log

Former Tecumseh Products Company Site Tecumseh, Michigan

- **March 30, 2012 – April 10, 2012:**
 - Completed installation of soil vapor extraction wells SVE-1 through SVE-4, and
 - Completed installation of temporary vacuum pressure points.
- **April 9, 2012 – April 13, 2012:**
 - Completed installation of above grade piping at SVE-1 through SVE-4 and SVE header pipeline 1 (Line 1).
- **April 16, 2012 – April 23, 2012:**
 - Temporary SVE blower installed (powered with diesel generator);
 - Conducted stepped-rate tests at SVE-1 through SVE-4;
 - Balanced system flow (~60 ACFM at each extraction well); and
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points.
- **April 25, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points;
 - Blower maintenance (lubrication); and
 - Collected exhaust samples from SVE system and other on-site emission sources (S-Building SSDV system and PRB methane ventilation system).
- **May 2, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points;
 - Blower maintenance (lubrication); and
 - Collected a 1-week post start-up SVE system exhaust sample.
- **May 10, 2012:**
 - Closed make-up air valves (evaluation of SVE system exhaust data indicates that make-up air is not needed to maintain MDEQ air permit exemption requirements by reducing total emissions);
 - Re-balance system (~115 ACFM at each extraction well);

- Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication).
- **May 16, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication).
- **May 24, 2012:**
 - Collected vacuum and flow measurements at blower and extraction wells; and
 - Blower maintenance (lubrication).
- **May 29, 2012:**
 - Collected vacuum and flow measurements at blower and extraction wells; and
 - Blower maintenance (lubrication).
- **May 29, 2012 – June 1, 2012:**
 - Completed installation of soil vapor extraction wells SVE-5 through SVE-7;
 - Completed installation of above grade piping at SVE-5 through SVE-7 and SVE header pipeline 2 (Line 2); and
 - Completed connection of Line 2 to temporary blower skid.
- **June 4, 2012 – June 5, 2012:**
 - Conducted stepped-rate tests at SVE-5 through SVE-7;
 - Managed problems with diesel generator, and accepted delivery of replacement generator;
 - Balanced system flow (~65 ACFM at each well);
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication).
- **June 7, 2012:**
 - Permanent power installed.

- **June 14, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication).
- **June 21, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication).
- **June 26, 2012:**
 - Blower maintenance (lubrication).
- **June 29, 2012:**
 - Blower maintenance (lubrication).
- **July 10, 2012:**
 - Blower maintenance (lubrication).
- **July 16, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points; and
 - Blower maintenance (lubrication and oil change).
- **July 26, 2012:**
 - Blower maintenance (lubrication); and
 - Collected an SVE system exhaust sample.
- **August 2, 2012:**
 - Blower maintenance (lubrication).
- **August 8, 2012:**
 - Blower maintenance (lubrication); and
 - Collected an SVE system exhaust sample.
- **August 17, 2012:**
 - Blower maintenance (lubrication).
- **August 23, 2012:**
 - Blower maintenance (lubrication); and
 - Collected SVE system influent samples from Line 1 and Line 2;

- Closed flow from Line 2 (July 26, 2012 and August 8, 2012 sample events indicate TCE concentrations in Line 2 require treatment prior to emission);
 - Rebalanced SVE system (~115 ACFM at extraction wells SVE-1 through SVE-4); and
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points.
- **August 30, 2012:**
 - Blower maintenance (lubrication).
 - **September 7, 2012:**
 - Blower maintenance (lubrication).
 - **September 14, 2012:**
 - Blower maintenance (lubrication).
 - **September 26, 2012:**
 - Blower maintenance (lubrication).
 - **October 3, 2012:**
 - Blower maintenance (lubrication).
 - **October 11, 2012:**
 - Blower maintenance (lubrication and oil change).
 - **October 17, 2012:**
 - Blower maintenance (lubrication).
 - **October 25, 2012 – October 26, 2012:**
 - Remove temporary SVE blower skid (including removal of ~47 gallons of condensate from the knock out tank for disposal);
 - Install permanent SVE blower skid;
 - Assemble exhaust stack and piping connections to SVE header pipelines (a tee is installed so that flow from Line 2 enters the blower skid through influent lines 2 and 3);
 - Power cannot be connected (permanent power source is 208v, buck-booster transformer needed to increase voltage to 240v); and
 - Install carbon treatment system (two 3000 lb vapor phase carbon vessels and associated plumbing).

- **October 31, 2012:**
 - Generator delivery to supply power temporarily;
 - Full-scale system start up; and
 - Adjust system flow to maintain lateral control and maximize source removal (SVE-1 through SVE-5 ~90 ACFM, SVE-6 and SVE-7 ~150 ACFM).
- **November 2, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent and treatment system exhaust; and
 - Collected Line 1 influent sample, Line 2 influent sample and SVE system exhaust samples for laboratory analysis.
- **November 8 – November 9, 2012:**
 - Adjusted valves on SVE influent line 2 and 3 so that flow was within acceptable range for installed flow meters;
 - Rebalanced system (SVE-1 through SVE-5 ~90 ACFM, SVE-6 and SVE-7 ~140 ACFM);
 - Collected vacuum and flow measurements at blower, extraction wells, and temporary vacuum pressure points;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent and treatment system exhaust; and
 - Collected Line 1 influent sample, Line 2 influent sample, sample between vessels (lead effluent/lag influent), and SVE system exhaust samples for laboratory analysis.
- **November 12, 2012:**
 - Collected vacuum and flow measurements at blower; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
- **November 14, 2012:**
 - Buck-booster transformer installed and permanent power connected;
 - Thermostat on ventilation fan repaired; and
 - SVE system re-started.

- **November 16, 2012:**
 - Collected vacuum and flow measurements at blower and extraction wells; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, treatment system exhaust, and individual extraction wells.
- **November 20, 2012:**
 - Collected vacuum and flow measurements at blower and extraction wells;
 - Water (condensate) had accumulated on valve at SVE-5 resulting in gurgling sound and low flow. Valve opened completely to allow water to drain then readjusted; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
- **November 26, 2012:**
 - SVE system shut down due to remote modifications to system telemetry;
 - On-site to restart SVE system;
 - Collected vacuum and flow measurements at blower and extraction wells; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust (breakthrough observed on lag vessel).
- **December 3, 2012:**
 - Prior to carbon change out:
 - Collected vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Collected samples at lead vessel influent and between vessels (lead effluent/lag influent) for laboratory analysis;
 - Remove spent carbon from both vessels for regeneration/disposal;
 - Installed 2250 lbs of carbon in lead vessel and 1485 lbs of carbon in lag vessel; and
 - Post carbon change out:
 - Collected vacuum and flow measurements at blower and extraction wells.

- **December 18, 2012:**
 - Collected vacuum and flow measurements at blower, extraction wells and temporary vacuum pressure points; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, treatment system exhaust, and extraction wells SVE-5 through SVE-7.

- **January 3, 2013:**
 - Collected vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Breakthrough observed on lead vessel, arrange change out; and
 - Collected samples at lead vessel influent, between vessels (lead effluent/lag influent), and system exhaust for laboratory analysis.

- **January 7, 2013:**
 - Prior to carbon change out:
 - Collected vacuum and flow measurements at blower and extraction wells; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
 - The following problems were noted during system inspection:
 - SVE-5 was gurgling due to water (condensate) on the butterfly valve;
 - The following corrective measures were taken:
 - Valve at SVE-5 opened completely to allow water (condensate) to drain during carbon change out. Valve was reset prior to post change out readings;
 - Collected a second round of vacuum and flow measurements once valve was readjusted and system was restated and rebalanced;
 - Remove spent carbon from lead vessel for regeneration/disposal;
 - Switch system piping so that lead vessel becomes lag vessel and vice versa;
 - Capped off former lag vessel with new carbon (990 lbs new carbon + 1485 lbs installed 12/3/12) for a total of 2475 lbs of carbon;
 - Re-filled former lead vessel with new carbon (1980 lbs);

- Post carbon change out:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at blower and extraction wells.
- **January 24, 2013:**
 - Collected vacuum and flow measurements at blower and extraction wells;
 - Field measurement of TCE concentrations (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - The following problems were noted during system inspection:
 - Riser pipe at SVE-6 damaged (likely run into with fork lift), ambient air is being pulled through the SVE-6 from the damaged area; and
 - SVE-2 was gurgling due to water (condensate) on the butterfly valve.
 - The following corrective measures were taken:
 - Subcontractor contacted to schedule system repairs;
 - Valve closed at SVE-6 to stop the flow of ambient air;
 - Rebalance flow (SVE-1 through SVE-4 ~95 ACFM, SVE-5 ~156 ACFM, and SVE-7 ~226 ACFM);
 - Valve at SVE-2 opened completely and system turned off briefly to allow water (condensate) to drain; and
 - Collected a second round of vacuum and flow measurements once valve was readjusted and system was restated and rebalanced.
- **February 11, 2013:**
 - Prior to carbon change out and system repairs:
 - Collected vacuum and flow measurements at blower and extraction wells;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Completed piping repairs at SVE-06
 - Installed bollards at locations not protected by perimeter guard rail (SVE-06 and SVE-07) to help prevent future piping damage.
 - No new problems were noted during system inspection.
 - Remove spent carbon (2475 lbs) from lead vessel for regeneration/disposal;
 - Switch system piping so that lead vessel becomes lag vessel and vice versa;

- Re-filled former lead vessel with new carbon (2530 lbs);
- Post carbon change out and repair:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at blower and extraction wells.
- **February 14, 2013:**
 - City of Tecumseh issued an order for no entry into the former TPC manufacturing building. Access for routine operation and maintenance inside the building restricted indefinitely.
- **February 28, 2013:**
 - Before electrical conduit installed:
 - Collected vacuum and flow measurements at blower (access to extraction wells restricted by a no entry order from City of Tecumseh as noted above); and
 - Field measurement of TCE concentrations (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
 - Installed electrical conduit along outside wall of P-Building from the main power drop to the main power supply box on the SVE skid.
 - Following electrical conduit installation:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at blower.
- **March 14, 2013:**
 - Collected vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough observed on lead vessel (TCE concentration just registered on Draeger® tube, <2 ppm), arrange change out for week of March 25, 2013.
- **March 28, 2013:**
 - Prior to carbon change out:
 - Collected vacuum and flow measurements at blower; and
 - Field measurement of TCE concentration (with Draeger® tube and Gastec tube [for comparison]) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.

