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REMEDIATION SYSTEM RESTART REPORT

January 2017 through December 2018

Phillips 66 Facility No. 255353 (AOC 1396)
600 Westlake Avenue North
Seattle, Washington 98107
Washington State Department of Ecology Facility ID: 46445373
Washington State Department of Ecology Voluntary Cleanup Program No. NW1714
ATC PROJECT NO. Z076000073

Submitted to:
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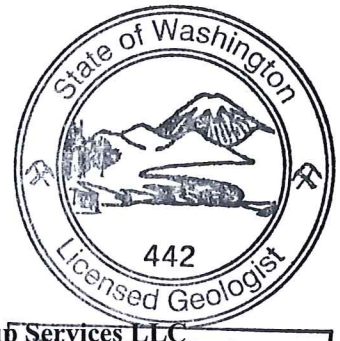

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1.0 INTRODUCTION AND REMEDIATION HISTORY

ATC Group Services LLC (ATC) has prepared this report on behalf of Phillips 66 Company (P66) to document the results of the soil vapor extraction (SVE) and air-sparge (AS) remediation system repair and re-start activities, operation and maintenance, and winterization activities that occurred at former Phillips 66 Facility No. 255353 (AOC 1396) during 2017 and 2018. The former facility address is 600 Westlake Avenue North, Seattle, Washington. P66 is conducting investigation, cleanup, and monitoring of the former P66 facility (located on the south half of City Block 37) and those properties on or around Block #37 bounded by Westlake Avenue North, Valley Street, Terry Avenue North, and Mercer Street (herein referenced as the Site). P66 is conducting the investigation, cleanup, and monitoring pursuant to a Settlement and Remedial Action Agreement (Settlement Agreement) among ConocoPhillips (now P66), Union Oil Company of California, City Investors XI, LLC (City Investors), and the City of Seattle (City) that was executed in April 2007.

The SVE system consists of two blowers that are capable of extracting soil vapors from a total of 36 vertical wells (19 in Mercer Street, 17 in Terry Avenue) and 16 horizontal wells (7 in Valley Street, 9 in Westlake Avenue). The air sparge (AS) system is capable of supplying compressed air to a total of 62 AS wells (27 in Mercer Street, 14 in Valley Street, 21 in Westlake Avenue). The SVE blowers discharge vapors to an off-gas treatment system that uses granular activated carbon (GAC) to reduce air emissions to permitted levels (under Puget Sound Clean Air Agency [PSSCA] permit Registration No. 29548). Recovered water from the SVE moisture separators is also treated with GAC before discharging to the King County sewer system (under Discharge Authorization No. 4262-02, expiration: 6/18/2019). The SVE/AS system equipment summary and SVE/AS well identification are presented in **Table 1**.

The Site is shown relative to surrounding physical features in **Figure 1**. The current layout of the Site and locations of the SVE and AS wells are shown on **Figure 2**. The current layout of the SVE/AS system is shown on **Figure 3**.

2.0 SYSTEM WINTER MAINTENANCE

Several site visits were conducted between January 1 and August 29, 2017 in order to inspect and maintain system components while the system remained winterized. Previous system winterization was completed on December 16, 2016 and is discussed in ATC's *System Restart Report – Third and Fourth Quarter 2016.* A summary of the winter maintenance site visits is presented below:

March 3, 2017 – ATC performed the following maintenance
- Manually rotated the liquid transfer pumps P-5501, P-501, P-401
- Manually rotated the AS compressor motor C-2201

April 26, 2017 – ATC performed the following maintenance
- Manually rotated the liquid transfer pumps P-5501, P-501, P-401
- Manually rotated the AS compressor motor C-2201
- Reinstalled sump pump in the sump pit at southwest corner of containment pad.

3.0 SYSTEM RE-START AND OPERATION SUMMARY

Several site visits were conducted that included preparing the system for re-start, monitoring and optimizing its performance, and performing routine system operation and maintenance. A summary of the site visits conducted from August 28, 2017 to December 7, 2019, is presented below:

System Inspection, Repairs and Re-Start Activities (August 28, 2017 through November 29, 2017)

Multiple visits were made to the site in order to perform the necessary repairs and maintenance to the SVE/AS system in preparation for system re-start. The following visits and tasks were completed during the period from August 28, 2017 through November 19, 2017.

August 28, 2017 – ATC performed the following system restart preparation activities:
- Filled the liquid carbon vessels with H20
- Reconnected carbon vessels to system hoses.
- Performed review of system components

August 29, 2017 – ATC performed the following system restart preparation activities:
- Attempted to manually rotate B-701 and B-801 blowers, but blowers were seized
- Dismantled blowers B-701 and B-801 in order to have the blowers serviced
- Performed temporary (bump) operation of the AS system. Found that the compressor will not run in auto mode but will run in manual mode.
- Inspected solenoid valve conditions on the AS manifold.

August 30, 2017 – ATC performed the following system maintenance and restart preparation activities:
- Cleaned out separation tank (scrubbed interior and vacuumed out solids/liquids).
- Dismantled dilution air filter assembly of blowers B-701 and B-801 and lubricated blower lobes (seized) with oil
- Attempted manual rotation of blowers but was unsuccessful
- Changed gear oil of AS compressor

November 14, 2017 – ATC subcontracted Beckwith and Kuffel to performed the following system repair activities

- Removed the seized blowers B-701 and B-801 and replaced them with new units
- Reinstalled threaded interfaces between new blowers and system components
- Filled gear boxes of new blowers with oil

November 28, 2017 – ATC performed the following system repairs and restart preparation activities

- Reinstalled unistrut stands of B-701 and B-801 SVE skids
- Reconnected piping to B-701 and B-801 blowers
- Reinstalled auto lubricators on B-701 and B-801 blowers

November 29, 2017 – ATC performed the following system repairs and restart activities

- Installed motor sheaves on B-701 and B-801 blowers
- Aligned blowers with motors and installed belts on B-701 and B-801 blowers
- Reconnected electrical components on B-701 and B-801 blowers
- Restarted system:
  - SVE system running properly.
  - AS compressor operating but requires troubleshooting maintenance (oil discharged from pressure relief valve on AS skid)
- Performed system monitoring (see below)
- SVE system on at departure from site / AS off at departure from site.

- **O&M:**
  A partial O&M event was conducted during the November 29, 2017 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system; collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801); and collection of vacuum, velocity and vapor data from well headers of the SVE system manifold.

November 30, 2017 – ATC performed the following system repairs and restart activities:

- Troubleshooting AS compressor operation.
- Refilled liquid phase carbon vessel B with tap water and closed discharge piping valve (vessel had lost water through syphoning to sewer discharge point).

December 6, 2017 – ATC performed system repairs and restart activities as well as limited operation and maintenance activities as follows:

- SVE system on upon arrival to site/ AS system off upon arrival to site.
- Cleaned out storm sewer catch basin inside remediation system compound (obscured with weeds/soil/debris).
- Performed system monitoring (see below).
- Performed oil change on the AS compressor.
- Attempting to troubleshoot operation of AS system. (AS cooling fan operations but the compressor will not turn on).
- SVE system on at departure from site / AS off at departure from site.

- **O&M:**
  A partial O&M event was conducted during the December 6, 2017 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and

flowrate vapor data from the vapor phase treatment system; collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801); and collection of vacuum, velocity and vapor data from well headers of the SVE system manifold (Note: vapor data collected from select wells).

December 14, 2017 – ATC performed the following system repairs and restart activities.

- SVE system on upon arrival to site/ AS system off upon arrival to site.
- System shut down and locked-out/tagged-out.
- Replaced internal components of rotameter for well W1 on AS manifold
- Determined that system logic programming may require diagnosis in order for AS compressor to run normally.
- SVE system on at departure from site / AS off at departure from site.

December 20, 2017 – ATC performed system repairs and restart activities as well as limited operation and maintenance activities as follows:

- System (SVE and AS) was off upon arrival to site. Alarm present on display.
- Restarted System (Successfully restarted SVE system, but AS compressor will not turn on).
- Pumped water accumulated in sump pit to the system separation tank.
- Adjusted water filters/reset filter gaskets (slight leaks observed).
- Performed system monitoring event (see below).

- **O&M:**
  A partial O&M event was conducted during the December 20, 2017 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system; collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801); and collection of vacuum, velocity and vapor data from well headers of the SVE system manifold.

February 27, 2018 ATC performed the following system maintenance activities:

- System was off upon arrival to site.
- Manually rotated the liquid transfer pumps P-5501, P-501, P-401
- Manually rotated the AS compressor motor C-2201 and noted that the motor turns with significant resistance.
- Noted that a section of PVC piping between the vapor liquid separator VLS-201 and the system separation tank had been broken.

March 27, 2018 ATC performed the following system repair and maintenance activities:

- System was off upon arrival to site.
- Repaired the broken section of PVC piping between the vapor liquid separator VLS-201 and the system separation tank.
- Manually rotated the liquid transfer pumps P-5501, P-501, P-401.
- Manually rotated the AS compressor motor C-2201 and noted that the motor turns with significant resistance.

April 18, 2018 ATC performed the following system repair and maintenance activities:

- System was off upon arrival to site.
- Manually rotated the liquid transfer pumps P-5501, P-501, P-401.
- Manually rotated the AS compressor motor C-2201 Manually rotated the liquid transfer pumps P-5501, P-501, P-401.

- Noted that the control panel touchscreen display was not functioning.
- Performed over-the-phone troubleshooting of display with vendor (Newterra) and diagnosed that the display would need to be removed and shipped to vendor for servicing.
- Removed touchscreen display module.

July 13, 2018 ATC visited the site with Valley Electric to make an assessment of system electrical component status and estimate costs to perform troubleshooting and repairs to panel:

- System was off upon arrival to site.
- Valley electric performed review of electrical components.
- ATC performed review of system condition.

July 27, 2018 – ATC performed the following system repair and restart activities.

- System was off upon arrival to site.
- Confirmed that electrical panel was energizing system display
- Attempted restart of SVE / AS systems but equipment would not turn on/blowers would not rotate.
- Identified that blowers B-701 and B-801 were seized. Blower electrical motors appeared in good condition and the electrical motor shafts rotated freely.
- Attempted manual rotation of blowers but was unsuccessful.

August 8, 2018 – ATC performed the following system repair and restart activities.

- System was off upon arrival to the site.
- Disassembled blowers B-701 and B-801 (removed belt cages, removed auto oiler connections, removed piping/flange connections)
- Applied lubricant to blower lobes and freed seized lobes via manual rotation
- Began reassembly of blower components/connections

August 9, 2018 – ATC performed the following system repair and restart activities.

- System was off upon arrival to the site.
- Completed reassembly of blower components/connections.
- Successfully restarted SVE system / blowers running in auto mode.
- Greased blowers and checked belt tension.
- Attempted restart of AS system but was unsuccessful.
- Restarted SVE system.

August 10, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- Attempted restart of AS system but was unsuccessful.
- Performed troubleshooting of AS compressor and identified that AS motor was receiving power, but would not turn on/rotate.
- Locked out/tagged out AS system.
- Removed electrical wiring to AS motor, disconnected compressor from system piping and partially disconnected motor from compressor in preparation for service by subcontractor.
- Performed partial system monitoring event (see below).

- **O&M:**
  A partial O&M event was conducted during the August 10, 2018 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and

flowrate vapor data from the vapor phase treatment system; and collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801).

August 16, 2018 – ATC performed partial system monitoring activities. The SVE system was on upon arrival. The AS system was off (down for planned servicing):

- **O&M:**
  A partial O&M event was conducted on August 16, 2018 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system; and collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801).

August 22, 2018 – ATC subcontracted Beckwith and Kuffel and the following system repair and restart activities were performed.

- SVE system was on upon arrival / AS system was off
- SVE system turned off and system locked out for inspection of AS system.
- Beckwith and Kuffel removed AS compressor from AS motor
- Beckwith and Kuffel confirmed that the AS compressor was seized (corrosion on internal parts), but AS motor appeared in good order.
- AS compressor left on skid, disconnected. (Beckwith and Kuffel will return to site to remove compressor and perform further evaluation at their shop).
- ATC restarted SVE system.
- ATC performed partial system monitoring event (see below).

- **O&M:**
  A partial O&M event was conducted during the August 22, 2018 site visit which involved the following activities: Collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system.

September 12, 2018 – ATC performed system operation and maintenance activities as described below.

- The SVE system was off upon arrival (alarms present on system control panel). The AS system was off (down for servicing).
- ATC cleared alarms present on system control panel and restarted the SVE system.

- **O&M:**
  A partial O&M event was conducted on September 12, 2018, which involved the following activities: Collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system.

September 25, 2018 – ATC subcontracted Beckwith and Kuffel and the following system repair and restart activities were performed.

- SVE system was on upon arrival / AS system was off
- SVE system turned off and system panel breaker turned off and locked out/tagged out for installation of new AS compressor.
- Beckwith and Kuffel removed existing/seized AS compressor unit
- Beckwith and Kuffel attempted installation of new AS compressor unit, but found that threads were stripped on compressor oil plug (Plug had been temporarily removed in order to mount legs to base of compressor).

- Beckwith and Kuffel discontinued installation of new AS compressor and left site with new compressor unit repair oil plug threads.
- ATC removed lockout-tagout (LOTO) from system panel breaker, re-energized system and restarted SVE system. (Note: AS system is still locked out/tagged out).

October 5, 2018 – ATC subcontracted Beckwith and Kuffel and the following system repair and restart activities were performed.

- SVE system was on upon arrival / AS system was off.
- SVE system shut down (system panel breaker turned off and locked out/tagged out).
- Beckwith and Kuffel installed new AS compressor unit (reconnected to motor, reconnected piping and electrical connections).
- ATC/Beckwith and Kuffel attempted system restart. SVE system running normally, but cannot start AS system in "auto" mode. AS cooling fan and compressor will operate in manual "hand" mode.
- At departure from site, SVE system left on and AS system turned off.

October 12, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- Performed troubleshooting of AS system operation, but was unsuccessful at restarting system in "auto" mode. AS system will operate in manual mode for approximately one to two minutes and then automatically shuts off.
- Determined that problem is most-likely a programming issue.
- Noted squeaking from B-701 belt cage area.
- Shut down SVE system and LOTO main panel breaker to inspect B-701 belt.
- Removed B-701 belt cage and determined that belt was worn /belt alignment was slightly off.
- Attempted to adjust position of B-701 motor to align belt, but identified that adjustment bolts in the base mount of the B-701 motor were not functioning.
- ATC reinstalled B-701 belt cage, removed LOTO from panel breaker and restarted SVE system.
- At departure from site, SVE system left on and AS system turned off.

October 24, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- ATC performed rotation of AS compressor by running it in manual mode.

October 30, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- Took measurements and photographs of B-701 motor base mount to order a replacement mount assembly.

November 1, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- ATC performed short term rotation of AS compressor by running it in manual, "hand" mode

November 7, 2018 – ATC performed the following system repair and restart activities.

- SVE system was on upon arrival / AS system was off.
- Successfully performed troubleshooting of AS system operation (programming errors which would not allow well valves to open).
- Turned AS system on in auto mode. (SVE and AS systems on upon departure from site).

November 8, 2018 – ATC performed the following system repair and restart activities.

- SVE and AS systems were on upon arrival.
- Systems shut down and main panel breaker LOTO for replacement of B-701 motor mount.
- Removed B-701 belt cage, removed belt, unbolted B-701 motor from mount and unbolted mount from skid table and removed motor from skid table.
- Replaced B-701 motor mount, reinstalled motor bolted connections.
- Replaced B-701 belt and realigned by adjusting motor position.
- LOTO removed from panel and SVE/AS systems restarted.

November 16, 2018 – ATC performed system repairs and restart activities as well as limited operation and maintenance activities as follows:

- SVE and AS systems were on upon arrival.
- Observed that AS well W11 rotameter body was broken.
- Observed that pressure relief valve of AS system was activating.
- System shut down and panel breaker LOTO for replacement of W11 rotameter.
- Replaced W11 rotameter.
- Removed LOTO from panel breaker and restarted SVE/ AS systems.
- Performed system monitoring event (see below).
- Performed troubleshooting of AS pressure relief valve and identified that pressure relief valve was broken.
- Upon departure from site, the SVE system was running and AS system was turned off.

- **O&M:**
  A partial O&M event was conducted during the November 16, 2018 site visit which involved the following activities: Recording the totalizer reading for the liquid phase treatment system, recording SVE/AS system hour meter readings; collection of stack temperature, velocity and flowrate vapor data from the vapor phase treatment system; and collection of vacuum, temperature and pressure data from both SVE systems (B-701 and B-801).

November 21, 2018 – ATC performed system repairs and restart activities as follows:

- SVE system was running/ AS system was off upon arrival.
- System shut down and panel breaker LOTO for lubrication of system components and replacement of pressure relief valve on AS system.
- Added oil to SVE blowers B-701 and B-801 auto oiler reservoirs.
- Replaced AS system pressure relief valve.
- Removed LOTO from panel breaker and restarted SVE and AS systems.
- Tested AS operation as AS cycled through well field zones (AS bleed valve in 50% open position). Identified that AS pulse program Step #4 resulted in pressure relief valve activation and required bleed valve to be set to 75% open position to alleviate over-pressure.
- Reset AS pulse programming so that step #4 was not active and remaining steps would pulse for seven minutes (reduced from 10 minutes).
- Upon departure from site, the SVE and AS system were running.

November 28, 2018 – ATC performed system operation and maintenance activities as follows:

- SVE and AS systems were running upon arrival.
- Observed that storm sewer catch basin in compound was backed up, however the backed up storm water was not overflowing outside of system compound.

- **O&M:**
  During the November 28, 2018 site visit, the following O&M activities were conducted: Recorded the totalizer reading and SVE/AS system hour meter readings; collected stack temperature, velocity and flowrate vapor data from the SVE system; collected vacuum, temperature and pressure data from both SVE systems (B-701 and B-801); collected temperature and pressure data from the AS system. Collected influent, intermediate and effluent petroleum vapor readings from the vapor sampling ports SVE system using a PID; Collected PID readings from all SVE wells; Collected pressure and air flow measurements from all AS wells; Collected vapor samples from the discharge vapor sampling ports utilizing Tedlar bags and submitted them to PACE Analytical of Minneapolis, MN for analysis of total hydrocarbons (THC) as gasoline and benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method TO-15; Collected DA 4262-02 compliance sample from the discharge sampling port on second liquid phase carbon vessel. The sample submitted to PACE Analytical of Minneapolis, MN for analysis of BTEX by EPA Method 8260 and Nonpolar fat/oil/grease by method EPA 1664A TPH. The SVE/AS system remained operating upon departure.

December 7, 2018 – ATC performed system operation and maintenance activities as follows:

- SVE and AS systems were running upon arrival.
- Inspected storm sewer catch basin with GLY representatives and observed that catch basin was free of sediment/debris blockages.
- Added oil to AS compressor.

- **O&M:**
  During the December 7, 2018 site visit, the following O&M activities were conducted: Recorded the totalizer reading and SVE/AS system hour meter readings; collected stack temperature, velocity and flowrate vapor data from the SVE system; collected vacuum, temperature and pressure data from both SVE systems (B-701 and B-801); collected temperature and pressure data from the AS system. Collected influent, intermediate and effluent petroleum vapor readings from the vapor sampling ports SVE system using a PID; Collected PID readings from select SVE wells; Collected pressure and air flow measurements from all AS wells; The SVE/AS system remained operating upon departure.