- During system inspection the following problem was noted:
 - The flexible hose fitting entering the vessel closest to the skid was beginning to slide off.
- The following corrective measures were taken:
 - The flexible hose was reseated in the correct position and tightened; and
 - A brick and scrap wood were used to support the hose to prevent future slipping.
- Remove spent carbon (1980 lbs) from lead vessel for regeneration/disposal;
- Switch system piping so that lead vessel becomes lag vessel and vice versa;
- Re-filled former lead vessel with new carbon (2,600 lbs);
- Post carbon change out and repair:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at blower.
- **May 13, 2013:**
 - Collected vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.
- **May 23, 2013:**
 - Completion of the second quarter 2013 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection vacuum and flow measurements at extraction wells
 - Collection vacuum and flow measurements at blower;
 - Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.

■ **July 1, 2013:**

- Collected vacuum and flow measurements at blower;
- Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
- Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.
- During collection of vacuum and flow measurements the following problem was noted:
 - The reading at the differential pressure gage was not consistent with the calculated difference between the air filter inlet pressure and the air filter outlet pressure.
- The following corrective measures were taken:
 - System telemetry was used to determine that the air filter outlet pressure gage was malfunctioning; and
 - A replacement gage was ordered.

■ **August 15, 2013:**

- Completion of the third quarter 2013 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection vacuum and flow measurements at blower;
 - Collection vacuum and flow measurements at extraction wells;
 - Field measurement of TCE concentration (with Draeger® tube) at SVE wells SVE-05, SVE-06, and SVE-07; lead carbon vessel influent; lag carbon vessel influent; and treatment system exhaust; and
 - Breakthrough observed, exhaust concentration at lead vessel ~50% of concentration at blower exhaust, lag vessel exhaust remains non-detect.
- Performed variable frequency drive (VFD) adjustments to determine if energy costs could be reduced while maintaining system effectiveness:
 - Reduce blower frequency in increments of approximately 2 Hertz (Hz);
 - Monitor system flow and pressure to determine minimum allowable frequency (before deadheading blower) with carbon treatment;
 - Repeat/continue VFD adjustments with carbon treatment bypass open;
 - Determine optimal SVE blower frequency with carbon treatment (50.4 Hz [84%, approximate energy savings of 40%]), and adjust VFD to that frequency;

- Check and confirm system balance (flow at lower concentration wells [SVE-01 through SVE-05] is approximately equal [75-85 ACFM] and flow at highest concentration wells [SVE-06 and SVE-07] is higher [112-128 ACFM]);
 - Collect pressure point readings to confirm radius of influence is maintained; and
 - Collect final vacuum and flow readings at the blower.
- **August 28, 2013:**
 - Prior to carbon change out:
 - Collected vacuum and flow measurements at blower; and
 - Field measurement of TCE concentration (with Draeger® tube and Gastec tube [for comparison]) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
 - The following problems were noted during carbon change out:
 - Carbon (2,600 lbs) was inadvertently removed from incorrect (lag) carbon vessel and replaced with new (1000 lbs) carbon.
 - The rubber gasket sealing the top of that carbon vessel (western most) had deteriorated and needed replacement.
 - The following correction measures were taken:
 - Carbon change out for the lead vessel was re-scheduled;
 - Schrader agreed to save the carbon taken from the lag vessel for replacement during that carbon change out.
 - Schrader agreed to provide a replacement gasket during the next carbon change out.
- **September 4, 2013:**
 - Prior to carbon change out vacuum and flow measurements were collected at the blower;
 - The following problems were noted during carbon change out:
 - Schrader had not stockpiled carbon taken from lag vessel on August 28, 2013
 - The replacement rubber gasket was not the correct size.

- The following correction measures were taken:
 - New carbon was used rather than the carbon inadvertently removed from the lag vessel on August 28, 2013;
 - Caulk was used to seal the top of the westernmost carbon vessel; and
 - Schrader agreed to provide a replacement gasket during the next carbon change out.
- Spent carbon (2530 lbs) was removed from the lead vessel for regeneration/disposal;
- Switch system piping so that lead vessel becomes lag vessel and vice versa;
- Re-filled former lead vessel with new carbon (1,000 lbs);
- Added an additional 1,000 lbs of new carbon to the former lag vessel (2,000 lbs total);
- Post carbon change out and repair:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at blower.
- **November 5, 2013:**
 - Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough was not observed, carbon change out not yet needed.
 - During collection of vacuum and flow measurements no new problems were noted.
- **November 14, 2013:**
 - Completion of the fourth quarter 2013 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection of vacuum and flow measurements at blower;
 - Collection of vacuum and flow measurements at extraction wells;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and

- Influent concentration near detection limit for tubes, breakthrough indicated by laboratory analytical results.
- **December 11, 2013:**
 - Prior to carbon change out:
 - Collection of vacuum and flow measurements at blower; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.
 - Remove spent carbon (2000 lbs) from lead vessel for regeneration/disposal;
 - Switch system piping so that lead vessel becomes lag vessel and vice versa;
 - Added 1,300 lbs of additional carbon to fill the lead (former lag) vessel (2,300 lbs total in vessel);
 - Re-filled lag (former lead) vessel with new carbon (1,700 lbs); and
 - Post carbon change out:
 - Restarted SVE system; and
 - Collected vacuum and flow measurements at the blower
- **January 28, 2014:**
 - Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent and lag carbon vessel influent (Note: measurement at treatment system exhaust not collected due to frozen sample port); and
 - Breakthrough was not observed, carbon change out not yet needed.
 - During collection of vacuum and flow measurements no new problems were noted.
- **March 5, 2014 – March 7, 2014:**
 - Completion of the first quarter 2014 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection of vacuum and flow measurements at blower;
 - Collection of vacuum and flow measurements at extraction wells;
 - Collect pressure point readings at interior locations. (Note: Measurements were not collected at exterior locations due to heavy snow cover, e.g. greater than 2.5 feet of interbedded hard pack snow and ice);

- Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust (approximately 1 day after the variable frequency drive (VFD) adjustments described below);
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust (before and after VFD adjustments); and
 - Breakthrough was not observed, carbon change out not yet needed
 - Performed variable frequency drive adjustments to improve control of lateral migration from the site:
 - Increase vacuum alarm settings (Completed by Proact remotely. TRC could not connect locally on March 5, 2014 or remotely on March 6, 2014 to complete these adjustments.);
 - Adjust VFD setting locally from 84% (50.4 Hz) to 100 % (60 Hz) increasing total system flow from approximately 600 ACFM to 700 ACFM;
 - Adjust well setting to optimize flow from westernmost SVE wells (SVE-01, SVE-05, SVE-05, and SVE-07) while maintaining lateral capture along northern perimeter (SVE-02, SVE-03, and SVE-04);
 - Collect pressure point readings to measure the pressure differential across the slab at interior locations. (Note: Measurements were not collected at exterior locations due to heavy snow cover as described above); and
 - Collect final vacuum and flow readings at the blower.
 - During the system inspection no new problems were noted.
- **April 11, 2014:**
 - Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough was observed at the lead vessel, carbon change was scheduled.
 - During collection of vacuum and flow measurements no new problems were noted.
- **April 23, 2014:**
 - Prior to carbon change out:
 - Collection of vacuum and flow measurements at blower; and
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust.