3.0 DATA SUMMARY AND EVALUATION

Historical system performance data collected prior to the 2017 – 2018 activities is summarized in the following reports:

- Cardno, *Remediation Progress Report, First Quarter 2014, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, July 2, 2014.
- Cardno, *Remediation Progress Report, Second Quarter 2014, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, August 22, 2014.
- Cardno, *Remediation Progress Report, Third Quarter 2014, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, January 21, 2015.
- Cardno, *Remediation Progress Report, Fourth Quarter 2014, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, February 19, 2015.
- Cardno, *Remediation Progress Report, First Quarter 2015, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, May 22, 2015.
- ATC, *Remediation System Restart Report – Third and Fourth Quarter 2016, Phillips 66 Facility 255353, 600 Westlake Avenue North, Seattle, Washington 98107*, May 3, 2017.

Cumulative historical system operational and performance data collected prior to the August 2016 SVE/AS system re-start activities is provided in **Tables 1** through **5** of **Appendix A**.

RUNTIME EVALUATION: The cumulative runtimes for the AS and VE systems were approximately 68% and 80%, respectively, during this period. System runtime summaries for the AS and the SVE system are provided in **Tables 2** and **3**, respectively. System downtime during this reporting period was attributed to factors, including: seized and/or damaged equipment requiring maintenance and/or replacement and PLC issues which prevented the AS system from running in "Auto" mode.

GROUNDWATER DEPTH TO WATER AND FLOW DIRECTION EVALUATION:
2017 Monitoring Period - Depths to groundwater measured on December 12 and 13, 2017 (while system SVE operated) ranged from 10.82 feet below the top of well casing (TOC) in monitoring well SMW-3 to 21.15 feet below TOC in monitoring well MW-216. The inferred shallow groundwater flow direction is generally towards the northeast, at an average gradient of approximately 0.04 foot/foot.

2018 Monitoring Period - Depths to groundwater measured on June 13, 2018 (while system was off) ranged between 8.66 feet below TOC in monitoring well MWR-5 to 10.94 feet below TOC in monitoring well MWR-6. Depths to groundwater measured on January 1, 2019 (while system was off) ranged from 7.72 feet below TOC in monitoring well MWR-5 to 11.38 feet below TOC in monitoring well MW-217. The inferred shallow groundwater flow direction during both the June 2018 and January, 2019 monitoring events is generally towards the northeast, at an average gradient of approximately 0.04 foot/foot.

Historical groundwater data indicates that the pre-dominant groundwater flow direction is toward the north-northeast (toward South Lake Union located approximately 500 feet north of the Site). The depths to water and groundwater flow direction are likely influenced by the presence of native soil and fill materials on and off-site and the presence of subsurface hydrogeologic barriers installed during the remedial excavation activities completed in 2008. The elevation of the water surface in south Lake Union may also influence the direction of the groundwater flow beneath the site. A summary of the groundwater conditions measured during the 2017 monitoring period are summarized in ATC's *Groundwater Monitoring Report (2017 Annual Report)*, dated January 26, 2018. A summary of the groundwater conditions measured in the 2018 monitoring period are summarized in ATC's *Groundwater Monitoring Report (2018 Annual Report),* dated February 2, 2019.

GROUNDWATER DISSOLVED CONCENTRATION EVALUATION:
2017 Monitoring Period - Laboratory analytical results for groundwater samples collected on during the 2017 monitoring period indicate that gasoline-range hydrocarbons, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) were not detected above laboratory method reporting limits or were detected at concentrations less than the MTCA Method A cleanup levels in all of the samples submitted for analysis.

2018 Monitoring Period - Laboratory analytical results for groundwater samples collected During the 2018 monitoring period indicate that gasoline-range hydrocarbons, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) were not detected above laboratory method reporting limits or were detected at concentrations less than the MTCA Method A cleanup levels in the samples submitted for analysis, with the exception of gasoline-range hydrocarbons and benzene detected at concentration of 11,000 µg/L and 5.9 µg/L respectively in MWR-5 during the June, 2018 sampling event, gasoline-range hydrocarbons, benzene, ethylbenzene and total xylenes detected at concentrations of 43,000 µg/L, 20.9 µg/L, 1,180 µg/L, and 4,280 µg/L respectively in MWR-5, and gasoline-range hydrocarbons detected at a concentration of 1,230 µg/L in MW-45 during the January, 2019 sampling event. These analytical results are generally similar to historical analytical results. A summary of the groundwater analytical results collected from the wells on December 13, 14 and 16, 2016 are summarized in ATC's *Groundwater Monitoring Report (Fourth*

Quarter 2016), dated February 23, 2017. A summary of the groundwater analytical results collected during the 2017 and 2018 monitoring periods is presented in ATC's *Groundwater Monitoring Report (2017 Annual Report)*, dated January 26, 2018 and ATC's *Groundwater Monitoring Report (2018 Annual Report),* dated February 2, 2019.

INCIDENTAL GROUNDWATER / CONDENSATE RECOVERY: The SVE/AS system recovered less than 100 gallons of water during operation during the 2017 and 2018 operating periods. An effluent compliance sample per King County DA 4262-02 was collected on November 28, 2018. Sample port locations are shown on **Figure 3**. The sample was submitted to PACE Analytical of Minneapolis, MN for analysis of BTEX by EPA Method 8260 and Nonpolar fat, oil and grease by method EPA 1664A TPH. BTEX and fat, oil and grease were not detected above the laboratory's method reporting limits in the sample submitted for analysis, and the sample demonstrated compliance with DA 4261-02 limits. The analytical results and established discharge limits per DA 4262-02 are presented in **Table 4**. A copy of the analytical report is presented in **Appendix B**. Note no discharge from the system to the King County sewer system occurred during the 2017 – 2018 period. All accumulated incidental accumulated water is currently being stored within system vessels.

VAPOR AND OFFGAS ANALYTICAL AND TREATMENT EVALUATION: PSSCA compliance vapor samples were collected from the influent, intermediate, and effluent vapor sampling ports on each of the vapor phase carbon treatment trains, utilizing Tedlar bags on November 29, 2017. PSSCA compliance vapor samples were also collected from the effluent vapor sampling ports on each of the vapor phase carbon treatment trains on November 28, 2018. Vapor sample port locations are shown on **Figure 3**. The samples were submitted to PACE Analytical of Minneapolis, MN for analysis of gasoline-range hydrocarbons and BTEX by EPA Method TO-15. Copies of the laboratory analytical reports of the vapor samples are provided in **Appendix B**. (Note: The PSCAA permit specifies vapor concentrations as TPH, while the analytical laboratory reports Method TO-15 results as Total Hydrocarbon Concentration as gasoline [THCg]. For reporting purposes, TPH and THCg are assumed to be equivalent).

The vapor analytical results, the PID screening results, and the corresponding mass recovery and emissions rates for each of the three vapor trains are summarized in **Tables 5, 6** and **7**, respectively. The PSCAA permit specifies that a control efficiency of 97% must be demonstrated when total petroleum hydrocarbon (TPH) concentrations at the inlets to the granular activated carbon vessels are 200 ppmv or greater. As shown on **Tables 5**, **6** and **7**, TPH concentrations have never exceeded this threshold; therefore control efficiency is not reported.

Because readings used to calculate air flow were not collected during 2017, mass recovery rates and cumulative mass removal values were not calculated for this period.

Because vapor samples were not collected from the influent sampling ports of the vapor phase carbon treatment trains during 2018, mass recovery rates and cumulative mass removal values were not calculated for this period

ATC amended calculations for flow rate data previously generated for the 2016 operating period which were presented in the ATC *Remediation System Restart Report – Third and Fourth Quarter 2016.* The amended calculations yield higher flow rates which in turn yield slightly higher mass recovery rates and higher cumulative mass removed values. These changes are reflected in **Tables 3, 5, 6 and 7**. The previously reported total mass of hydrocarbons recovered by the SVE system as of May 3, 2017 was 3,091 lbs. After factoring the amended flow rate calculations, this value has been corrected to 3,126.6 lbs.

SVE PID AND AS FLOW RATE DATA: SVE PID measurements and AS flow rate data for this reporting period are provided in **Tables 8** and **9**, respectively.

4.0 2018 WINTERIZATION ACTIVITIES

On December 17, 2018, ATC visited the site to conduct winterization activities on the SVE/AS system. Upon arrival, the system (SVE and AS) was on. ATC shut down the system by turning off the main panel breaker and applied LOTO to the panel breaker. During the visit, ATC ensured that all SVE manifold valves were opened and the water from above the valve was allowed to drain back to the well and/or underground piping. The three water transfer pumps were run to convey all water stored in vapor liquid separator tanks and conveyance piping to the separation tank vessel. All water conveyance piping and hoses were detached at the cam lock fittings and hoses and piping were allowed to drain. The three water transfer pumps were drained by removing the plug on both the top of the pump head and the bottom. The plugs were stored in the onsite construction box. The AS compressor was covered with plastic sheeting to prevent water intrusion. The sump pump was removed from the sump pit, allowed to drain, placed in a plastic garbage bag and stored at the southwest corner of the compound. The two water filters and cartridge housings were removed. The filters and housings were placed in plastic garbage bags and stored in the onsite construction box. The remediation compound gate was secured and locked upon departure.

Beginning January 4, 2019. ATC commenced a program of bi-weekly site visits to inspect the system condition following winterization and perform short duration operation of the SVE blowers and AS compressor to keep equipment lubricated and prevent corrosion.

5.0 SYSTEM DECOMMISSIONING

The remediation system was decommissioned in April, 2019. A report documenting the removal of the system is forthcoming.

TABLES

TABLE 1
SVE/AS REMEDIATION SYSTEM SUMMARY

No. 4262-02, expiration: 6/18/2018).

Startup Date: 8/17/2016

Permits	Discharge of treated groundwater to King County sewer system under King County
(e.g. NPDES, consumptive use)	Disharge Authorization No. 4262-02, expires 6/18/2019. Discharge treated vapors
	to atmoshere under PSCCA permit Registration No. 29548.
Soil Vapor Extraction	
Mercer Street SVE Well ID's:	19 1-inch diameter vertical SVE wells to approximately 8 feet bgs, designated
	MSVE-1 through MSVE-19
Valley Street SVE Well ID's:	8 1-inch diameter horizontal SVE wells to approximately 8 feet bgs, designated
	VSVE-1 through VSVE-7, and VSVE-9
Terry Avenue North SVE Well ID's:	15 1-inch diameter vertical SVE wells (depths unknown), designated WA-1 through
	WC-3, V-1 through V-9, TSVE-1 through TSVE-8, TSVE-10 through TSVE-12,
	TEFR-1 Air, TEFR-2 Air, TMW-48 Air, and TMW-65 Air
Westlake Avenue North SVE Well ID's:	9 1-inch diameter horizontal SVE wells (depths unknown), designated
	WC1 through WC3, WB1 through WB3, and WA1 through WA3
Screen Interval	Not specified
Design Flow Rate	Total =~ 200 CFM @ 22" Hg; Legs = 30 CFM @ 12" Hg
Off Gas Treatment	Vapor-Phase Granular Activated Carbon
Other	Water from SVE moisture separators treated with Liquid Phase Granular Activated Carbon.
Air Sparging	
Mercer Street AS Well ID's:	27 1-inch diameter AS wells to approximately 21 feet bgs, designated
	MAS-1 through MAS-19
Valley Street AS Well ID's:	14 1-inch diameter AS wells to approximately 18 feet bgs, designated
	VAS-1 through VAS-14
Terry Avenue North AS Well ID's:	No AS wells in Terry Avenue North
Westlake Avenue North AS Well ID's:	21 1-inch diameter AS wells to approximately 25 feet bgs, designated
	AS-1 through AS-21
Screen Interval	Not specified
Design Flow Rate	Not specified
Equipment & Specifications	(2) 10HP Sutorbuilt 5L-RHC Blower, Newterra Vapor Liquid Separator - VLW Series
(i.e. tower, blower, flowmeter,	With Goulds Transfer Pump
pumps) Specify usage, type, mfg,	(6) (2 in-Series) (3 Trains in Parallel)- 1000 lbs Siemens Vent-Scrub- Vapor Phase Adsorbers
and design specifications.	220 Gallon Cylindrical Poly Tank with 1.5 HP Gould Transfer Pump
	(2) 1000 lbs. Siemens Aqua Scrub Liquid Phase Adsorbers (in Series)
	(1) Rietchle Rotary Claw Compressor 10 HP with American Industrial Heat Exchanger
Control Panel	Custom - Newterra
(Brand & List components)	Control panel Nema 4, 480 VAC, 3 phase 4 W, 100 amp service
Surge Protection (MFG & Type)	600V Lightning Arrestor Square D
Other	60"x 60"x 12" Double Door Encl with 3-Point Latch
Telemetry (Mfg)	Sensaphone Cell 682 Autodialer

SYSTEM REPAIR HISTORY	
11/22/2016	System shut down
12/16/2016	Winterized pumps, blowers, compressor, carbon vessels, and associated piping.
8/29/2017	Disconnect both blowers from the system for repair/replacement.
11/14/2017	Remove and replace both blowers (B-701 and B-801).
11/29/2017	Completed reinstallation of B701 and B801 blowers and restarted system (SVE/AS)
12/6/2017	Changed oil in compressor
12/14/2017	Replaced AS well W-1 rotameter
3/27/2018	Repaired the broken section of PVC piping between the vapor liquid separator VLS-201 and the system separation tank
4/18/2018	Removed touch screen display from panel for repairs
8/8/2018	Blowers B-701 and B-801 freed via manual rotation (had been seized).
8/9/2018	Blowers B-701 and B-801 restarted.
8/10/2018	Began dismantling AS for repairs (seized)
10/5/2018	Completed installation of new air-end compressor unit of AS system.
11/7/2018	Restarted AS system.
11/8/2018	Replaced blower B-701 base mount and belt and realigned B-701 blower with motor
11/16/2018	Replaced rotameter for AS well W11
11/21/2018	Replaced AS pressure relieif valve
12/17/2018	Winterized pumps, blowers, compressor, carbon vessels, and associated piping.

TABLE 2: AIR SPARGING PERFORMANCE SUMMARY

Process Status Code	Arrive	Depart
1	on	on
2	off	on
3	off	off
4	on	off

Facility Name: Former Phillips 66 Facility No. 255353 (AOC 1396) **Startup Date:** 8/17/2016
Ecology Facility ID: 46445373
Ecology VCP No: NW1714

Site Visit Date	Days Between Site Visits	Days Since Startup	AS Compressor		Hours of Operation Period	Total Hours of Operation Cumulative	Approved Down Time (hours)[1]	Percent Run Time (period)	Percent Run Time (cumulative)	Process Status
			Hour Meter Reading	Daily Designed Run Time (hours)						
08/17/16	0	0	10,372	24	0.0	0	Start Up	Start Up	Start Up	2
08/18/16	1	1	10,393	24	21.0	21.0	0	88%	88%	1
08/22/16	4	5	10,489	24	96.0	117.0	0	100%	98%	1
08/23/16	1	6	10,514	24	25.0	142.0	0	104%	99%	4
08/29/16	6	12	10,514	24	25.0	142.0	0	17%	49%	2
09/19/16	21	33	10,919	24	405.0	547.0	0	80%	69%	3
09/26/16	7	40	10,919	24	0.0	547.0	168	100%	74%	3
10/05/16	9	49	10,919	24	0.0	547.0	216	100%	79%	3
10/06/16	1	50	10,919	24	0.0	547.0	24	100%	80%	3
10/07/16	1	51	NM	24	--	--	24	--	--	3
10/12/16	5	56	NM	24	--	--	120	--	--	3
10/21/16	9	65	10,919	24	0.0	547.0	216	100%	84%	2
11/02/16	12	77	11,204	24	285.0	832.0	0	99%	87%	1
11/16/16	14	91	11,544	24	340.0	1172.0	0	101%	89%	1
11/22/16	6	97	11,684	24	140.0	1312.0	0	97%	89%	4
11/29/17	372	469	11,684	24	140.0	1312.0	6,720	77%	78%	3
12/06/17	7	476	11,684	24	0.0	1312.0	0	0%	77%	3
12/20/17	14	490	11,684	24	0.0	1312.0	0	0%	75%	3
12/29/17	9	499	11,684	24	0.0	1312.0	0	0%	73%	3
08/10/18	224	723	11,686	24	2.0	1314.0	4,440	83%	76%	3
08/16/18	6	729	11,686	24	0.0	1314.0	0	0%	76%	3
09/12/18	27	756	NM	24	0.0	1314.0	0	0%	73%	3
11/07/18	56	812	11,686	24	0.0	1314.0	0	0%	68%	2
11/16/18	9	821	11,871	24	185.0	1499.0	0	86%	68%	4
11/28/18	12	833	12,034	24	163.0	1662.0	0	57%	68%	1
12/07/18	9	842	12,251	24	217.0	1879.0	0	100%	68%	1

TABLE 3: SOIL VAPOR EXTRACTION PERFORMANCE SUMMARY

Process Status Code	Arrive	Depart
1	on	on
2	off	on
3	off	off
4	on	off

Facility Name: Former Phillips 66 Facility No. 255353 (AOC 1396)
Ecology Facility ID#: 46445373
Ecology VCP No: NW1714

Startup Date: 8/17/2016
Restart Date: 11/29/2017

Standard Temp = 80 °F Standard Pressure = 14.7 psi

								SVE Blower B-701							SVE Blower B-801						
Site Visit Date	Days Between Site Visits	Days Since Startup	Totalizer (gallons)	System Vacuum (manifold) "WC	System Velocity (ft/min)	System Flow Rate acfm	Corrected System Flow Rate scfm	Hour Meter Reading	Hours of Operation Period	Total Hrs Operation Cumulative	Approved Down Time (hours)	Percent Run Time (period)	Percent Run Time (cumulative)	Process Status	Hour Meter Reading	Hours of Operation Period	Total Hrs Operation Cumulative	Approved Down Time (hours)	Percent Run Time (period)	Percent Run Time (cumulative)	Process Status
08/17/16	0	0	82,300	5	1,829	143	120	10,238	0	0	--	0%	0%	2	9380		0	--	0%	0%	3
08/18/16	1	1	82,300	5	3,708	290	244	10,258	20.0	20.0	--	83%	100%	1	9401	21.0	21.0	--	88%	100%	2
08/22/16	4	5	82,300	5	4,048	316	266	10,354	96.0	116.0	--	100%	97%	1	9497	96.0	117.0	--	100%	98%	1
08/29/16	7	12	82,300	5	4,056	317	267	10,522	168.0	284.0	--	100%	99%	1	9664	167.0	284.0	--	99%	99%	2
09/19/16	21	33	82,300	NM	NM	NM	NM	10,929	407.0	691.0	--	81%	87%	3	10071	407.0	691.0	--	81%	87%	2
09/26/16	7	40	82,300	NM	NM	NM	NM	10,929	0.0	691.0	168	100%	89%	3	10071	0.0	691.0	168	100%	89%	1
10/05/16	9	49	82,300	NM	NM	NM	NM	10,929	0.0	691.0	216	100%	91%	2	10071	0.0	691.0	216	100%	91%	1
10/06/16	1	50	82,300	18	4,501	352	286.4	10,949	20.0	711.0	--	83%	91%	1	10092	21.0	712.0	--	88%	91%	1
10/07/16	1	51	82,300	NM	NM	NM	NM	NM	--	--	--	--	--	1	NM	--	--	--	--	--	1
10/12/16	5	56	82,300	NM	NM	NM	NM	NM	--	--	--	--	--	1	NM	--	--	--	--	--	1
10/21/16	9	65	82,372	34	3,359	262	205	11,310	361.0	1,072.0	--	100%	93%	1	10453	361.0	1,073.0	--	100%	93%	4
11/02/16	12	77	82,422	20	2,045	160	129	11,597	287.0	1,359.0	--	100%	94%	1	10454	1.0	1,074.0	288	100%	94%	3
11/16/16	14	91	82,629	20	2,561	200	162	11,936	339.0	1,698.0	--	100%	95%	1	10454	0.0	1,074.0	336	100%	95%	3
11/22/16	6	97	82,629	22	NM	NM	NM	12,076	140.0	1,838.0	--	97%	95%	4	10454	0.0	1,074.0	144	100%	96%	3
11/29/17	372	469	82,629	NM	NM	NM	NM	12,079	3.0	1,841.0	6,720	75%	79%	2	10457	3.0	1,077.0	6,720	75%	80%	2
12/06/17	7	476	82,629	NM	NM	NM	NM	12,240	161.0	2,002.0	--	96%	80%	1	10617	160.0	1,237.0	--	95%	80%	1
12/20/17	14	490	82,629	NM	NM	NM	NM	12,359	119.0	2,121.0	192	93%	80%	2	10735	118.0	1,355.0	192	92%	80%	2
12/29/17	9	499	82,629	NM	NM	NM	NM	--	--	--	--	--	--	4	--	--	--	--	--	--	4
08/10/18	224	723	82,629	NM	NM	NM	NM	12,593	--	--	4,440	--	--	1	10970	--	--	4,440	--	--	1
08/16/18	6	729	82,629	NM	NM	NM	NM	12,738	145.0	2,266.0	--	100%	80%	1	11115	145.0	1,500.0	--	100%	80%	1
09/12/18	27	756	NM	NM	NM	NM	NM	NM	NM	NM	--	--	--	2	NM	NM	NM	--	--	--	2
11/16/18	65	821	82,629	NM	NM	NM	NM	14,269	1,531.0	3,797	--	98%	79%	1	12718	1,603.0	3,103.0	--	103%	79%	1
11/28/18	12	833	82,629	NM	NM	NM	NM	14,553	284	4,081	--	99%	79%	1	13002	284.0	3,387.0	--	99%	79%	1
12/07/18	9	842	82,629	NM	NM	NM	NM	14,770	217	4,298	--	100%	79%	1	13218	216.0	3,603.0	--	100%	80%	1

NM = Not Measured

cfm = ft^3/min = velocity [ft/min] x pipe area [πr^2]; pipe size = 4 inch diameter

scfm = acfm X $((P^{st}-P^{g})/Pst)x(T^{st}/(T^{st}+T^{act})$

TABLE 4: LIQUID PHASE ANALYTICAL SUMMARY

Facility Name: **Former Phillips 66 Facility No. 255353 (AOC 1396)**
Facility Address: **600 Westlake Avenue North, Seattle, WA**
Ecology Facility ID#: **46445373**
Ecology VCP No: **NW1714**

Sample Location	Sample ID	Date	Benzene	Toluene	Ethyl benzene	Total Xylenes	TPH	Oil & Grease
W-INF-WS1	W-INF-WS1	11/16/16	< 1.0	< 1.0	< 1.0	< 3.0	< 100	NS
W-OUT-WC1	W-OUT-WS1	11/16/16	< 1.0	< 1.0	< 1.0	< 3.0	< 100	NS
W-DSCHG	W-DSCHG-1	11/16/16	< 1.0	< 1.0	< 1.0	< 3.0	< 100	< 5,100
W-DSCHG	W-DSCHG-2	11/16/16	NS	NS	NS	NS	NS	< 5,100
W-DSCHG	W-DSCHG-3	11/16/16	NS	NS	NS	NS	NS	< 5,100
W-DSCHG	W-DSCHG-1	11/28/18	<0.10	<0.083	<0.14	<0.31	NS	2.1 J
KCIW Permit Limits			70	1,400	1,700	2,200	NE	100,000

Notes:
All results reported in micrograms per liter (µg/L).

There are a total of two liquid phase carbon units plumbed in series to treat water. Sample W-INF-WS1 was collected from a sample port located prior to the first liquid phase carbon unit. Sample W-OUT-WC1 was collected from a sample port located between the first and second liquid phase carbon units. Samples W-DSCHG-1, W-DSCHG-2 and W-DSCHG-3 were collected in succession 5 minutes apart from the sample port located after the second (and final) liquid phase carbon unit . The sample port locations are shown on Figure 3.

Permit Limits Established in King County Industrial Waste (KCIW) Discharge Authorization No. 4262-01 (expires 6/30/2018).
NS = Not Sampled
NE = Not Established
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

TABLE 5: SVE ANALYTICAL SUMMARY
Vapor Train No. 1

Facility Name: Former Phillips 66 Facility No. 255353 (AOC 1396)
Facility Address: 600 Westlake Avenue North, Seattle, WA
Ecology Facility ID#: 46445373
Ecology VCP No: NW1714

If Non-Detect Use MDL "U"
Not Sampled = NS
Analytical Results = µg/m³

Standard Temp = 80 °F Standard Pressure = 14.7 psi

Sample Location	Sample ID	Date	Hour Meter	Flow Rate (scfm)	PID (ppm)	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total VOCs	THCg (ug/m³)	THCg[1] (ppmv)	Recovery Rate (Influent)/ Emission Rate (Effluent)[2] Rate (lb/day)	Cumulative Mass Recovered / Discharged[3] (lbs)
V-INF-1	Inf-1	08/17/16	10,238	120.2	NM	Not Sampled								
	Inf-1	08/18/16	10,258	243.8	14.2	13.1 U	31.1 U	35.6 U	107.0 U	**186.8**	**8,070**	1.91	0.18	0.15
	Inf-1	08/22/16	10,354	266.1	NM	1.4 U	**6.7**	1.8 U	**9.3**	**19.2**	**3,750**	0.89	0.09	0.51
	Inf-1	08/29/16	10,522	266.7	NM	26.20 U	**57.8**	35.6 U	107.0 U	**226.6**	**15,100**	3.58	0.36	3.04
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Inf-1	10/06/16	10,949	286.4	NM	**51.90**	**130.00**	34.1 U	**220.00**	436.0	**68,600**	16.24	1.77	34.44
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Inf-1	10/21/16	11,310	204.9	NM	**1.4**	**55.0**	1.8 U	5.4 U	63.6	**5,550**	1.31	0.10	35.98
	Inf-1	11/02/16	11,597	129.4	NM	14.9 U	35.3 U	40.3 U	121.0 U	211.5	**5,120**	1.21	0.06	36.69
	Inf-1	11/16/16	11,936	162.1	NM	0.82 U	**8.7**	2.2 U	**8.7**	20.4	**1,740**	0.41	0.03	37.05
	Inf-1	11/22/16	12,076	NM	NM	3.4 U	**16.7**	9.2 U	**31.3**	60.6	**1,670**	0.40	NA	NA
	Inf-1	11/29/17	12,079	NM	0.6	**2.4**	**120**	**4.1**	**9.1**	135.6	**6,640**	1.57	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.4	Not Sampled								
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled								
	Not Sampled	08/10/18	12,593	NM	0.3	Not Sampled								
	Not Sampled	08/16/18	12,738	NM	0.2	Not Sampled								
	Not Sampled	09/12/18	NM	NM	0.0	Not Sampled								
	Not Sampled	11/16/18	14,269	NM	0.0	Not Sampled								
	Not Sampled	11/28/18	14,553	NM	0.0	Not Sampled								
	Not Sampled	12/07/18	14,770	NM	0.0	Not Sampled								
V-INT-1	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled								
	Int -1	08/18/16	10,258	243.8	14.2	18.2 U	153.0	49.3 U	148.0 U	368.5	3,990 U	0.94	0.09	NA
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled								
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled								
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Int -1	10/06/16	10,949	286.4	NM	**19.9**	**192.0**	34.1 U	103.0 U	349.0	**35,400**	8.38	0.91	NA
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled								
	Not Sampled	11/02/16	11,597	129.4	NM	Not Sampled								
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled								
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled								
	Int -1	11/29/17	12,079	NM	0.1	0.66 U	**95.1**	1.8 U	5.4 U	103.0	**3,440**	0.81	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.1	Not Sampled								
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled								
	Not Sampled	08/10/18	12,593	NM	0.4	Not Sampled								
	Not Sampled	08/16/18	12,738	NM	1.1	Not Sampled								
	Not Sampled	09/12/18	NM	NM	0.0	Not Sampled								
	Not Sampled	11/16/18	14,269	NM	0.2	Not Sampled								
	Not Sampled	11/28/18	14,553	NM	0.1	Not Sampled								
	Not Sampled	12/07/18	14,770	NM	0.0	Not Sampled								
V-DSCHG-1	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled								
	Eff-1	08/18/16	10,258	243.8	14.2	12.6 U	29.9	34.1 U	103.0 U	179.6	2,760 U	0.65	0.06	0.05
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled								
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled								
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Eff-1	10/06/16	10,949	286.4	NM	**16.2**	**133.0**	35.6 U	107.0 U	291.8	**17,700**	4.19	0.46	13.16
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled								
	Not Sampled	11/02/16	11597	129.4	NM	Not Sampled								
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled								
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled								
	DSCHG-1	11/29/17	12,079	NM	0.0	0.63 U	**85.3**	1.8 U	5.1 U	92.8	**2,410**	0.57	NA	NA
	Not Sampled	12/06/17	12,240	NM	0	Not Sampled								
	Not Sampled	12/20/17	12,359	NM	0	Not Sampled								
	Not Sampled	08/10/18	12,593	300.2	0.1	Not Sampled								
	Not Sampled	08/16/18	12,738	285.4	0.1	Not Sampled								
	Not Sampled	09/12/18	NM	235.4	0.0	Not Sampled								
	Not Sampled	11/16/18	14,269	290.7	0.1	Not Sampled								
	Eff-1	11/28/18	14,553	304.6	0.0	1.0	17.0	1.1	6.5	25.6	607	0.14	0.02	14.88
	Not Sampled	12/07/18	14,770	315.5	0.0	Not Sampled								
PSCAA Threshold Concentration[1]												200		

Notes:

There are three sets (or trains) of two vapor phase carbon units (for a total of six) used to treat extracted vapors. The two carbon units associated with each train are plumbed in series. Samples Inf-1, Int-1 and Eff-1 were collected from sample ports associated with the first train of vapor phase carbon units. The influent sample ports for each train are located prior to the first carbon units. The intermediate sample ports for each train are located between the first and second carbon units. The effluent sample ports for each train are located after the second (and last) carbon units. The sample port locations are shown on Figure 3.

VOCs = Volatile Organic Compounds (Benzene, Toluene, Ethylbenzene and Total Xylenes)

U = Analyte not detected above the referenced laboratory method reporting limit.

1. THCg ppmv = THC (ug/m³)/42.23 (conversion factor for molar volume @ STP)/M (molucular weight of THC [100]). PSCAA Permit (Registration #29548) requires a minimum control efficiency of 97% when the TPH (THC) influent concentration is greater than or equal to 200 ppmv. None of the THCg concentrations exceed 200 ppmv.

2. Recovery/Emission Rate [lb/day] = Conc [ug/m^3] x Flow Rate [sft^3/min] x (1m^3/35.3ft^3) x (1g/1,000000 ug) x (1lb/454 g) x (1440 min/day)

3. Cumulative Mass Recovered/Discharged [lb/day] = Recovery/Discharge Rate (Influent or Effluent, lbs. per day) x Flow Rate [sft^3/min] - previous Flow Rate [sft^3/min] ÷ 24 hours + previous calculated Cumulative Mass Recovered/Discharged. Influent measurements were used to determine the total mass of hydrocarbons recovered in the vapor phase from Train 1. Total Mass of hydrocarbons recovered by the System as reported in the text of the report also includes the total mass of hydrocarbons recovered from Trains 2 and 3.

V-DSCHG-1 Flow Rates (scfm) for the period of 12/6/17 to 12/7/17 were calculated using field collected velocity and temperature, and a standard pressure value.

NA = Not applicable

TABLE 6: SVE ANALYTICAL SUMMARY
Vapor Train No. 2

Facility Name: Former Phillips 66 Facility No. 255353 (AOC 1396)
Facility Address: 600 Westlake Avenue North, Seattle, WA
Ecology Facility ID#: 46445373
Ecology VCP No: NW1714

If Non-Detect Use MDL "U"
Not Sampled = NS
Analytical Results = µg/m^3

Standard Temp = 80 °F Standard Pressure = 14.7 psi

Sample Location	Sample ID	Date	Hour Meter	Flow Rate (scfm)	PID (ppm)	Benzene		Toluene		Ethyl benzene		Total Xylenes		Total VOCs	THCg (ug/m^3)		THCg[1] (ppmv)	Recovery Rate (Influent)/ Emission Rate (Effluent)[2] Rate (lb/day)	Cumulative Mass Recovered / Discharged[3] (lbs)
V-INF-2	Inf-2	08/17/16	10,238	120.2	NM	Not Sampled													
	Inf-2	08/18/16	10,258	243.8	14.2	11.7	U	27.7	U	31.7	U	95.4	U	**166.5**	**3,900**		0.92	0.09	0.07
	Inf-2	08/22/16	10,354	266.1	NM	**1.3**		**5.6**		1.5	U	**7.3**		**15.7**	**3,420**		0.81	0.08	0.40
	Inf-2	08/29/16	10,522	266.7	NM	26.20	U	**60.4**		35.6	U	107.0	U	**229.2**	**19,700**		4.66	0.47	3.70
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled													
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled													
	Inf-2	10/06/16	10,949	286.4	NM	**48.70**		**185.00**		32.9	U	**181.00**		447.6	**42,100**		9.97	1.08	22.98
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled													
	Inf-2	10/21/16	11,310	204.9	NM	**1.3**		**146.0**		**7.2**		**34.6**		189.1	**2,510**		0.59	0.05	23.67
	Inf-2	11/02/16	11,597	129.4	NM	14.9	U	35.3	U	40.3	U	121.0	U	211.5	4,750	U	1.12	0.06	24.33
	Inf-2	11/16/16	11,936	162.1	NM	**0.89**		**10.2**		2.2	U	**12.1**		25.4	**1,930**		0.46	0.03	24.73
	Inf-2	11/22/16	12,076	NM	NM	**1.5**		**16.9**		**3.6**		**24.4**		46.4	**1,520**		0.36	NA	NA
	Inf-2	11/29/17	12,079	NM	0.4	**2.6**		**8.8**		1.5	U	4.6	U	17.5	**3,910**		0.93	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.4	Not Sampled													
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled													
	Not Sampled	08/10/18	125.93	NM	0.3	Not Sampled													
	Not Sampled	08/16/18	12,738	NM	0.2	Not Sampled													
	Not Sampled	09/12/18	NM	NM	0.0	Not Sampled													
	Not Sampled	11/16/18	14,269	NM	0.0	Not Sampled													
	Not Sampled	11/28/18	14,553	NM	0.0	Not Sampled													
	Not Sampled	12/07/18	14,770	NM	0.0	Not Sampled													
V-INT-2	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled													
	Int -2	08/18/16	10,258	243.8	14.2	13.6	U	32.3		37.0	U	111.0	U	193.9	2,990	U	0.71	0.07	NA
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled													
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled													
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled													
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled													
	Int -2	10/06/16	10,949	286.4	NM	**20.7**		**145.0**		35.6	U	107.0	U	308.3	**24,500**		5.80	0.63	NA
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled													
	Not Sampled	11/02/16	11597	129.4	NM	Not Sampled													
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled													
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled													
	Int -2	11/29/17	12,079	NM	0.0	0.63	U	**4.2**		1.7	U	5.1	U	11.6	**1,930**		0.46	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.2	Not Sampled													
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled													
	Not Sampled	08/10/18	12,593	NM	0.6	Not Sampled													
	Not Sampled	08/16/18	12,738	NM	1.0	Not Sampled													
	Not Sampled	09/12/18	NM	NM	1.0	Not Sampled													
	Not Sampled	11/16/18	14,269	NM	0.6	Not Sampled													
	Not Sampled	11/28/18	14,553	NM	0.1	Not Sampled													
	Not Sampled	12/07/18	14,770	NM	0.1	Not Sampled													
V-DSCHG-2	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled													
	Eff-2	08/18/16	10,258	243.8	14.2	12.2	U	28.8		32.9	U	99.1	U	173.0	2,660	U	0.63	0.06	0.05
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled													
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled													
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled													
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled													
	Eff-2	10/06/16	10,949	286.4	NM	**21.6**		**155.0**		38.5	U	116.0	U	331.1	**20,900**		4.95	0.54	15.53
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled													
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled													
	Not Sampled	11/02/16	11597	129.4	NM	Not Sampled													
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled													
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled													
	DSCHG-2	11/29/17	12,079	NM	0.1	1.0	U	**99.0**		2.8	U	8.4	U	111.2	**3,540**		0.84	0.11	20.78
	Not Sampled	12/06/17	12,240	350.6	0.1	Not Sampled													
	Not Sampled	12/20/17	12,359	350.6	0.1	Not Sampled													
	Not Sampled	08/10/18	12,593	321.5	0.7	Not Sampled													
	Not Sampled	08/16/18	12,738	321.5	1.0	Not Sampled													
	Not Sampled	09/12/18	NM	251.9	1.1	Not Sampled													
	Not Sampled	11/16/18	14,269	310.9	0.4	Not Sampled													
	Eff-2	11/28/18	14,553	324.4	0.1	4.0		41.2		31.2		179		255.4	3180.0		0.75	0.09	30.34
	Not Sampled	12/07/18	14,770	353.0	0.1	Not Sampled													
PSCAA Threshold Concentration*																	200		

Notes:

There are three sets (or trains) of two vapor phase carbon units (for a total of six) used to treat extracted vapors. The two carbon units associated with each train are plumbed in series. Samples Inf-2, Int-2 and Eff-2 were collected from sample ports associated with the second train of vapor phase carbon units. The influent sample ports for each train are located prior to the first carbon units. The intermediate sample ports for each train are located between the first and second carbon units. The effluent sample ports for each train are located after the second (and last) carbon units. The sample port locations are shown on Figure 3.

VOCs = Volatile Organic Compounds (Benzene, Toluene, Ethylbenzene and Total Xylenes)

U = Analyte not detected above the referenced laboratory method reporting limit.

1. THCg ppmv = THC (ug/m^3)/42.23 (conversion factor for molar volume @ STP)/M (molucular weight of THC [100]). PSCAA Permit (Registration #29548) requires a minimum control efficiency of 97% when the TPH (THC) influent concentration is greater than or equal to 200 ppmv. None of the THCg concentrations exceed 200 ppmv.

2. Recovery/Emission Rate [lb/day] = Conc [ug/m^3] x Flow Rate [sft^3/min] x (1m^3/35.3ft^3) x (1g/1,000000 ug) x (1lb/454 g) x (1440 min/day)

3. Cumulative Mass Recovered/Discharged [lb/day] = Recovery/Discharge Rate (Influent or Effluent, lbs. per day) x Flow Rate [sft^3/min] - previous Flow Rate [sft^3/min] ÷ 24 hours + previous calculated Cumulative Mass Recovered/Discharged. Influent measurements were used to determine the total mass of hydrocarbons recovered in the vapor phase from Train 1. Total Mass of hydrocarbons recovered by the System as reported in the text of the report also includes the total mass of hydrocarbons recovered from Trains 1 and 3.

V-DSCHG-2 Flow Rates (scfm) for the period of 12/6/17 to 12/7/17 were calculated using field collected velocity and temperature, and a standard pressure value.