- Remove spent carbon (2300 lbs) from lead vessel for regeneration/disposal;
 - Switch system piping so that lead vessel becomes lag vessel and vice versa;
 - Completed system minor repairs:
 - Replaced gasket on westernmost carbon vessel;
 - Re-banded all hosing connections in carbon treatment system (6 total); and
 - Patch screen on easternmost carbon vessel.
 - Added 600 lbs of additional carbon to fill the lead (former lag) vessel (2,300 lbs total in vessel);
 - Re-filled lag (former lead) vessel with new carbon (1,900 lbs); and
 - Post carbon change out:
 - Restarted SVE system; and
 - Collected of vacuum and flow measurements at the blower.
 - During carbon change out, Schrader technician noted evidence of corrosion on screen of easternmost vessel. He recommended that replacement screens be cut for both vessels so they are ready for installation the next time the vessels are empty.
- **May 19, 2014:**
- Completion of the second quarter 2014 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection vacuum and flow measurements at extraction wells;
 - Collection of vacuum measurements at vacuum monitoring points;
 - Collection vacuum and flow measurements at blower;
 - Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Field measurement of TCE concentration (with Draeger® tube) at three source area extraction wells (SVE-05, SVE-06, SVE-07), lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.
- **June 23, 2014:**
- Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and

- Breakthrough was not observed.
- During collection of vacuum and flow measurements no new problems were noted.
- **July 14, 2014:**
 - Completion of the third quarter 2014 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection vacuum and flow measurements at extraction wells;
 - Collection of vacuum measurements at vacuum monitoring points;
 - Collection vacuum and flow measurements at blower;
 - Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Field measurement of TCE concentration (with Draeger® tube) at three source area extraction wells (SVE-05, SVE-06, SVE-07), lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.
 - The following problem was noted during system inspection:
 - Riser pipe at SVE-1 damaged (likely run into with fork lift), ambient air was being pulled through the SVE-1 from the damaged area.
 - The following corrective measures were taken:
 - Subcontractor contacted to schedule system repairs;
 - Valve closed at SVE-1 to stop the flow of ambient air;
 - Balance of system flow verified; and
 - Collected a second round of vacuum and flow measurements once valve was closed.
- **July 17, 2014:**
 - Establishment of fire watch for interior activities;
 - Completed piping repairs at SVE-1 and valve re-opened; and
 - Verified flow at SVE-1 is consistent with flow prior to damage.
- **August 21, 2014:**
 - Collection of vacuum and flow measurements at blower;

- Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough was not observed.
 - During collection of vacuum and flow measurements the following potential problem was noted: scrubs/small trees growing between the building and blower enclosure are touching the enclosure air vent and could restrict cooling air circulation in the future.
- **September 17, 2014:**
- Small trees and bushes growing between the building and blower enclosure were trimmed;
 - Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough was not observed.
 - During collection of vacuum and flow measurements no new problems were noted.
- **November 12-13, 2014:**
- Completion of the fourth quarter 2014 SVE system inspection including:
 - Establishment of fire watch for interior activities;
 - Collection vacuum and flow measurements at extraction wells;
 - Collection of vacuum measurements at vacuum monitoring points;
 - Collection vacuum and flow measurements at blower; and
 - Breakthrough not observed, influent concentration near detection limit for tubes, carbon change out not yet needed.
 - The following problem was noted during system inspection:
 - Tear present in hose between lead vessel and lag vessel (short circuiting the polishing lag vessel prior to exhaust);
 - Several valves on vacuum monitoring points broken; and
 - Pressure gage at air filter outlet malfunctioning (non-critical due to redundant gages in system).
 - The following corrective measures were taken:
 - Verified that TCE concentration between the lead and lag vessel were non-detect;

- Subcontractor contacted and hose repair completed the same day; and
 - Replacement valves installed at vacuum monitoring points as needed.
- **December 12, 2014:**
- Collection of samples for laboratory analysis at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust;
 - Collection of vacuum and flow measurements at blower;
 - Field measurement of TCE concentration (with Draeger® tube) at lead carbon vessel influent, lag carbon vessel influent, and treatment system exhaust; and
 - Breakthrough was not observed.
 - During collection of vacuum and flow measurements no new problems were noted.

Attachment 2

Laboratory Data

20 March 2014



Ms. Stacy Metz
TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

H&P Project: TRC031314-11
Client Project: 187156.0001 Ph2 / TPC On-Site SVE

Dear Ms. Stacy Metz:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 13-Mar-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,



Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SVE- Exhaust	E403062-01	Vapor	07-Mar-14	13-Mar-14
SVE- B/W Vessels	E403062-02	Vapor	07-Mar-14	13-Mar-14
SVE-At Blower	E403062-03	Vapor	07-Mar-14	13-Mar-14
DUP-01	E403062-04	Vapor	07-Mar-14	13-Mar-14

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

DETECTIONS SUMMARY

Sample ID: **SVE- Exhaust**

Laboratory ID: **E403062-01**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Vinyl chloride	1.8	1.0		ppbv	EPA TO-15	
1,1-Dichloroethane	1.0	1.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	5.4	1.0		ppbv	EPA TO-15	
Trichloroethene	1.5	1.0		ppbv	EPA TO-15	

Sample ID: **SVE- B/W Vessels**

Laboratory ID: **E403062-02**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
cis-1,2-Dichloroethene	170	120		ppbv	H&P 8260 SV	
Trichloroethene	360	18		ppbv	H&P 8260 SV	

Sample ID: **SVE-At Blower**

Laboratory ID: **E403062-03**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
1,1,1-Trichloroethane	130	91		ppbv	H&P 8260 SV	
Trichloroethene	2200	18		ppbv	H&P 8260 SV	
Tetrachloroethene	48	15		ppbv	H&P 8260 SV	

Sample ID: **DUP-01**

Laboratory ID: **E403062-04**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
cis-1,2-Dichloroethene	210	120		ppbv	H&P 8260 SV	
Trichloroethene	390	18		ppbv	H&P 8260 SV	

TRC Environmental - MI
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Project: TRC031314-11
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Reported:
20-Mar-14 11:37

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVE- Exhaust (E403062-01) Vapor Sampled: 07-Mar-14 Received: 13-Mar-14									
Vinyl chloride	1.8	1.0	ppbv	1	EC41902	18-Mar-14	19-Mar-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	1.0	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	5.4	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	1.5	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>101 %</i>		<i>76-134</i>	<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>101 %</i>		<i>78-125</i>	<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

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Project: TRC031314-11
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Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Volatile Organic Compounds by 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
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SVE- B/W Vessels (E403062-02) Vapor Sampled: 07-Mar-14 Received: 13-Mar-14

Vinyl chloride	ND	19	ppbv	0.05	EC41706	14-Mar-14	14-Mar-14	H&P 8260 SV	
trans-1,2-Dichloroethene	ND	120	"	"	"	"	"	"	
1,1-Dichloroethane	ND	120	"	"	"	"	"	"	
1,1-Dichloroethene	ND	120	"	"	"	"	"	"	
cis-1,2-Dichloroethene	170	120	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	91	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	24	"	"	"	"	"	"	
Trichloroethene	360	18	"	"	"	"	"	"	
Tetrachloroethene	ND	15	"	"	"	"	"	"	

<i>Surrogate: Dibromofluoromethane</i>		105 %		75-125		"	"	"	"
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %		75-125		"	"	"	"
<i>Surrogate: Toluene-d8</i>		105 %		75-125		"	"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %		75-125		"	"	"	"

SVE-At Blower (E403062-03) Vapor Sampled: 07-Mar-14 Received: 13-Mar-14

Vinyl chloride	ND	19	ppbv	0.05	EC41706	14-Mar-14	14-Mar-14	H&P 8260 SV	
trans-1,2-Dichloroethene	ND	120	"	"	"	"	"	"	
1,1-Dichloroethane	ND	120	"	"	"	"	"	"	
1,1-Dichloroethene	ND	120	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	120	"	"	"	"	"	"	
1,1,1-Trichloroethane	130	91	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	24	"	"	"	"	"	"	
Trichloroethene	2200	18	"	"	"	"	"	"	
Tetrachloroethene	48	15	"	"	"	"	"	"	

<i>Surrogate: Dibromofluoromethane</i>		101 %		75-125		"	"	"	"
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %		75-125		"	"	"	"
<i>Surrogate: Toluene-d8</i>		112 %		75-125		"	"	"	"
<i>Surrogate: 4-Bromofluorobenzene</i>		107 %		75-125		"	"	"	"

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Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Volatile Organic Compounds by 8260SV

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
DUP-01 (E403062-04) Vapor Sampled: 07-Mar-14 Received: 13-Mar-14									
Vinyl chloride	ND	19	ppbv	0.05	EC41706	14-Mar-14	14-Mar-14	H&P 8260 SV	
trans-1,2-Dichloroethene	ND	120	"	"	"	"	"	"	
1,1-Dichloroethane	ND	120	"	"	"	"	"	"	
1,1-Dichloroethene	ND	120	"	"	"	"	"	"	
cis-1,2-Dichloroethene	210	120	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	91	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	24	"	"	"	"	"	"	
Trichloroethene	390	18	"	"	"	"	"	"	
Tetrachloroethene	ND	15	"	"	"	"	"	"	
<hr/>									
<i>Surrogate: Dibromofluoromethane</i>		94.1 %		75-125	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %		75-125	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		109 %		75-125	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %		75-125	"	"	"	"	

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Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EC41902 - TO-15

Blank (EC41902-BLK1)

Prepared & Analyzed: 18-Mar-14

Vinyl chloride	ND	1.0	ppbv							
1,1-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	2.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,2-Dichloroethane (EDC)	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							

Surrogate: 1,2-Dichloroethane-d4

46.3

"

50.2

92.2

76-134

Surrogate: Toluene-d8

49.3

"

49.8

99.0

78-125

LCS (EC41902-BS1)