NA = Not applicable

TABLE 7: SVE ANALYTICAL SUMMARY
Vapor Train No. 3

Facility Name: Former Phillips 66 Facility No. 255353 (AOC 1396)
Facility Address: 600 Westlake Avenue North, Seattle, WA
Ecology Facility ID#: 46445373
Ecology VCP No: NW1714

If Non-Detect Use MDL "U"
Not Sampled = NS
Analytical Results = µg/m^3

Standard Temp = 80 °F Standard Pressure = 14.7 psi

Sample Location	Sample ID	Date	Hour Meter	Flow Rate (scfm)	PID (ppm)	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total VOCs	THCg (ug/m^3)	THCg[1] (ppmv)	Recovery Rate (Influent)/ Emission Rate (Effluent)[2] Rate (lb/day)	Cumulative Mass Recovered / Discharged[3] (lbs)
V-INF-3	Inf-3	08/17/16	10,238	120.2	NM	Not Sampled								
	Inf-3	08/18/16	10,258	243.8	14.2	14.2 U	33.7 U	38.5 U	116.0 U	**202.4**	**3,120**	0.74	0.07	0.06
	Inf-3	08/22/16	10,354	266.1	NM	1.1 U	**5.2**	1.5 U	**7.0**	**14.8**	**3,170**	0.75	0.08	0.36
	Inf-3	08/29/16	10,522	266.7	NM	26.20 U	**80.6**	35.6 U	**148.0**	**290.4**	2,880 U	0.68	0.07	0.84
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Inf-3	10/06/16	10,949	286.4	NM	**51.00**	**154.00**	35.6 U	**176.00**	416.6	**39,600**	9.38	1.02	18.97
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Inf-3	10/21/16	11,310	204.9	NM	**1.9**	**7.7**	**3.0**	**18.3**	30.9	**1,500**	0.36	0.03	19.39
	Inf-3	11/02/16	11,597	129.4	NM	16.4 U	38.8 U	44.4 U	134.0 U	233.6	5,230 U	1.24	0.06	20.11
	Inf-3	11/16/16	11,936	162.1	NM	0.78 U	**6.7**	2.1 U	**10.8**	20.4	**1,680**	0.40	0.02	20.46
	Inf-3	11/22/16	12,076	NM	NM	**1.4**	**11.1**	**3.1**	**20.7**	36.3	**943**	0.22	NA	NA
	Inf-3	11/29/17	12,079	NM	0.6	**3.4**	**6.8**	1.6 U	5.0 U	16.8	**4,440**	1.05	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.4	Not Sampled								
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled								
	Not Sampled	08/10/18	125.93	NM	0.3	Not Sampled								
	Not Sampled	08/16/18	12,738	NM	0.2	Not Sampled								
	Not Sampled	09/12/18	NM	NM	0.0	Not Sampled								
	Not Sampled	11/16/18	14,269	NM	0.0	Not Sampled								
	Not Sampled	11/28/18	14,553	NM	0.0	Not Sampled								
	Not Sampled	12/07/18	14,770	NM	0.0	Not Sampled								
V-INT-3	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled								
	Int -3	08/18/16	10,258	243.8	14.2	12.6 U	29.9	34.1 U	103.0 U	179.6	2,760 U	0.65	0.06	NA
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled								
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled								
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Int -3	10/06/16	10,949	286.4	NM	**68.8**	**304.0**	**44.2**	**215.0**	632.0	**33,400**	7.91	0.86	NA
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled								
	Not Sampled	11/02/16	11597	129.4	NM	Not Sampled								
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled								
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled								
	Int -3	11/29/17	12,079	NM	0.0	**0.78**	**7.2**	**4.4**	**6.8**	19.2	**3,780**	0.90	NA	NA
	Not Sampled	12/06/17	12,240	NM	0.0	Not Sampled								
	Not Sampled	12/20/17	12,359	NM	0.1	Not Sampled								
	Not Sampled	08/10/18	12,593	NM	0.3	Not Sampled								
	Not Sampled	08/16/18	12,738	NM	0.7	Not Sampled								
	Not Sampled	09/12/18	NM	NM	0.2	Not Sampled								
	Not Sampled	11/16/18	14,269	NM	0.5									
	Not Sampled	11/28/18	14,553	NM	0.1	Not Sampled								
	Not Sampled	12/07/18	14,770	NM	0.1	Not Sampled								
V-DSCHG-3	Not Sampled	08/17/16	10,238	120.2	NM	Not Sampled								
	Eff-3	08/18/16	10,258	243.8	14.2	13.1 U	31.1	35.6 U	107.0 U	186.8	2,880 U	0.68	0.06	0.05
	Not Sampled	08/22/16	10,354	266.1	NM	Not Sampled								
	Not Sampled	08/29/16	10,522	266.7	NM	Not Sampled								
	Not Sampled	09/19/16	NM	NM	NM	Not Sampled								
	Not Sampled	09/26/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/05/16	NM	NM	NM	Not Sampled								
	Eff-3	10/06/16	10,949	286.4	NM	Not Analyzed Due to Insuffient Sample Volume Upon Receipt at Laboratory								
	Not Sampled	10/07/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/12/16	NM	NM	NM	Not Sampled								
	Not Sampled	10/21/16	11,310	204.9	NM	Not Sampled								
	Not Sampled	11/02/16	11597	129.4	NM	Not Sampled								
	Not Sampled	11/16/16	11,936	162.1	NM	Not Sampled								
	Not Sampled	11/22/16	12,076	NM	NM	Not Sampled								
	DSCHG-3	11/29/17	12,079	NM	0.1	1.0 U	**99.0**	2.8 U	8.4 U	111.2	**4,100**	0.97	0.13	NA
	Not Sampled	12/06/17	12,240	365.7	0.1	Not Sampled								
	Not Sampled	12/20/17	12,359	357.0	0.1	Not Sampled								
	Not Sampled	08/10/18	12,593	336.0	2.0	Not Sampled								
	Not Sampled	08/16/18	12,738	344.8	0.2	Not Sampled								
	Not Sampled	09/12/18	NM	286.2	0.0	Not Sampled								
	Not Sampled	11/16/18	14,269	355.5	0.0	Not Sampled								
	Eff-3	11/28/18	14,553	357.2	0.2	4.8	47.5	32.0	179.8	264.1	2570.0	0.61	0.08	14.81
	Not Sampled	12/07/18	14,770	375.6	0.2	Not Sampled								
PSCAA Threshold Concentration*												200		

Notes:

There are three sets (or trains) of two vapor phase carbon units (for a total of six) used to treat extracted vapors. The two carbon units associated with each train are plumbed in series. Samples Inf-3, Int-3 and Eff-3 were collected from sample ports associated with the third train of vapor phase carbon units. The influent sample ports for each train are located prior to the first carbon units. The intermediate sample ports for each train are located between the first and second carbon units. The effluent sample ports for each train are located after the second (and last) carbon units. The sample port locations are shown on Figure 3.

VOCs = Volatile Organic Compounds (Benzene, Toluene, Ethylbenzene and Total Xylenes)

U = Analyte not detected above the referenced laboratory method reporting limit.

1. THCg ppmv = THCg (ug/m^3)/42.23 (conversion factor for molar volume @ STP)/M (molucular weight of THC [100]). PSCAA Permit (Registration #29548) requires a minimum control efficiency of 97% when the TPH (THC) influent concentration is greater than or equal to 200 ppmv. None of the THCg concentrations exceed 200 ppmv.

2. Recovery/Emission Rate [lb/day] = Conc [ug/m^3] x Flow Rate [sft^3/min] x (1m^3/35.3ft^3) x (1g/1,000000 ug) x (1lb/454 g) x (1440 min/day)

3. Cumulative Mass Recovered/Discharged [lb/day] = Recovery/Discharge Rate (Influent or Effluent, lbs. per day) x Flow Rate [sft^3/min] - previous Flow Rate [sft^3/min] ÷ 24 hours + previous calculated Cumulative Mass Recovered/Discharged. Influent measurements were used to determine the total mass of hydrocarbons recovered in the vapor phase from Train 1. Total Mass of hydrocarbons recovered by the System as reported in the text of the report also includes the total mass of hydrocarbons recovered from Trains 1 and 2.

V-DSCHG-3 Flow Rates (scfm) for the period of 12/6/17 to 12/7/17 were calculated using field collected velocity and temperature, and a standard pressure value.

NA = Not applicable

Table 8
SVE PID Data Summary
Phillips 66 Facility #255353 (AOC 1396)

Date	Westlake Avenue SVE Wells - PID Readings (ppm)								
	WC1	WC2	WC3	WB3	WB2	WB1	WA3	WA2	WA1
08/18/16	6.4	0.0	0.1	0.0	10.6	0.0	0.3	0.0	0.0
08/22/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
08/29/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
10/06/16	Closed	Closed	Closed	Closed	1.3	Closed	Closed	Closed	Closed
10/21/16[1]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
11/02/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/16/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/22/16[2]	0	0	0	0.4	0	0.1	0.1	0	0
11/29/17	0.0	0.2	0.4	0.6	1.05	0.1	0.0	0.0	0.0
12/6/17	NM	NM	NM	NM	NM	NM	NM	NM	NM
12/20/17	NM	NM	NM	NM	NM	NM	NM	NM	NM
11/28/18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12/07/18	NM	NM	NM	0.4	NM	NM	NM	NM	NM

Date	Valley Street SVE Wells - PID Readings (ppm)							
	V1	V2	V3	V4	V5	V6	V7	V9
08/18/16	0.6	0.2	1.7	0.2	1.3	0.5	0.4	0.9
08/22/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
08/29/16	Closed	Closed	Closed	Closed	0.5	Closed	Closed	0.7
10/06/16	1.1	0.1	0.1	0.1	0.1	1.4	0	0.5
10/21/2016[1]	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1
11/02/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/16/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/22/16[2]	0	0	0.1	0.2	0	0	0	0.1
11/29/16	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1
12/6/2017	NM	NM	NM	NM	NM	NM	NM	NM
12/20/17	NM	NM	NM	NM	NM	NM	NM	NM
11/28/18	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1
12/07/18	NM	NM	NM	0.2	NM	NM	NM	NM

Date	Mercer Street SVE Wells - PID Readings (ppm)																		
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19
08/18/16	44.6	45.3	10.3	1.4	21	29.2	7.3	8.7	32.9	42.6	29.2	67.9	4.3	3.5	6.8	8.4	22.1	57.2	6.1
08/22/16	0.1	3.1	3.1	Closed	0	15.4	Closed	Closed	0.6	0.2	2.1	7.3	Closed	Closed	Closed	Closed	0.6	0.6	Closed
08/29/16	Closed	Closed	Closed	Closed	Closed	3.3	Closed	0.8	Closed	Closed	0.5	5.5	Closed	Closed	Closed	Closed	0.1	0.1	Closed
10/06/16	0.7	1.7	0.5	3	0.2	0.5	1	0.5	0.9	0	1.7	2.8	1.6	0.6	0.8	0.1	0.2	0.4	0.1
10/21/2016[1]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.1	Closed	Closed	Closed	0.1	Closed	Closed
11/02/16	0	0	0	0	0	0.1	0.1	0	0.2	0.1	0	0	0	Closed	Closed	Closed	0	Closed	Closed
11/16/16	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	Closed	Closed	Closed	0	Closed	Closed
11/22/16[2]	0	0	0	0	0.1	0	0	1.4	1.9	0	0	0	0	0	0.2	0.1	0	0.1	0
11/29/17	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.2	0.4	2.7	0.0	1.2	0.0	0.3	0.1	5.4	5.5	7.3
12/6/17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.0	0.0	0.0
12/20/17	NM	NM	NM	NM	NM	NM	NM	NM	3.0	NM	10.0	NM	NM	NM	NM	NM	NM	NM	NM
11/28/18	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	NM	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.3	0.0
12/07/18	NM	NM	NM	NM	NM	NM	NM	NM	0.3	NM	NM	NM	NM	NM	0.3	NM	NM	0.3	NM

Date	Terry Avenue SVE Wells - PID Readings (ppm)														
	TSVE1	TSVE2	TSVE3	TSVE4	TSVE5	TSVE6	TSVE7	TSVE8	MW-65	MW-66	MW-67	MW-68	TEFR1-Air	TEFR2-Air	TMW48-Air
08/18/16	0.3	1.2	3.8	0.7	0.2	0.6	0.3	0.2	0.2	1.7	0.4	0.3	0.0	0.2	0.1
08/22/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0	Closed	Closed	Closed	Closed	Closed
08/29/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0	Closed	Closed	Closed	Closed	Closed
10/06/16	0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0	0.1	0	0.1	0.1
10/21/16[1]	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1
11/02/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/16/16	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
11/22/16[2]	0.1	0.1	0	0	0.1	0	0	0.2	0.1	0	0	0	0	0.3	0.1
11/29/17	0.0	0.1	0.7	0.1	1.9	0	0.1	0.1	0.1	0.8	0.5	1.4	0.1	0.1	0.8
12/6/17	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
12/20/17	NM	NM	NM	NM	0.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
11/28/18	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1
12/07/18	NM	NM	NM	NM	NM	NM	NM	0.2	NM	NM	NM	NM	NM	0.2	NM

Date	Terry Avenue SVE Wells - PID Readings (ppm)			
	TMW48-WATER	TEFR2-WATER	TEFR1-WATER	TMW65-WATER
12/6/17	0.0	0.5	3.1	0.3
12/20/17	NM	NM	NM	NM
11/28/18	NM	NM	NM	NM

Notes:
1. All SVE wells were adjusted to 45 degrees open
2. All SVE wells were re-opened 100 percent
SVE = Soil Vapor Extraction
PID = Photo Ionization Detector
ppm = parts per million

Table 9
AS Flow Data Summary
Phillips 66 Facility #255353 (AOC 1396)

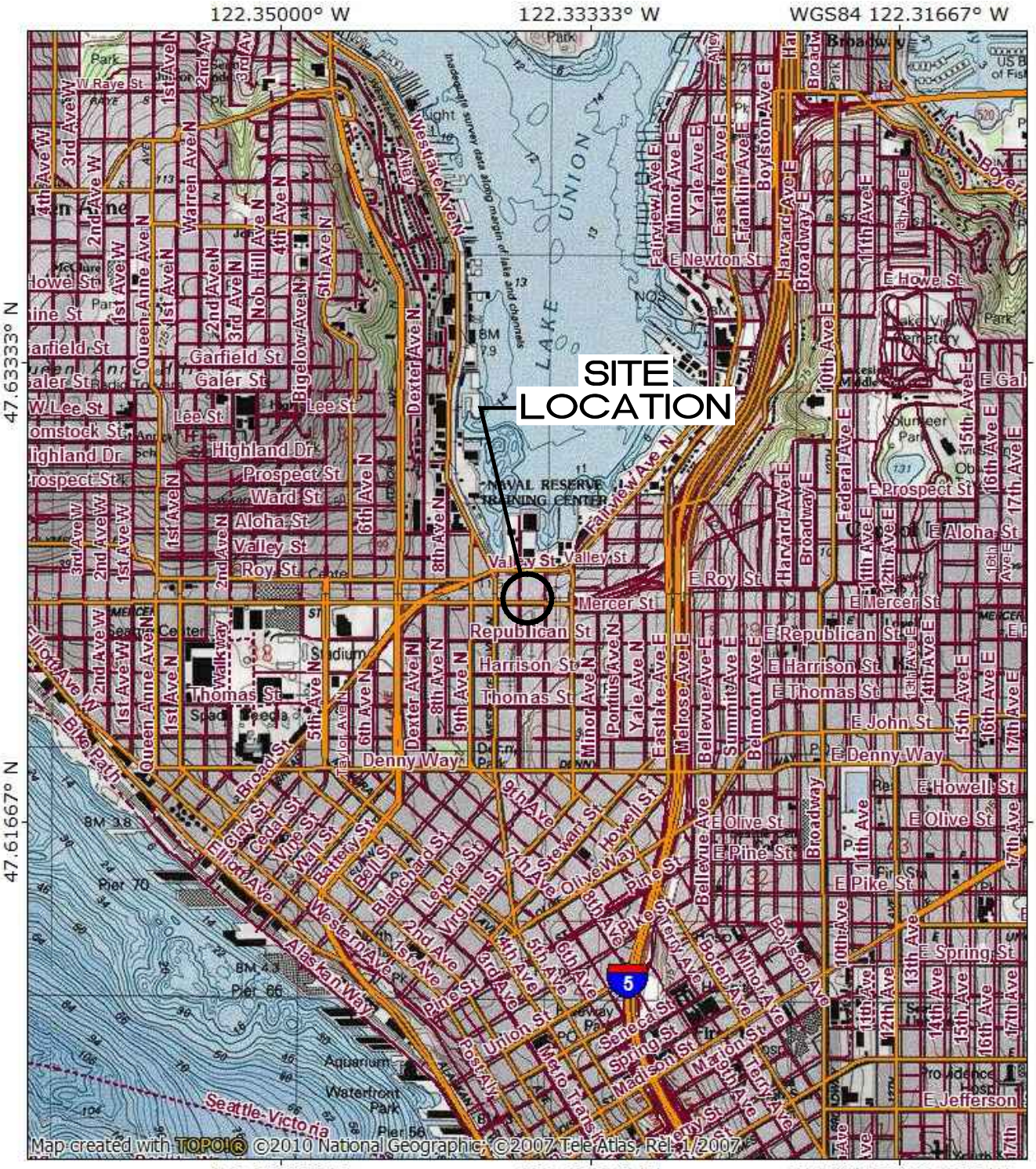
Date	Westlake Avenue AS Wells - Flow Rate Readings (scfm)																				
	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16	W-17	W-18	W-19	W-20	W-21
08/18/16	+25[1]	4	4	1	2	5	4	5	5	3	2	4	2	4	3	4	Damaged[2]	4	4	6	6
08/22/16	+25[1]	2	2	1	2	+25[1]	3	3	3	2	1	2	NM	2	1	2	Damaged[2]	2	2	2	3
08/29/16	+25[1]	2	2	1	1	+25[1]	4	2	1	1	2	2	NM	2	1	2	Damaged[2]	3	2	2	2
10/06/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
10/21/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/02/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/16/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/22/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/28/18	5	0	0	+25[1]	0	0	0	0	0	0	0[4]	0	+25[1]	0	0	0	0	--	--	--	--
12/07/18	9	7	0	+25[1]	0	0	2	7	2	0	0	0	13	4	2	12	0	--	--	--	--

Date	Valley Street AS Wells - Flow Rate Readings (scfm)													
	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
08/18/16	2	Damaged[2]	6	12	5	3	8	5	4	2	8	2	6	6
08/22/16	2	Damaged[2]	5	8	4	2	4	3	2	2	6	4	6	4
08/29/16	2	Damaged[2]	3	+25[1]	2	1	2	2	2	2	6	2	8	4
10/06/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
10/21/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/02/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/16/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/22/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/28/18	+25[1]	20	NM	0	+25[1]	0	13	0	NM	0	0	0	4	NM
12/07/18	+25[1]	18	0	16	+25[1]	0	13	0	0	+25[1]	0	0	7	3

Date	Mercer Street AS Wells - Flow Rate Readings (scfm)																										
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27
08/18/16	16	+25[1]	6	10	8	10	8	10	+25[1]	8	6	8	6	9	6	6	18	8	6	13	3	10	4	8	15	+25	4
08/22/16	14	+25[1]	8	8	8	12	8	8	+25[1]	6	4	11	6	8	8	4	18	6	8	+25[1]	2	8	2	6	16	+25[1]	2
08/29/16	12	+25[1]	8	10	10	12	6	10	+25[1]	6	4	10	8	8	6	4	16	6	6	+25[1]	2	8	2	6	15	+25[1]	2
10/06/16	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
10/21/16	14	+25[1]	10	+25	10	15	7	15	+25[1]	12	10	10	8	8	8	6	18	8	6	+25[1]	4	10	2	8	15	+25[1]	4
11/02/16	12	+25[1]	12	10	12	14	12	12	+25[1]	10	+25[1]	8	8	10	6	6	12	4	4	+25[1]	3	8	4	6	12	+25[1]	2
11/16/16	14	+25[1]	8	12	12	14	10	12	+25[1]	8	6	6	6	8	6	4	16	6	4	+25[1]	2	6	4	4	12	+25[1]	4
11/22/16	12	+25[1]	8	10	+25[1]	12	15	11	+25[1]	8	4	8	6	10	6	6	12	4	4	+25[1]	2	8	2	4	12	+25[1]	2
11/28/18	NM	0	0	0	8	0	NM	0	0	0	+25[1]	0	0	0	+25[1]	0	0	NM	NM	0	0	0	0	NM[3]	NM	0	0
12/07/18	8	0	9	12	8	14	15	13	0	0	0	0	0	+25[1]	+25[1]	0	0	NM	NM	0	NM	0	0	NM[3]	NM	0	0

Notes:
AS = Air Sparge
SCFM = Standard Cubic Feet per Minute
NM - Not Measured
OL = Off Line
[1] = Rotometer pegged at 25 scfm (not accurate reading - rotometer likely "stuck").
[2] = Rotometers were repaired/replaced on October 5, 2016.
[3] = No rotameter installed
[4] = Rotameter was repaired/replaced on November 16, 2018
-- = Not present on manifold

FIGURES



NATIONAL GEOGRAPHIC

0 .5 1 MILES
1000 0 1000 2000 3000 4000 5000 FEET
1 .5 0 KILOMETERS 1
1000 0 METERS 1000

TN 16° MN
06/20/14

N

SOURCE: USGS TOPO MAP, SEATTLE SOUTH E, WA QUAD, 1983

SITE VICINITY MAP

PHILLIPS 66 FACILITY NO. 255353 (AOC 1396)
600 WESTLAKE AVENUE N
SEATTLE, WA

PROJECT NUMBER: Z076000073		DATE: 5/3/17	FIGURE 1
APPROVED BY: KS		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

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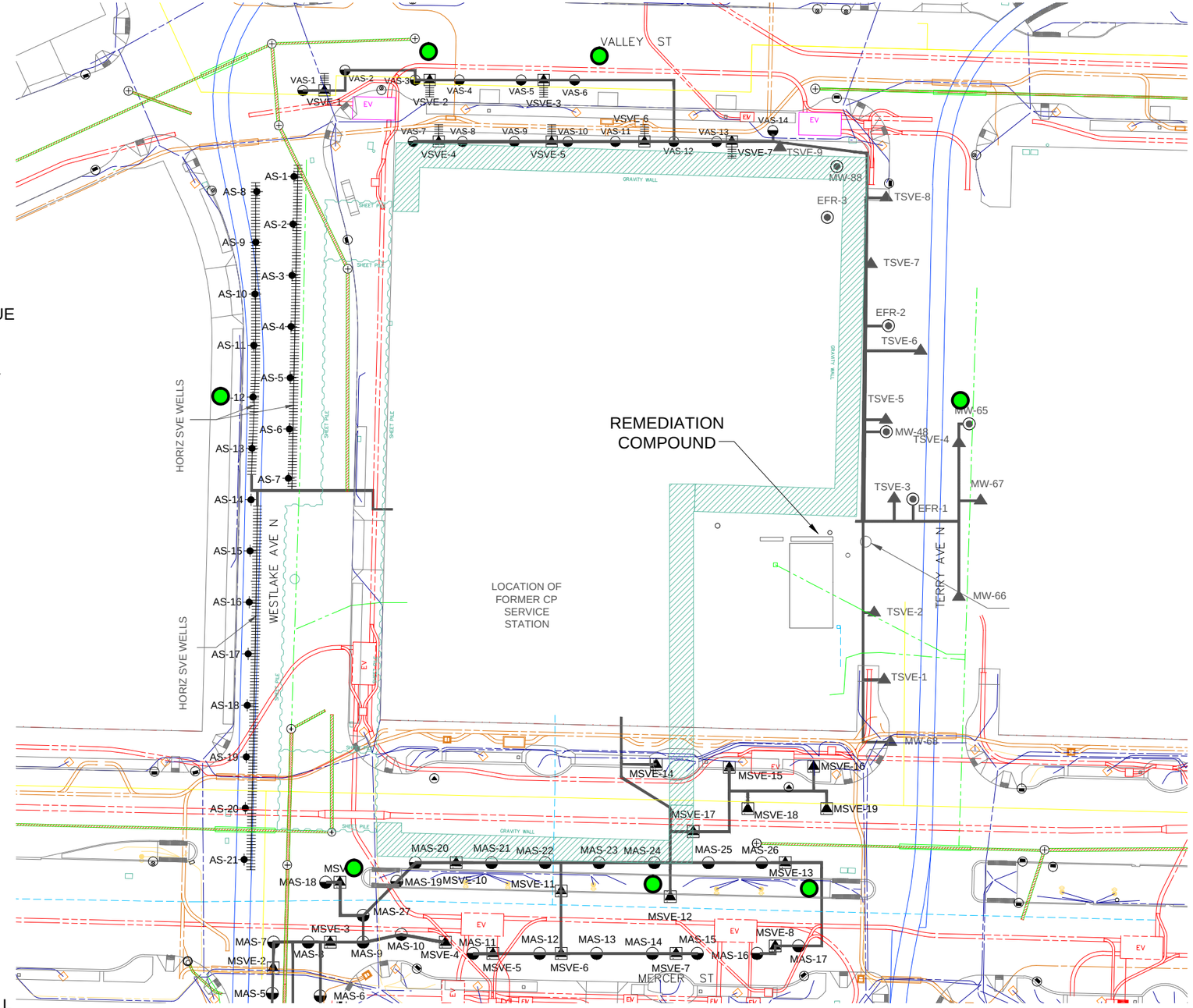
LEGEND:

- LAMP POST LOCATION
- WATER LINE LOCATION
- PROPERTY LINES
- TRENCH ROUTES
- AS-1 — AIR SPARGE WELL ON WESTLAKE AVENUE
- HORIZONTAL SVE WELL
- TSVE-1 — SVE WELLS ON TERRY AVENUE
- MW-67 — MONITORING WELL
- EFR-1 — ENHANCED FLUID RECOVERY WELL
- MAS-1 — AS WELL ON MERCER
- MSVE-7 — SVE WELLS ON MERCER
- VAS-13 — VALLEY STREET AS WELL
- VSVE-7 — VALLEY STREET HORIZONTAL SVE WELL
- ELECTRICAL LINE LOCATION FOR STREET LIGHTS
- SANITARY/ STORM SEWER LOCATION
- STORM SEWER MANHOLE/CATCH BASIN LOCATION
- ELECTRICAL LINE LOCATION (SCL)
- COMMUNICATION LINE LOCATION
- GAS LINE LOCATION
- STREET CAR LINE LOCATION
- SHEET PILE LOCATION
- GRAVITY WALL LOCATION
- PROPOSED MONITORING WELL



N

APPROXIMATE SCALE

0 60 120 Feet

NOTES:

1. LOCATIONS OF SITE FEATURES CONSTRUCTED FOR THE P-66 REMEDIATION SYSTEM (REMEDIATION COMPOUND, ON-SITE TRENCHES, TERRY AVE. TRENCH EXTENSION) HAVE NOT BEEN SURVEYED AND ARE APPROXIMATE.

2. LOCATIONS OF ALL OTHER SITE AND AREA FEATURES ARE BASED ON PLANS SUPPLIED BY SDOT, AND HAVE NOT BEEN VERIFIED BY THE PROJECT ENGINEER.

SITE LAYOUT DIAGRAM

PHILLIPS 66 FACILITY NO. 255353
600 WESTLAKE AVENUE NORTH
SEATTLE, WA

PROJECT NUMBER: Z076000073		DATE: 5/3/17	FIGURE
APPROVED BY: KS		DRAWN BY: BK	2

ATC
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Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

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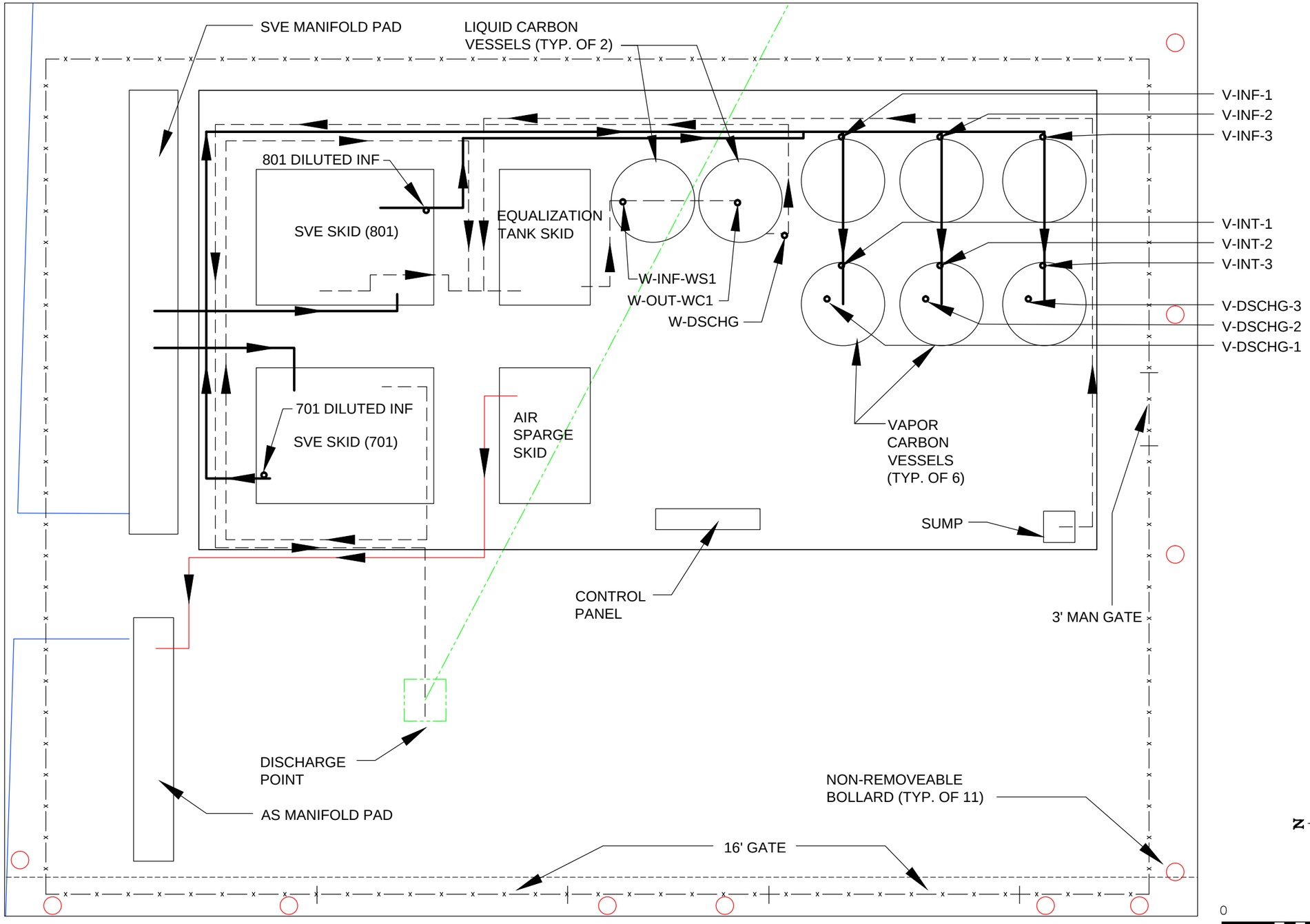
NOTES:

1. LOCATIONS OF SITE FEATURES CONSTRUCTED FOR THE P-66 REMEDIATION SYSTEM (REMEDIATION COMPOUND, ON-SITE TRENCHES) HAVE NOT BEEN SURVEYED AND ARE APPROXIMATE.

2. LOCATIONS OF ALL OTHER SITE AND AREA FEATURES ARE BASED ON PLANS SUPPLIED BY SDOT, AND HAVE NOT BEEN VERIFIED BY THE PROJECT ENGINEER.



LEGEND

- SVE TRENCHING
- SANITARY/ STORM SEWER LOCATION
- AIR SPARGE REMEDIATION PIPING
- COMPOUND FENCE LOCATION
- VAPOR REMEDIATION PIPING
- WATER REMEDIATION PIPING
- SAMPLE POINT
- BOLLARD LOCATION

REMEDIATION SYSTEM LAYOUT

PHILLIPS 66 FACILITY NO. 255353
600 WESTLAKE AVENUE NORTH
SEATTLE, WA

PROJECT NUMBER: Z076000073		DATE: 4/21/17	FIGURE
APPROVED BY: KS		DRAWN BY: BK	3

ATC
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APPENDIX A

Cumulative historical system operational and performance data

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 1 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V1 Influent	01/27/14	77,100	ND<12.6	121	86	411	81.8	18.3
V1 Intermediate		54,100	ND<21.9	128	ND<59.3	ND<119	ND<59.3	12.8
V1 Effluent		30,500	ND<12.2	ND<12.3	ND<12.4	ND<12.5	ND<12.6	7.2
V1 Influent	02/19/14	158,000	84	598	1,370	9,450	2,150.0	37.4
V1 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	NC
V1 Effluent		7,800	ND<10.9	38	ND<29.6	ND<59.1	ND<29.6	1.8
V1 Influent	03/10/14	181,000	227	2,380	3,110	21,000	9,420.0	42.9
V1 Intermediate		4,560	ND<11.3	27.6	ND<30.6	ND<61.2	ND<30.6	1.1
V1 Effluent		8,660	ND<13.6	40	ND<37.0	ND<73.9	ND<37.0	2.1
V1 Influent	04/16/14	156,000	119	2,050	1,430	9,170	3,630.0	36.9
V1 Intermediate		ND<1220	ND<6.5	32	ND<17.6	ND<35.2	ND<17.6	NC
V1 Effluent		ND<1220	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	NC
V1 Influent	05/08/14	107,000	28	483	745	7,240	2,720.0	25.3
V1 Intermediate		4,120	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.0
V1 Effluent		5,110	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.2
V1 Influent	06/25/14	55,200	ND<76	309	277	5,840	2,280	13.1
V1 Intermediate		9,600	19.3	231	148	773	38	2.3
V1 Effluent		ND<2040	20.6	36.5	ND<29.6	ND<59.1	ND<29.6	NC
V1 Influent	07/09/14	131,000	ND<58.4	235.0	253	5,360	2,460	31.0
V1 Intermediate		ND<3520	ND<37.6	ND<44.6	ND<51.0	ND<102	ND<51.0	NC
V1 Effluent		9,860	17	29.7	ND<22.3	ND<44.5	ND<22.3	2.3
V1 Influent	08/05/14	33,900	ND<37.6	127	ND<102	1,560	701	8.0
V1 Intermediate		2,630	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<79.5	0.6
V1 Effluent		ND<2190	ND<11.7	28.6	ND<31.7	ND<63.4	ND<79.5	NC
V1 Influent	09/04/14	20,500	ND<10.9	51.5	ND<78.6	3,730	1,720	4.9
V1 Intermediate		ND<2040	ND<10.9	88.1	ND<78.6	ND<59.1	ND<29.6	NC
V1 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V1 Influent	10/16/14	16,500	ND<13.1	ND<31.1	ND<35.6	372	246	3.9
V1 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V1 Effluent		16,800	64.0	84.5	ND<25.5	ND<51.0	ND<25.5	4.0
V1 Influent	11/11/14	ND<1640	ND<8.7	ND<48.3	ND<55.6	ND<119	63.1	NC
V1 Intermediate		ND<1760	ND<9.4	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V1 Effluent		ND<1760	10.2	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V1 Influent	12/10/14	6,930	ND<6.0	14.8	ND<16.1	ND<32.3	ND<16.1	1.6
V1 Intermediate		7,240	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.7
V1 Effluent		10,700	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	2.5
V1 Influent	01/20/15	ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V1 Intermediate		2,100	ND<10.9	ND<129	ND<29.6	ND<59.1	ND<29.6	0.5
V1 Effluent		2,660	ND<12.6	ND<149	ND<34.2	ND<68.5	ND<34.2	0.6
V1 Influent	02/25/15	ND<1750	ND<9.4	ND<22.2	ND<25.3	ND<50.7	ND<25.3	NC
V1 Intermediate		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V1 Effluent		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V1 Influent	03/18/15	1,970	ND<6.1	23.1	ND<82.5	44.4	ND<82.5	0.5
V1 Intermediate		3,310	19.4	342	ND<74.2	ND<29.6	ND<74.2	0.8
V1 Effluent		2,720	ND<3.3	10.2	ND<44.7	ND<17.8	ND<44.7	0.6
PSCAA Threshold Concentration *								200

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 2 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V2 Influent	01/27/14	179,000	ND<13.1	750	1,110	5,390	1,530	42.4
V2 Intermediate		62,300	ND<11.3	34.5	ND<30.6	ND<61.2	ND<30.6	14.8
V2 Effluent		32,500	ND<12.6	39.5	ND<34.1	ND<68.3	ND<34.1	7.7
V2 Influent	02/19/14	153,000	88	432	1,030	4,540	1,600	36.2
V2 Intermediate		5,700	ND<10.9	30.7	ND<29.6	ND<59.1	ND<29.6	1.3
V2 Effluent		7,750	ND<10.9	31.4	ND<29.6	ND<59.1	ND<29.6	1.8
V2 Influent	03/10/14	219,000	214	2,230	2,910	19,000	5,800	51.9
V2 Intermediate		9,140	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	2.2
V2 Effluent		6,320	ND<12.2	ND<28.8	ND<32.9	ND<65.8	ND<32.9	1.5
V2 Influent	04/16/14	162,000	85	1,420	988	5,510	2,530	38.4
V2 Intermediate		ND<1220	ND<6.5	22.9	ND<17.6	ND<35.2	ND<17.6	NC
V2 Effluent		ND<1220	ND<6.5	30.3	ND<17.6	ND<35.2	ND<17.6	NC
V2 Influent	05/08/14	103,000	ND<16.2	435	711	8,340	2,660.0	24.4
V2 Intermediate		3,310	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	0.8
V2 Effluent		5,620	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	1.3
V2 Influent	06/25/14	23,200	ND<73.4	ND<174	ND<199	2,820	1,070	5.5
V2 Intermediate		12,900	19.4	143	34	ND<61.2	ND<30.6	3.1
V2 Effluent		ND<2040	12	ND<25.9	ND<29.6	ND<59.1	ND<29.6	NC
V2 Influent	07/09/14	46,000	ND<56.5	154	146	3,040	1,290	10.9
V2 Intermediate		ND<3520	ND<37.6	ND<44.6	ND<51.0	ND<102	ND<51.0	NC
V2 Effluent		6,900	ND<18.8	28.0	ND<25.5	ND<51.0	ND<25.5	1.6
V2 Influent	08/05/14	39,300	ND<22.0	83.7	ND<59.5	1,230	571	9.3
V2 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<76.8	NC
V2 Effluent		10,600	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<79.5	2.5
V2 Influent	09/04/14	19,500	ND<10.9	39.3	ND<78.6	1,780	910	4.6
V2 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V2 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V2 Influent	10/16/14	67,800	ND<13.1	ND<31.1	ND<35.6	238	171	16.1
V2 Intermediate		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V2 Effluent		7,860	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	1.9
V2 Influent	11/11/14	ND<1640	8.2	ND<48.3	ND<55.6	ND<111	58.0	NC
V2 Intermediate		ND<2060	ND<11.0	ND<64.7	ND<74.6	ND<149	ND<74.6	NC
V2 Effluent		ND<2060	ND<11.0	ND<64.7	ND<74.6	ND<149	ND<74.6	NC
V2 Influent	12/10/14	6,210	ND<7.3	ND<17.3	ND<19.8	ND<39.5	ND<19.8	1.5
V2 Intermediate		5,950	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.4
V2 Effluent		3,140	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	0.7
V2 Influent	01/20/15	ND<2190	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	NC
V2 Intermediate		ND<1760	ND<9.4	37.4	ND<63.9	ND<51.0	ND<25.5	NC
V2 Effluent		2,360	ND<12.2	ND<143	ND<32.9	ND<65.8	ND<32.9	0.6
V2 Influent	02/25/15	2,940	ND<7.4	ND<17.6	ND<20.2	ND<40.3	32.3	0.7
V2 Intermediate		ND<1980	ND<10.6	ND<25.1	ND<28.7	115	46.7	NC
V2 Effluent		2,530	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	0.6
V2 Influent	03/18/15	2,300	ND<5.8	ND<13.9	ND<79.5	39.7	ND<79.5	0.5
V2 Intermediate		1,500	ND<5.5	15.0	ND<74.2	ND<29.6	ND<74.2	0.4
V2 Effluent		3,470	ND<8.6	29.5	ND<117	ND<46.8	ND<117	0.8
PSCAA Threshold Concentration *								200