Prepared & Analyzed: 18-Mar-14

Vinyl chloride	19	1.0	ppbv	20.1		93.0	70-130			
1,1-Dichloroethene	18	1.0	"	20.1		89.7	70-130			
trans-1,2-Dichloroethene	16	2.0	"	20.1		81.2	70-130			
1,1-Dichloroethane	18	1.0	"	20.1		89.1	70-130			
cis-1,2-Dichloroethene	17	1.0	"	19.9		87.5	70-130			
1,1,1-Trichloroethane	17	1.0	"	20.2		84.3	70-130			
1,2-Dichloroethane (EDC)	17	1.0	"	20.1		86.2	70-130			
Trichloroethene	17	1.0	"	20.1		82.4	70-130			
Tetrachloroethene	16	1.0	"	20.1		78.1	70-130			

Surrogate: 1,2-Dichloroethane-d4

47.3

"

50.2

94.2

76-134

Surrogate: Toluene-d8

50.3

"

49.8

101

78-125

LCS Dup (EC41902-BSD1)

Prepared & Analyzed: 18-Mar-14

Vinyl chloride	19	1.0	ppbv	20.1		96.4	70-130	3.53	25	
1,1-Dichloroethene	18	1.0	"	20.1		90.5	70-130	0.829	25	
trans-1,2-Dichloroethene	17	2.0	"	20.1		82.3	70-130	1.28	25	
1,1-Dichloroethane	18	1.0	"	20.1		88.6	70-130	0.617	25	
cis-1,2-Dichloroethene	18	1.0	"	19.9		88.7	70-130	1.37	25	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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Batch EC41902 - TO-15

LCS Dup (EC41902-BSD1)

Prepared & Analyzed: 18-Mar-14

1,1,1-Trichloroethane	17	1.0	ppbv	20.2		84.2 70-130	0.177	25	
1,2-Dichloroethane (EDC)	17	1.0	"	20.1		86.1 70-130	0.116	25	
Trichloroethene	16	1.0	"	20.1		81.5 70-130	1.21	25	
Tetrachloroethene	16	1.0	"	20.1		77.6 70-130	0.639	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>47.6</i>		<i>"</i>	<i>50.2</i>		<i>94.9 76-134</i>			
<i>Surrogate: Toluene-d8</i>	<i>50.0</i>		<i>"</i>	<i>49.8</i>		<i>100 78-125</i>			

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Volatile Organic Compounds by 8260SV - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EC41706 - EPA 5030

Blank (EC41706-BLK1)

Prepared & Analyzed: 14-Mar-14

Vinyl chloride	ND	19	ppbv							
trans-1,2-Dichloroethene	ND	120	"							
1,1-Dichloroethane	ND	120	"							
1,1-Dichloroethene	ND	120	"							
cis-1,2-Dichloroethene	ND	120	"							
1,1,1-Trichloroethane	ND	91	"							
1,2-Dichloroethane (EDC)	ND	24	"							
Trichloroethene	ND	18	"							
Tetrachloroethene	ND	15	"							
<i>Surrogate: Dibromofluoromethane</i>	549		"	539		102	75-125			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	625		"	585		107	75-125			
<i>Surrogate: Toluene-d8</i>	647		"	602		108	75-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	317		"	344		92.2	75-125			

LCS (EC41706-BS1)

Prepared & Analyzed: 14-Mar-14

Vinyl chloride	1640	19	ppbv	1930		85.3	70-130			
trans-1,2-Dichloroethene	1190	120	"	1240		96.1	70-130			
1,1-Dichloroethane	1170	120	"	1220		95.8	70-130			
1,1-Dichloroethene	1290	120	"	1240		104	70-130			
cis-1,2-Dichloroethene	1180	120	"	1240		95.3	70-130			
1,1,1-Trichloroethane	881	91	"	906		97.2	70-130			
1,2-Dichloroethane (EDC)	1270	24	"	1220		105	70-130			
Trichloroethene	890	18	"	917		97.0	70-130			
Tetrachloroethene	696	15	"	726		95.8	70-130			
<i>Surrogate: Dibromofluoromethane</i>	558		"	539		104	75-125			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	632		"	585		108	75-125			
<i>Surrogate: Toluene-d8</i>	663		"	602		110	75-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	352		"	344		102	75-125			

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC031314-11
Project Number: 187156.0001 Ph2 / TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
20-Mar-14 11:37

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A	1,3-Dichlorobenzene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A	Trichlorofluoromethane by EPA TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A	Naphthalene by H&P SOP TO-15/GC-MS
Dichlorotetrafluoroethane by EPA TO-14A	1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A	1,2-Dibromo-3-chloropropane by EPA TO-15
Benzene by EPA TO-15 & TO-14A	1,3-Butadiene by EPA TO-15
Chlorobenzene by EPA TO-15 & TO-14A	1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Ethyl benzene by EPA TO-15 & TO-14A	Carbon disulfide by EPA TO-15
Styrene by EPA TO-15 & TO-14A	1,4-Dioxane by EPA TO-15
Toluene by EPA TO-15 & TO-14A	
Total Xylenes by EPA TO-15	
1,1,1-Trichloroethane by EPA TO-15 & TO-14A	
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A	
1,1,2-Trichloroethane by EPA TO-15 & TO-14A	
1,1-Dichloroethane by EPA TO-15 & TO-14A	
1,1-Dichloroethene by EPA TO-15 & TO-14A	
1,2-Dichloroethane by EPA TO-15 & TO-14A	
1,2-Dichloropropane by EPA TO-15 & TO-14A	
Benzyl Chloride by EPA TO-15 & TO-14A	
Bromoform by EPA TO-15	
Bromomethane by EPA TO-15 & TO-14A	
Carbon tetrachloride by EPA TO-15 & TO-14A	
Chloroethane by EPA TO-15 & TO-14A	
Chloroform by EPA TO-15 & TO-14A	
Chloromethane by EPA TO-15 & TO-14A	
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A	
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A	
Methylene chloride by EPA TO -15 & TO-14A	
Tetrachloroethane by EPA TO-15 & TO-14A	
trans-1,2-Dichloroethene by EPA TO-15	
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A	
Trichloroethene by EPA TO-15 & TO-14A	
Vinyl chloride by EPA TO -15	
2-Butanone by EPA TO-15	
4-Methyl-2-Pentanone by EPA TO-15	
Hexane by EPA TO-15	
Methyl tert-butyl ether by EPA TO-15	
Vinyl acetate by EPA TO-15	

This certification applies to samples analyzed in summa canisters.

13 February 2015

Ms. Stacy Metz
TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108



H&P Project: TRC052214-10
Client Project: 187156.0001 Ph2 TPC On-Site SVE

Dear Ms. Stacy Metz:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 22-May-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, I certify that all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,



Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. is certified under the California ELAP, the National Environmental Laboratory Accreditation Conference (NELAC) and the Department of Defense Accreditation Programs.

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SVE- Exhaust	E405098-01	Vapor	19-May-14	22-May-14
SVE- B/W Vessels	E405098-02	Vapor	19-May-14	22-May-14
SVE- At Blower	E405098-03	Vapor	19-May-14	22-May-14

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

DETECTIONS SUMMARY

Sample ID: **SVE- Exhaust**

Laboratory ID: **E405098-01**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Vinyl chloride	1.5	1.0		ppbv	EPA TO-15	
trans-1,2-Dichloroethene	3.1	2.0		ppbv	EPA TO-15	
1,1-Dichloroethane	1.7	1.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	41	1.0		ppbv	EPA TO-15	
1,1,1-Trichloroethane	2.0	1.0		ppbv	EPA TO-15	
Trichloroethene	7.8	1.0		ppbv	EPA TO-15	

Sample ID: **SVE- B/W Vessels**

Laboratory ID: **E405098-02**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Vinyl chloride	1.5	1.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	3.8	1.0		ppbv	EPA TO-15	
Tetrachloroethene	2.4	1.0		ppbv	EPA TO-15	

Sample ID: **SVE- At Blower**

Laboratory ID: **E405098-03**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Vinyl chloride	1.2	1.0		ppbv	EPA TO-15	
trans-1,2-Dichloroethene	8.7	2.0		ppbv	EPA TO-15	
1,1-Dichloroethane	6.4	1.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	85	1.0		ppbv	EPA TO-15	
1,1,1-Trichloroethane	91	1.0		ppbv	EPA TO-15	
Trichloroethene	2600	5.0		ppbv	EPA TO-15	
Tetrachloroethene	39	1.0		ppbv	EPA TO-15	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
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SVE- Exhaust (E405098-01) Vapor Sampled: 19-May-14 Received: 22-May-14

Vinyl chloride	1.5	1.0	ppbv	1	EE42905	29-May-14	29-May-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	3.1	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	1.7	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	41	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	2.0	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	7.8	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4

93.5 % 76-134

"

"

"

"

"

Surrogate: Toluene-d8

97.1 % 78-125

"

"

"

"

"

Surrogate: 4-Bromofluorobenzene

93.5 % 77-127

"

"

"

"

"

SVE- B/W Vessels (E405098-02) Vapor Sampled: 19-May-14 Received: 22-May-14

Vinyl chloride	1.5	1.0	ppbv	1	EE42905	29-May-14	29-May-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	3.8	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	2.4	1.0	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4

92.4 % 76-134

"

"

"

"

"