Table 1. Vapor Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Vapor Results, Vapor Train 3 (EPA Method TO-15 for VOCs) (µg/m3)						*THCg (ppmv)
		THCg	Benzene	Toluene	Ethylbenzene	m&p Xylenes	o-Xylenes	
V3 Influent	01/27/14	261,000	184	1,680	2,440	9,530	3,590	61.8
V3 Intermediate		108,000	ND<13.6	39.5	ND<37.0	ND<73.9	ND<37.0	25.6
V3 Effluent		31,800	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	7.5
V3 Influent	02/19/14	165,000	85	456	1,070	4,550	1,650	39.1
V3 Intermediate		2,640	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	0.6
V3 Effluent		3,220	ND<10.9	34.1	ND<29.6	ND<59.1	ND<29.6	0.8
V3 Influent	03/10/14	209,000	204	2,110	2,830	18,400	5,550	49.5
V3 Intermediate		8,010	ND<10.8	27.3	ND<29.5	ND<59.0	ND<29.5	1.9
V3 Effluent		4,980	ND<10.9	ND<25.9	ND<29.6	ND<59.1	ND<29.6	1.2
V3 Influent	04/16/14	167,000	78	1,320	882	6,860	2,290	39.5
V3 Intermediate		ND<1220	ND<6.5	18	ND<17.6	ND<35.2	ND<17.6	NC
V3 Effluent		ND<1220	ND<6.5	30.8	ND<17.6	ND<35.2	ND<17.6	NC
V3 Influent	05/08/14	134,000	33	641	1,060	11,600	3,690.0	31.7
V3 Intermediate		9,300	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	2.2
V3 Effluent		3,970	ND<6.5	ND<15.4	ND<17.6	ND<35.2	ND<17.6	0.9
V3 Influent	06/25/14	ND<28400	ND<152	ND<360	ND<412	3,140	1,130	NC
V3 Intermediate		19,100	24.5	188	130	944	207	4.5
V3 Effluent		ND<2120	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<30.6	NC
V3 Influent	07/09/14	83,400	ND<56.5	172	180	3,440	1,540	19.7
V3 Intermediate		ND<2120	ND<22.6	27.9	ND<30.6	ND<61.2	ND<30.6	NC
V3 Effluent		3,540	ND<18.8	22.7	ND<25.5	ND<51.0	ND<25.5	0.8
V3 Influent	08/05/14	35,700	ND<22.0	85.3	ND<59.5	1,140	519	8.5
V3 Intermediate		ND<2460	ND<13.1	ND<31.1	ND<35.6	ND<71.1	ND<89.2	NC
V3 Effluent		5,840	ND<11.3	ND<26.8	ND<30.6	ND<61.2	ND<76.8	1.4
V3 Influent	09/04/14	4,850	ND<10.9	ND<25.9	ND<78.6	1,460	640	1.1
V3 Intermediate		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V3 Effluent		ND<2040	ND<10.9	ND<25.9	ND<78.6	ND<59.1	ND<29.6	NC
V3 Influent	10/16/14	15,200	ND<13.1	ND<31.1	ND<35.6	241	170	3.7
V3 Intermediate		ND<2550	ND<13.6	ND<32.3	ND<37.0	ND<73.9	ND<37.0	NC
V3 Effluent		ND<1760	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	NC
V3 Influent	11/11/14	ND<1750	ND<9.4	ND<55.2	ND<63.6	ND<127	65.6	NC
V3 Intermediate		ND<1760	ND<9.4	ND<55.4	ND<63.9	ND<128	ND<63.9	NC
V3 Effluent		ND<1540	ND<8.2	ND<48.4	ND<55.8	ND<112	ND<55.8	NC
V3 Influent	12/10/14	6,140	ND<9.4	ND<22.3	ND<25.5	ND<51.0	ND<25.5	1.5
V3 Intermediate		ND<2060	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	NC
V3 Effluent		7,100	ND<11.0	ND<26.0	ND<29.7	ND<59.5	ND<29.7	1.7
V3 Influent	01/20/15	12,100	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	2.9
V3 Intermediate		ND<2270	ND<12.2	ND<28.8	ND<32.9	ND<65.8	ND<32.9	NC
V3 Effluent		ND<2550	ND<13.6	ND<161	ND<37.0	ND<73.9	ND<37.0	NC
V3 Influent	02/25/15	3,340	ND<11.7	ND<27.7	ND<31.7	ND<63.4	ND<31.7	0.8
V3 Intermediate		ND<1980	ND<10.6	ND<25.1	ND<28.7	ND<57.3	ND<28.7	NC
V3 Effluent		ND<1980	ND<10.6	ND<25.1	ND<28.7	ND<57.3	ND<28.7	NC
V3 Influent	03/18/15	2,290	ND<5.7	14.8	ND<76.8	38.3	ND<76.8	0.5
V3 Intermediate		ND<1280	ND<6.8	28.4	ND<92.7	ND<37.0	ND<92.7	NC
V3 Effluent		2,240	ND<5.5	ND<12.9	ND<74.2	ND<29.6	ND<74.2	0.5
PSCAA Threshold Concentration *								200

Notes:
There are three sets (or trains) of two vapor phase carbon units (for a total of six) used to treat extracted vapors. The two carbon units associated with each train are plumbed in series. Samples V1 Influent, V1 Intermediate, and V1 Effluent were collected from sample ports associated with the first train of vapor phase carbon units. Samples V2 Influent, V2 Intermediate, and V2 Effluent were collected from sample ports associated with the second train of vapor phase carbon units. Samples V3 Influent, V3 Intermediate, and V3 Effluent were collected from sample ports associated with the third train of vapor phase carbon units. The influent sample ports for each train are located prior to the first carbon units. The intermediate sample ports for each train are located between the first and second carbon units. The effluent sample ports for each train are located after the second (and last) carbon units. The sample port locations are shown on Figure 2.

NC = Not Calculated due to concentration below laboratory MDL.

* THCg ppm = THCg (µg/m^3) /42.23 (conversion factor for molar volume @ STP)/M (molecular weight of THC [100]). PSCAA Permit (Registration #29548) requires a minimum control efficiency of 97% when the TPH (THC) influent concentration is greater than or equal to 200 ppmv.

Table 2. Liquid Phase Analytical Results Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Sample Location	Sample Date	Analytical Water Results (NWTPH-Gx/8021 for THCg and EPA Method 8260 for VOCs) (µg/L)				
		THCg	Benzene	Toluene	Ethylbenzene	Total Xylenes
W-DSCHG	01/27/14	2,250	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INT		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF		ND (<100)	ND (<1.0)	1.5	ND (<1.0)	8.6
W-DSCHG	02/20/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	1.3	11.4
W-DSCHG	03/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	04/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	5.5
W-DSCG	05/08/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	06/25/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	07/09/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	08/13/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	09/04/14	*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		*	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	10/16/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	11/11/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	12/10/14	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	01/21/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		827	10.2	82.1	11.4	86.2
W-DSCHG	02/25/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-DSCHG	03/18/15	ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-OUT-WC1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
W-INF-WS1		ND (<100)	ND (<1.0)	ND (<1.0)	ND (<1.0)	ND (<3.0)
KCIW Permit Limits			70	1,400	1,700	2,200

Notes:
There are a total of two liquid phase carbon units plumbed in series to treat water. Samples W-INF or W-INF-WS1 were collected from a sample port located prior to the first liquid phase carbon unit. Samples W-INT or W-OUT-WC1 were collected from a sample port located between the first and second liquid phase carbon units. Samples W-DSCHG or W-DSCG were collected from the sample port located after the second (and final) liquid phase carbon unit. The sample port locations are shown on Figure 2.

KCIW Permit Maximum Allowable Concentrations:
Benzene – 0.07 mg/L (70 µg/L); Ethylbenzene – 1.7 mg/L (1,700 µg/L); Toluene – 1.4 mg/L (1,400 µg/L); Total Xylenes – 2.2 mg/L (2,200 µg/L).

* THCg analysis was requested, but the laboratory inadvertently neglected to complete the THCg analysis.

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

	SVE System						AS System		Off-gas Treatment System									System Totals		
	Mercer-Westlake Wells			Valley-Terry Wells					VPC-1			VPC-2			VPC-3					
Date	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Applied Pressure (psi)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removal Rate (lbs./hr)	Cumulative TPHg Removed (lbs.)
1/3/14	114	28	26	114	23	26	114	6.5	NM	95000	20.41	NM	74950	15.53	NM	54900	10.89	46.84	0.41	154.94
1/6/14	3	28	28	3	23	26	3	6	NM	95000	0.54	NM	74950	0.41	NM	54900	0.29	1.23	0.41	156.17
1/7/14	19	28	18	19	23	25	19	6	503.07	95000	3.40	485.37	74950	2.59	464.73	54900	1.82	7.81	0.41	163.98
1/8/14	28	28	18	28	23	26	28	5	NM	95000	0.00	NM	74950	0.00	NM	54900	0.00	0.00	0.00	163.98
1/9/14	24	28	22	24	23	26	24	8	515.92	95000	9.55	496.37	74950	7.25	496.38	54900	2.45	19.24	0.43	183.22
1/10/14	17	28	22	18	23	27	17	7.5	517.42	95000	3.13	502.21	74950	2.54	528.50	54900	1.96	7.62	0.43	190.84
1/13/14	79	28	22	79	23	26	80	6.5	508.97	95000	14.31	532.16	74950	11.80	548.73	54900	8.91	35.02	0.44	225.87
1/14/14	19	28	22	18	23	27	18	6.5	497.43	95000	3.36	523.97	74950	2.65	553.03	54900	2.05	8.06	0.44	233.92
1/15/14	28	28	23	28	23	27	26	7	512.50	95000	5.11	513.61	74950	4.04	537.68	54900	3.10	12.24	0.44	246.16
1/16/14	19	28	24	19	23	28	19	6	538.21	95000	3.64	533.57	74950	2.85	538.31	54900	2.10	8.59	0.45	254.75
1/17/14	25	28	34	26	23	44	25	6	441.06	95000	3.92	420.97	74950	3.07	464.49	54900	2.48	9.48	0.37	264.23
1/20/14	69	28	33	69	23	44	69	6.5	456.66	95000	11.21	452.21	74950	8.76	455.74	54900	6.47	26.44	0.38	290.67
1/21/14	29	28	46	29	23	53	29	5.5	429.86	95000	4.44	460.09	74950	3.75	466.58	54900	2.78	10.96	0.38	301.63
1/22/14	20	28	42	19	23	33	20	6.5	451.76	95000	3.22	462.40	74950	2.47	500.94	54900	1.96	7.64	0.39	309.27
1/23/14	30	28	40	30	23	32	30	8.5	418.24	95000	4.46	438.07	74950	3.69	471.91	54900	2.91	11.07	0.37	320.34
1/24/14	25	28	41	25	23	32	25	7	432.19	95000	3.84	439.34	74950	3.08	479.91	54900	2.47	9.40	0.38	329.73
1/27/14	66	28	41	66	23	31	66	6.5	431.90	77100	8.23	431.15	179000	19.08	475.41	261000	30.68	57.99	0.88	387.72
1/28/14	25	28	40	25	23	31	25	8	439.45	77100	3.17	441.02	179000	7.39	475.41	261000	11.62	22.18	0.89	409.91
1/29/14	23	28	44	23	23	59	23	8.5	450.89	77100	2.99	406.78	179000	6.27	454.55	261000	10.22	19.49	0.85	429.39
1/30/14	17	28	44	17	23	56	17	7	452.30	77100	2.22	433.34	179000	4.94	444.43	261000	7.39	14.55	0.86	443.94
1/31/14	3	28	46	3	23	47	3	8.5	429.59	77100	0.37	413.24	179000	0.83	414.10	261000	1.21	2.42	0.81	446.36
2/3/14	69	28	40	69	23	46	69	8.7	464.08	77100	9.25	430.25	179000	19.90	463.12	261000	31.24	60.39	0.88	506.75
2/4/14	28	28	46	28	23	48	28	8	399.93	77100	3.23	421.40	179000	7.91	448.73	261000	12.28	23.43	0.84	530.18
2/7/14	69	28	48	69	23	47	69	8	409.47	77100	8.16	424.23	179000	19.63	456.33	261000	30.78	58.57	0.85	588.75
2/11/14	97	28	50	97	23	51	98	6	449.75	77100	12.60	444.32	179000	28.90	451.16	261000	42.78	84.28	0.87	673.02
2/12/14	26	28	47	26	23	51	25	6	438.41	77100	3.29	482.88	179000	8.42	483.94	261000	12.30	24.01	0.92	697.03
2/13/14	19	28	48	19	23	51	20	6	422.95	77100	2.32	412.96	179000	5.26	458.18	261000	8.51	16.09	0.85	713.13
2/17/14	67	28	51	67	23	52	66	7	415.17	77100	8.03	427.60	179000	19.21	449.94	261000	29.47	56.71	0.85	769.84
2/19/14	25	28	49	25	23	49	26	7	432.53	158000	6.40	468.57	153000	6.71	487.13	165000	7.53	20.64	0.83	790.48
2/20/14	22	28	50	22	23	49	21	9	433.97	158000	5.65	458.83	153000	5.78	497.26	165000	6.76	18.20	0.83	808.68
2/25/14	122	28	48	122	23	46	122	10	438.82	158000	31.68	499.65	153000	34.93	493.41	165000	37.20	103.82	0.85	912.50
2/26/14	26	28	49	26	23	53	26	8.5	365.19	158000	5.62	395.49	153000	5.89	411.09	165000	6.61	18.12	0.70	930.62
2/27/14	23	28	50	23	23	63	23	9	359.08	158000	4.89	390.85	153000	5.15	419.23	165000	5.96	16.00	0.70	946.61
3/3/14	97	28	50	97	23	62	97	8	343.96	158000	19.75	381.85	153000	21.23	388.82	165000	23.31	64.28	0.66	1010.90
3/5/14	38	28	50	38	23	67	38	12.2	339.24	158000	7.63	370.37	153000	8.07	374.87	165000	8.80	24.50	0.64	1035.39
3/7/14	48	28	52	48	23	67	48	11.9	417.00	158000	11.85	473.58	153000	13.03	493.58	165000	14.64	39.52	0.82	1074.91
3/10/14	74	28	65	74	23	71	74	11.8	376.48	181000	18.89	415.20	219000	25.20	430.89	209000	24.96	69.05	0.93	1143.96
3/14/14	91	28	70	90	23	73	91	13.4	400.74	181000	24.72	428.35	219000	31.62	463.82	209000	32.68	89.03	0.99	1232.99
3/18/14	99	28	74	100	23	75	99	12.6	410.20	181000	27.53	442.68	219000	36.31	462.90	209000	36.24	100.08	1.00	1333.07
3/20/14	45	28	71	44	23	74	45	12.3	416.64	181000	12.71	438.17	219000	15.81	468.67	209000	16.14	44.67	1.01	1377.74
3/24/14	95	28	75	96	23	77	95	13.4	423.51	181000	27.28	473.84	219000	37.31	495.55	209000	37.24	101.83	1.06	1479.58
4/1/14	194	28	73	194	23	74	194	15.1	399.25	181000	52.51	428.93	219000	68.26	468.17	209000	71.10	191.87	0.99	1671.45
4/11/14	71	28	71	70	23	73	71	15.4	434.40	181000	20.91	478.15	219000	27.46	503.76	209000	27.61	75.97	1.08	1747.42
4/16/14	118	27	72	119	21	74	118	12.5	406.84	156000	28.05	496.74	162000	35.87	501.69	167000	37.34	101.27	0.85	1848.69
4/23/14	168	27	62	168	21	74	168	12.6	406.20	156000	39.88	464.92	162000	47.39	482.21	167000	50.67	137.95	0.82	1986.63
4/30/14	146	27	73	169	21	73	170	12.6	336.33	107000	45.29	351.75	103000	48.72	363.86	134000	65.56	159.58	0.45	2146.21
5/8/14	190	27	73	190	21	75	190	13	319.88	107000	13.08	334.30	103000	13.16	345.68	134000	17.70	43.93	0.43	2190.14
5/12/14	102	27	73	102	21	74	102	13.4	318.18	107000	29.97	333.56	103000	30.11	343.06	134000	40.29	100.37	0.43	2290.51
5/22/14	235	27	74	234	21	74	234	12.5	325.05	107000	13.03	336.54	103000	13.11	358.27	134000	18.16	44.30	0.44	2334.81