Surrogate: Toluene-d8

97.7 % 78-125

"

"

"

"

"

Surrogate: 4-Bromofluorobenzene

94.9 % 77-127

"

"

"

"

"

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
SVE- At Blower (E405098-03) Vapor Sampled: 19-May-14 Received: 22-May-14									
Vinyl chloride	1.2	1.0	ppbv	1	EE42905	29-May-14	29-May-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	8.7	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	6.4	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	85	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	91	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	2600	5.0	"	5	"	"	"	"	
Tetrachloroethene	39	1.0	"	1	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		94.3 %		76-134	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.4 %		78-125	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.8 %		77-127	"	"	"	"	

TRC Environmental - MI
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Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EE42905 - TO-15

Blank (EE42905-BLK1)

Prepared & Analyzed: 29-May-14

Vinyl chloride	ND	1.0	ppbv							
1,1-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	2.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,2-Dichloroethane (EDC)	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	49.4		"	50.2		98.4	76-134			
<i>Surrogate: Toluene-d8</i>	48.8		"	49.8		98.0	78-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	47.1		"	50.2		93.7	77-127			

LCS (EE42905-BS1)

Prepared & Analyzed: 29-May-14

Vinyl chloride	11	1.0	ppbv	10.0		110	70-130			
1,1-Dichloroethene	11	1.0	"	10.0		111	70-130			
trans-1,2-Dichloroethene	11	2.0	"	10.0		106	70-130			
1,1-Dichloroethane	12	1.0	"	10.0		118	70-130			
cis-1,2-Dichloroethene	12	1.0	"	9.94		118	70-130			
1,1,1-Trichloroethane	11	1.0	"	10.1		113	70-130			
1,2-Dichloroethane (EDC)	11	1.0	"	10.0		113	70-130			
Trichloroethene	11	1.0	"	10.1		111	70-130			
Tetrachloroethene	11	1.0	"	10.1		108	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	48.4		"	50.2		96.4	76-134			
<i>Surrogate: Toluene-d8</i>	48.5		"	49.8		97.3	78-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	59.7		"	50.2		119	77-127			

LCS Dup (EE42905-BSD1)

Prepared & Analyzed: 29-May-14

Vinyl chloride	12	1.0	ppbv	10.0		121	70-130	9.83	25	
1,1-Dichloroethene	12	1.0	"	10.0		117	70-130	5.88	25	
trans-1,2-Dichloroethene	11	2.0	"	10.0		114	70-130	7.31	25	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EE42905 - TO-15

LCS Dup (EE42905-BSD1)

Prepared & Analyzed: 29-May-14

1,1-Dichloroethane	12	1.0	ppbv	10.0		122	70-130	3.91	25	
cis-1,2-Dichloroethene	12	1.0	"	9.94		120	70-130	2.11	25	
1,1,1-Trichloroethane	11	1.0	"	10.1		113	70-130	0.535	25	
1,2-Dichloroethane (EDC)	11	1.0	"	10.0		113	70-130	0.220	25	
Trichloroethene	11	1.0	"	10.1		112	70-130	0.928	25	
Tetrachloroethene	11	1.0	"	10.1		109	70-130	0.843	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>49.4</i>		<i>"</i>	<i>50.2</i>		<i>98.5</i>	<i>76-134</i>			
<i>Surrogate: Toluene-d8</i>	<i>49.0</i>		<i>"</i>	<i>49.8</i>		<i>98.3</i>	<i>78-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>60.2</i>		<i>"</i>	<i>50.2</i>		<i>120</i>	<i>77-127</i>			

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC052214-10
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
13-Feb-15 09:59

Notes and Definitions

LCC Leak Check Compound
ND Analyte NOT DETECTED at or above the reporting limit
MDL Method Detection Limit
%REC Percent Recovery
RPD Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory and Mobile Laboratory in accordance with the DoD-ELAP and the ISO 17025 programs, certification number L11-175.

H&P is approved by the State of Arizona as an Environmental Testing Laboratory and Mobile Laboratory, certification numbers AZM758 and AZ0779.

H&P is approved by the State of California as an Environmental Laboratory and Mobile Laboratory in conformance with the Environmental Laboratory Accreditation Program (ELAP) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste, certification numbers 2740, 2741, 2743, 2744, 2745, 2754 & 2930.

H&P is approved by the State of Florida Department of Health under the National Environmental Laboratory Accreditation Conference (NELAC) certification number E871100.

The complete list of stationary and mobile laboratory certifications along with the fields of testing (FOTs) and analyte lists are available at www.handpmg.com/about/certifications.

Lab Client and Project Information		
Lab Client/Consultant:	TRC Solutions	Project Name / #: 187156.0001 Ph2 TPC On-Site SVE
Lab Client Project Manager:	Stacy Metz	Project Location: Tecumseh, MI
Lab Client Address:	1540 Eisenhower PI	Report E-Mail(s): rsortor@trcsolutions.com
Lab Client City, State, Zip:	Ann Arbor, MI 48108	smetz@trcsolutions.com
Phone Number:	734-585-7825	
Reporting Requirements	Turnaround Time	Sampler Information
<input checked="" type="checkbox"/> Standard Report <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input checked="" type="checkbox"/> Excel EDD <input type="checkbox"/> Other EDD: _____ <input type="checkbox"/> CA Geotracker Global ID: _____	<input checked="" type="checkbox"/> 5-7 day Stnd <input type="checkbox"/> 24-Hr Rush <input type="checkbox"/> 3-day Rush <input type="checkbox"/> Mobile Lab <input type="checkbox"/> 48-Hr Rush <input type="checkbox"/> Other: _____	Sampler(s): <u>Stacy Metz</u> Signature: <u>[Signature]</u> Date: <u>5/19/2014</u>

Sample Receipt (Lab Use Only)	
Date Rec'd: <u>5/22/14</u>	Control #:
H&P Project # <u>TRC052214-10</u>	
Lab Work Order # <u>E 405298</u>	
Sample Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Notes Below	
Receipt Gauge ID: <u>11167</u>	Temp: <u>RT</u>
Outside Lab:	
Receipt Notes/Tracking #: <u>Fed Ex # 7700 4432 5110</u>	
Lab PM Initials: <u>WA</u>	

Additional Instructions to Laboratory:		Purchase Order #48596		Project Analyte List: PCE, TCE, 1,1-DCE, 1,2-cis-DCE, 1,2-trans-DCE, vinyl chloride, 1,1,1-TCA, 1,1-DCA, and 1,2-DCA (8260SV First, TO-15 if low level)		VOCs Standard Full List		VOCs Short List / Project List		Oxygenates		Naphthalene		TPHv as Gas		TPHv as Diesel (sorberent tube)		Aromatic/Aliphatic Fractions		Leak Check Compound		Methane by EPA 8015m		Fixed Gases by ASTM D1945		VOCs Per Additional Instructions	
<input checked="" type="checkbox"/> Check if Project Analyte List is Included: * Preferred VOC units (please choose one): <input type="checkbox"/> µg/L <input checked="" type="checkbox"/> µg/m ³ <input checked="" type="checkbox"/> ppbv <input type="checkbox"/> ppmv						<input checked="" type="checkbox"/> 8260SV <input checked="" type="checkbox"/> TO-15 <input checked="" type="checkbox"/> 8260SV <input checked="" type="checkbox"/> TO-15				<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15																	
SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac																				
SVE - Exhaust	NA	05/19/14	1439	SV	400mL	155	-9																				
SVE - B/w Vents	↓	↓	1442	↓	↓	370	-6																				
SVE - At Blower	↓	↓	1445	↓	↓	140	-1																				
Approved/Relinquished by:	<u>Stacy Metz</u>	Company:	<u>TRC</u>	Date:	<u>5/23/14</u>	Time:	<u>1045</u>	Received by:	<u>[Signature]</u>	Company:	<u>H&P</u>	Date:	<u>5/22/14</u>	Time:	<u>0945</u>												
Approved/Relinquished by:	<u>[Signature]</u>	Company:		Date:		Time:		Received by:	<u>[Signature]</u>	Company:	<u>H&P</u>	Date:		Time:													
Approved/Relinquished by:		Company:		Date:		Time:		Received by:		Company:		Date:		Time:													

*Approval constitutes as authorization to proceed with analysis and acceptance of conditions on back

05 August 2014



Ms. Stacy Metz
TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

H&P Project: TRC072214-14
Client Project: 187156.0001 Ph2 TPC On-Site SVE

Dear Ms. Stacy Metz:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 22-Jul-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,

A handwritten signature in black ink that reads "Janis Villarreal" followed by a small mark.

Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
P-Building SVE Exhaust	E407081-01	Vapor	14-Jul-14	22-Jul-14
P-Building b/w Vessels	E407081-02	Vapor	14-Jul-14	22-Jul-14
P-Building at Blower	E407081-03	Vapor	14-Jul-14	22-Jul-14

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
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P-Building SVE Exhaust (E407081-01) Vapor Sampled: 14-Jul-14 Received: 22-Jul-14

Vinyl chloride	ND	1.0	ppbv	1	EG43008	30-Jul-14	31-Jul-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	2.1	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	ND	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	31	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	1.9	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	1.8	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	97.2 %	76-134	"	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>	101 %	78-125	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	107 %	77-127	"	"	"	"	"	"	

P-Building b/w Vessels (E407081-02) Vapor Sampled: 14-Jul-14 Received: 22-Jul-14

Vinyl chloride	ND	1.0	ppbv	1	EG43008	30-Jul-14	31-Jul-14	EPA TO-15	
1,1-Dichloroethene	9.1	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	9.8	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	3.0	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	36	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	1.3	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	

<i>Surrogate: 1,2-Dichloroethane-d4</i>	101 %	76-134	"	"	"	"	"	"	
<i>Surrogate: Toluene-d8</i>	101 %	78-125	"	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	105 %	77-127	"	"	"	"	"	"	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
P-Building at Blower (E407081-03) Vapor Sampled: 14-Jul-14 Received: 22-Jul-14									
Vinyl chloride	ND	5.0	ppbv	5	EG43008	30-Jul-14	31-Jul-14	EPA TO-15	
1,1-Dichloroethene	ND	5.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	16	10	"	"	"	"	"	"	
1,1-Dichloroethane	7.3	5.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	80	5.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	150	5.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	5.0	"	"	"	"	"	"	
Trichloroethene	2300	5.0	"	"	"	"	"	"	
Tetrachloroethene	69	5.0	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		101 %		76-134	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %		78-125	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %		77-127	"	"	"	"	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EG43008 - TO-15

Blank (EG43008-BLK1)

Prepared & Analyzed: 30-Jul-14

Vinyl chloride	ND	1.0	ppbv							
1,1-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	2.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,2-Dichloroethane (EDC)	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>46.0</i>		<i>"</i>	<i>50.2</i>		<i>91.7</i>	<i>76-134</i>			
<i>Surrogate: Toluene-d8</i>	<i>50.8</i>		<i>"</i>	<i>49.8</i>		<i>102</i>	<i>78-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>54.3</i>		<i>"</i>	<i>50.2</i>		<i>108</i>	<i>77-127</i>			

LCS (EG43008-BS1)

Prepared & Analyzed: 30-Jul-14

Vinyl chloride	16	1.0	ppbv	20.1		81.4	70-130			
1,1-Dichloroethene	18	1.0	"	20.1		88.6	70-130			
trans-1,2-Dichloroethene	17	2.0	"	20.1		86.3	70-130			
1,1-Dichloroethane	19	1.0	"	20.1		95.0	70-130			
cis-1,2-Dichloroethene	20	1.0	"	19.9		102	70-130			
1,1,1-Trichloroethane	19	1.0	"	20.2		95.1	70-130			
1,2-Dichloroethane (EDC)	18	1.0	"	20.1		89.5	70-130			
Trichloroethene	18	1.0	"	20.1		89.0	70-130			
Tetrachloroethene	19	1.0	"	20.1		96.4	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>46.2</i>		<i>"</i>	<i>50.2</i>		<i>92.1</i>	<i>76-134</i>			
<i>Surrogate: Toluene-d8</i>	<i>50.8</i>		<i>"</i>	<i>49.8</i>		<i>102</i>	<i>78-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>56.0</i>		<i>"</i>	<i>50.2</i>		<i>111</i>	<i>77-127</i>			

LCS Dup (EG43008-BSD1)

Prepared & Analyzed: 30-Jul-14

Vinyl chloride	16	1.0	ppbv	20.1		82.0	70-130	0.793	25	
1,1-Dichloroethene	18	1.0	"	20.1		90.4	70-130	2.00	25	
trans-1,2-Dichloroethene	18	2.0	"	20.1		88.8	70-130	2.90	25	

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EG43008 - TO-15

LCS Dup (EG43008-BSD1)

Prepared & Analyzed: 30-Jul-14

1,1-Dichloroethane	19	1.0	ppbv	20.1		95.6	70-130	0.575	25	
cis-1,2-Dichloroethene	20	1.0	"	19.9		102	70-130	0.445	25	
1,1,1-Trichloroethane	19	1.0	"	20.2		94.6	70-130	0.628	25	
1,2-Dichloroethane (EDC)	18	1.0	"	20.1		89.4	70-130	0.0557	25	
Trichloroethene	18	1.0	"	20.1		88.6	70-130	0.448	25	
Tetrachloroethene	19	1.0	"	20.1		95.2	70-130	1.25	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>47.2</i>		<i>"</i>	<i>50.2</i>		<i>94.2</i>	<i>76-134</i>			
<i>Surrogate: Toluene-d8</i>	<i>51.6</i>		<i>"</i>	<i>49.8</i>		<i>103</i>	<i>78-125</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>55.5</i>		<i>"</i>	<i>50.2</i>		<i>110</i>	<i>77-127</i>			

TRC Environmental - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC072214-14
Project Number: 187156.0001 Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
05-Aug-14 11:24

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A
Dichlorotetrafluoroethane by EPA TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A
Benzene by EPA TO-15 & TO-14A
Chlorobenzene by EPA TO-15 & TO-14A
Ethyl benzene by EPA TO-15 & TO-14A
Styrene by EPA TO-15 & TO-14A
Toluene by EPA TO-15 & TO-14A
Total Xylenes by EPA TO-15
1,1,1-Trichloroethane by EPA TO-15 & TO-14A
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A
1,1,2-Trichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethane by EPA TO-15 & TO-14A
1,1-Dichloroethene by EPA TO-15 & TO-14A
1,2-Dichloroethane by EPA TO-15 & TO-14A
1,2-Dichloropropane by EPA TO-15 & TO-14A
Benzyl Chloride by EPA TO-15 & TO-14A
Bromoform by EPA TO-15
Bromomethane by EPA TO-15 & TO-14A
Carbon tetrachloride by EPA TO-15 & TO-14A
Chloroethane by EPA TO-15 & TO-14A
Chloroform by EPA TO-15 & TO-14A
Chloromethane by EPA TO-15 & TO-14A
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A
Methylene chloride by EPA TO -15 & TO-14A
Tetrachloroethane by EPA TO-15 & TO-14A
trans-1,2-Dichloroethene by EPA TO-15
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A
Trichloroethene by EPA TO-15 & TO-14A
Vinyl chloride by EPA TO -15
2-Butanone by EPA TO-15
4-Methyl-2-Pentanone by EPA TO-15
Hexane by EPA TO-15
Methyl tert-butyl ether by EPA TO-15
Vinyl acetate by EPA TO-15
1,3-Dichlorobenzene by EPA TO-15 & TO-14A
Trichlorofluoromethane by EPA TO-14A
Naphthalene by H&P SOP TO-15/GC-MS
1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,2-Dibromo-3-chloropropane by EPA TO-15
1,3-Butadiene by EPA TO-15
1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Carbon disulfide by EPA TO-15
1,4-Dioxane by EPA TO-15

This certification applies to samples analyzed in summa canisters.

Lab Client and Project Information	
Lab Client/Consultant: TRC Solutions	Project Name / #: 187156.0001 Ph2 TPC On-Site SVE
Lab Client Project Manager: Stacy Metz	Project Location: Tecumseh, MI
Lab Client Address: 1540 Eisenhower Pl	Report E-Mail(s): rsortor@trcsolutions.com
Lab Client City, State, Zip: Ann Arbor, MI 48108	smetz@trcsolutions.com
Phone Number: 734-585-7825	

Sample Receipt (Lab Use Only)	
Date Rec'd: <u>7/22/14</u>	Control #: <u>140505.01</u>
H&P Project # <u>TRC072214-14</u>	
Lab Work Order # <u>E407081</u>	
Sample Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Notes Below	
Receipt Gauge ID: <u>11167</u>	Temp: <u>R7</u>
Outside Lab: <u>11167^{JM}</u>	
Receipt Notes/Tracking #: <u>7706 1101 5274</u>	
Lab PM Initials: <u>SN</u>	

Reporting Requirements	Turnaround Time	Sampler Information
<input checked="" type="checkbox"/> Standard Report <input type="checkbox"/> Level III <input type="checkbox"/> Level IV	<input checked="" type="checkbox"/> 5-7 day Std <input type="checkbox"/> 24-Hr Rush	Sampler(s): <u>Stacy Metz</u>
<input checked="" type="checkbox"/> Excel EDD <input type="checkbox"/> Other EDD: _____	<input type="checkbox"/> 3-day Rush <input type="checkbox"/> Mobile Lab	Signature: <u>[Signature]</u>
<input type="checkbox"/> CA Geotracker Global ID: _____	<input type="checkbox"/> 48-Hr Rush <input type="checkbox"/> Other: _____	Date: <u>7/14/14</u>

Additional Instructions to Laboratory: <input checked="" type="checkbox"/> Check if Project Analyte List is Included: * Preferred VOC units (please choose one): <input type="checkbox"/> µg/L <input checked="" type="checkbox"/> µg/m ³ <input checked="" type="checkbox"/> ppbv <input type="checkbox"/> ppmv	Purchase Order #48596 Project Analyte List: PCE, TCE, 1,1-DCE, 1,2-cis-DCE, 1,2-trans-DCE, vinyl chloride, 1,1,1-TCA, 1,1-DCA, and 1,2-DCA (8260SV First, TO-15 if low level)
---	--

SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac	VOCs Standard Full List		VOCs Short List / Project List		Oxygenates	Naphthalene	TPHV as Gas	TPHV as Diesel (sorbent tube)	Aromatic/Aliphatic Fractions	Leak Check Compound	Methane by EPA 8015m	Fixed Gases by ASTM D1945	VOCs Per Additional Instructions	
								<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15													
P-Building SVE Exhaust	NA	07/14/14	1817	SV	1L	405	1.40														X
P-Building b/w Vessels	↓	↓	1821	↓	↓	187	2.09														X
P-Building At Blower	↓	↓	1824	↓	↓	417	1.22														X

Approved/Relinquished by: <u>Stacy Metz</u> <u>[Signature]</u>	Company: <u>TRC</u>	Date: <u>7/15/14</u>	Time: <u>1505</u>	Received by: <u>Fed Ex</u>	Company: <u>[Signature]</u>	Date: <u>7/15/14</u>	Time: <u>[Signature]</u>
Approved/Relinquished by: <u>[Signature]</u>	Company: <u>[Signature]</u>	Date: <u>7/22/14</u>	Time: <u>0800</u>	Received by: <u>JONES, JEROME</u>	Company: <u>[Signature]</u>	Date: <u>7/22/14</u>	Time: <u>0800</u>
Approved/Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

15 December 2014



Ms. Stacy Metz
TRC Solutions - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

H&P Project: TRC120814-11
Client Project: 187156.0001/ Ph2 TPC On-Site SVE

Dear Ms. Stacy Metz:

Enclosed is the analytical report for the above referenced project. The data herein applies to samples as received by H&P Mobile Geochemistry, Inc. on 08-Dec-14 which were analyzed in accordance with the attached Chain of Custody record(s).

The results for all sample analyses and required QA/QC analyses are presented in the following sections and summarized in the documents:

- Sample Summary
- Case Narrative (if applicable)
- Sample Results
- Quality Control Summary
- Notes and Definitions / Appendix
- Chain of Custody

Unless otherwise noted, all analyses were performed and reviewed in compliance with our Quality Systems Manual and Standard Operating Procedures. This report shall not be reproduced, except in full, without the written approval of H&P Mobile Geochemistry, Inc.

We at H&P Mobile Geochemistry, Inc. sincerely appreciate the opportunity to provide analytical services to you on this project. If you have any questions or concerns regarding this analytical report, please contact me at your convenience at 760-804-9678.

Sincerely,



Janis Villarreal
Laboratory Director

H&P Mobile Geochemistry, Inc. operates under CA Environmental Lab Accreditation Program Numbers 2579, 2740, 2741, 2742, 2743, 2745 and 2754. National Environmental Laboratory Accreditation Conference (NELAC) Standards Lab #11845

TRC Solutions - MI
1540 Eisenhower Place
Ann Arbor, MI 48108

Project: TRC120814-11
Project Number: 187156.0001/ Ph2 TPC On-Site SVE
Project Manager: Ms. Stacy Metz

Reported:
15-Dec-14 12:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
P-Building SVE-Exhaust	E412029-01	Vapor	04-Dec-14	08-Dec-14
P-Building SVE-B/W Vessels	E412029-02	Vapor	04-Dec-14	08-Dec-14
P-Building SVE-at Blower	E412029-03	Vapor	04-Dec-14	08-Dec-14

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DETECTIONS SUMMARY

Sample ID: **P-Building SVE-Exhaust**

Laboratory ID: **E412029-01**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
trans-1,2-Dichloroethene	29	2.0		ppbv	EPA TO-15	
1,1-Dichloroethane	28	1.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	460	1.0		ppbv	EPA TO-15	
1,1,1-Trichloroethane	17	1.0		ppbv	EPA TO-15	
Trichloroethene	1.3	1.0		ppbv	EPA TO-15	

Sample ID: **P-Building SVE-B/W Vessels**

Laboratory ID: **E412029-02**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
trans-1,2-Dichloroethene	4.9	4.0		ppbv	EPA TO-15	
1,1-Dichloroethane	4.5	2.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	35	2.0		ppbv	EPA TO-15	
1,1,1-Trichloroethane	49	2.0		ppbv	EPA TO-15	
Trichloroethene	910	5.0		ppbv	EPA TO-15	

Sample ID: **P-Building SVE-at Blower**

Laboratory ID: **E412029-03**

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
trans-1,2-Dichloroethene	12	4.0		ppbv	EPA TO-15	
1,1-Dichloroethane	11	2.0		ppbv	EPA TO-15	
cis-1,2-Dichloroethene	76	2.0		ppbv	EPA TO-15	
1,1,1-Trichloroethane	140	2.0		ppbv	EPA TO-15	
Trichloroethene	4100	10		ppbv	EPA TO-15	
Tetrachloroethene	44	2.0		ppbv	EPA TO-15	

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15-Dec-14 12:08

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
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P-Building SVE-Exhaust (E412029-01) Vapor Sampled: 04-Dec-14 Received: 08-Dec-14

Vinyl chloride	ND	1.0	ppbv	1	EL41106	11-Dec-14	11-Dec-14	EPA TO-15	
1,1-Dichloroethene	ND	1.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	29	2.0	"	"	"	"	"	"	
1,1-Dichloroethane	28	1.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	460	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	17	1.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	1.0	"	"	"	"	"	"	
Trichloroethene	1.3	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	1.0	"	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4 109 % 76-134 " " " "

Surrogate: Toluene-d8 107 % 78-125 " " " "

Surrogate: 4-Bromofluorobenzene 87.7 % 77-127 " " " "

P-Building SVE-B/W Vessels (E412029-02) Vapor Sampled: 04-Dec-14 Received: 08-Dec-14

Vinyl chloride	ND	2.0	ppbv	2	EL41106	11-Dec-14	11-Dec-14	EPA TO-15	
1,1-Dichloroethene	ND	2.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	4.9	4.0	"	"	"	"	"	"	
1,1-Dichloroethane	4.5	2.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	35	2.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	49	2.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	2.0	"	"	"	"	"	"	
Trichloroethene	910	5.0	"	5	"	"	12-Dec-14	"	
Tetrachloroethene	ND	2.0	"	2	"	"	11-Dec-14	"	

Surrogate: 1,2-Dichloroethane-d4 111 % 76-134 " " " "

Surrogate: Toluene-d8 111 % 78-125 " " " "

Surrogate: 4-Bromofluorobenzene 87.2 % 77-127 " " " "

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15-Dec-14 12:08

Volatile Organic Compounds by EPA TO-15

H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Dilution Factor	Batch	Prepared	Analyzed	Method	Notes
P-Building SVE-at Blower (E412029-03) Vapor Sampled: 04-Dec-14 Received: 08-Dec-14									
Vinyl chloride	ND	2.0	ppbv	2	EL41106	11-Dec-14	11-Dec-14	EPA TO-15	
1,1-Dichloroethene	ND	2.0	"	"	"	"	"	"	
trans-1,2-Dichloroethene	12	4.0	"	"	"	"	"	"	
1,1-Dichloroethane	11	2.0	"	"	"	"	"	"	
cis-1,2-Dichloroethene	76	2.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	140	2.0	"	"	"	"	"	"	
1,2-Dichloroethane (EDC)	ND	2.0	"	"	"	"	"	"	
Trichloroethene	4100	10	"	10	"	"	12-Dec-14	"	
Tetrachloroethene	44	2.0	"	2	"	"	11-Dec-14	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		110 %		76-134	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		110 %		78-125	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		83.2 %		77-127	"	"	"	"	

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Reported:
15-Dec-14 12:08

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EL41106 - TO-15

Blank (EL41106-BLK1)

Prepared & Analyzed: 11-Dec-14

Vinyl chloride	ND	1.0	ppbv							
1,1-Dichloroethene	ND	1.0	"							
trans-1,2-Dichloroethene	ND	2.0	"							
1,1-Dichloroethane	ND	1.0	"							
cis-1,2-Dichloroethene	ND	1.0	"							
1,1,1-Trichloroethane	ND	1.0	"							
1,2-Dichloroethane (EDC)	ND	1.0	"							
Trichloroethene	ND	1.0	"							
Tetrachloroethene	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	56.8		"	50.2		113	76-134			
<i>Surrogate: Toluene-d8</i>	53.7		"	49.8		108	78-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	44.2		"	50.2		88.0	77-127			

LCS (EL41106-BS1)

Prepared & Analyzed: 11-Dec-14

Vinyl chloride	17	1.0	ppbv	20.1		85.4	70-130			
1,1-Dichloroethene	20	1.0	"	20.1		99.8	70-130			
trans-1,2-Dichloroethene	20	2.0	"	20.1		98.1	70-130			
1,1-Dichloroethane	19	1.0	"	20.1		96.3	70-130			
cis-1,2-Dichloroethene	16	1.0	"	19.9		82.8	70-130			
1,1,1-Trichloroethane	17	1.0	"	20.2		85.1	70-130			
1,2-Dichloroethane (EDC)	18	1.0	"	20.1		87.3	70-130			
Trichloroethene	17	1.0	"	20.1		86.3	70-130			
Tetrachloroethene	15	1.0	"	20.1		75.4	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	55.1		"	50.2		110	76-134			
<i>Surrogate: Toluene-d8</i>	51.0		"	49.8		102	78-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	55.4		"	50.2		110	77-127			

LCS Dup (EL41106-BSD1)

Prepared & Analyzed: 11-Dec-14

Vinyl chloride	18	1.0	ppbv	20.1		91.1	70-130	6.50	25	
1,1-Dichloroethene	21	1.0	"	20.1		103	70-130	2.76	25	
trans-1,2-Dichloroethene	15	2.0	"	20.1		75.7	70-130	25.8	25	QR-02

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Reported:
15-Dec-14 12:08

Volatile Organic Compounds by EPA TO-15 - Quality Control
H&P Mobile Geochemistry, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EL41106 - TO-15

LCS Dup (EL41106-BSD1)

Prepared & Analyzed: 11-Dec-14

1,1-Dichloroethane	18	1.0	ppbv	20.1		91.7	70-130	4.88	25	
cis-1,2-Dichloroethene	17	1.0	"	19.9		83.5	70-130	0.907	25	
1,1,1-Trichloroethane	17	1.0	"	20.2		85.7	70-130	0.697	25	
1,2-Dichloroethane (EDC)	18	1.0	"	20.1		90.4	70-130	3.53	25	
Trichloroethene	18	1.0	"	20.1		88.7	70-130	2.67	25	
Tetrachloroethene	16	1.0	"	20.1		78.6	70-130	4.14	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	55.2		"	50.2		110	76-134			
<i>Surrogate: Toluene-d8</i>	51.5		"	49.8		103	78-125			
<i>Surrogate: 4-Bromofluorobenzene</i>	56.0		"	50.2		112	77-127			

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Notes and Definitions

- QR-02 The RPD result exceeded the QC control limits. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

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Appendix

H&P Mobile Geochemistry, Inc. is approved as an Environmental Testing Laboratory (Certification # L11-175) in accordance with the DoD-ELAP program. H&P is approved by the State of Arizona under Certification Numbers AZM758 and AZ0779. H&P is approved as an Environmental Laboratory in conformance with the Environmental Laboratory Accreditation Program (CA) for the category of Volatile and Semi-Volatile Organic Chemistry of Hazardous Waste for the following methods:

Certificate# 2741, 2743, 2579, 2754 & 2740 approved for EPA 8260 and LUFT GC/MS
Certificate# 2742, 2745, & 2741 approved for LUFT
Certificate# 2745 & 2742 approved for EPA 418.1

H&P Mobile Geochemistry, Inc. is approved as an Environmental Laboratory in conformance with the National Environmental Accreditation Conference Standards for the category Environmental Analysis Air and Emissions for the following analytes and methods:

Hexachlorobutadiene by EPA TO-15 & TO-14A	1,3-Dichlorobenzene by EPA TO-15 & TO-14A
1,2,4-Trichlorobenzene by EPA TO-15 & TO-14A	Trichlorofluoromethane by EPA TO-14A
1,2-Dichlorobenzene by EPA TO-15 & TO-14A	Naphthalene by H&P SOP TO-15/GC-MS
Dichlorotetrafluoroethane by EPA TO-14A	1,2-Dibromoethane (EDB) by EPA TO-15 & TO-14A
1,4-Dichlorobenzene by EPA TO-15 & TO-14A	1,2-Dibromo-3-chloropropane by EPA TO-15
Benzene by EPA TO-15 & TO-14A	1,3-Butadiene by EPA TO-15
Chlorobenzene by EPA TO-15 & TO-14A	1,1,2-Trichlorotrifluoroethane by EPA TO-14A
Ethyl benzene by EPA TO-15 & TO-14A	Carbon disulfide by EPA TO-15
Styrene by EPA TO-15 & TO-14A	1,4-Dioxane by EPA TO-15
Toluene by EPA TO-15 & TO-14A	
Total Xylenes by EPA TO-15	
1,1,1-Trichloroethane by EPA TO-15 & TO-14A	
1,1,2,2-Tetrachloroethane by EPA TO-15 & TO-14A	
1,1,2-Trichloroethane by EPA TO-15 & TO-14A	
1,1-Dichloroethane by EPA TO-15 & TO-14A	
1,1-Dichloroethene by EPA TO-15 & TO-14A	
1,2-Dichloroethane by EPA TO-15 & TO-14A	
1,2-Dichloropropane by EPA TO-15 & TO-14A	
Benzyl Chloride by EPA TO-15 & TO-14A	
Bromoform by EPA TO-15	
Bromomethane by EPA TO-15 & TO-14A	
Carbon tetrachloride by EPA TO-15 & TO-14A	
Chloroethane by EPA TO-15 & TO-14A	
Chloroform by EPA TO-15 & TO-14A	
Chloromethane by EPA TO-15 & TO-14A	
cis-1,2-Dichloroethene by EPA TO-15 & TO-14A	
cis-1,3-Dichloropropene by EPA TO-15 & TO-14A	
Methylene chloride by EPA TO -15 & TO-14A	
Tetrachloroethane by EPA TO-15 & TO-14A	
trans-1,2-Dichloroethene by EPA TO-15	
trans-1,3-Dichloropropene by EPA TO-15 & TO-14A	
Trichloroethene by EPA TO-15 & TO-14A	
Vinyl chloride by EPA TO -15	
2-Butanone by EPA TO-15	
4-Methyl-2-Pentanone by EPA TO-15	
Hexane by EPA TO-15	
Methyl tert-butyl ether by EPA TO-15	
Vinyl acetate by EPA TO-15	

This certification applies to samples analyzed in summa canisters.

Lab Client and Project Information		
Lab Client/Consultant:	TRC Solutions	Project Name / #: 187156.0001 Ph2 TPC On-Site SVE
Lab Client Project Manager:	Stacy Metz	Project Location: Tecumseh, MI
Lab Client Address:	1540 Eisenhower Pl	Report E-Mail(s): rsortor@trcsolutions.com
Lab Client City, State, Zip:	Ann Arbor, MI 48108	smetz@trcsolutions.com
Phone Number:	734-585-7825	
Reporting Requirements	Turnaround Time	Sampler Information
<input checked="" type="checkbox"/> Standard Report <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input checked="" type="checkbox"/> Excel EDD <input type="checkbox"/> Other EDD: _____ <input type="checkbox"/> CA Geotracker Global ID: _____	<input checked="" type="checkbox"/> 5-7 day Stnd <input type="checkbox"/> 24-Hr Rush <input type="checkbox"/> 3-day Rush <input type="checkbox"/> Mobile Lab <input type="checkbox"/> 48-Hr Rush <input type="checkbox"/> Other: _____	Sampler(s): S. Metz Signature: <i>[Signature]</i> Date: 12/4/14

Sample Receipt (Lab Use Only)	
Date Rec'd: 12/8	Control #: 140855.01
H&P Project # TRC20814-11	
Lab Work Order # E412029	
Sample Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Notes Below	
Receipt Gauge ID: 11167	Temp: 21
Outside Lab:	
Receipt Notes/Tracking #: 7721 1676 500	
Lab PM Initials: SN	

Additional Instructions to Laboratory:		Purchase Order #48596		Project Analyte List: PCE, TCE, 1,1-DCE, 1,2-cis-DCE, 1,2-trans-DCE, vinyl chloride, 1,1,1-TCA, 1,1-DCA, and 1,2-DCA (8260SV First, TO-15 if low level)		VOCs Standard Full List		VOCs Short List / Project List		Oxygenates		Naphthalene		TPHv as Gas		TPHv as Diesel (sorber tube)		Aromatic/Aliphatic Fractions		Leak Check Compound		Methane by EPA 8015m		Fixed Gases by ASTM D1945		VOCs Per Additional Instructions					
<input checked="" type="checkbox"/> Check if Project Analyte List is Included: * Preferred VOC units (please choose one): <input type="checkbox"/> µg/L <input checked="" type="checkbox"/> µg/m ³ <input checked="" type="checkbox"/> ppbv <input type="checkbox"/> ppmv						<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 <input type="checkbox"/> 8260SV <input type="checkbox"/> TO-15		<input checked="" type="checkbox"/> 8260SV <input type="checkbox"/> TO-15 *see notes			
SAMPLE NAME	FIELD POINT NAME (if applicable)	DATE mm/dd/yy	TIME 24hr clock	SAMPLE TYPE Indoor Air (IA), Ambient Air (AA), Subslab (SS), Soil Vapor (SV)	CONTAINER SIZE & TYPE 400mL/1L/6L Summa or Tedlar or Tube	CONTAINER ID (###)	Lab use only: Receipt Vac																								
P-Building SVE - Exhaust	NA	12/04/14	1541	SV	1L	200	1.50																		X						
P-Building SVE - b/w Vessels	↓	↓	1549	↓	↓	198	1.13																		X						
P-Building SVE - at Blower	↓	↓	1552	↓	↓	177	1.96																		X						
																									SN 12/18/14						
Approved/Relinquished by: Stacy Metz		Company: TRC	Date: 12/5/14	Time: 1456	Received by: Fed Ex		Company:	Date: 12/5/14	Time:																						
Approved/Relinquished by: <i>[Signature]</i>		Company:	Date:	Time:	Received by: <i>[Signature]</i>		Company: H&P	Date: 12/8/14	Time: 1100																						
Approved/Relinquished by:		Company:	Date:	Time:	Received by:		Company:	Date:	Time:																						