Table 3. Remediation System Operational Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Date	SVE System						AS System		Off-gas Treatment System									System Totals		
	Mercer-Westlake Wells			Valley-Terry Wells					VPC-1			VPC-2			VPC-3					
	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Wells On-line (count)	Applied Vaccum (in. H_2O)	Period Operating Hours	Applied Pressure (psi)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Flow Rate (scfm)	Influent Conc. ($\mu g/m^3$)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removed (lbs.)	Estimated TPHg Removal Rate (lbs./hr)	Cumulative TPHg Removed (lbs.)
5/27/14	100	27	76	101	21	75	100	12.7	333.45	107000	22.45	376.74	103000	24.42	376.67	134000	31.76	78.63	0.47	2413.44
6/3/14	168	16	77	168	22	68	169	13.3	321.35	107000	21.38	371.88	103000	23.82	371.30	134000	30.94	76.13	0.46	2489.58
6/10/14	166	16	79	166	22	82	165	13.8	323.85	107000	18.69	339.19	103000	18.71	350.53	134000	25.16	62.56	0.44	2552.14
6/16/14	144	16	80	143	22	85	144	12.7	316.85	55200	13.95	348.40	23200	6.48	357.32	28400	8.13	28.57	0.13	2580.71
6/25/14	213	16	78	214	22	85	214	10.7	320.62	55200	0.13	337.27	23200	0.06	354.99	28400	0.08	0.27	0.13	2580.97
7/1/14	2	16	75	2	22	78	2	15.2	315.28	131000	30.17	343.08	46000	11.53	352.97	83400	21.50	63.20	0.32	2644.17
7/9/14	195	16	78	195	22	79	195	10.1	323.83	131000	11.60	376.45	46000	8.95	375.90	83400	16.21	36.76	0.34	2680.93
7/15/14	73	16	71	138	22	75	137	13.2	308.90	131000	22.28	343.61	46000	8.64	357.62	83400	16.31	47.24	0.32	2728.16
7/21/14	147	16	73	146	22	76	147	12	306.32	131000	12.78	343.95	46000	5.04	350.79	83400	9.31	27.13	0.32	2755.29
7/30/14	85	16	71	85	22	70	85	12.2	314.00	33900	5.50	338.85	39300	6.88	352.17	35700	6.50	18.88	0.14	2774.17
8/5/14	138	18	73	138	22	74	138	11.8	312.81	33900	7.31	328.88	39300	8.91	349.19	35700	8.59	24.81	0.13	2798.98
8/13/14	184	18	73	184	22	64	184	12.3	327.24	33900	7.65	343.02	39300	9.29	362.57	35700	8.92	25.86	0.14	2824.84
8/21/14	184	18	73	184	22	64	184	12	311.21	33900	4.82	388.48	39300	6.98	381.94	35700	6.23	18.03	0.15	2842.87
8/26/14	122	18	71	122	22	62	122	14.9	339.72	20500	5.50	439.51	19500	6.77	408.65	4850	1.57	13.84	0.07	2856.71
9/4/14	211	18	82	211	22	73	211	13	338.28	20500	3.79	473.59	19500	5.05	436.07	4850	1.16	10.00	0.07	2866.71
9/10/14	146	18	82	146	22	74	146	12.2	334.25	20500	4.26	462.21	19500	5.60	419.59	4850	1.27	11.13	0.07	2877.84
9/17/14	166	18	81	166	22	77	166	12.9	341.08	20500	3.30	454.77	19500	4.19	413.23	4850	0.95	8.43	0.07	2886.27
9/22/14	126	18	80	126	22	76	126	11.5	328.56	20500	5.63	452.80	19500	7.38	424.43	4850	1.72	14.72	0.07	2900.99
10/3/14	223	18	80	223	22	77	223	14	323.83	16500	6.16	416.06	67800	32.54	395.12	15200	6.93	45.64	0.15	2946.63
10/16/14	308	18	81	308	22	82	308	11	333.97	16500	6.94	426.08	67800	36.36	413.66	15200	7.91	51.21	0.15	2997.84
10/30/14	336	18	79	336	22	83	336	12.4	319.37	820	0.18	371.05	820	0.21	365.29	875	0.22	0.60	0.00	2998.44
11/11/14	181	18	79	181	22	75	181	13.1	310.64	820	0.34	401.50	820	0.44	377.78	875	0.44	1.23	0.00	2999.66
11/26/14	358	15	79	358	19	74	358	9.1	285.03	6930	1.37	337.16	6210	1.45	333.38	6140	1.42	4.24	0.02	3003.90
12/10/14	185	15	90	185	19	80	185	9	286.29	6930	2.19	350.27	6210	2.41	344.49	6140	2.35	6.95	0.02	3010.85
12/23/14	295	15	91	296	19	80	295	12.9	315.04	6930	2.33	334.14	6210	2.60	352.16	6140	2.71	7.65	0.02	3018.50
1/6/15	285	13	90	335	19	76	336	13	331.40	1060	0.44	405.42	1095	0.56	399.64	12100	6.05	7.04	0.02	3025.54
1/20/15	334	13	71	334	19	70	333	12.7	353.11	1060	0.47	301.76	1095	0.41	360.20	12100	5.44	6.32	0.02	3031.86
2/3/15	333	11	76	333	28	68	334	11.5	309.19	1060	0.09	333.62	1095	0.10	357.34	12100	1.23	1.43	0.02	3033.29
2/6/15	76	11	82	76	14	73	75	11.7	320.72	1060	0.12	343.69	1095	0.13	356.96	12100	1.54	1.79	0.02	3035.08
2/10/15	95	15	84	95	14	74	96	14.2	341.44	1060	0.09	351.01	1095	0.10	363.64	12100	1.12	1.31	0.02	3036.39
2/13/15	68	18	75	68	13	78	68	11.9	332.46	1060	0.03	323.87	1095	0.03	351.46	12100	0.32	0.37	0.02	3036.76
2/16/15	20	22	84	20	11	87	20	12.1	331.29	875	0.23	333.00	2940	0.79	341.66	3340	0.92	1.94	0.01	3038.70
2/25/15	214	22	84	215	21	87	214	11	135.72	875	0.08	158.62	2940	0.00	168.13	3340	0.00	0.08	0.00	3038.77
3/4/15	169	8	83	0	0	NM	169	10	144.32	875	0.09	162.42	2940	0.00	164.72	3340	0.00	0.09	0.00	3038.87
3/12/15	196	19	85	0	0	NM	196	9.3	134.97	1970	0.14	167.89	2300	0.00	169.75	2290	0.00	0.14	0.00	3039.01
3/18/15	140	9	100	0	0	NM	139	16.6	148.80	1970	0.13	154.76	2300	0.00	159.31	2290	0.00	0.13	0.00	3039.13
3/24/15	116	9	99	0	0	NM	117	8.5	142.43	1970	0.23	154.86	2300	0.00	159.26	2290	0.00	0.23	0.00	3039.36

Notes:

SVE	=	Soil Vapor Extraction	AS	=	Air Sparge	VPC	=	Vapor Phase Carbon
in. H_2O	=	inches of water	psi	=	pounds per square inch	scfm	=	standard cubic feet per minute
ppm	=	parts per million	($\mu g/m^3$)	=	micrograms per cubic met	TPHg	=	Total Petroleum Hydrocarbons (Gasoline)

Table 4. SVE PID Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Date	Westlake SVE Wells - PID Readings (ppm)								
	WC1	WC2	WC3	WB3	WB2	WB1	WA3	WA2	WA1
1/17/2014	6	8.6	3.4	5	10.9	3	0.2	1.2	0.5
1/20/2014	5.4	9	7.1	5.3	4.5	3.7	3.4	5.4	5.1
1/21/2014	1.8	1.7	2.7	2.2	1.6	1.3	1.3	2.3	2
1/27/2014	1	1.2	1.9	1.5	1.4	1.3	1.9	2.7	2.7
1/29/2014	1.5	1.6	2	3.2	1.9	3.2	2.3	5.8	3.3
2/3/2014	1.5	1.6	2	3.2	1.9	3.2	2.3	5.8	3.3
2/12/2014	0.2	0.1	1.7	0.8	0.1	0.1	0	0.1	0
2/19/2014	0.7	0.6	0.7	0.6	0.4	0.4	0.3	0.3	0.4
2/27/2014	0.9	1.2	1.2	1.3	1.3	1.4	1.6	1.8	1.9
3/7/2014	0.6	0.3	0.5	0.4	0.3	0.2	0.3	0.2	0.1
3/20/2014	0.7	0.6	0.5	0.4	0.4	0.4	0.3	0.2	0.3
4/16/2014	69	225	210	135	32	225	64	210	115
6/3/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
8/5/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/26/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL
1/6/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
1/28/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/3/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/6/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/10/2015	OL	OL	OL	OL	OL	0	4	0.3	0.1
2/13/2015	0	0.1	6.2	0	4	0	0	0	0
2/16/2015	0	0	0	0	0	OL	OL	OL	OL
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/12/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/18/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL

Valley SVE Wells - PID Readings (ppm)							
V9	V7	V1	V6	V2	V5	V3	V4
7.8	3.3	2.4	4.3	15.1	38.8	3.3	69.4
4	1.8	2.3	1.6	2.3	35.8	3	2.8
5.3	1.4	2.6	2.3	9	32	2.3	2.9
4.6	1	1.1	0.8	3	42.5	2.4	5.3
3.2	1.2	1.4	2	4.8	35.2	1.4	2.1
1.4	1.2	1.7	1.4	3.3	26.9	1	1.1
0.9	0.8	1.2	1.2	2.2	27.5	1.1	2
0.8	1	0.9	1	1.5	17.3	1.3	1.1
0.7	0.6	0.7	1	1.8	31.3	0.6	0.8
0.7	0.6	0.6	0.9	1.9	31	0.4	0.8
0.6	0.7	0.4	1.5	1.5	51.1	0.5	0.3
0.1	0.1	0.1	0.1	W	81.1	W	0.1
0	0	0.1	0	0	22.8	W	0.1
--	--	--	--	--	22	W	--
--	0	W	--	W	0.1	0.3	0.7
0.2	0.4	OL	0.2	OL	0.2	OL	0.6
0.5	0.6	1	0.2	0.6	0.5	0.6	0.6
0.3	0.2	0.6	OL	0.1	0.2	OL	0.4
0	0	0.4	OL	0	0.2	OL	0.1
OL	0.1	0	OL	0.1	0	OL	0
OL	0.1	OL	OL	0	0	OL	0.1
OL	0	0.2	0	0.1	0	0	0
OL	OL	OL	OL	OL	OL	OL	OL
OL	OL	OL	OL	OL	OL	OL	OL
OL	OL	OL	OL	OL	OL	OL	OL

Date	Mercer SVE Wells - PID Readings (ppm)																	
	M6	M7	M10	M9	M8	M1	M2	M3	M4	M5	M14	M13	M15	M12	M11	M16	M17	M18	M19
1/17/2014	0.1	0.4	0.3	1.2	184	3.5	22.3	0	9.9	10.5	13	13.5	13.7	430	260	31	107	220	200
1/20/2014	5.6	7.2	10.1	16.8	171	2.2	3.5	3.7	1.1	1.2	3.2	3.3	4.3	281	235	29.7	150	184	222
1/21/2014	3.2	3	2.2	1.7	145	6.5	4.1	3.4	2.4	2	2.6	3.1	4.6	184	267	46.2	153	161	226
1/27/2014	3.5	4.8	7.5	16	236	0.9	1.2	1.1	0.7	0.5	1.5	0.6	2.9	100	355	33.8	216	183	240
1/29/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/3/2014	2.8	3.7	7.6	13.9	191	0.6	0.9	1.1	0.7	0.7	1.9	0.7	4	40	302	23	193	156	160
2/12/2014	0	0.1	0	0	98.9	2	2.3	2.5	2.6	3.1	6.1	4.3	8.9	15.5	237	16.9	159	97.5	36.1
2/19/2014	0.4	0.7	0.3	0.3	78.1	1.9	2.1	2.4	2.2	2.6	4	4	7.8	18.1	192	13.5	121	65	25.9
2/27/2014	2.3	2.7	3.8	6	63.9	0.5	0.4	0.3	0.1	0.2	1.6	0.4	1.6	0.2	179	8	139	70	21.5
3/7/2014	0.1	0.3	0.1	0.1	60.5	1.8	1.4	1.1	0.8	0.8	2	0.7	1.4	0.6	178	9.5	134	71.2	21.5
3/20/2014	0.3	0.7	0.2	0.2	58	3.1	1.8	1.4	0.8	0.8	1.6	0.7	1.3	0.6	156	16.1	146	101	14.2
4/16/2014	W	0.4	0.1	2.6	49.3	1.6	0.3	0.2	0.1	0.1	1.1	0.1	0.1	0.1	183	8.3	154	118	8.5
6/3/2014	0.1	0	0.2	0.8	8	0	OL	0.1	0.1	W	1.1	0	OL	0.1	124	12.5	74.5	31	0.8
8/5/2014	--	--	--	--	7.3	--	--	--	--	W	--	--	--	--	74.1	5.1	63.7	13.1	--
11/26/2014	--	--	0.4	0.3	10.4	--	W	--	--	W	--	--	--	W	--	--	--	--	W
1/6/2015	1.9	1	OL	0.7	9	0.8	OL	0.7	1	OL	11	W	0.6	OL	7.4	4.6	9.6	4.5	OL
1/28/2015	2.9	1.4	1.5	2.5	8.9	2.5	0.1	1.3	0.2	0.2	0.4	0.8	0.2	20.5	9.5	2.6	12	3	0.8
2/3/2015	2.5	OL	0.8	2.1	9.3	2.3	OL	OL	OL	OL	OL	1.2	OL	14.9	11.5	4.8	10.7	3.8	OL
2/6/2015	1.9	OL	2.5	2.7	4.8	3	OL	OL	OL	OL	OL	4.5	OL	19.3	3.5	2.3	5.2	2	OL
2/10/2015	2	OL	0.1	0.1	2.1	0	OL	OL	OL	OL	OL	0.1	OL	11.1	4.6	0.1	6.8	0.1	OL
2/13/2015	0.1	OL	0.1	0.1	1	OL	OL	OL	OL	OL	OL	0	OL	10.6	3.8	OL	4	0	OL
2/16/2015	OL	OL	0.1	0	0.1	0	0	0	1	0	0	0	0	7.5	0.1	0	0.1	0	13.2
3/4/2015	OL	OL	0.3	0.2	1.8	OL	OL	OL	0	OL	OL	OL	OL	8.4	3.3	OL	2.1	OL	3.7
3/12/2015	0	0.3	0	0.1	1.6	10.1	0	0	0	0	0	0	0.1	8.2	1.8	1.2	1.1	1	2.4
3/18/2015	OL	OL	OL	0	0.3	0.1	OL	OL	0.5	OL	OL	OL	OL	4.9	0.9	0.1	0	OL	0.8

Date	Terry SVE Wells - PID Readings (ppm)														
	TSVE3	TEFR1 AIR	TMW65 AIR	TSVE4	TSVE11-MW67	TSVE10 - MW66	TSVE2	TSVE1	TSVE7	TSVE12-MW68	TSVE5	TSVE6	TEFR2 AIR	TSVE8	TMW48 AIR
1/17/2014	19.2	9.5	11.8	2.6	4.6	107	4.1	1.7	1.5	1.3	20.1	6.4	0.4	0.3	131
1/20/2014	26.6	10.3	8.5	8.4	11.1	125	10	5.5	3.5	4.7	6.3	5.4	4.5	2	115
1/21/2014	17.1	3.1	4.1	3.4	5.8	115	1.7	1	1.2	1.4	6.5	4.9	3.8	4.5	100
1/27/2014	15.5	5.1	3.1	1.9	3.5	116	4.2	2.2	1.1	1.2	4.7	3.7	1.3	1	113
1/29/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	7.3	3.6	2.9	5.7	97.1
2/3/2014	14.3	1.1	1.7	2.3	7.2	138	0.5	0.5	0.6	0.7	2.4	2.9	2.9	6.2	69.7
2/12/2014	3.6	1	1.1	1.9	7.2	120	0.4	0.5	0.6	0.4	3.4	3.2	2.5	6.2	77.3
2/19/2014	5.6	1	1.2	1.6	3.5	71.3	0.6	0.6	0.6	0.6	2.9	2.2	2.1	2.4	47
2/27/2014	3.4	1	0.9	1.2	4.1	58.7	0.3	0.3	0.3	0.4	0.7	1.2	0.9	1.6	29.8
3/7/2014	3.5	0.9	1	1	4	52.7	0.1	0.1	0.1	0.3	0.6	1.1	0.9	1.7	26.3
3/20/2014	2.8	2.2	1.5	0.9	2.6	44.9	0.9	4.4	0.7	0.7	0.3	0.4	0.2	0.5	18.4
4/16/2014	3.2	1.5	0.8	0.2	2.5	45	1.8	1	0.2	0.3	0.2	0.1	0	0.1	16.1
6/3/2014	0.8	0.5	0.3	0.2	0.6	30.7	1.3	0.4	0.1	0.1	0	0	0.1	0	0.3
8/5/2014	--	--	--	--	--	16.3	--	--	--	--	--	--	--	--	--
11/26/2014	--	--	OL	--	--	--	--	--	--	--	--	--	OL	--	--
1/6/2015	1.9	1.4	1.9	0.3	1	0.5	0	0.5	0.4	1.4	0.3	0.4	OL	0.1	0.1
1/28/2015	1	0.9	1.9	1.8	0.6	0.6	0.7	0.7	0.7	1	0.5	0.8	0.7	0.7	0.3
2/3/2015	OL	0.1	OL	0.2	OL	OL	0.3	0.5	0.3	OL	0.2	0.4	OL	0.7	OL
2/6/2015	OL	0.4	OL	0.3	OL	OL	0.2	0.3	0.4	OL	0	0.1	OL	0.1	OL
2/10/2015	OL	0	OL	0.1	OL	OL	0.1	0	0.1	OL	0.1	0.1	OL	0.1	OL
2/13/2015	OL	OL	OL	0	OL	OL	0	0	0.1	OL	0	0.1	OL	0	OL
2/16/2015	0	0	0	0	0	0	0	0	0.1	OL	0.1	0	0	0	0
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/12/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/18/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

SVE = Soil Vapor Extraction
PID = Photo Ionization Detector
ppm = parts per million
-- = Not Measured
OL = Offline
W = Water in Well

Table 5. AS Flow Data Summary
PHILLIPS 66 FACILITY #255353 (AOC 1396)

Date	Westlake AS Wells - Flow Rate Readings (scfm)																				
	W-1	W-2	W-3	W-4	W-5	W-6	W-7	W-8	W-9	W-10	W-11	W-12	W-13	W-14	W-15	W-16	W-17	W-21	W-20	W-19	W-18
1/23/2014	0	3	0	0	3	0	0	0	0	0	0	0	0	5	0	0	0	0	0	3	0
1/31/2014	2	4	>25	2	3.5	5	<2	<2	4.5	<2	<2	3.5	14.5	6	4	3	7	7.5	7	3	8.5
2/4/2014	2	3	>25	3	3	7	<2	5	4	2	<2	4	11	7	3	3	7	7	7	4	8.5
2/12/2014	<2	5	>25	4	<2	11	6	9	7	<2	2	6	12	7	8	4	7.5	7	8	4	9
2/17/2014	2	6	9	3	2	9	4	8	5	3	3	6	16	8	6	4	8	10	13	4	10
2/26/2014	2	10	9	6	<2	12	7	9.5	9	3	3	6	13	9	6	3	11	14	7.5	4	11
3/3/2014	2	10	10	5	3	12	8	9	4	5	4	7	13.5	10	6	6	10	8	9.5	5	11
3/18/2014	2	11	<2	6	2	16	11	14	9	4	4	<2	15	11	17	8	9	15	10	5	11
5/27/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
7/9/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
11/26/2014	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
2/13/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

Date	Mercer AS Wells - Flow Rate Readings (scfm)																								
	M-8	M-20	M-26	M-2	M-27	M-16	M-3	M-9	M-17	M-5	M-19	M-15	M-7	M-10	M-14	M-18	M-6	M-13	M-4	M-22	M-12	M-1	M-23	M-11	M-25	M-24	M-21
1/23/2014	9	0	0	0	0	0	0	0	7.5	0	0	0	6	0	0	1	0	0	5	0	0	0	0	0	0	0	0
1/31/2014	9	3.5	<2	<2	<2	4.5	3	5	7.5	7.5	3.5	6	5	6	>25	<2	<2	<2	5.5	5	<2	11.5	<2	<2	7.5	4	<2
2/4/2014	10	<2	<2	<2	<2	3.5	4	5	7.5	7	3	6	6	7	>25	2	<2	<2	6.5	5	<2	11.5	<2	<2	5.5	>25	7
2/12/2014	10	6	3	<2	<2	4	3.5	5	7	9	4	5.5	7	8	>25	3	<2	<2	8	6	<2	13	<2	<2	8.5	>25	7
2/17/2014	11	12	2	<2	<2	6	3.5	6	8	10	5	7	5	9	8	<2	<2	2	7	8	<2	14	2	<2	5.5	4	<2
2/26/2014	12	12	<2	<2	<2	5	4	8	8.5	11	6	6.5	6	10	9	3	2	3	8	9	3	12	2	<2	9	4	<2
3/3/2014	13	10	<2	<2	<2	5	4.5	7	9	12	5	6.5	7	11	10	4	2	3	11	9	3	13	<2	<2	8	4	2
3/18/2014	13	11	<2	<2	<2	7	5	9	10	13	8	9	8	11	11	7	<2	8	10	12	4	16	3	<2	11	6	8
5/27/2014	14	25	0	0	0	6.5	7	7	10	15	6.5	8	7	25	25	0	16	5	11	11.5	6	16	1	1	25	9	0
7/9/2014	12	25	0	0	0	5	6	7	9	12	7	6	7	20	25	0	13	5	12	10	4	16	1	1	25	7	0
11/26/2014	--	20	--	--	0	--	--	--	--	--	7	--	--	--	--	1	14	--	--	--	--	--	0	--	--	--	1
2/13/2015	11	20	0	10	OL	0	4	11	15	3	OL	6	7	0	8	OL	14	6	11	0	3	11	0	1	25	7	0
3/4/2015	--	--	--	10	OL	0	--	10	18	3	OL	--	--	1	9	OL	--	--	--	0	--	12	--	0	--	--	--

Date	Valley AS Wells - Flow Rate Readings (scfm)													
	V-6	V-7	V-8	V-9	V-10	V-5	V-11	V-4	V-12	V-3	V-13	V-2	V-14	V-1
1/23/2014	0	6	0	0	0	0	0	0	0	0	6	0	0	0
1/31/2014	4	8	6	<2	3	5	7.5	3	4	3.5	7.5	10	8.5	2
2/4/2014	3.5	8	5	<2	4	4	7.5	4	4	4	7	9.5	5	5
2/12/2014	4	8	8	<2	5	6	11	4	5	6	8	10	7	7
2/17/2014	4	6	7	2	6	5	9	5	5	6	8	12	2	4
2/26/2014	8	9	7	3	8	8	13.5	3.5	4	6	9	11	8	10
3/3/2014	10	10	8	2	10	<2	16.5	5	5	9	8	12	9	9
3/18/2014	4	12	7	4	7	<2	21	4	4	12	14	13	<2	7
5/27/2014	1	18	5	3	8	0	17	2	3	8	8	12	0	6
7/9/2014	1	13	4	5	6	0	16	2	2	2	6	12	0	5
11/26/2014	3	7	6	0	5	1	--	3	--	8	4	4	3	--
2/13/2015	3	7	5	0	4	1	0	2	0	7	5	4	5	0
3/4/2015	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL	OL

Notes:
AS = Air Sparge
SCFM = Standard Cubic Feet per Minute
-- = Not Measured
OL = Offline

APPENDIX B
Laboratory Analytical Reports

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 06, 2018

Elisabeth Silver
ATC Group Services LLC
6347 Seaview Ave NW
Seattle, WA 98107

RE: Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Dear Elisabeth Silver:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Laurence Brown, ATC Group Services LLC

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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CERTIFICATIONS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Pace Analytical Services, LLC
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(612)607-1700

SAMPLE SUMMARY

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10457067001	**EFF-1**	Air	11/28/18 15:45	11/30/18 09:55
10457067002	**EFF-2**	Air	11/28/18 15:55	11/30/18 09:55
10457067003	**EFF-3**	Air	11/28/18 16:10	11/30/18 09:55

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SAMPLE ANALYTE COUNT

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10457067001	**EFF-1**	TO-15	CH1	6	PASI-M
10457067002	**EFF-2**	TO-15	CH1	6	PASI-M
10457067003	**EFF-3**	TO-15	CH1	6	PASI-M

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Sample: EFF-1 **Lab ID: 10457067001** Collected: 11/28/18 15:45 Received: 11/30/18 09:55 Matrix: Air

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	**0.99**	ug/m3	0.57	0.27	1.74		12/04/18 00:06	71-43-2	A4
Ethylbenzene	**1.1J**	ug/m3	1.5	0.53	1.74		12/04/18 00:06	100-41-4	
THC as Gas	**607**	ug/m3	181	90.3	1.74		12/04/18 00:06		N2
Toluene	**17.0**	ug/m3	1.3	0.61	1.74		12/04/18 00:06	108-88-3	
m&p-Xylene	**4.8**	ug/m3	3.1	1.2	1.74		12/04/18 00:06	179601-23-1	
o-Xylene	**1.7**	ug/m3	1.5	0.60	1.74		12/04/18 00:06	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Sample: EFF-2 **Lab ID: 10457067002** Collected: 11/28/18 15:55 Received: 11/30/18 09:55 Matrix: Air

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	**4.0**	ug/m3	0.57	0.27	1.74		12/04/18 00:37	71-43-2	A4
Ethylbenzene	**31.2**	ug/m3	1.5	0.53	1.74		12/04/18 00:37	100-41-4	
THC as Gas	**3180**	ug/m3	181	90.3	1.74		12/04/18 00:37		N2
Toluene	**41.2**	ug/m3	1.3	0.61	1.74		12/04/18 00:37	108-88-3	
m&p-Xylene	**125**	ug/m3	3.1	1.2	1.74		12/04/18 00:37	179601-23-1	
o-Xylene	**54.0**	ug/m3	1.5	0.60	1.74		12/04/18 00:37	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Sample: EFF-3 **Lab ID: 10457067003** Collected: 11/28/18 16:10 Received: 11/30/18 09:55 Matrix: Air

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
TO15 MSV AIR	Analytical Method: TO-15								
Benzene	**4.8**	ug/m3	0.57	0.27	1.74		12/04/18 01:06	71-43-2	A4
Ethylbenzene	**32.0**	ug/m3	1.5	0.53	1.74		12/04/18 01:06	100-41-4	
THC as Gas	**2570**	ug/m3	181	90.3	1.74		12/04/18 01:06		N2
Toluene	**47.5**	ug/m3	1.3	0.61	1.74		12/04/18 01:06	108-88-3	
m&p-Xylene	**125**	ug/m3	3.1	1.2	1.74		12/04/18 01:06	179601-23-1	
o-Xylene	**54.8**	ug/m3	1.5	0.60	1.74		12/04/18 01:06	95-47-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

QC Batch: 578556 Analysis Method: TO-15
QC Batch Method: TO-15 Analysis Description: TO15 MSV AIR Low Level
Associated Lab Samples: 10457067001, 10457067002, 10457067003

METHOD BLANK: 3138171 Matrix: Air
Associated Lab Samples: 10457067001, 10457067002, 10457067003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/m3	<0.076	0.16	0.076	12/03/18 15:26	
Ethylbenzene	ug/m3	<0.15	0.44	0.15	12/03/18 15:26	
m&p-Xylene	ug/m3	<0.35	0.88	0.35	12/03/18 15:26	
o-Xylene	ug/m3	<0.17	0.44	0.17	12/03/18 15:26	
THC as Gas	ug/m3	<26.0	52.0	26.0	12/03/18 15:26	N2
Toluene	ug/m3	<0.18	0.38	0.18	12/03/18 15:26	

LABORATORY CONTROL SAMPLE: 3138172

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/m3	34.4	31.7	92	70-134	
Ethylbenzene	ug/m3	45.5	44.3	97	70-133	
m&p-Xylene	ug/m3	45.9	45.4	99	70-133	
o-Xylene	ug/m3	44.1	43.8	99	70-132	
THC as Gas	ug/m3	4440	4570	103	59-150	N2
Toluene	ug/m3	39.4	38.5	98	70-130	

SAMPLE DUPLICATE: 3138950

Parameter	Units	10457168002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/m3	0.45J	0.39J		25	
Ethylbenzene	ug/m3	<0.45	<0.45		25	
m&p-Xylene	ug/m3	<1.0	<1.0		25	
o-Xylene	ug/m3	<0.51	<0.51		25	
THC as Gas	ug/m3	<77.3	95.4J		25	N2
Toluene	ug/m3	0.81J	0.75J		25	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

SAMPLE QUALIFIERS

Sample: 10457067001

[1] Sample was collected in a sampling bag. Sampling bags are not certified for volatile organic compound concentrations prior to sample collection.

Sample: 10457067002

[1] Sample was collected in a sampling bag. Sampling bags are not certified for volatile organic compound concentrations prior to sample collection.

Sample: 10457067003

[1] Sample was collected in a sampling bag. Sampling bags are not certified for volatile organic compound concentrations prior to sample collection.

ANALYTE QUALIFIERS

A4	Sample was transferred from a sampling bag into a Summa Canister within 48 hours of collection.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Z076000073 P66-Westlake
Pace Project No.: 10457067

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10457067001	**EFF-1**	TO-15	578556		
10457067002	**EFF-2**	TO-15	578556		
10457067003	**EFF-3**	TO-15	578556		

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed a

WO# : 10457067

10457067

Section A — Required Client Information:

Company: ATC Group Services
Address: 6347 Seaview Ave NW Seattle WA 98107
Email To: elisabeth.silver@atcgs.com
Phone: 206-781-1449 Fax:
Requested Due Date/TAT: Std. per analysis hold limits

Section B — Required Project Information:

Report To: Elisabeth Silver
Copy To: Lavrence Brown
lavrence.brown@atcgs.com
Purchase Order No.:
Project Name: P66 - Westlake
Project Number: 207600073

Section C — Invoice Information:

Attention: Accounts Payable
Company Name: ATC Group Services
Address: 6347 Seaview Ave, NW Seattle, WA 98107
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 32376

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WA

Section D — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: THC as Gas (TO-15)	BTEX (TO-15)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	~~V-DSCHG-1~~ EFF-1	AR	G			11/28/18	1545		1	1											001
2	~~V-DSCHG-2~~ EFF-2	AR	G			↓	1555		1	1											002
3	~~V-DSCHG-3~~ EFF-3	AR	G			↓	1610		1	1											003
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Extract to SUMAS Immediately	Lavrence Brown/ATC	11/29/18	1350	[illegible] PACE	11-30-18	1330	—	4°	N	Y
	[signature]	11/30/18	1700	[signature] ATC	11-30-18	955	—	N	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Lavrence Brown

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY):

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 11Oct2018 Page 1 of 1
	Document No.: F-MN-A-106-rev.16	Issuing Authority: Pace Minnesota Quality Office

Air Sample Condition Upon Receipt

Client Name: ATC

Project #: WO#: 10457067

PM: JMG Due Date: 12/07/18

CLIENT: P66_CarWA

Courier: ☑ Fed Ex ☐ UPS ☐ Speedee ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 4486 7789 6424

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Tin Can ☐ Other: **Temp Blank rec:** ☐ Yes ☑ No

Temp. (TO17 and TO13 samples only) (°C): X **Corrected Temp (°C):** X **Thermom. Used:** ☐ G87A9170600254 ☐ G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** X **Date & Initials of Person Examining Contents:** 11-30-18 AA

Type of ice Received ☐ Blue ☐ Wet ☑ None

			Comments:
Chain of Custody Present?	☑ Yes	☐ No	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	5.
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	7.
Sufficient Volume?	☑ Yes	☐ No	8.
Correct Containers Used?	☑ Yes	☐ No	9.
-Pace Containers Used?	☑ Yes	☐ No	
Containers Intact?	☑ Yes	☐ No	10.
Media: Air Can (Airbag) Filter TDT Passive			11. Individually Certified Cans Y N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☑ Yes	☐ No	12.

Samples Received: Pressure Gauge # 10AIR35

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Jenni Gross **Date:** 11/30/18

Note: Whenever there is a discrepancy affecting North : samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

December 07, 2018

Elisabeth Silver
ATC Group Services LLC
6347 Seaview Ave NW
Seattle, WA 98107

RE: Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Dear Elisabeth Silver:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jennifer Gross
jennifer.gross@pacelabs.com
(206)957-2426
Project Manager

Enclosures

cc: Laurence Brown, ATC Group Services LLC

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #: MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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SAMPLE SUMMARY

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10457136001	**W-DSCHG-1**	Water	11/28/18 15:15	11/30/18 09:55
10457136002	**W-DSCHG-2**	Water	11/28/18 15:20	11/30/18 09:55
10457136003	**W-DSCHG-3**	Water	11/28/18 15:25	11/30/18 09:55

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SAMPLE ANALYTE COUNT

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10457136001	**W-DSCHG-1**	EPA 8260B	GD1	7	PASI-M
		EPA 1664A TPH	AR3	1	PASI-M

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ANALYTICAL RESULTS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Sample: W-DSCHG-1 **Lab ID: 10457136001** Collected: 11/28/18 15:15 Received: 11/30/18 09:55 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	1.0	0.10	1		12/02/18 21:51	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		12/02/18 21:51	100-41-4	
Toluene	**<0.083**	ug/L	1.0	0.083	1		12/02/18 21:51	108-88-3	
Xylene (Total)	**<0.31**	ug/L	3.0	0.31	1		12/02/18 21:51	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%.	75-125		1		12/02/18 21:51	17060-07-0	
Toluene-d8 (S)	100	%.	75-125		1		12/02/18 21:51	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		12/02/18 21:51	460-00-4	
1664A SGT-HEM, TPH	Analytical Method: EPA 1664A TPH								
Total Petroleum Hydrocarbons	**2.1J**	mg/L	5.1	1.3	1		12/05/18 13:18		B

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

QC Batch: 578392
QC Batch Method: EPA 8260B
Analysis Method: EPA 8260B
Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10457136001

METHOD BLANK: 3137537 Matrix: Water
Associated Lab Samples: 10457136001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	<0.10	1.0	0.10	12/02/18 18:44	
Ethylbenzene	ug/L	<0.14	1.0	0.14	12/02/18 18:44	
Toluene	ug/L	<0.083	1.0	0.083	12/02/18 18:44	
Xylene (Total)	ug/L	<0.31	3.0	0.31	12/02/18 18:44	
1,2-Dichloroethane-d4 (S)	%.	101	75-125		12/02/18 18:44	
4-Bromofluorobenzene (S)	%.	101	75-125		12/02/18 18:44	
Toluene-d8 (S)	%.	98	75-125		12/02/18 18:44	

LABORATORY CONTROL SAMPLE: 3137538

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	18.1	91	75-126	
Ethylbenzene	ug/L	20	18.4	92	75-125	
Toluene	ug/L	20	18.3	92	74-125	
Xylene (Total)	ug/L	60	56.9	95	75-125	
1,2-Dichloroethane-d4 (S)	%.			101	75-125	
4-Bromofluorobenzene (S)	%.			100	75-125	
Toluene-d8 (S)	%.			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3137539 3137540

Parameter	Units	10456748002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	19.6	19.7	98	98	62-140	0	30	
Ethylbenzene	ug/L	ND	20	20	20.2	20.1	101	101	75-131	0	30	
Toluene	ug/L	ND	20	20	19.7	19.9	98	100	68-132	1	30	
Xylene (Total)	ug/L	ND	60	60	60.6	61.7	101	103	69-135	2	30	
1,2-Dichloroethane-d4 (S)	%.						101	99	75-125			
4-Bromofluorobenzene (S)	%.						101	99	75-125			
Toluene-d8 (S)	%.						101	100	75-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

QC Batch: 579049 Analysis Method: EPA 1664A TPH
QC Batch Method: EPA 1664A TPH Analysis Description: 1664A SGT-HEM, TPH
Associated Lab Samples: 10457136001

METHOD BLANK: 3140689 Matrix: Water
Associated Lab Samples: 10457136001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Petroleum Hydrocarbons	mg/L	1.4J	5.0	1.3	12/05/18 13:18	

LABORATORY CONTROL SAMPLE: 3140690

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Petroleum Hydrocarbons	mg/L	20	16.4	82	64-132	

MATRIX SPIKE SAMPLE: 3140691

Parameter	Units	40180210001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Petroleum Hydrocarbons	mg/L	2.6J	19.2	11.5	46	64-132	M1

SAMPLE DUPLICATE: 3140692

Parameter	Units	40180210004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Petroleum Hydrocarbons	mg/L	2.4J	3.0J		34	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: 579049

[BE]	Batch extracted by solid phase extraction (SPE).

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

METHOD CROSS REFERENCE TABLE

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Parameter	Matrix	Analytical Method	Preparation Method
8260B MSV UST	Water	SW-846 8260B/5030B	N/A

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Z076000073 P66-Westlake
Pace Project No.: 10457136

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10457136001	**W-DSCHG-1**	EPA 8260B	578392		
10457136001	**W-DSCHG-1**	EPA 1664A TPH	579049		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

WO#: 10457136

10457136

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ATC Group Services	Report To: Elisabeth Silver	Attention: Accounts Payable
Address: 6347 Seaview Ave NW Seattle, WA 98107	Copy To: Lawrence Brown lawrence.brown@atcgs.com	Company Name: ATC Group Services
Email To: elisabeth.silver@atcgs.com	Purchase Order No.:	Address: 6347 Seaview Ave NW Seattle, WA 98107
Phone: 206-781-1449 Fax:	Project Name: PGG-WestLake	Pace Quote Reference:
Requested Due Date/TAT: Std.	Project Number: 207600073	Pace Project Manager:
		Pace Profile #: 32376

Site Location STATE: WA

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: BTEX by 8260	Nonpolar FOG	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	W-DSCHG-1	Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	WT	G			11/28/18	1515		8				8						X	X		001
2	W-DSCHG-2		WT	G			↓	1520		2				2							X		002
3	W-DSCHG-3		WT	G			↓	1525		2				2							X		003
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Lawrence Brown / ATC	11/28/18	1350	PACE	11-28-18	1350	—	N	N	Y
		11-29-18	1700		11/29/18	955	1.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Lawrence Brown

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/29/18

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 31Oct2018 Page 1 of 2
	Document No.: **F-MN-L-213-rev.24**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: ATC Group Services

Project #: **WO#: 10457136**

PM: JMG **Due Date: 12/07/18**

CLIENT: P66_CarWA

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client

☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 4426 7789 6435

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☐ Bubble Bags ☐ None ☒ Other: Cardboard/styrofoam **Temp Blank?** ☐ Yes ☒ No

Thermometer Used: ☐ G87A9170600254 ☒ G87A9155100842

Type of Ice: ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Cooler Temp Read (°C): 1.7 **Cooler Temp Corrected (°C):** 1.7 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0 **Date and Initials of Person Examining Contents:** KW 11/30/18

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒ Yes	☐ No		1.
Chain of Custody Filled Out?	☒ Yes	☐ No		2.
Chain of Custody Relinquished?	☒ Yes	☐ No		3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No		5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		6.
Rush Turn Around Time Requested?	☐ Yes	☒ No		7.
Sufficient Volume?	☒ Yes	☐ No		8.
Correct Containers Used?	☒ Yes	☐ No		9.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11. Note if sediment is visible in the dissolved container
Is sufficient information available to reconcile the samples to the COC? Matrix: WT	☒ Yes	☐ No		12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☐ Yes	☐ No	☒ N/A	Sample #
	☒ Yes	☐ No	☐ N/A	Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): NA				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Larry Brown Date/Time: 11/30/18

Comments/Resolution: Hold samples 002 and 003, see attached revised COC.

Project Manager Review: Jenni Gross **Date:** 11/30/18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: KW

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

REVISED COC 11/30/18
Per Larry Brown; JMG

Page: 1 of 1

2297736

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ATC Group Services	Report To:	Elizabeth Silves	Attention:	Accounts Payable
Address:	[illegible] Ave NW	Copy To:	Lawrence Brown	Company Name:	ATC Group Services
	Seattle WA 98107		lawrence.brown@atcgs.com	Address:	[illegible]
Email To:	elizabeth.silves@atcgs.com	Purchase Order No.:		Pace Quote Reference:	
Phone: 206-781-1449	Fax:	Project Name:	TCC-Westlake	Pace Project Manager:	
Requested Due Date/TAT:	Std.	Project Number:	2074000073	Pace Profile #:	~~32376~~

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: WA

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX by 8260	Nonpolar / FOG	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	W-DSCHG-1	WT	G			11/28/18	1515		8				8						X	X		
2	W-DSCHG-2	WT	G			↓	1520		2				2							X		HOLD
3	W-DSCHG-3	WT	G			↓	1525		2				2							X		HOLD
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Lawrence Brown / ATC	11/28/18	1350	[signature] PACE	11-28-18	1350	

3

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Lawrence Brown

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/29/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-C-010-rev.00, 09Nov2017